SPORE PRINTS

BULLETIN OF THE PUGET SOUND MYCOLOGICAL SOCIETY

Number 236 November 1987

ROACH-KILLING FUNGUS DISCOV R D ACCID N ALLY
[*Mycena News*, Myco. Soc. of San Francisco, 9/86]

RIVERSIDE (AP) -- A fungus that wrecked the experiment of entomologists at the University of California at Riverside has inadvertently led them to a new cockroach killer that may be one of the most potent yet.

The scientists said they have no immediate plans to market their discovery, but they believe it has widespread commercial potential, as long as people don't mind spraying fungus spores into their kitchen cupboards.

Entomologists Edwin Archbold, Michael Rust, and Don Reierson published their findings in the February [1986] issue of *The Journal of Environmental Entomology*.

They had been conducting research into the pesticide resistance of German cockroaches, the most common indoor pest in the world. The scientists collected their specimens from Southern California restaurants and reared them in laboratory garbage cans.

Rust, who has studied cockroaches for 15 years, said that more than a million of their laboratory roaches died inexplicably in 1980, in what turned out to be the first of several cockroach epidemics.

In an effort to save their cockroaches and research, Rust said, "we cleaned, washed jars and rearing facilities, sterilized food and water. ...None of it was successful."

In 1984, after losing $100,000 in time and research, Archbold isolated and identified the fungus that invades the insects' circulatory systems and robs them of nutrition.

Rust said the fungus seems to infect only the German cockroach colonies. Other, less-common cockroach species have been unaffected in the laboratory.

Since their discovery, Rust and the others have been able to grow the fungus in laboratory equipment and believe they may have found a potentially powerful, biological means of controlling the pest.

"In California alone, the dollar amount spent on structural pest control and over-the-counter aerosols is $550 million a year," Rust said.

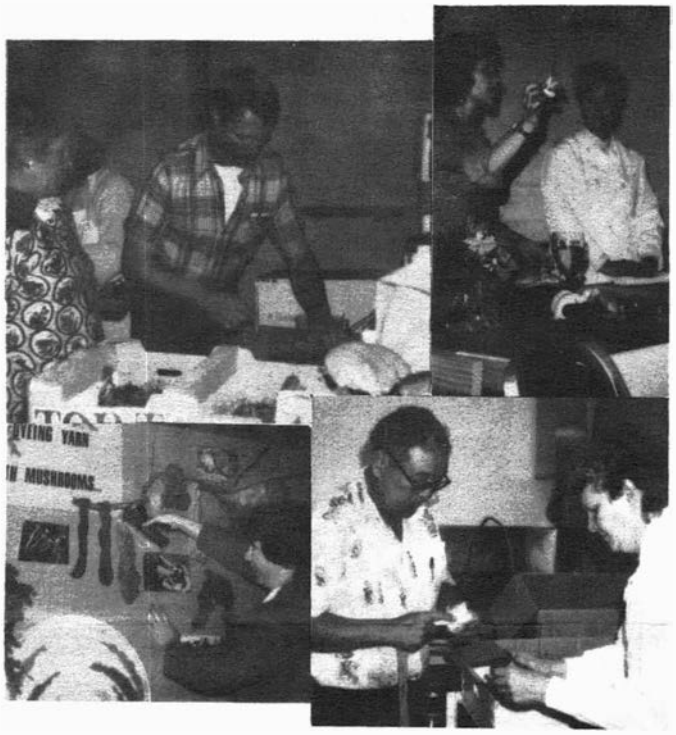
Other roach experts, however, are cautious about the prospects.

"You need to have an awful lot of information on a microorganism before you reach the point where it can be of practical importance," said Gary Bennett, a professor of entomology at Purdue University in Indiana.

Rust said a commercial product for use in the home--likely a spray or a treated bait trap--may not be available for another five years or more.

ANNUAL EXHIBIT **Dennis Bowman**

Surprised and amazed were common reactions of the visitors to our 24th annual wild mushroom exhibit. Even the exhibit workers were seen shaking their heads in disbelief at the number of mushrooms that had been found by members for the display. Once again the mycophagy demonstrations were the highlight for any visitors lucky enough to sample some of the delectable dishes prepared, and the photo display was a popular attraction for young and old alike. Book and poster sales were brisk as were the sales for arts and crafts. A big thanks to all PSMS members out there who made this year's exhibit into the fun, beautifiul, and amazing show that it was.



Congratulations to Dr. Harry Thiers, Professor of Mycology and Botany at San Francisco State University and mentor of the Mycological Society of San Francisco, who is the recipient of the 1987 NAMA award for contributions to amateur mycology. Not necssarily bestowed every year, the award is given only when an exraordinary contribution is noted. Dr. Thiers studied under the late Dr. Alexander Smith at the University of Michigan and is a world-renowned expert on boletes. --*Mycolog*, Humboldt Bay Myco. Soc.

Dues reminder: Unless you just joined PSMS during our Annual exhibit, your membership expires in January. Please use the enclosed renewal slip. Return envelopes are appreciated.

Would PSMS membership be a good gift for a friend?

Spore Prints

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PUGET SOUND MYCOLOGICAL SOCIETY
Center for Urban Horticulture, Mail Stop GF-15
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Calendar

Nov 9	Public mushroom i.d., 2-7 p.m., CUH
Nov 9	Beginners' class, 3-5 and 7-9 p.m., CUH
Nov 10	Membership meeting, 7:30 p.m., CUH
Nov 16	Public mushroom i.d., 2-7 p.m., CUH
Nov 16	Board meeting, 7:00 p.m., CUH
Nov 17	Beginners' class, 3-5 and 7-9 p.m., CUH
Nov 20	*Spore Prints* deadline
Nov 30	*Spore Prints* mailing, 10 a.m., CUH
Dec 8	Christmas meeting--cookie bash & slides

MUSHROOMS WITH RICE — Patrice Gales Benson

This rice dish is a fine vehicle for the flavor of any tasty mushroom. Use matsutake, shiitake, chanterelles, etc.

1-1/2 cups washed rice
1 cup mushroom pieces
1-1/2 cups water or pale broth

Place all ingredients into a pot. Bring to a boil. Reduce heat and cover. Cook on low for 18 minutes. Turn off burner and let pot sit unopened for another 10 minutes.

NOTICE SHIITAKE GROWERS

For those of you who are serious about shiitake growing, the PSMS library now has copies of the following catalogs: (1) the Field and Forest Products Inc. "1987 Catalog of Mushroom Growing Supplies" and (2) the "*Mushroom*people 1987 Brochure," both of which emphasize shiitake supplies and cultivation.

Membership Meeting

Tuesday, November 10, at 7:30 p.m. in the Center for Urban Horticulture, 3501 N.E. 41st Street, Seattle.

Brian Luther reveals **A History of Mushrooms in the Mailbox.** Brian, a PSMS member for 15 years, has identified our mushrooms and taught us about fungi since his undergraduate days at the University of Washington. He is among the best taxonomists in the Northwest and has an infectious enthusiasm for mycology. He is a member of the Pacific Northwest Key Council, has chaired the identification committee at the PSMS Annual Exhibit for several years, and is chairperson of PSMS's regular on-going identification committee. His past addresses to our society have been memorable, and we are fortunate to have him back. At this meeting, Brian will introduce us to his entertaining new mushroom-related hobby.

BOARD NEWS — Dick Sieger

Ben Woo counselled the board on the significance of the agreement with CUH and on methods for achieving our goal of $25,000.

Margaret Dilly recommended that PSMS support Initiative 97, the toxic cleanup campaign. Approved.

Denis Benjamin reported on ways to improve our meetings. It was decided to try a new format in January. He solicits comments from members on what they would like to see at meetings.

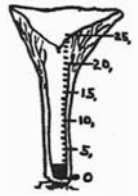
Dennis Bowman reported that the quality of this year's exhibit was excellent, as was the enthusiasm of the workers. Attendance was lower, however, and, as a result, new memberships were also proportionately lower. Book sales and craft sales, on the other hand, were higher than in previous years. It was decided to make tentative exhibit reservations at CUH for the third or fourth week in October, 1988.

Ways of selling our inventory of posters were discussed, and Dan Schwenk volunteered to start the sales campaign. The board would like to find a committee who have experience in the field.

A nominating committee was appointed to select a slate for 1988. It consists of Dennis Bowman, Claude Dilly, and Russell Kurtz.

Dan Schwenk read his letter to the State Historical Society in which he asked that Daniel E. Stuntz be included in their Centennial Hall of Honor.

BUILDING FUND — Coleman Leuthy



I would like to thank the Bartas, especially Libby, for the fine crocheted kitchen towels which were donated to the building fund and displayed at the October membership meeting. An unexpected and welcome gift beyond their other donations. Thank you.

Contribution letters are now in preparation by the UW that acknowledge individual donations. You may use these letters for tax deductions. Totaling about $2300, 43 contributions had been received through August. Thank you all for your generous support.

RAIN AND MUSHROOMS *The Spore Print*

[Los Angeles Mycological Society, December 1985]

The question of how rainfall is correlated with mushroom fruiting has been a topic of research for Danish mycologist Morten Lange. One of the things he did was to observe the fruiting of mushrooms in a field over a period of four years. In his recent article titled "Fleshy Fungi in Grass Fields. II. Precipitation and Fructification" (*Nordic Journal of Botany*, Volume 4, pp. 491-501, 1984), he says he chose to study a field because it's a simplified situation: the environment is uniform, there are no special water reservoirs (logs and stumps) or nutrient reservoirs (tree roots), all the mushrooms are saprophytes, and all the mushrooms are exposed to rain, sun, and wind. Conditions were controlled even further for Dr. Lange in that his field was sown with grass, it was fertilized in different ways in different sections of it, and it was mown several times a year.

Forty species of mushrooms fruited during the four years. The more common species turned out to be either early fruiters, which appeared in May or June then mostly faded out by mid September, or else late fruiters, which appeared in September and continued strong until late October or into November. Among the early fruiters were *Marasmius oreades*, *Panaeolus foenisecii*, two Entolomataceae species, and two *Conocybe* species. Among the late fruiters were four species of *Mycena* and two species of *Stropharia*.

Dr. Lange found some relationships between rainfall and fruiting which applied to all the mushrooms. First, at the beginning of a season and also after a long dry period, it took 25 to 30 days after a heavy rain for a good crop of mushrooms to fruit. Secondly, after the field was mowed (and therewith the mushrooms cut down) or after a short dry period, it took 5 days for a mushroom crop to appear. It turns out that the 25 to 30 days is the time required by most mushrooms for dormant mycelium to become activated, grow, and finally produce the tiny primordia which enlarge to become mushrooms. The 5 days is the time required for primordia to become mushrooms.

The effect of drought as a mushroom inhibitor was found to depend especially on the amount of sunshine falling on the field. A sunny day in summer set back fruiting more than a sunny day in fall. As few as 2 sunny days in summer had a detrimental effect on fruiting.

Sometimes special fruiting patterns were observed for particular species. A good year of fruiting for *Clitocybe angustissima* was followed by a poor one (in the second year the mushrooms appeared late and were few), apparently because the mycelium had exhausted its productivity in the first year. *Nolanea sericea* actually reached its greatest numbers after droughts; it would seem that either this species is stimulated to form primordia by dryness (which then can fruit soon after the next rain) or else its mycelium outcompetes other species under dry conditions.

The mushroom season ended with the arrival of freezing temperatures. Most fruiting bodies were killed by even the slightest night frost, though *Clitocybe angustissima* and the stropharias were more durable.

CISPUS CENTER FORAY — Dick Sieger

And young and old come forth to play
On a sunshine holiday.
--John Milton

After 10 years, PSMS returned to Cispus. It was fun to be back. The Washington State Cispus Environmental Center near Randle has been spruced up but fortunately retains its old character. The barracks have been supplemented with large mobile homes containing kitchen and bath, ideal for evening wine and cheese gatherings. There are even spacious cabins.

The Lewis County Mycological Society, which sponsored the event along with PSMS, was host to about a hundred people, many of them PSMSers attending a foray for the first time. The Lewis County people had scouted the dry forests for moist areas. As a result, we found a surprising variety of fungi. Some large *Sparassis radicata* were brought in. *Gomphus clavatus*, *Phaeolepiota aurea*, and *Cortinarius* species, however, which are usually abundant in the area, were largely absent.

Employing Key Council keys, members of the afternoon workshop tried out Gene Butler's "character building" method of identifying mushrooms. After sufficient character had been built, we were entertained in the evening by Maggie Rogers, who gave a sneak preview of the NAMA photo contest award winners, and Andy Green, who led a campfire program. Between activities, what with the fine weather and being so close, many of us drove over to Mt. St. Helens for a memorable, even awe-inspiring experience.

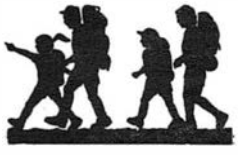
When's the next Cispus Foray?

SODA SPRINGS FIELD TRIP — Irwin Kleinman

Eighteen enthusiastic hunters found only 41 species of mushrooms which were very capably identified by Brian Luther. Thirteen PSMS members enjoyed the excellent potluck and compared the gorgeous weekend with the Columbus Day storm of 25 years ago. The hosts and hostess were Irwin Kleinman and Henry and Corinne Cato.

EAGLE CREEK FIELD TRIP — Coleman Leuthy

We had 22 people and 55 species of mushrooms. Brian Luther identified our finds, many of which were collected enroute over Stevens or Snoqualmie and Swauk passes. My appreciation to Ioleen and Bill Williams for co-hosting and keeping the fires burning. We had an exceptional pot luck dinner.



FATHER OF MYCOLOGY *Mycophile*
[Vancouver, B.C., Mycological Society]

Who was this man? He was first to conclusively demonstrate that fungi grow from spores and not by some kind of mischievous spontaneous generation. He was the first to describe and name taxa in the genera *Aspergillus*, *Botrytis*, *Polyporus*, *Clathrus*, and *Geaster*.

Did his name instantly spring to mind? If not, here are some other clues. He was the first to note the quaternary arrangement of basidiospores on the gill surface of agarics and first to describe an ascus. He was the first to note the mechanism involved in the distribution of spores from the glebal mass of gasteromycetes. He observed cystidia on the gill surface of *Coprinus* and decided their function was to keep the gills apart so the spores could fall and disperse. The list goes on.

That should be enough clues, shouldn't it? Well, if not, here is a final clue. He wrote the mycological classic *Nova Plantarum Genera* describing 1900 plants, 1400 for the first time (900 of them were fungi).

The answer is Pier Antonio Micheli. Well, of course.

While his name may not be a household word, if the study of mycology requires parenthood, then Micheli could well be described as the "father of mycology."

He was a poor boy born in Florence in 1679. Although his parents sent him to school, his formal education was elementary; he taught himself Latin, and he never received a university degree, an obstacle that prevented his advancement in the scholarly world.

During his childhood and for the rest of his life, Micheli devoted himself to his primary interest -- botany. He was fortunate enough to attract a patron, Cosmo III de Medici, Grand Duke of Tuscany, who gave him a modest position at the botanical gardens, first at Pisa, then Florence.

Despite his poverty, he maintained a correspondence with leading botanists of the day. He collected plants not only from Italy but also from Austria, Tirol, Bohemia, and Prussia. Micheli had a keen intelligence that picked out and remembered pertinent features with ease, a lucid mind that readily grasped the features that distinguish relationships, and a driving interest. His observations were made with two primitive microscopes he acquired.

In 1718 Micheli conducted two series of experiments. In one, he collected spores from a mold, *Mucor*, and grew them on a melon. He collected the spores and grew them on another melon, producing, of course, an identical mold each time -- and thus proving that the spores were a kind of minute "seed." In another series of experiments carried out about the same time, he inoculated rotting leaves with agaric spores, and succeeded in growing mushrooms from them (identical to the parents again). Considering the chances of contamination, his success in this has an element of luck.

In 1729 the masterpiece *Nova Plantarum Genera* was published. This work reflects Micheli's special interest in algae, liverworts, mosses, lichens, and the fungi. It took 200 patrons to help finance this work. It included 108 copper plates, many illustrating fungi, which cost Micheli about $2.50 each (quite a sum for a poor man at that time).

Micheli was interested in other fields besides mycology. He collected fossils and was a geologist, being the first to recognize an extinct volcano as such.

Another of Micheli's contributions was the beginnings of a system of classification of the fungi based on his observation of macroscopic features.

He was working on a second volume of his book when he contracted pleurisy from exposure while collecting in autumn. He died at the beginning of 1737 and is buried in Florence. A tablet erected by his friends describes him as "most worthy of men" on account of "his wisdom, sweetness of disposition, and modesty."

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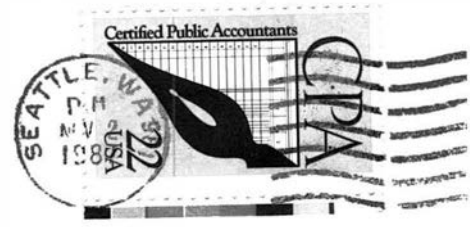

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"Mushrooms in the Mailbox"
Tues., Nov. 10, 7:30 p.m., CUH