THE INSECT CLUB

Who knows... with its insect cuisine and decor to match, it could end up in the National Registry of Historic Places.

Diner: Waiter, there's a worm in my churrocha.
Waiter: I'm sorry, sir, there are supposed to be 20 of them.

That's how the article in People magazine started out in describing the Insect Club, but People is only part of the avalanche of publicity the club has been getting since introducing its insect cuisine last February (see earlier item in the March Newsletter). But, staying with People for the moment:

"Yes, it has come to this. In downtown Washington, at the aptly named Insect Club, they are serving things that 4-year-olds try to feed their 2-year-old brothers when their parents aren't watching. Among the dishes to tempt taste buds at the restaurant-nightclub, open since last September, are mealworms Rockefeller and grilled cricket polenta.

"The seven buggy items -- which are on the house and just a small part of the eatery's New American menu -- are a culinary extension of the club's decorative theme. A 14-foot sheetmetal dragonfly clings to the outside wall; large praying mantises guard the door, a 50-foot caterpillar hangs from the ceiling.

The Washingtonian's version began like this: "If Pee-wee Herman had taken a shine to entomology instead of skin flicks, he might have opened a place like the Insect Club. It is one big fun house where insects are not the things that scurry in the night, but our wacky friends with extra legs.

"We are talking high concept here, but one based on a simple premise: take an aging commercial space and transform it into a shrine to vermin. Make patrons enter through a termite mound, put the deejay inside an anthill, cover the walls with bug art, overhang the pool tables with spider chandeliers, and voilà, essence of arthropod. The final touch: an oversized ant farm model along the stairs. . . . Even PBS never showed anything like this. But for all its bug fetishism, Insect Club is more cozy than creepy . . . . Just down the hall is a bug-festooned bar. . . . There's another bar downstairs, and the dance floor, where the twenty- and thirty-something crowd finds its rhythm to an eclectic mix of progressive, Latin, Motown, Hip Hop, and even an occasional Bee Gees hit. The effect is of a big house party, albeit in a house owned by someone in need of many years of therapy."

"Old bugaboos fall by the wayside" was the tide of John Lombardo's column in the Washington Business Journal for the week of March 12-18: "The idea of adding an insect menu to the club's regular menu was the idea of Joe Englert, one of the six owners of what is becoming one of Washington's hottest clubs. Lombardo assesses two of the offerings: "The churrchas, stuffed with a creamy pureed mealworm filling and well-complemented by a spicy sauce and a dollop of sour cream, was surprisingly good." And, "The cricket brittle, chock full of black chunks of that leaping orthopteran insect noted for the chirping notes produced by the male . . . was especially tasty."

Choice of wines? Chef Mark Nevin "suggests a house cabernet sauvignon to go with the churrchas and a nice Rioja for the won tons."

The first article we saw was Judith Olney's column, "Olney in America" in the Washington Times. She says: "Well, we hadn't had a bug binge since we ate that little sack of salted water bugs in Bangkok in May. We hadn't had any really good grub since '72 when Liberian natives fried plump white queen termites in palm oil until they tasted like crisp brains, and we knew from a recent New York Times article that serious bug tastings were on the rise."

Newslette finances shaky
See Treasury, page 9

Olney describes the clientele: "It's funny to see the staid crowd of government workers during lunch at the Insect Club: lawyers, FBI types, American Association of Retired Persons persons. They're eating good pizzas plump with grilled vegetables and house-made chorizo sausage. They're downing chicken wings, smoked salmon on shredded potato and leek pancakes, delicious vegetable burgers flavored with cumin that would be awfully easy to hide mealworms in . . . . But this night of experimentation is devoted to a different clientele. Strange human creatures in baggy pants, antennae caps, tasseled slippers haunt the premises. They creep in slowly. 'A place like this really doesn't get fashionable until after 10:30 when the night crawlers come out,' says the owner.

"They down the gelatin cups with crickets, the cricket brittle, the mealworm won tons with Thai sauce. 'I always hated Pinocchio,' claims one night denizen. 'It's a pleasure to eat Jiminy Cricket with justification. I hope I'll start chirping tonight.'"

Olney quotes Nevin: "Noontime customers seem to enjoy the chocolate-covered peanut buttercups with crickets that we've been sending out gratis. I've just added bugs to some of our regular dishes, like vegetable burgers. It can only up the protein content. Try some cranberry cricket polenta."

The crickets have a certain nutlike savor, according to Olney, "Prrett the cricket rolls are cracked seven-grain bread, spread them with garlic butter, and what's not to like?" Fried mealworms, in a sort of trail mix with Pepperidge Farm Goldfish 'taste a bit like

SEE INSECT CLUB, P.11
Authors’ Summary. Eucheira socialis is a unique member of the mealworms. The life history is described on the basis of observations from near Cayo Chabana and a review of the available literature. The larvae are quasisocial. Eggs are laid in masses beneath leaves of madrone trees (Arbutus spp.) and the caterpillars communally build and live within silk tenets known as bolsas. These start as flimsy tents around which the heavy bolsa is constructed of double-stranded silk. The larvae forage nocturnally, following each other along silken trails. They start moving within the bolsa about half an hour after sunset and start to emerge 15 minutes later. The last individuals follow about 2 hours later. Each bolsa may contain up to 600 larvae and there may be over 200 bolsas on a single tree. The larvae inhabit the bolsa from July to April, and develop through 5 instars. When the larvae are disturbed, their reactions include arching and regurgitating an alkaloid-containing fluid. The whole larval lifestyle is one of defensive strategies which have a social component. They pulate suspended head down within the bolsa and this stage lasts 25-30 days. The adults appear to be nocturnal. The larvae and especially the pupas are used as food by various peoples in Mexico. The bolsas have been used for making boxes, bandages, flagging, and as paper for writing and painting. Habitat destruction by lumbering in the pine/oak forests is a serious problem. The larvae forage in the pine/oak forests as well as coconut and other palms. As a result of habitat loss, the insect is critically endangered. It is recommended that efforts be made to protect the insect’s habitat and ensure its survival.

Eating Palm-Weevil Larvae in Trinidad (an Extract from Leon Provancher)

While in Port of Spain, Trinidad in May 1888, we stopped by Laventille one morning in the company of some Dominican fathers. Laventille is a hill outside of town with a chapel dedicated to the Holy Virgin, to which there are usually many pilgrimages. Walking atop a street that skirts the hill, we came upon a black man splitting a wooden log with his hatchet, and near him a little girl holding a teacup. This man is looking for palm grubs,“ one of the fathers told us. “Let us stop a moment if you would like to see them.” On approaching, we saw that the log was in fact the trunk of a palm, probably a coconut palm. It was about four or five feet long and in an advanced state of decomposition. Every blow of the hatchet exposed seven or eight big, very plump grubs, each about three inches long, which the little girl was eagerly gathering into the cup. Demonstrated that the vitamin E content of invertebrates used as feed can be altered by altering the dietary levels of this nutrient (significant only for mealworms). In the chemical composition studies, percent water, and total N (N x 6.25 = crude protein), crude fat and ash as a percentage of dry matter varied widely. Values for crustaceans were, respectively: 73%; 10.3%, 19.9% and 2.4%; for small mealworms: 61.2%, 7.8%, 23% and 2.5%; for large mealworms: 55.6%, 7%, 44.9% and 8.6%; and for waxworms: 59.7%, 5.55%, 56% and 3.2%. Acid detergent-nitrogen (ADF-N) was determined as a measure of unavailable N (about 7% of total N), and neutral detergent fibre (NDF) as an estimate of chitin (averaged about 20% of dry matter). From these data, the authors discuss true protein values and the nutritional importance of chitin both in animals with, and those without, chitinase activity.


This paper was written at the invitation of Crop Protection, a technical journal published in London, as an up-to-date overview of the subject for its Comment section. The last time the author saw the manuscript before seeing it in print, the title was simply, “Insects as human food: nutrition and economics.” An author who would insert his own name into the title of his paper might appear somewhat immodest, so I take this opportunity to mention that I had nothing to do with it.

The subject is treated under four major headings: Traditional use and economic importance in non-European cultures; Nutritional value, Relevance to environmentally compatible pest management and sustainable agriculture; and Economic implications for industrialized countries. Subheadings under Nutritional value are Protein, Fat, Vitamins and minerals, Fibre, and Potential hazards. There are 45 references.

Technical journal reprints Newsletter article about palm weevils

PRINCIPES, Journal of the International Palm Society, has reprinted the article, “Hypothesizing about palm weevil and palm rhinoceros beetle larvae as traditional cuisine, tropical waste recycling, and pest and disease control on coconut and other palms–Can they be integrated?” which was published originally in The Food Insects Newsletter. 1990, 11(2):2-6. The reference is Principes 37(1): 42-47,1993. Reprints are available.

The Food Insects Newsletter

Eating Palm-Weevil Larvae in Trinidad (an Extract from Leon Provancher)

Leon Provancher (1820-1896) was a French-Canadian priest and an ardent naturalist. Although he lived in the province of Quebec while it was still a very inward-looking society, and although he was very much a creature of the Church, Provancher traveled extensively and was apparently fluent in English. In 1868 he founded the influential journal Le Naturaliste Canadien, which continues today. A great deal of the journal was taken up with his own writings on a wide range of topics, and the freedom from editorial restraint allowed Provancher to expound at often great length. The various parts of his travelogue on an 1888 visit to various Caribbean islands, in particular, amount to a substantial book.

One of his shorter papers concerns the virtues of entomophagy and observations on bug-eating habits of various peoples. It is strikingly similar in argument to Vincent Holt’s classic Why Not Eat Insects? of 1885. The following is a translated extract from Provancher’s paper.

While in Port of Spain, Trinidad in May 1888, we stopped by Laventille one morning in the company of some Dominican fathers. Laventille is a hill outside of town with a chapel dedicated to the Holy Virgin, to which there are usually many pilgrimages. Walking atop a street that skirts the hill, we came upon a black man splitting a wooden log with his hatchet, and near him a little girl holding a teacup. “This man is looking for palm grubs,” one of the fathers told us. “Let us stop a moment if you would like to see them.” On approaching, we saw that the log was in fact the trunk of a palm, probably a coconut palm. It was about four or five feet long and in an advanced state of decomposition. Every blow of the hatchet exposed seven or eight big, very plump grubs, each about three inches long, which the little girl was eagerly gathering into the cup.

These larvae were truly handsome animals, of a lovely yellowish white and with six dainty feet near the front end.

“And do the black people eat these grubs?” we asked. “Oh no!” we were told, “this food is too precious for the poor. They collect them for sale to the English gourmets, who relish them.”

“What price do they fetch?” “A small cup such as you see there usually goes for a ‘gourde’, $1.” We estimated that this trunk would furnish at least two such cups of grubs.

These grubs are not the larvae of a butterfly but of a curculionid beetle, Calandra pulmarum Fabr. 1 It is surprising that this insect, while certainly quite large, has a larva of a size equal to those of Canada’s very largest beetles.

Notes:
2. Now, a poor section of Port-of-Spain with a strong sense of its own identity. The name means “Little Wind.”
3. A French creole term for a unit of currency, like “buck” in English. It literally means “gourd” or “calabash” and derives from the old use of gourds as currency in West Africa. Or (less likely) it may be taken to mean
Remember those chocolate-covered ants? They're still high in demand! Reese would buy a carcass at a high price and give it, frozen, to a cannery for processing. The meat went into little cans and demand was small, so 'a carcass went a long way. It wasn't that we were decimating the jungle.' The only big seller was rattlesnake, Reese's first wild food, which starting in 1948 was packed for Reese at a rattlesnake ranch in Florida.

As for that old picnic staple, ants, you don't have to be an anteater to eat them: 'We were the first to ever bring in the ants. As for that old picnic staple, ants, you don't have to be an anteater to eat them: 'We were the first to ever bring in the ants. We went, to Washington to get it stopped.'

Reese had a contract with a well-known chocolate company. On receiving its first shipment of Colombian ants, 500 pounds, the latter made an excited telephone call to the headquarters of Reese Finer Foods. 'Get your ants out of here! The men are threatening to quit.'

In his letter to us, Mr. Kushner mentioned that he was once a contestant on the Groucho Marx You Bet Your Life Show. Groucho, who quizzed Mr. Kushner about his profession and the items he sold, said, 'Mr. Kushner, I can't eat your chocolate-covered ants...the chocolate upsets my stomach.'

Morris Kushner is a consultant to the specialty food trade, with which he has been associated since about the end of World War II. He is a former president of the National Association for the Specialty Food Trade, Inc., and continues as a contributing editor of the Association's magazine, Showcase. According to columnist Susan M. Kreifel in the Lincoln (Nebraska) Journal of Showcase, "Today's specialty is tomorrow's staple." He is a former executive at Reese Finer Foods.

The following inventory of Reese's offerings is taken from a catalogue page (undated, but probably 1960s) sent to the editor by Mr. Kushner. All items except one were sold in 1 to 3 1/2 oz. tins:

<table>
<thead>
<tr>
<th>Chocolate-Coated Menagerie</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Ants, Bees, Caterpillars, Grasshoppers)</td>
</tr>
<tr>
<td>French Fried South American Giant Ants</td>
</tr>
<tr>
<td>Chocolate Covered South American Giant Ants</td>
</tr>
<tr>
<td>French Fried Grasshoppers</td>
</tr>
<tr>
<td>Roasted Caterpillars</td>
</tr>
<tr>
<td>Chocolate Covered Bees</td>
</tr>
<tr>
<td>Chocolate Covered Caterpillars</td>
</tr>
<tr>
<td>French Fried Bees</td>
</tr>
<tr>
<td>French Fried Silkworms</td>
</tr>
</tbody>
</table>

Listed non-insect items included Japanese Sliced Smoked Octopus, Japanese Baby Octopus, Japanese Smoked Froglegs, Japanese Seasoned Sliced Whalemeat, Japanese Smoked Sliced Whalemeat, Rattlesnake Meat, Quail Eggs, and Japanese B.B.Q. Snakemeat. Although not listed on the page we received, Reese apparently stocked animal items from antelope to turtle and everything in between, like bear, elephant, hippopotamus, iguana, kangaroo, lion, tiger, etc."

Morris Kushner is a consultant to the specialty food trade, with which he has been associated since about the end of World War II. He is a former president of the National Association for the Specialty Food Trade, Inc., and continues as a contributing editor of the Association's magazine, Showcase. According to columnist Susan M. Kreifel in the Lincoln (Nebraska) Journal of Showcase, "Today's specialty is tomorrow's staple."
Thousands of Colombians are preparing to stock up in the coming days on a national delicacy that is equivalent - in its high price as well as its gastronomic value - with Russian caviar or French truffles. They have their wallets open and their palates ready to enjoy the annual harvest of hormigas culonas (big-bottomed ants). So called because of their protruding abdomen, the toasted ants constitute the highest attainment of Colombian cookery. Also the most expensive. By collecting and selling the ants, a campesino can earn during the three-month season, from March to May, the equivalent of a year of day wages. A pound (453 grams) of ants is sold for about $20, the equivalent of six days of work at the minimum wage.

There are no statistics regarding the annual production of hormigas culonas, nor of those who occupy themselves in hunting, frying and selling them. It is a marginal activity that, however, has important benefits for many campesinos. Their sale is especially redeeming because the ants grow in zones of erosion, with little agricultural employment. Japan has imported the product, since in the Orient the insects are not considered strange.

The ant in the northeastern region of Santander is the only one of its kind in the world, and a difficult-to-obtain dish. One has to wait for the period of the insect's nuptial ceremonies in order to assault the ant hill in search of fertile specimens. Only the females arrive in the frying pan; the males lose their reproductive apparatus and die soon after sexual contact with their partners.

The consumption of ants is a tradition dating to precolombian times. In 1540 Captain Martin Gaicano and his army conquered the region and discovered that the Indians ate these insects, which they called copecho. In the Guane language it means nuptial food, which refers as much to the fime in the ants' life cycle in which they are captured as to the aphrodisiacal qualities attributed to this dish.

The cultivation of the culonas has been studied by experts in precolombian economic organization. Although the Indians of the region had communal land and dwellings, the ant hills were private property. The head man periodically portioned this unique franchise to the Indians had the right to consume or barter ants, which were cultivated in small "farm," surrounded by palm leaves.

The Spaniards at first limited themselves to describing this curious gastronomic custom with a certain disgust. "In the region of Butaregua and Chanchon [now the municipalities of San Gil and Socoflo] one can find numerous colonies of ants that are eaten with much relish and, toasted, are kept in gourds so that they can be used for many months."

After their initial repulsion, the Spaniards soon came to appreciate them and from there, they became intent on monopolizing the cultivation. This provoked such grave conflicts with the Indians that they finally desisted.

The culonas do not leave the ant hill every day, nor every hour -- only when it has rained a lot during the night and the sun comes out strongly the next day. This last condition usually forces the ant hunters to project sunrays with a mirror into the mouth of the ant hill. If they are given these circumstances, the ants will come out only during the morning.

The Zoos would furnish lists of animals for sending the excerpt.

The author mentions a variety of other insects that are collected and eaten, including, under the earth, the fertile ants lay between 200 and 400 eggs a day. The first born from these eggs will be workers. The galleries that run through an ant hill are astonishing works of engineering that can measure altogether up to 100 meters. An ant hill shelters more than 5 million ants, and produces between half a pound and five or seven pounds of edible ants.

In order to avoid the bites of the insects, the hunters usually wear reinforced suits. The culonas are thrown into the pan alive, and afterward the wings and piners must be removed. During the 90 days there will be a tumult of hunting in the rural areas of Santander and in the vicinity of the football stadium in Bucaramanga, where it is said the most aphrodisiacal ants grow. The inhabitants of the province continue to enjoy the almost millennium-old tradition of eating insects. Because of this, the ant forms part of the regional folklore, which an old, celebrated and ultra-macho couplet proclaims:

"The little ant of our Santander
- Pardon, Senora, the frankness-
-values herself in the same way
-as a woman does:
-By what she has behind,
-not what she has on top."

(Note: this might also be read to mean: She values herself using her vanity - nor her head.)

With information from M.C. Caballero and E. Gomez Mejia.

From Papua New Guinea - more about the sago grub

There have been several articles and letters about palm weevils, including the famous sago grub (Rhynchophorus ferrugineus), in past issues of the Newsletter. Tom Stone, Berkeley, California, recently sent several xeroxed pages of the book A Guide to Bush Foods, Markets and Culinary Arts of Papua New Guinea, by R.J. May, published in 1984 by Robert Brown & Associates (Aust) Pty. Ltd. (P.O. Box 29, Bathurst, N.S.W. 2795 Australia). We quote from page 95 concerning sago grubs: "Usually the grubs are either boiled or roasted over an open fire. In the Maprik and Angoram (East Sepik) markets, and probably elsewhere, they are often sold pitted and grilled like satay. They are tender and very sweet with a slightly nutty flavour. The adult beetle is also eaten. 

For those with access to a good supply of sago grubs, a recipe is offered on page 144.

Tabular data on nine animal foods summarized by the author from other sources show the sago grub second only to pork (medium fat) as a source of energy (760 kilojoules/100 grams), highest in calcium (461 mg/100g), molluscs were second highest at 0.21 mg/100g, and highest in riboflavin at 0.43 mg/100g, saltwater fish, fatty, were second highest at 0.21 mg/100g.

The author mentions a variety of other insects that are collected and eaten.
For readers who have asked about the edibility of spiders

Two items on spiders have crossed our desk recently, which about equals the number of requests received for information on the edibility of the arachnid class. Linda DeFoliart, Hotchkiss, Colorado, called attention to a short article, "On the Menu: the Giant Tarantula of Amazonia," in the March 1993 National Geographic. The species is *Theraphosa leblondi* which can "comfortably span a ten-inch dinner plate," and which Piaroa Indians, among other tribes, consider delicious.

Filmmaker Nick Gordon and scientific adviser Rick West chronicled the natural history of the spider in central Venezuela, then joined in a feast. The blessing of the spirits was invoked by a shaman before the hunt. "By twitching a vine in the tarantula's burrow, imitating the movement of an insect, a hunter lures the ground-dwelling giant from its lair." The spiders are tucked into bundles of leaves and kept alive until cooking. After singeing off the barbed hairs, the legs and thorax are barbecued. They taste much like shrimp, according to Gordon and West.

Maybe it's all in knowing what to do and how to do it when it comes to food, and maybe the *Newsletter* has been remiss in so completely ignoring the Arachnida. Spiders are also eaten in Papua New Guinea (see next article), and elsewhere, and Dr. Yves Provost of Lakehead University in Canada reported finding nothing wrong with the scorpions he was served while in China (see last *Newsletter*).


Who learned from whom?

Most of the termites that are eaten are the winged males and females which are collected as, or after, they emerge from their earthen mounds on their mating flights. In some localities, people also eat soldier termites. As the soldiers have no wings, they are collected by inserting a slender twig or blade of grass into holes in the mounds. The soldiers clamp onto the intruding twig or blade with their large mandibles and are drawn to the surface, 10-15 at a time. Chimpanzees use exactly the same method for collecting soldier termites.
Letters In Congo -- trying to undo Western bias

Dr. Gregoire Ban, of the Laboratoire d’Entomologie Agricole, Brazzaville, Republic of Congo, wrote on January 29, 1993:

"Thank you for the Food insects Newsletter which I have been receiving for a few months. I am preparing a manuscript on the use of insects as food in Congo. I shall send it soon. I find this newsletter very interesting to break many preconceived ideas on this topic. In my country for example, many people are fond of many food insects but a lot of them do not show it because they think that edible insects are 'uncivilised' food. I think it might be the same in many other African countries."

In Papua New Guinea -- trying to undo Western bias

Under date of June 5, 1993, Larry Orsak, Director of the Christensen Research Institute, Madang, PNG, wrote in part:

"As one who once assisted another graduate student prepare "insect meals" for ravenous students at a U.C. Berkeley dormitory, I'm pleased at the Food Insects Newsletter's spread and impact. Here in Papua New Guinea, we regularly eat insects, not necessarily cooked. The fare includes giant orb-weaving spiders, giant stinkbugs and other exotica. The sad thing is, New Guinean villagers are coming to believe that this is "bush kanaka" behavior, something to be discarded as they enter the developing world. More and more frequently, they are likely to forego this cheap source of protein in favor of expensive "tinned fish" or corned beef. Status is a very important need to be met in Melanesian culture, and buying, instead of collecting protein fits into the syndrome. But spending the little money they have on unnecessary things can be debilitating in a country where all school children must pay school fees, and thousands of villagers remain largely outside of the cash economy. Suffice it to say that I spend a lot of time lobbying people to stick to the bug-eating ... as one of their pathways to development!"

Insect tasting display at Kansas State University

Open House gets press coverage

From Dr. C. Michael Smith, professor and head of the Department of Entomology, dated January 29, 1993.

Thank you for including me as a subscriber to the Food Insects Newsletter. I've been reading the newsletters of Alberto Broce, a faculty member in our department, for the last two years. I first did an insect cooking lecture in an "Insects and People" class I taught at the University of Idaho four years ago and have been doing this occasionally ever since. I do Ag in the Classroom training for high school teachers in the summer and many are-, highly enthusiastic of information on cooking and consuming insects as well as insect nutritional value.

Attached are some press clippings from the Kansas State University Open House last fall. Our insect tasting display was quite a hit, although I've not found a way to effectively compete with the Grain Science and Milling Dept. which provides donut and cheese-puff samples. The clipplings from the Hutchinson, Kansas News were also interesting. First, that we made the paper in a rural city near urban Wichita and second the response that article drew. In contrast to Mr. Dressier's response I did have several faming families can me inquiring about recipes for cooking with insects!

More U.S. Cookbooks to include insects in the future?

From Amy Rosmarin of New York City.

"This is the best newsletter I've ever seen. I'm putting together a cookbook -- Serving Odd & Elegant -- and now hope to include some insect foods. Thanks."

Ed.: We swear that we didn't print Amy's brief note because it contains a nice compliment for the Newsletter. We thought it of interest to readers that there may be a new U.S. cookbook that contains insect recipes. And, we know of at least two more that are underway.

From a student (fifth-grader?) in Delaware

January 22, 1993. Dear Dr. DeFoliart:

I just wanted to thank you for your time with my trend story on eating insects. I enjoyed reading The Food Insects Newsletters and the article you sent me. The story will be in the next issue of our school paper. (Although I haven't even written it yet, the teacher was so impressed by my sources that she wanted it in soon.) I'll send you a copy as soon as it goes to print.

Thanks again. Scott A. McLaughlin [signed], Hockessin, Delaware.

Ed.: The Newsletter hears from several dozen students per year. They are not only writing for school newspapers, but exploring insects as food in biology projects, Science Fairs, forensics and university term papers. Read on.

From an 8th Grade Science Fair Winner in Toledo, Ohio

Dear Dr. DeFoliart,

I sent you my finished report on 'Insects: The Inside Story.' Thank you very much for all your help. I learned a lot about this subject, and I'm also surprised that there are so many other interested people out there. The pamphlets helped me out a great deal, too. In fact. in one of the Food Insects Newsletters there was a recipe for worm fritters, and for the science fairs I went to, I cooked them for my judges. Only one judge would eat them, unfortunately. Also, (just on a more curious note), at my school I realized that my famous worm fritters were eaten more by the little girls and older women. The older men shrunk at the very idea, and only about three boys tried the "infested" food for the mere purpose of showing off in front of the more timid girls that refused to even look at bugs. So, maybe if we introduce the idea of eating insects to women, they will agree and eventually, men will follow! (Okay, so maybe I'm jumping the gun!)

SEE LETTERS, P. 8

The Food Insects Newsletter

Letters (from page seven)

Seriously though, I am impressed by this whole idea, how insects can be good, nutritional, environmental and inexpensive food. At my school, St. Pius X, I participated in their science fair, and after that I decided to go on to the Northwest District Science Fair at the University of Toledo. (I mentioned "decided" because since our school is so small anyone who wanted to go on could.) While there, my project won the Governors Award for Excellence in Agricultural and Food Science Research plus $25.00 and a Superior which enabled me to go on to the State Science Day in Columbus which is this Saturday (the 17th of April). No matter how this turns out, I owe a lot to you for taking the time to help me out, I am sure that you are a very busy man no doubt!

I hope you had a nice Easter season, and your weather actually starts to look like spring (unlike ours).

Thanks again, Laura Gibson

Ed.: Laura's report was wide-ranging and excellent. She drew on many sources of expertise: an entomologist in Georgia, a protein specialist at general Mills in Minneapolis (who conducted a protein analysis of her spring workshops for local teachers and I have included entomophagy as a topic. I supply them with procedures and some hands-on experience as well as some ideas for experiments in the classroom. Not all the teachers are as eager to try this in their classrooms, but I know that I have converted a few. I make a point of making my recipes appealing and flavorful and most people are amazed that "insects don't really taste that bad!"

I'm sure that you get many letters like this every day, but I just wanted to let you know that you had a voice spreading the word about edible insects here in Tucson.

Caterpillar Crunch

1/2 tsp. ground cumin
1/2 tsp. chili powder
1/4 tsp. cayenne pepper
1/4 tsp. ground ginger
1/4 tsp. ground cinnamon
1/2 tsp. curry powder
1 c. pecans & 1 c. pumpkin 1/2 tsp. garlic salt
1/4 tsp. cayenne pepper
1 tsp. Coarse (kosher) salt
1/4 tsp. ground cinnamon
Approx. 1 cup waxworms (or mealworms or crickets)

2 Tbs. Olive oil
2 C. shelled pecan halves or 1/2 tsp. garlic salt

Garlic salt (optional)

SEE LETTERS, P. 8
mealworms and crickets in comparison to beef; the New York author of a
recipe book: Ronald Taylor (author of Butterflies in My Stomach); a
professor in medicinal chemistry at the University of Toledo; the Toledo
Zoo; the Cincinnati ZOO; if even 10-20% of the next generation develop the
kind of interest and appreciation that Laura has in the beneficial side of
insects, it will be a better world for both insects and people.

From a graduate student at the University of Arizona

Under date of May 17, Robin K. Roche, wrote in part: I've written to you
before. I am a graduate student in entomology at the University of Arizona
and I have been interested in ethnobotany and entomophagy for some
time now. Early last fall I wrote to you to ask if you knew of places where I
could purchase more exotic insects (other than the standard mealworms and
crickets that can be ordered from places like Rainbow Mealworms). You
very kindly referred me to Dr. Fish of the New York Entomological Society
and he was a great help and we enjoyed sharing our enthusiasm for cooking
insects. He also ended up referring me to Dr. Tom Tarpin (then president of
ESA) and I was invited to help run the edible insect display at the Insect
Expo in Baltimore last December. So, for all of that, I'd like to thank you
for your letter.

At that time I was preparing a special Thanksgiving slide show and mini
feast for our local organization, Sonoran Arthropod Studies. It was a great
success! I love to cook and so I tried adapting some of my favorite recipes
from The Silver Palate and other cookbooks. I served Houpes de Grillon
(cheese puffs with crickets), Caterpillar Crunch (spicy nut mix with fried
wax moth caterpillars), and Chocolate Zozeo (chocolate covered Zophobus
morio i.e., giant mealworms) to name a few. The Caterpillar Crunch and
the Zozeo were the obvious favorites of the crowd. Since last fall I have
several requests for the Caterpillar Crunch recipe. I probably will have a
similar mini feast again this fall. Currently, I am teaching several

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$ $ $ $ Newsletter Treasury in need of a cash transfusion $ $ $ $ $

If you have never made a contribution in support of The Food Insects Newsletter or haven't in a long time, a contribution of $5, $10, or more would be most appreciated. Printing and postage costs are now running to more than $1,500 for each of the three mailings per year, and costs entailed in responding to hundreds of pieces of correspondence boost the annual total to well over $5,000. During the past two years, two small grants, one from the Agrecol Corporation and one from the UW College of Agricultural and Life Sciences have helped keep the Newsletter operating in the black. In the current year, as well as in past years, reader contributions have covered only about one-third of the costs. So, please think about writing a check today.

Address on page 11.


Inside APHIS is an in-house newspaper of the USDA. We thank Dr. Jim Mertens, Ames, Iowa, for sending a copy of the report. It's always good news when government officials and researchers are open to the idea of insect harvest as a potentially viable option in dealing with pest populations in some situations.

The swarms, described as "epidemic proportions," were centered in the Yucatan Peninsula and to the west in the states of Tlaxcala and Puebla. The highly toxic insecticide, methyl parathion, most of it applied by way of backpack sprayers, has been the Mexican government's method of choice in combatting the outbreaks. The government was also studying alternatives such as use of the fungal organism, Metarhizium, and harvest of the insects as food.

At the request of Mexico's Sandia Vegetal (Agricultural Resources, Campaign Plant Protection), Gary Cunningham, project director for PPQ's Grasshopper Integrated Pest Management (GHIPW project in Boise, Idaho, flew to Mexico in late October to tour the hardest-hit areas and recommend new pest management approaches. According to Cunningham, "The swarms I saw were rather small, perhaps 30 yards square. But one can see 20-30 swarms per acre, and they can go for miles and miles. It's quite a sight and niacin and are quite nutritious. In fact, these insects are eaten and relished in many parts of the world. In Asia and Africa, they are fried, roasted, or ground to be mixed with flour.

While Cunningham was in Puebla, an extension specialist from Mexico City was demonstrating grasshopper recipes learned from natives in the nearby State of Tlaxaca; grasshoppers and other insects have been part of their diet since before the Spanish Conquest.

Cunningham purchased a pound of the freshly prepared Sphenarium in a Puebla market for 4,000 pesos, or about $1.25. The recipe was simple and, according to him, complimented the insect's hearty flavor.

The natives gather grasshoppers in a sweep net and place them in water for 24 hours. After the insects are drained, they are then placed in boiling water for about 30 minutes, adding salt and garlic. Corn husks are added to give them a darker, more delicious flavor.

'The GHWM project looks at everything from biologicals to decision support systems in its effort to better manage grasshoppers," says Cunningham, "but we have not yet been successful at getting the U.S. population to eat grasshoppers."

Cunningham made a number of recommendations, among them the use of baits like wheat bran or roasted oats impregnated with small amounts of less potent insecticides such as malathion or carbaryl, and that Mexico expand...
We quote in full a part of the article which is headed: A Little Salt with Your Grasshoppers?

Another alternative being pursued by the Mexican Government is the use of grasshoppers as a food source. The idea of eating insects, while perhaps foreign to most Americans, is not new. Studies have shown that grasshoppers are high in protein, calcium, phosphorus, and its biological control options to consider another fungal organism, Beauveria, along with Metarhizium. The article is accompanied by a photograph of Cunningham holding a fork and a bowl of grasshoppers, and captioned: "Although Gary Cunningham... readily shares his grasshoppers with employees in his office, he admits that he has a fair amount left,"

First Record of Pawnee Indians Eating Grasshoppers?

Neil Hunter of Plainwell, Michigan, sent the old newspaper clipping below with this note, "From 1924 Pathfinder weekly paper:"

Indians Ate Grasshoppers

I saw an article in your magazine about Indians eating grasshoppers. About 70 years ago my grandfather was agent for the Pawnee Indians on their reservation in what is now western Nebraska. I have often heard my father, who was then a boy, tell of those Indians eating grasshoppers and the interesting way in which they caught them. They would dig a deep hole in the ground and then, choosing a time when there was no wind and when a fire would burn on the prairie slowly and could be kept under control, they would encircle several acres around this hole with a ring of fire and drive the hoppers into the hole and capture them by the bushel. They were then dried and ground into meal to be mixed with their corn meal and made into bread. A.L. Giffis, Mt. Pleasant, Iowa.

Ed. - There are more than 250 papers that report the use of insects as food by North American Indian tribes, mostly in the western part of the continent. While the harvest method described above is similar to those in many other reports, I do not recall any other records pertaining to the Pawnees nor to grasshopper harvesting from as far east as Nebraska.

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Helen M. Smith, Invertebrate Conservation Officer of the WCMC is author of a subsection on invertebrates (pages 361-364, part of a section on Uses and Values of Biodiversity). Four tables relevant to edible insects are: Selected insects used as a human food resource (showing scientific names (63 species or general, life stage normally consumed, and area(s) where eaten); Countries with honey production at or in excess of 10,000 tons in 1989; Nutritional values of selected vertebrate and invertebrate products (proximate analyses of 8 vertebrate and 19 insect species); Efficiency of food conversion for selected animals (6 vertebrates, 29 insects). From the tabular data, the author notes that, nutritionally, insects compare well with other animal products, and the efficiency of food conversion to biomass is also favorable.

Other points made: "Some species are dried and sold to quite a large market and are important in the local economy," "The seasonal abundance of certain species makes them especially important at times of year when other food resources may be lacking." "Despite the widespread use of insects and other invertebrates for food, they represent an under-exploited resource"; and, "Many species which are agricultural pests are also used as a food resource in some part of their range, or have the potential to be utilized."

The sources of insect data cited are among those familiar to students of the subject, but this report is significant because it is another demonstration that organisms such as the WCMC are increasingly recognizing the global importance and potential of edible insects. The WCMC is a joint-venture between the three partners who developed the World Conservation Strategy: The World Conservation Union, United Nations Environmental Programme, and World Wide Fund for Nature (formerly World Wildlife Fund), its mission is to support conservation and sustainable development through the provision of information on the world's biological diversity.

Further, the report was written by someone who was not already a dedicated promoter. In a letter to the Newsletter editor, Ms. Smith said: "Personally I must admit I have never purposely eaten anything invertebrate except for the odd prawn when there is nothing else available (I am not a great fan of seafood and no one will ever persuade me to try an oyster!). I was fascinated to try some other (terrestrial) invertebrates as long as someone else prepares the food since I have no interest or expertise in cooking whatsoever! (The editor must admit that he and Smith are in the same company when it comes to lack of personal interest or expertise in cooking!) If I happen to know of any restaurants etc. which sell insect (ect) foods in the UK I would be most interested."

Wisconsin entomologists give "thumbs-up" to "Pupae Puffs"

Pupae Puffs in this case were pupae and prepupae of two kinds of wasps, the relatively large bals-faceted hornet, Dolichovespula maculata, and the smaller German yellowjacket, Vespula germanica. The term, "Pupae Puffs," was coined by the chef for the occasion, Marsha Lisitza, formerly in the medical entomology laboratory and now with the Wisconsin Eye Bank. About 60-70 people (faculty and students) showed up on October 30, 1992, for the afternoon tasting event in the Department of Entomology conference room. The pupae were deep-fried in peanut oil for about 15 seconds. In their unseasoned natural state, the Puffs had a mild nutty flavor. Optionally, garlic salt could be added.

A rating form had been devised, but unfortunately, only 35 copies were available. The Puffs averaged a rating of slightly above 8. On a scale of 1-10, with 24 tasters rating them at 8, 9 or 10, and 11 tasters rating them at 5, 6 or 7. Three people rated the two species separately, two slightly favoring Dolichovespula, and one slightly favoring Vespula. To the question, "In your opinion would additional flavors, such as lemon-pepper, Cajun, or others, enhance the product?" 14 respondents checked "yes" for lemon-pepper, 16 yes for Cajun, 5 wrote in "garlic," 2 wrote in "salt," and 3 wrote in other flavors.

Comments (with the rating given by the person making the comment in parentheses) included: "They were delicious plain! (10); "Those are the most extremely tasty creatures I have ever had." (10); "A bit greasy, how about air popping?" (10); "Fried more deeply would be better." (9); "They would make good appetizers." (9); "Thanks. It's only weird when their eyes look at you." (8); "Very rich, couldn't eat too many." (8); "Would be very good for breakfast." (8); "Surprisingly good!: (8); "I have tried drone bee larva in Indonesia, it was better." (7); "Just don't look them in the eye!! Good!" (7); "Need to add some seasoning." (7); "I would like them better if they were crunchier." (6); "I guess I would like them better if they were a little crispier. More like a potato chip." (6); "[They need] lemon or fine herbs added such as parsley, basil, oregano, etc." (5).

The papue became available as the result of a small grant from the Agrecol Corporation which was used to motivate a summer student employee in Professor Robert Jeanne's social insects lab to put in some overtime nest collecting.

Another round of free publicity for Don Chon's in Mexico City - A good omen for the Insect Club!

Don Chon's probably gets more publicity in the U.S. media than any other restaurant located in Mexico. Year after year, writers are inspired to write about the wild foods served up, including the insect dishes at prices of $20 to $30 a plate. In the latest round, readers sent in clippings from The Atlanta Journal, The Atlantic Constitution of May 24, 1993 (sent by Dr. Murray Blum, University of Georgia, Athens), the Arkansas Democrat Gazette (Little Rock) of May 29, (sent by Ms. Jessica Dean Scott of Rogers, Arkansas, who happens to be the editor's sister), and The San Diego Union Tribune of June 11 (sent by Mr. Tom, Higgins of San Diego). If advertising is one of the keys to business success, and if The Insect Club can continue to inspire writers for as long as Don Chon's has, it will get a very high return, indeed on its advertising dollars!
The Insect Club (from page one)

Corn nuts. "Along the way, Olney and some of the other articles work in information on insect nutritional value, their importance in some other countries, and some of Nevin's techniques preparing them.

The club's fame is not limited to the United States. It was mentioned in the Italian periodical, Panorama. In a letter to this editor (Newsletter), dated May 11, Chef Nevin said, in part: "Every week more and more people are coming in and asking for insect food. I've been getting phone calls on a daily basis from reporters and laymen from all over wanting to know more about insect cuisine. In addition to those mentioned above, the club has been featured on MTVs "Week in Rock," a BBC video story, and the Entomological Society of America Newsletter, and there are upcoming stories in the Orlando Sentinel and on CNN's "Real News for Real Kids."

Olney quoted Englert saying, "Bugs are simply the creatures of the 1990s. They will replace the dinosaur fad of the 80's." He may be right. The Insect Club is open for lunch and dinner Monday through Friday, starting at 9 a.m., a bug-free, complimentary buffet is included with the cover charge. Phone (202) 347-8884. GRD

(Thanks to Chef Mark Nevin for keeping us informed about media coverage. Thanks also to readers Lisa Rohr (Maryland) and Dick Gorham (FDA, Washington DC) for sending clippings from the local press.)

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The Buffalo Museum's Big Event Took a Hit, But Ultimately Triumphed Over the "Storm of the Century"

The Buffalo (New York) Museum of Science had put a lot of planning into the evening of Saturday, March 13th. The chief organizer was Wayne Gall, Associate Curator of Invertebrate Zoology. The evening would begin at 7:30 pm with a public lecture, "Insects: An Overlooked Food Resource," followed by the "Bug Appetit" reception. To cater the reception, the museum had engaged Pearls Pastries of Jamestown, New York.

Pearl's features chef Bill Warner who is famed throughout western New York for his specialty desserts and his creative puff pastry. Of the several puff pastry insects and arachnids created for the occasion, a praying mantis, standing about three feet high, was particularly impressive. The hors d'oeuvres and desserts included:

- Mushrooms stuffed with mealworms and wild rice
- Chicken, green onion, and cricket springroll
- Julienned zucchini and waxworm fritter with dipping sauce
- Mealworm praline on pastry cream in puff pastry
- Cricket hazelnut torte with raspberry

Local television, radio and newspapers provided good advance publicity, including televised interviews with several of the major participants for Saturday night. Gerry Rising's column, "Nature Watch," in the Buffalo News was particularly insightful, citing examples of how our narrow attitudes about food in the U.S. often work to the detriment of other people. By the close of business on Friday, ticket sales had passed the 300 mark. That was great, but all was not joy. It was becoming increasingly apparent that Saturday's event might be on a collision course with what was being heralded as the "storm of the century," slowly but inexorably moving up through the Atlantic coast states.

Your editor, there to deliver the lecture (and, as usual, trusting in good luck), planned to sleep in a little on Saturday morning but was jolted awake at 7:00 am by the telephone ringing. It was Wayne Gall, who had a big decision to make. There were 300 ticket-holders for 7:30 that evening; Bill Warner, the chef, was poised in Jamestown ready to head toward Buffalo with all the vittles; I was scheduled on a flight out the next morning; and the storm, now a virtual certainty to engulf western New York, was expected to become very noticeable in Buffalo before nightfall.

To make a longer story short, everything was rescheduled for Tuesday, March 16th. Despite the confusion of a postponement, 225 people showed up. Following the lecture, they made short work of Bill Warner's tasty and attractive assortment of hors d'oeuvres and desserts. Add Bill Warner to the short but growing list of U.S. chefs who have successfully and creatively braved the frontiers of insect cuisine. And congratulations to Wayne Gall and the Buffalo Museum of Science for a highly successful fete in the face of great adversity.

Addendum: During my storm-lengthened seven days in Buffalo, Wayne G. introduced me to the "Original Buffalo Chicken Wings" for which the city is so justly famed. Talk about good! It reminded me of baked cicada nymphs. I ate nothing but Chicken Wings the last three days.

Postponed:

The series of invited papers on potential hazards associated with the consumption of certain insect groups, which was scheduled to begin in this issue, has been postponed to the November issue.

First and last call for additions to the 1992 Directory

The 1992 Directory, published in February of that year, listed the names, addresses, telephone and fax numbers, and relevant interests of about 400 Newsletter recipients. Since then, the "waiting list" has grown to about 175 names and should reach or surpass 200 by the end of the summer. So, within a couple of months we plan to begin work on a supplement to the Directory which will include the new listings, also public and institutional libraries that receive the Newsletter, and, of course, corrections of entries in the original Directory.

Those listed in the original Directory win automatically receive a copy of the Supplement. Those listed in the Supplement will receive both the Supplement and the original Directory. Once the Supplement is out, we have no further plans for new directories or additional supplements. If you wish to be listed in the Supplement and have not already so indicated, fill out and return the Address Form on page 11, checking "yes" for Directory or let us know in some other manner that you wish to be listed.