A Novel Experience with Panaeolus
A Case Study from Hawaii

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INTRODUCTION

Panaeolus is a genus of melanosporous mushroom which has been the source of some controversy in the mycological literature. The characterization of definite species and the scope of the genus itself have been difficult problems for the mycologist. Schultes[1,2] indeed focused attention on this genus when he suggested that *Panaeolus sphinctrius* was the teonanacatl, i.e. sacred mushroom, of the ancient Aztecs.

Krieger[3] and Murrill[4] documented cases of *Panaeolus campanulatus* and *venenosis* Murr. poisoning respectively. Douglass[5] documented a case of mushroom poisoning due to *P. semiglobatus* (identified by Murrill) involving his wife, his maid, and himself, and he included a classification of mushroom poisoning. "Group V. Stimulating only the Nervous System" included *Panaeolus campanulatus, P. venenosis* Murr. (actually *P. subbalteatus), P. retirugis,* and *P. semiglobatus.* He astutely concluded that "the pilzatropin contained in this group" produced symptoms that were "purely those of a stimulated nervous system" and could not "conceive that a full meal of these mushrooms could cause death." Ford[6] then proposed a new classification of mycetismus (mushroom poisoning). His fifth category was "Mycetismus Cerebralis." He stated that patients become "greatly exhilarated, laugh immoderately on slight occasion, develop a staggering gait and show peculiar disturbances of vision. The symptoms are transient" but the patients may feel "as if they were walking on air" for several days. *Panaeolus papilionaceus* and *P. campanulatus* were mentioned as being "responsible for this peculiar poisoning."

Heim,[7] in considering various cases of *Panaeolus* intoxications from the United States and England, noted that the manifestations were comparable to the effects produced by psilocybin and psilocin and characteristic of the hallucinogenic Mexican mushrooms from which these indoles had first been isolated. This type of cerebral excitation became known in Europe as the psychodysleptic effect and in the United States as the psychedelic experience.

PRELUDE WITH A NOTE ON CULTURE

On December 21, 1972, David Chudnow and I were driving around Oahu toward Sunset Beach for the purpose of witnessing the "Hang Ten" American Professional Surfing Championships. Along the way we picked up two surfers (Tom and Mat) from the mainland east coast who were hitching a ride to the event. From the conversation which ensued we learned that the use of "magic" mushrooms constituted a part of the north shore "culture." Since we were not previously aware that such mushroom use existed in Hawaii, we were rather curious and decided we would make an effort to have the experience that evening.

We left the championships late in the afternoon with Tom and drove to a site where he had collected mushrooms the day before. The mushrooms were found

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growing mostly on semi-dry cow dung hidden from view by grass. Occasionally these mushrooms were exposed directly to sunlight, and sometimes they were growing among grass in no direct association with a cow pat. We collected only the black spored type indicated by Tom. After much searching for a couple of hours, we finally headed back to Tom's rented house with about twenty mushrooms. We were in for quite a surprise!

When we returned to the house, we were greeted by the sight of perhaps several pounds of mushrooms in a plastic bag collected in about an half hour by four servicemen who were present. Mat and a college student from Michigan who was staying there had also returned. In addition, a self made "troglodyte" whose cave we had seen earlier in the day was present.

THE EXPERIENCE

I ingested twelve washed mushroom caps early that evening. They were quite tasty and I considered them a delicacy. Two of the servicemen had ingested fifty mushrooms apiece that afternoon and the other two had also ingested a considerable number. The others present did not care for the taste so they consumed their mushrooms on bread with fruit preserves. They each consumed about a dozen mushrooms.

Within an hour I became acutely aware of alterations in visual perceptions. Three dimensional flashing patterns of colored lights were superimposed over images, and I felt as if I were perceiving stimuli traveling through multifocal space warps. Furthermore, I experienced stimulation which seemed to involve both a psychic and a somatic component resulting in a pleasant sense of wellbeing. No one present expressed any feelings of dysphoria or unpleasant somatic disturbances, and no adverse reactions were observed throughout the evening even in those who had ingested fifty mushrooms. When looking out the window some of us perceived moisture and felt as though it were raining, but when David and I went outside later in the evening, we discovered that it was in fact quite dry. We concluded that the robust sound of cicada may have given us the impression of rain and that perhaps we had experienced perhaps hallucinatory synesthesia. The ocean was vividly glowing in the distance, the clouds blowing across the sky were magnificent, and the entire setting produced a truly spectacular feeling of being alive.

About seven hours after the effects were first noticed, I felt drowsy and had no difficulty falling asleep (about 2:00 AM) despite a brilliant collage of images. Those who remained at the house also displayed drowsiness and likewise went to sleep.

The next morning everyone awoke refreshed and went about his business. Both David and I ingested six refrigerated mushroom caps. Although I experienced no noticeable effects (apparently due to a subthreshold dose), David soon felt "spaced out." He experienced an apparent increase in auditory acuity and an alteration in his sense of time. In addition he had a feeling of decreased ability to voluntarily move his extremities. This resulted in surprise as he discovered that he was in fact moving his limbs without difficulty. Furthermore, he felt a slight impairment of short term memory but only had a trace of "visuals." These effects disappeared within several hours.

BOTANICAL CONSIDERATIONS

These mushrooms were observed on Oahu, Kauai, and the island of Hawaii. The other Hawaiian islands were not explored. A specimen of the mushrooms collected on the north side of Oahu on December 21, 1972, was mailed to Richard Evans Schultes who kindly forwarded it to Roger Heim. He identified it as *Panaeolus cyanescens* Berkeley and Broome, section *Copelandia,* assured by microscopic observation of the spores and the cystidia.[8]

Formerly known from the Philippines as *Copelandia papilionacea* Bresadola and described from Florida in 1942 by Murrill as westii *Panaeolus*, this mushroom was renamed westii *Copelandia* by Singer[9] who adopted the generic name from Bresadola. Singer, later recognizing that this sole species of *Copelandia* had originally been described from Ceylon in 1871 by Berkeley and Broome as *Panaeolus cyanescens,* soon began to refer to it as *Copelandia cyanescens* maintaining his assertion that it should be a distinct genus. This nomenclature has since been maintained by Singer[10,11] and employed by various other mycologists.

Heim *et al.*[12] and then Heim[13] again stated that *Copelandia cyanescens* (Berkeley and Broome) Sing. had been noted from the Philippines, Indonesia, Ceylon, Florida, Mexico (Vera Cruz), Brazil, and Bolivia, and that Heim hemself had collected it from Madagascar (Malagasy Republic) and Cambodia. Ola'h, noting a need for revision of the genus *Panaeolus,* undertook a "systematic study" involving biological, anatomical, chemical, and physiological characteristics with "parallel cultural trials in the laboratory."[14,15] Following his results the genus *Panaeolus* was broadened "to include such entities as *Copelandia* Bres., *Anellaria* Karst, and *Panaeolina* Maire."[14,15] Heim[13] had previously suggested that *Copelandia* could be considered as a section of *Panaeolus.* Furthermore, Ola'h[14,15] noted that *Panaeolus,* being heterogeneous, had been "classified by authors in

the different families *Bolbitiaceae, Coprinaceae, Naucoriaceae,* and *Strophariaceae.*" One may observe "affinities" for any of these families, "but most characters lead towards the *Strophariaceae,* on both anatomical and chemical grounds."[14,15] The *Strophariaceae* notably include the hallucinogenic *Stropharia* and *Psilocybes.*

Singer[10] had noted the similarity of the "blue color of the sclerotia and of the base of one single specimen" of *Panaeolus subbalteatus* and "the bluing in *Copelandia cyanescens* (Berk. and Br.) Sing. and the bluing *Psilocybes*" of section Caerulescentes. He then hypothesized that a relationship existed "between the bluing capacity of a species and its capacity to provoke cerebral mycetisms," thereby predicting that *Copelandia cyanescens* might be significant for "research on cerebral mycetisms of the type represented by *Panaeolus subbalteatus* and *Psilocybe caerulescens.*[10] Later Singer[11] thus even referred to it as "apparently hallucinogenic."

CASE REPORT FROM THE FRENCH MARITIME ALPS

In the evening of August 19, 1965, a serious intoxication occurred in Menton, France. Mme Vial and her 11 and 14 year old children consumed a total of about sixty grams of cooked mushrooms. Heim and his coworkers[12] and Heim[13] have described this intoxication in detail and identified the mushrooms as *Copelandia cyanescens* (Berk. and Br.) Singer, thus citing a somewhat unexpected new locality for the occurrence of this pantropical species.

The following translation by the author summarizes the episode: Symptoms of Mme Vial which began in less than an hour after the ingestion included a general malaise, a violent sensation of dizziness and drunkenness, tinnitus, visual disturbances, pupillary dilatation, and a gradual lack of control of movement. An hour after ingestion she experienced what seemed like waves of lost and regained consciousness. Then the patient was seized by fear while frightful hallucinations struck by waves. She saw heads of monsters, green colored human bodies with heads of animals, and a wall opened as an abyss. The patient remained lucid enough to describe the phenomena she witnessed. She was treated with gastric lavage and "calmant analeptiques." The next day everything was back in order. No somatic action such as hypertension or hypotension had been noted. The two children experienced a psychomotor excitation phase almost immediately manifesting a strong agitation and lively hallucinations, sometimes comic and sometimes terrifying, followed by sleep without vomiting, abdominal pains, or diarrhea. The pupils were very dilated. The eldest, having curled up in an armchair, was incapable of raising himself. He distinguished the hair of his parents as green and some geometric forms appeared on the walls. When the nurse raised her hand, he saw this movement repeated several times. The younger, having entered into a nervous crisis, presented some impressive convulsions and lost consciousness.

DISCUSSION

During the evening of my experience on Oahu I suspected that the most probable "active agent" responsible for the psychedelic effect of the mushrooms was psilocybin or a related compound. Later my suspicion was further strengthened by Dermot Taylor who agreed that psilocybin was most likely responsible for the experience I described, considering the known pharmacology of the hallucinogens.

Heim, Hofmann, and Tscherter,[12] using paper chromatography, reported the presence of psilocybin in samples of the *Copelandia* from Menton. They not only determined its presence in wild carpophores but also in mycelial culture of this mushroom. Ola'h,[14,15] having consistently found psilocybin in *Panaeolus cyanescens,* Berkeley and Broome, categorized it as a "psilocybian" species, thereby confirming the previous work done on this species by Heim and his co-workers.

Considering the clinical pharmacology of psilocybin in man as reviewed by Mulkey[16] and discussed by Jaffe,[17] Victor and Adams,[18] Murphree,[19] Dimijian,[20] and Hollister,[21] it would seem that the symptomatology in the case from southern France and the experiences portrayed in the case from the north shore of Oahu could certainly be included within the spectrum of action of psilocybin.

These two cases, however, had quite different manifestations. The case from Hawaii was quite consistant with the clinical trials performed by Leary and Alpert who found that 73% of their 400 volunteers had a "very pleasant" experience.[16] From rough calculations by the author it would seem that Mme Vial received a nearly equivalent dose of psilocybin as those servicemen who had ingested fifty mushrooms. Even though there is a sex difference and probably a dosage difference, a partial explanation for the marked qualitative difference in symptoms may be found in the difference in psychological set and expectations present in the two situations. Although Rinkel *et. al.*[22] noted either mild euphoria or dysphoria even with low doses of psilocybin, it is certainly possible that Mme Vial's symptoms may have been exacerbated by anxiety produced when she thought she was being poisoned. The symptoms of her children must have been age and dose dependent. The seizuring and loss of consciousness of the youngest is

clinically significant in that it clearly represents an extreme neurophysiologic manifestation of the cerebral excitation syndrome.

It has been determined that psilocybin decreases the spatial distortion threshold.[23] This may possibly have some relevance to the author's experience of perceiving stimuli as if they were traveling through multifocal space warps. Furthermore, Redlich and Freedman have stated that the "usual boundaries structuring perception and cognition become fluid."[24] Heim, in reflecting on the power of hallucinogenic mushrooms, states that the domain which they create appears in effect to be a "no man's land" between the real and the eternal.[25]

The use of *Paneaolus cyanescens* has also become part of the Kauai subculture according to some former Californians who have become residents there. David Chudnow and I were informed of an episode which occurred when over two hundred of these mushrooms were found growing in a single locality after a heavy rain. All those who ingested the mushrooms indeed had a pleasurable experience. This subcultural use of *Panaeolus* brings to mind the sociocultural terms "cultogenic" and "utopiate" which have been employed with reference to psychedelic drugs.[24,26] On the basis of observations by Weil,[27] one might reasonably predict that the frequency of adverse reactions to such naturally occuring psychotropic materials would be less than to synthetic or refined products, such as those illicitly available as street drugs.

It seems that this mushroom was not employed in native Hawaiian culture.[28,29] Furthermore, it must be mentioned that for the novice an indulgence in this sociological phenomenon is not without risk. A case was reported of a youth from the mainland east coast vacationing in Oahu who died after eating ten of what he thought were "magic mushrooms" with a "reputation of producing hallucinogenic effects."[30] The case appeared to have a clinical course typical of the poisoning by certain species of *Amanita* and other genera. Numerous genera of mushrooms had been observed on the various Hawaiian islands.

CONCLUSION

An ethnobotanical case study has been presented which for the first time documents the employment of *Panaeolus cyanescens* Berkeley and Broome as a hallucinogen. Hawaii is a new locality being cited for the occurrence of this species. While it does not seem to have been used in native Hawaiian culture, it is actively utilized by part of the American subculture present in Hawaii. Furthermore, a subcultural employment of this mushroom in other localities of the world would certainly not be surprising. Since many types of mushrooms other than *P. cyanescens* occur in Hawaii, a detailed mycological and chemical investigation would be of great value.

It must be mentioned that many species of mushrooms superficially resemble the *Panaeoli* and occur in the same habitats. Although there is an excellent color picture of *P. campanulatus* (the type species of the genus) on plate 26a of John Ramsbottom's *Mushrooms and Toadstools* published by Collins, London (1953), one must be prudent and cautious in selecting any mushrooms for consumption remembering that many are deadly. Furthermore, many of the species of *Panaeoli* probably will have no psychotropic activity at all according to various studies completed thus far.[14,15]

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