

MUSHROOMS RUSSIA AND HISTORY

BY

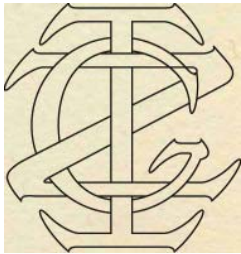
VALENTINA PAVLOVNA WASSON
AND R.GORDON WASSON

VOLUME II



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*TEO-NANACATL**The Sacred Mushrooms of the Nahua*

1 here are three cultural areas in the world where men consume mushrooms for psychic effects. We have just dealt with one of these - the eating of the fly amanita by the Hyperboreans of Siberia.

The second area is in New Guinea, in the northeastern part of that island, at the headwaters of the Wahgi River. The practice is reported among the natives living in the Mount Hagen range of mountains, but it may well be more widespread. The Mount Hagen natives are a mixture ethnically of Negritos and Papuans, with some Melanesian blood. Concerning their use of an intoxicating mushroom the available evidence is clear but pitifully meager. In 1947 the American Ethnographical Society published as its Monograph No. 12 a paper by Abraham L. Gitlow entitled 'Economics of the Mount Hagen Tribes'. He devoted one brief paragraph to intoxicants, and said that one of the three in current use was a mushroom called *nonda*. Then he continued:

The wild mushroom incites fits of frenzy and has even been known to result in death. It is taken before going out to kill an enemy, or in times of anger, sorrow, or excitement.

That is all. We are vouchsafed no information about the mushroom itself, or its manner of preparation, or the dosage, or the meaning of its native name; nor any hint of the folk associations that must cling to this potent fungal growth. How odd that professional anthropologists should so often ignore in this way the obvious questions about fungi.

Thomas Gilliard, an ornithologist of the American Museum of Natural History specializing in the birds of New Guinea, first drew our attention to the Mount Hagen reference. He did more: he suggested that we address a letter to a Catholic missionary working downstream from the Mount Hagen range and inquire about a peculiar fungal practice among the natives there. The Wahgi is a river that runs east and then south into the Gulf of Papua. Below Mount Hagen but still far from the sea it drains a valley shut in on the north by the Bismarck range and on the south by the Kubor mountains. The natives, known as the Chimbu people, are linguistically and culturally distinct from the Mount Hagen tribesmen, though ethnically similar. It seems that among them chastity is not prized as a virtue in young unmarried women, and that to avoid children they eat a certain fungus. Later, when they marry, they give up the

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fungus and proceed to bear children without let or hindrance. We sent off our letter to Father John Nilles, a member of the Society of the Divine Word, to his station at Mingende, in the Central Highlands of the Territory of New Guinea, and in due course his reply confirmed Mr. Gilliard's report:

I know [he wrote] of one kind of mushroom that is used by women as a means of preventing conception or procuring abortion. A native has brought me two specimens of that kind, of which I send you two cross sections. It grows on old tree stumps in the bush from 6,000 feet up on the slopes of the Chimbu and Wahgi valleys. When fresh the color on top is brown, and white underneath. Small slices are cut off, cooked by the woman between hot stones, and eaten with cooked sweet potatoes.

On receiving this gracious communication from Father Nilles, we forwarded the mushroom samples at once to Professor Roger Heim in Paris. They were insufficient for definitive identification, but Professor Heim felt confident that the specimens belonged to a genus known in France as *ungulina*, and probably to the species called by French mycologists the *ungulina auberiana* (Mont.) Pat. This particular species is abundant throughout the tropics and belongs to the polypores with rigid trama. It staggers under the burden of twenty or thirty competing scientific names; in the collections of the New York Botanical Garden the specimens carry the designation *rigidoporus microporus*.

In the watershed of the Wahgi, in the light of the tantalizing information at hand, holds exciting secrets for the exploring ethno-mycologist. But we must leave New Guinea behind and turn to Middle America, the third of our areas. Here we discover the most dramatic story in the whole field of ethno-mycology. There survives to this day in Mexico, within a few hours' flight of New York, the living cult of a sacred mushroom, a mushroom to which is attributed the power of bestowing on the eater extraordinary faculties. We know that this cult was flourishing when the Spaniards conquered Mexico and we believe there is evidence indicating that it was then millenniums old. For three centuries this cult lay forgotten by the world in the old writings of the 16th and 17th centuries, while Indians in remote corners of Mexico continued to believe in the mushroom and practice the cult. Only in the last twenty years has the cult come to light again, and even today its existence is known to few. After we had examined the available evidence old and new, we found ourselves succumbing to the spell of the mysterious mushroom with its strange powers and uncertain identity. The possibilities of further exploration in the field drew us more and more, and we proceeded with the pleasant task of laying

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plans for a trip to the remote Indian tribes of the mountains of Oaxaca. These plans we carried out in 1953.

Our readers must be patient with us if we develop our story deliberately, laying the groundwork for our own inquiries by first assembling the evidence previously available - evidence of the highest intrinsic value and not alone for

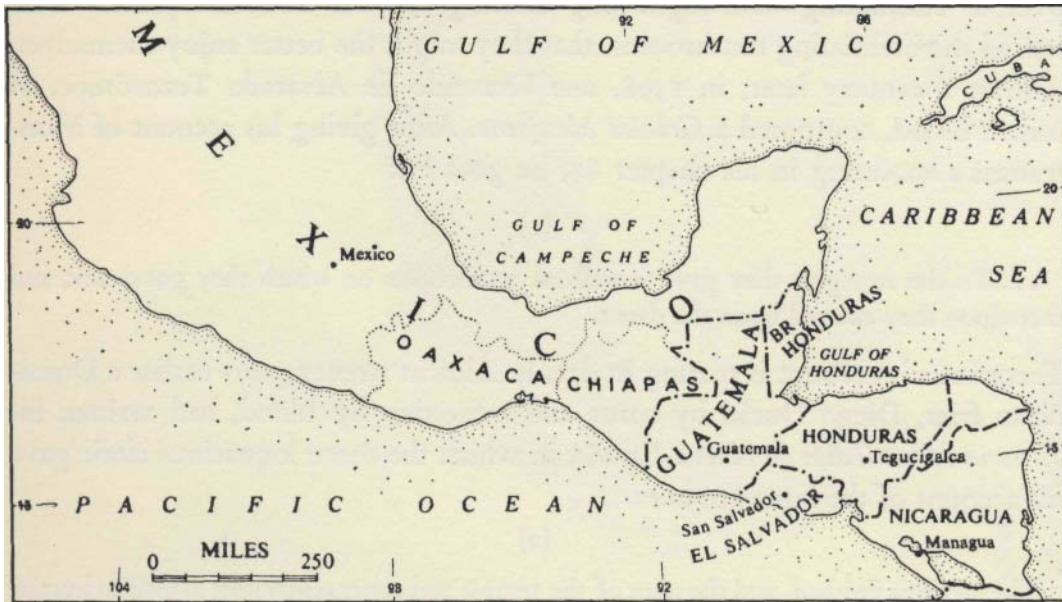


Fig. 12

ethno-mycologists. Ten early writers speak of the mushroom cult. We shall translate what they had to say, but as the original sources are often hard to come by, for the convenience of students we supply these texts in Appendix IV on pages 404-407, keyed numerically to the translations in the following pages. Those who read Spanish will relish the style of the old authors, terse, supple, free of literary artifice, the testimony of witnesses putting down on parchment for posterity what they saw and heard and experienced, usually coloring their comments with the religious feelings proper to their age. How exciting it is to exhume from the grave of centuries these almost forgotten voices telling us of the sacred mushroom and the powers attributed to it! This was the age of Richard Hakluyt, and our quotations belong to the world of exploration and discovery that we associate with his name.

Montezuma,¹ most famous of Aztec kings, assumed his regal office in the year 1502, and the event was celebrated with exceptional pomp. The Spaniards' carvels were already probing the Caribbean, but Cortez' landing at Vera Cruz was still seventeen years off. The ceremonies and festivities of the new monarch's

i. We adopt the popular spelling. Scholarly usage would require 'Moctezuma II'.

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installation were so spectacular that visitors arrived from far and wide, and even certain of Montezuma's traditional enemies, princes of the Tlascalan people, came in disguise to witness the great event. They were discovered, but the magnanimous Montezuma, instead of exploiting their capture, had them royally entertained. After his induction into office, the whole city gave itself over to celebrating with night-long dancing. To the Tlascalan princes were served the inebriating mushrooms, that they might the better enjoy themselves. Almost a century later, in 1598, one Fernando de Alvarado Tezozomoc, of Indian blood, composed a *Cronica Mexicana*. After giving his account of Montezuma's anointing in his chapter 87, he goes on:

[1]

... To the strangers they gave woodland mushrooms on which they got drunk, and thereupon they entered upon the dance.

Tezozomoc's account is sparing in details. Almost twenty years earlier a Dominican friar, Diego Duran by name and a mestizo by blood, had written his *Historia de las Indias de Nueva Espana*, in which the more loquacious cleric gave his account of the same episode:

[2]

The sacrifice finished, and the steps of the temple and court remaining bathed in human blood, they all went off to eat raw mushrooms, on which food they all lost their senses and ended up in a state worse than if they had drunk much wine; so drunk and senseless were they that many of them took their own lives, and by dint of those mushrooms, they saw visions and the future was revealed unto them, the Devil speaking to them in that drunken state.

Both Tezozomoc and Duran seem to have relied on a single source, now lost to us. Neither described the mushroom nor gave it a name, though we learn that it was associated with the woods and that it was eaten raw. Furthermore, through the friar's priestly bias and exaggeration one perceives an important fact: the mushroom was more than an intoxicant, for to it were attributed divinatory powers and these powers were thought by the Catholic chronicler to stem from Satan. How strange that Gitlow in his New Guinea observations should have similarly mentioned a fungal frenzy that led even to suicide.

Our third witness is Toribio de Benavente called Motolinia, a Franciscan friar who died in 1569. He was the author of a work whose lengthy title begins thus: *Ritos antiguos, sacrificios e idolatras de los Indios de la Nueva Espana*, and in it he gave further details about the extraordinary mushroom. Perhaps one senses behind his words the same lost source on whom the other writers relied, and

PLATE XXXVIII Jean-Henri
Fabre. *Boletus duriusculus* Kalchbr.



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he ends his account with words that could only have had horrifying connotations for the believing Spaniard of the 16th century, for he says that the mushroom in the Indians' religion played the role of the Host in Christian rites:

[3]

They possessed another method of intoxication, which sharpened their cruelty: for it they used certain mushrooms or small toadstools, for such there are in this land even as in Castile; but those of this land are in such wise that, eaten raw and by reason of their bitterness, [the Indians] drink after them or eat with them some bees' honey; and shortly thereafter they would see a thousand visions and especially snakes; and as they completely lost their senses, it would seem to them that their legs and body were full of worms eating them alive, and thus half raving they would go forth from their houses, wanting someone to kill them; and by reason of this bestial drunkenness and travail that they underwent, it could happen on occasion that someone would hang himself, and furthermore toward others they would be more cruel. They called these mushrooms in their language *teunamacatlh*, which means 'God's flesh', or of the Devil whom they worshipped, and in this wise with that bitter victual by their cruel God were they houseled.

Motolinia informs us that the inebriating mushroom is small, bitter, and quick to act. He tells us also the name in Nahuatl of the mushroom, and the meaning of that name as he understood it.

Our fourth witness was, as it happens, a sworn witness in a judicial proceeding. What is more - and this is significant in delimiting the cultural areas where the inebriating mushroom was in use - we are now transported to the Mixtec country. The Indians of the land that the world calls Mexico have always been divided among many cultures speaking utterly unrelated languages. At the time of the Conquest the dominant language was Nahuatl and the various tribes speaking it may be called collectively the Nahua; of these the politically dominant tribe was the Aztec. The Mixtec country lies far to the south of the valley of Mexico, in what is today the state of Oaxaca, on the road to the Zapotec country and the Isthmus of Tehuantepec. But linguistically the Mixtecs are unrelated to the Nahua and distinct from the Zapotecs.

On October 15, 1544, in the town of Etlantongo, Esteban Marban, Scribe and Notary Public in the service of their Majesties of Spain, was taking depositions in a case involving the alleged apostasy of three notables, all of them Indians, principal men of Yanhuitlan, Don Domingo the Cacique and the two *Gobernadores*, Don Francisco and Don Juan. It seems that, according to report, with 'diabolic ostentation' for many years they had persisted in invoking their idols and demons after the manner of their ancestors, with all the idolatrous trappings of the old religion. The crux of their offense lay in the fact that they had been

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baptized in 1527 and they were therefore apostates. The depositions in this case survive, and lengthy extracts were published in 1940 by the Museo Nacional in Mexico as an appendix to one section of the Codex of Yanhuitlan, in an edition of this manuscript edited by Wigberto Jimenez Moreno and Salvador Mateos Higuera. The witness that interests us was one Don Diego, Cacique of the town of Etlantongo, and we note that an interpreter served him: Don Diego must have been at home only in his native Mixtec tongue. After lengthy testimony that we would call hearsay, Don Diego continues:

[4]

. . . and [the witness] knows and saw that some 14 years since, in a fiesta he saw said Don Francisco and Don Juan drunk, and that they had taken *nanacates* in order to invoke the Devil as their forbears had done, and that it is common knowledge and notorious that whenever it does not rain or when the maize is gathered in, they cry out to the Devil, and when they gather in the maize, they hold their drunken parties.

Nanacate is the hispanicized form of the Nahuatl *nandcatl*, 'mushrooms'.

Our fifth witness is one Gaspar de Covarrubias, Governor of the mines of Temazcaltepec, reporting in 1579 on conditions in his area in a document known as the *Relation de las Minas de Temazcaltepec*.¹ The working of the mines under the Spaniards had led to an influx of Nahuatl speakers, but Don Gaspar expressly says that the tongue of the native-born population was *matalpnga*, i.e., Matlatzinca, which today we identify with the Otomi group of languages. Our informant says that in the old days, when the people were still heathen,

[5]

. . . they were wont to pay in tribute [to the Lord of Mexico], whenever they were asked to do so, two or three loads of hempen blankets, which are made from, a tree that is called *maguei*, and they would give mushrooms on which people get drunk, and *ocote* . . .

Additional curious evidence turns up in our sixth source, a book printed in Mexico in 1637 entitled *Doctrina y Ensenanza en la Lengua Mazahua de Cosas muy Utiles, y Provechosas para los Ministros de Doctrina*, written by the Licentiate Don Diego de Nagera (or Najera) Yanguas, incumbent of Xocotitlan. This is a manual for the clergy working among the Indians speaking the Mazahua tongue, which belongs to the Otomi linguistic family. It gives in Spanish and Mazahua, in parallel columns, the questions that a father confessor directs to

I. The text appears in *Papeles de Nueva Espana*, Paso y Troncoso, Madrid, 1905, vol. vn, p. 20. We are indebted to Robert J. Weitlaner for this reference, as well as for the following one.

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the penitent, and the various possible responses of the penitent. On folios 27-29 the father confessor catechizes his penitent as to whether he has eaten mushrooms and got drunk on them, or given them to others to get drunk on; and if so, why, whether to find lost objects or for illness. The following extract shows the tenor of the questions, the column in English being added by us:

[6]

SPANISH	MAZAHUA	ENGLISH
por que	yoqhenangueze	why
querias	daguiminemaha	didst thou want
comer	togui9a	to eat
essos hongos?	mayho yocho	those mushrooms?
por que	nangueze	because
estaba enfermo	darimi^hoye	I was ill
queria comer	dariminemaha rogoza	I wanted to eat
hongos	yocho	mushrooms
para ver	maqheranuu	to see
lo que perdi	maqhe peqherobexi	what I had lost
quantas vezes?	han^hanixi?	how often?
no los comiste?	que higuiza?	didst thou not eat them?
no los comi	hiroza	I ate them not
solamente	anguechco	I only
queria	dariminemaha	wanted
comerlos	togoza	to eat them.

Our seventh witness belongs in a different class. Francisco Hernandez, a botanist, went out to Mexico in the year 1570 to study and describe the flora of that new world. He devoted seven years to the undertaking, returning in 1577 to Spain with an immense manuscript. Much of it got copied and printed and published in three divergent editions, but the manuscript was lost in a fire in the Escorial without ever being properly edited. Hernandez seems to have devoted only a brief section to the mushrooms. We find this passage in Volume II of his *Opera* brought out in Madrid in 1790, as Chapter 95 of Book IX of the *Historia Plantamm Novce Hispanicz*. Alone among our witnesses, Hernandez might be expected to focus attention on the appearance of the sacred mushrooms, and what he says is significant though tantalizingly inadequate. He clearly speaks, not of one, but of three species of mushrooms that either cause psychic symptoms or are clothed in a halo of supernatural associations. The *teyhuinti* provoke uncontrolled laughter. Another kind conjures up spectacles of war or the likeness of demons. The search for the third species, bespoken for the tables

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of the rich and mighty, is attended by all-night vigils, and the mushrooms themselves are saturated in what the anthropologists today call *mana*. In his manuscript Hernandez included illustrations of his mushrooms, but alas! those precious illustrations were apparently lost in the Escorial fire. After describing a lethal species named *dtlalnacame*, Hernandez goes on:

[7]

. . . others when eaten cause not death but madness that on occasions is lasting, of which the symptom is a kind of uncontrolled laughter. Usually called *teyhuinti*, these are deep yellow, acrid, and of a not displeasing freshness. There are others again which, without inducing laughter, bring before the eyes all kinds of things, such as wars and the likeness of demons. Yet others are there not less desired by princes for their fiestas and banquets, of great price. With night-long vigils are they sought, awesome and terrifying. This kind is tawny and somewhat acrid.

Our eighth and leading witness is the Franciscan friar, Bernardino de Sahagun, who by reason of his moral and intellectual qualities towers over all his contemporaries who were writing about Mexico in the 16th century. He devoted his many years in Mexico, from 1529 to 1590, to the systematic and sympathetic study of the Indians among whom he lived and labored. He was the editor and author of an immense work, a major historical document, the *Historia General de las Cosas de Nueva Espana*. Published in Spanish in several editions and translated also into French and English, this source is familiar to all historians interested in Mexican culture and the Conquest. Despite its standing as a classic, there is one fact about this book that is sometimes forgotten. It was a bilingual composition, being composed in parallel Nahuatl and Spanish texts. The two texts, while parallel, are not identical. The Nahuatl version preserves the very words of the native informants as they spoke with Fray Bernardino, and to it priority should be given over the Spanish text. There are four brief passages in Sahagun where the inebriating mushrooms figure. The Nahuatl recension differs sufficiently to justify us in offering it, as well as the Spanish text, to our readers, especially as the Nahuatl passages have remained until now hidden behind their linguistic barrier. For locating and translating the Nahuatl passages we are greatly indebted to Professor Charles E. Dibble of the University of Utah, to Dr. Arthur J. O. Anderson of the Museum of New Mexico in Santa Fe, and to Miguel Barrios of Mexico City.

From the sources already quoted it is clear that the Indians regarded their inebriating mushrooms with reverence, and this called down on their heads the execrations of professional Christians. The unintentional effect of these

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denunciations is perhaps to whet the reader's appetite for the mysterious fungi. Sahagun's Indian informants were doubtless baptized, and perhaps for this reason or perhaps because of the artful simplicity of Fray Bernardino himself, they scarcely link the mushroom with native religious beliefs or divinatory practices, and the hallucinations that they attribute to the eating of mushrooms are so horrible for the most part that one asks why anyone should ever have been tempted by them.

We shall now offer the four quotations from Sahagun, each of them in duplicate, the translation from the Spanish version followed by the translation from the Nahuatl. The first and longest describes a mushroom party. Merchants have returned from a long and successful journey and they are giving the party to celebrate their success. While the text itself does not hint at religious associations and certainly precludes priestly direction, the context in Book IX is saturated with supernatural beliefs and practices, and leaves the attentive reader in no doubt that the mushroom gathering itself was similarly instinct with the divine presence.

[8 A. *From the Spanish*]

The first thing eaten at the gathering were certain black little mushrooms, which they call *nandcatl*, which inebriate and cause hallucinations, and even excite lust. These they ate before dawn, and they also drank cacao before dawn. The mushrooms they ate with honey, and when they began to get heated from them, they began to dance, and some sang and some wept, for now were they drunk from the mushrooms. And some cared not to sing, but would sit down in their rooms, and stayed there pensive-like. And some saw in a vision that they were dying, and they wept, and others saw in a vision that some wild beast was eating them, others saw in a vision that they were taking captives in war, others saw in a vision that they were to be rich, others saw in a vision that they were to own many slaves, others saw in a vision that they were to commit adultery and that their heads were to be bashed in therefor, others saw in a vision that they were to steal something, wherefore their heads were to be bashed in, others saw in a vision that they were to kill someone, wherefore they were to be killed, others saw in a vision that they were drowning in water, others saw in a vision that they would live and die in peace, others saw in a vision that they were falling from on high and would die from the fall. All the disastrous happenings that are wont to happen, these they saw in visions. Others saw themselves sinking in water as in a vortex. Then when the drunkenness of the mushrooms had passed, they spoke one with another about the visions that they had seen.

[8B. *From the Nahuatl*]

Coming at the very first, at the time of feasting, they ate mushrooms when, as they said, it was the hour of the blowing of flutes. Not yet did they partake of food; they drank only chocolate during the night. And they ate mushrooms with honey. When

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already the mushrooms were taking effect, there was dancing, there was weeping. And some still in their right senses sat in their places leaning against their houses; there they merely sit, nodding their heads. Some saw in a vision that already they would die [so] they sat weeping. Some saw in a vision that they would die in war. Some saw in a vision that they would be devoured by wild beasts. Some saw in a vision that they would take the enemy captive in war. Some saw in a vision that they would become rich, wealthy. Some saw in a vision that they would buy slaves, would become slave owners. Some saw in a vision that they would commit adultery [and so] would have their heads bashed in, would be stoned to death. Some saw in a vision that they would steal; [so] also would they be stoned to death. Some saw in a vision that their heads would be crushed with a stone, would be imprisoned. Some saw in a vision that they would perish in the water. Some saw in a vision that they would pass to tranquillity in death. Some saw in a vision that they would fall from the housetop, tumble to their death. All such things would happen to them at this time; all such things they saw, or else they sank into oblivion. And when [the effect of] the mushrooms ceased, they conversed one with another, spoke of what they had seen in visions.

Sahagun tells us that the *nandcatl* were small and black; that the Indians indulged in them in gatherings assembled for the purpose; and that the intoxicating effects were generally unpleasant for the eaters, which we may doubt. The Spanish text says that they excited lust, an observation calculated to tease the 16th century Spaniards, but this observation is missing in the Nahuatl version.

Sahagun's second and third references to the inebriating mushrooms occur in passages primarily concerned with *peiotl* or 'peyote', the cactus product long used by certain Indians for its psychic and other effects, and in recent years an object of intensive study and discussion among anthropologists, biological chemists, psychologists, neurologists, and even literary thinkers like Aldous Huxley. The use of peyote was endemic among the Indians of Mexico north of the Valley of Mexico and of what is now the Southwest of the United States. Sahagun composed his work primarily from within the framework of the Nahua culture with its cultural center in the Valley of Mexico. In the passages that we are about to give, he is speaking of the northern Indians, known to the Nahua collectively as the Chichimecas, a term applied to nomadic Indians generally. The Chichimecas, whatever the language or tribe, were hunters and food-gatherers, nomads, savages to be feared and also despised. Among them there were some, such as the people now known as Otomi, who in historic times had become settled on the land; but they were still by habit called 'Chichimecas'. To distinguish them from the true nomads, the latter were called the 'genuine' or Teochichimecas. While there is some ambiguity in the following quotations, we think that, carefully studied, they yield a sensible meaning only

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if we understand Sahagun as describing the use of peyote among the Northern nomads, and comparing that use with the use of inebriating mushrooms among the Aztecs. It is as though the Aztec compilers were saying, "The Chichimecas have their peyote just as we have our mushrooms." This interpretation, which we accept, was offered to us as a tentative suggestion by Dr. Anderson. If it is right, then apparently the northern limit of the use of the inebriating mushrooms was roughly the Valley of Mexico and the Nahuatl civilization.

[9A. *From the Spanish*]

[The Teochichimecas] also possessed great knowledge of herbs and roots, and knew their properties and virtues: It was they who discovered and first used the root they call *peyotl*, and those who ate and took it, made it serve in place of wine and in place of what are called *nanacatl* [?], which are the evil mushrooms that inebriate just like wine. And they would gather together on a level spot after having drunk and eat, where they would dance and sing a night and a day, according to their pleasure, and this for one day, for on the morrow they wept much, and they would say that they were cleansing and washing their eyes and faces with their tears.

[10A. *From the Spanish*]

There is another herb, like earth's testicles [truffles], which is called *peyotl*. It is white and grows in the direction of the north. Those who eat and drink it see frightful visions, or laughable ones. This state of drunkenness lasts two or three days and then goes away...

[pB. *From the Nahuatl*]

And the Teochichimecas had knowledge of the herbs, the roots; how they were, how they propagated. These people discovered the so-called peyote. They esteemed it in place of wine or mushrooms [?]. They gathered somewhere, assembled on the plain. At that place there was song and dance all night and all day. And on the morrow once again they gathered; wept, wept copiously. It was said their faces were washed. With their tears they cleansed their eyes.

[10B. *From the Nahuatl*]

Peyote: this peyote is white and it grows only in the land of the Chichimecas, the land of the god Mixcoatl, which is called the land of the dead north. Whoever eats or drinks of it becomes intoxicated as if by mushrooms. Likewise he sees many things which are frightening or laughable. Perhaps one day or two days he is intoxicated . . .

The fourth and final passage in Sahagun is the most interesting of all. Here he calls the inebriating mushroom by the name that Motolinia used-*teonandcatl* - which in its first element carries the religious association that Sahagun avoided elsewhere. Here the mushroom is described in some detail, and the Nahuatl text is much longer and more interesting than the rather arid Spanish:

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[HA. *From the Spanish*]

In this land there are certain little mushrooms that are called *teonanacatl*. They grow beneath the grass in fields or moors. They are round, have a long little stem, thin and round. When eaten they have a bad taste, hurt the throat, and inebriate. They are medicinal for fevers and the gout. Only two or three are to be eaten, not more: those who eat them see visions and feel palpitations of the heart. The mushrooms incite lust in those who eat many, or even be they few. To wild or mischievous youngsters people say that they have eaten *nanacatl*.

[IIB. *From the Nahuatl*]

One mushroom is called *teo-nanacatl*. It grows in the waste places, under the grass. The cap is round, the stem is elongated. By its bitterness it hurts, it hurts the throat. It intoxicates one, makes one dizzy, makes one violent. It helps in fevers, gout. Only two or three are to be eaten. It makes one suffer, causes affliction, makes one restless, causes one to flee, frightens one, makes one hide. He who eats many, many things sees. He terrifies people, makes them laugh. He strangles himself, hurls himself from high places, cries out, is afraid. When he eats it in honey he says, I eat mushrooms, I bemushroom myself. Of the boaster, the braggart, the vain one it is said, "He bemushrooms himself."

So far we have quoted only from 16th century sources. Our ninth witness belonged to a later generation. He is Jacinto de la Serna, a cleric who in the middle of the 17th century composed a guide for clergy ministering to the Indians. His work was entitled *Manuel de Ministros de Indias para el Conocimiento de sus Idolatras y Extirpation de Ellas*. He was a garrulous busybody, zealous in rooting out and extirpating all expressions of the Indians' old religion, and eager in his narrative to leave a record of his own zeal. Chapter IV of his work continues a recital of incidents that had happened to the author proving (as he says) that idolatry was still rampant among the Indians in his own time. In Section 3 of this chapter he is discussing native physicians and midwives, especially the role of 'witchcraft' in their practices, and certain goings on in his own household that had aroused his liveliest suspicions. A certain Indian, master of the native lore, had lately arrived in the village and had officiated at a religious rite in which the intoxicating mushrooms had been a central feature. The description of the religious ceremony reaches us through Don Jacinto by hearsay only, as of course he was not present, but it carries a ring of authenticity, and reminds us of the stirring words with which Motolinia ended his observations on the mushroom:

[12]

And what happened was that there had come to [the village] an Indian, a native of the village of Tenango, great maestro of superstitions, and his name was Juan Chichiton,

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which means 'little dog', and he had brought the red-colored mushrooms that are gathered in the uplands, and with them he had committed a great idolatry, and before I tell of it, I wish to describe the property of said mushrooms, which are called in the Mexican language *Quautlannamacatl*, and having consulted the Licenciado Don Pedro Ponce de Leon, the great Minister and Master of Masters as I said in Chapter II, he told me that these mushrooms were small and golden, and to gather them it was the custom for the priests and old men deputized as ministers for this kind of humbuggery to go up into the mountain, and they remained almost the whole night in prayer and superstitious entreaties, and at dawn, when there sprang up a certain breeze that they knew, then they gathered the mushrooms, attributing divinity to them, possessing as they did the same effect as *ololiuqui* [*rivea corymbosa* (L.) Hallier filius] or *peyote* [*Lophophora Williamsii* (Lem.) Coulter], because whether eaten or drunk, it intoxicates them and deprives them of their senses, and makes them believe a thousand foolish things. And so this Juan Chichiton, having gathered the mushrooms on a certain night, in the house where everyone had gathered on the occasion of a saint's feast, the saint was on the altar, and the mushrooms with *pulque* and a fire beneath the altar, the *teponastli* [a percussion instrument peculiar to the Aztecs] and singing going on the whole night through, after most of the night had passed, said Juan Chichiton, who was the priest for that solemn rite, to all those present at the fiesta gave the mushrooms to eat, after the manner of Communion, and gave them *pulque* to drink, and finished off the festivities with an abundance of *pulque*, so that what with the mushrooms on the one hand and the *pulque* on the other, they all went out of their heads, a shame it was to see.

Don Jacinto goes on to relate how he had made utmost efforts to ferret out and lay his hands on Chichiton. There was a hot chase, but by the skin of his teeth the 'Little Dog' had eluded his pursuer's clutches - to the considerable relief of the modern reader, who hopes that Chichiton lived to preside over many another mushroomic agape.

Our tenth and final source is French: the *Histoyre du Mechique*, written by Andre Thevet not later than 1574. His text is a translation or paraphrase of a lost work, *Antiguedades Mexicanas*, written about 1543 by the Spanish cleric Andres de Olmos. The historian is speaking of events that had taken place in the middle of the 15th century, and thus he is placing the use of our mushrooms earlier than any of our other sources, and he places them in an Otomi context. Thevet's manuscript lies in the Bibliotheque Nationale and was first published in 1905, edited by Ed. de Jonghe, in the *Journal de la Societe des Americanistes de Paris* (Nouvelle Serie, vol. n). Our quotation is from the fourth chapter, page 18:

[13]

. . . Said Lord of Tezcuq [Tezcoco] . . . paid great reverence to the gods and took great care of the temples and ceremonies; he commanded also that the youths and maidens should dance in the temples, . . . that they should strew the temple with roses and flowers,

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dancing constantly before them, both those of the city and the near neighbors, whom the devil abused making them eat some herb that they call *naucatl*, which made them lose their senses and see many visions.

Our ten documentary sources treating of the divine mushrooms are supported by other linguistic evidence. There are several early lexicons to cite. The year 1571 saw the publication in Mexico of a Nahuatl dictionary, *Vocabulario en lengua castellana y mexicana*, compiled by Alonso de Molina. In its pages we discover under *hongo* a series of names for mushrooms that inebriate, *hongos que emborrachan* or *que embeodan*. Here are these words, with their literal translation:

<i>xochi nanacatl</i> :	'flower mushrooms'
<i>tepexi nanacatl</i> :	'cliff mushrooms'
<i>ixtlauacan nanacatl</i> :	'savannah mushrooms'
<i>ma\$auacan nanacatl</i> :	'mushrooms of the stag's places'
<i>teyuinti nanacatl</i> :	'mushrooms of the divine inebriation', with <i>te-</i> derived from <i>teotl</i> , 'god', and - <i>yuinti</i> from <i>yuintia</i> , 'inebriation'.

Molina, born in Spain, arrived with his parents in Mexico in 1523 and after learning Nahuatl served the Franciscan friars as interpreter. We know not how reliable his mushroom names are. Hernandez, as we have seen, also mentions the *teyuinti*, but neither Hernandez nor Molina uses *teo-nandcatl*, which we find only in Sahagun and Motolinia.

More interesting for us than Molina's work is a Zapotec lexicon, *Vocabulario Castellano-Zapoteco*, compiled by Fray Juan de Cordoba and published in 1578 in Mexico. In it we find the words *pea\$6o*, *peya\$6o*, which he defines as *honguillo o xeta con que se emborracha*, 'little mushroom or toadstool on which one gets drunk'. (The accents on his words appear to represent glottal stops.) Under *xeta* he reports an intoxicating mushroom that grows in trees, which he calls *nocuana peneeche*, a designation that the Zapotec of today fails to recognize.¹

Here then is proof that the inebriating mushroom was familiar to the Zapotecs, and thus we establish as a minimum range for the use of the inebriating mushroom an area that includes the Nahua and Otomi peoples, the Mixtecs, and southeastward to the Zapotecs of the Valley of Oaxaca and probably the Isthmus of Tehuantepec. If our interpretation of Sahagun is right, the use of the mush-

i. Pedro Carrasco reports that in old Otomi lexicons, under *hongo*, there are names for the inebriating mushrooms. This would support the testimony concerning the Otomies that we have quoted in our text. See Carrasco's *Los Otomies*, Mexico, 1950, p. 230. We have had no access to these lexicons. All old dictionaries for the Indian languages of Mexico and Guatemala should be combed for such references.

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room petered out as one advanced north from the Valley of Mexico, being replaced by the peyote of cactus origin. To the southward we cannot define the boundaries. Our information about the important Zapotecs is relatively

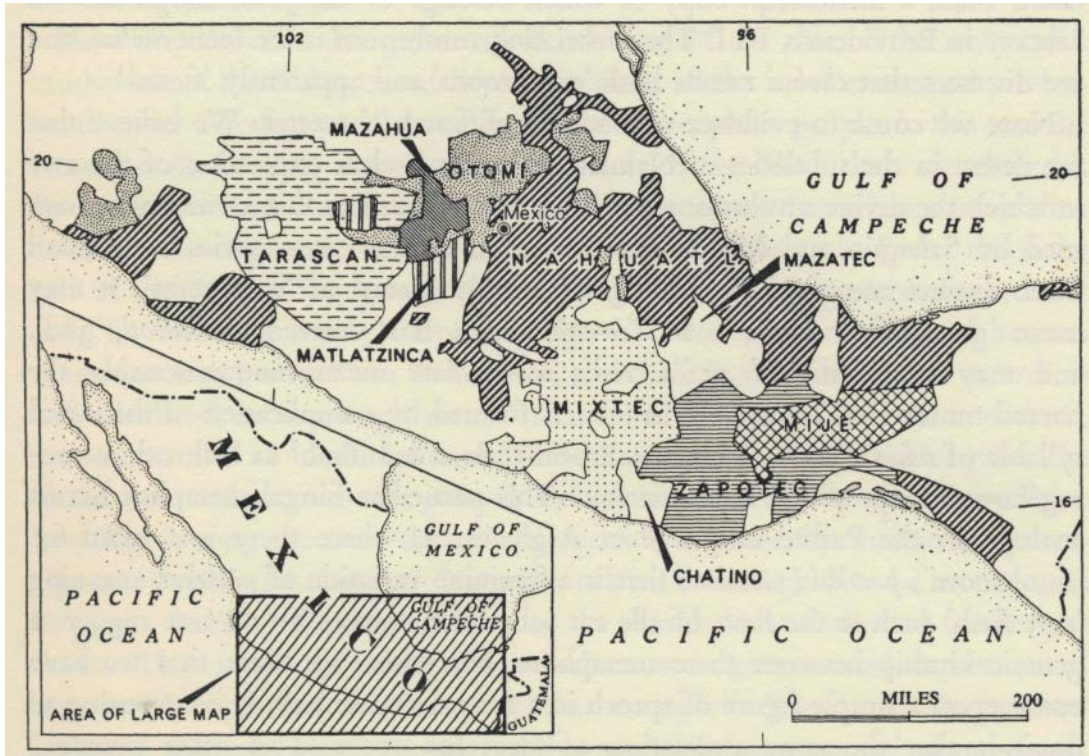


Fig. 1^ THE MUSHROOM CULT IN 16th AND 17th CENTURIES

Linguistic areas where contemporary reports establish use of divinatory mushrooms. As modern evidence indicates that the cult prevails only in uplands, all contours below, say, 600 meters should probably be excluded. Conversely, upland areas such as Mazatec and Chatino as to which early evidence is lacking undoubtedly used the mushroom. Northern limits are quite definitely fixed, but eastern limits in Chiapas are uncertain.

rich, by comparison with the complicated mosaic of other Indian cultures on all sides of them.

But there are a few other old lexicons that document the use of our mushrooms. Some years ago Walter Miller discovered the manuscript of an early Mije dictionary in the Mije village of San Lucas Camotlan. It now lies in the Museo Nacional. In it 'the little mushroom with which people get drunk', *el honguito con que se emborrachan*, is rendered by the Mije word *maxmux*. The manuscript may date from the 18th century. A Tarascan lexicon composed by Fray-Maturino Gilberti and published in 1559 translates 'the mushroom that inebriates' by the expression *cauiqua terequa*, wherein the second element means

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'mushroom'. The Tarascans live in Michoacan, to the west of Mexico City. Already we have placed the mushrooms in the Matlatzinca country: our previous evidence is confirmed by the Matlatzinca lexicon of Fray Diego Basalenque, dated 1642, a manuscript copy of which belongs to the John Carter Brown Library in Providence, R. I. The inebriating mushroom is the *intza chohui*, and we discover that *chohui* means both 'mushroom' and apparently 'fiesta'!

Now we come to evidence of a wholly different character. We believe that we detect in the subtleties of Nahuatl grammar a clear expression of the awe in which the divine mushroom was held. Let us examine that term *teo-nandcatl*, used by Sahagiin and Motolinia. The initial element *teo-* carries in Nahuatl three distinct meanings. It can signify simply 'great' or 'important'. It may mean 'genuine' or 'real', as in *Teo-chichimecas*. It is derived from *teotl*, 'god', and may mean 'divine' or 'sacred'; *teo-nandcatl* means unquestionably the 'sacred mushrooms'. *Nandcatl*, in turn, is formed by a duplication of the initial syllable of *ndcatl*, 'flesh'. Thus mushrooms are called 'flesh' in Nahuatl, assuming however the plural form *nandcatl*. This particular fungal metaphor has its analogy in the Pashto language of Afghanistan, where there is a word for 'mushroom', *poczli* (*potsakdi*) that is a feminine variation of *potsdkai*, meaning 'soft flesh' such as the flesh of the ear lobe. (Of course we do not suggest a genetic kinship between these metaphors, but when we think that we have come upon a simple figure of speech in a fungal vocabulary, it is reassuring to discover that the same association of ideas has occurred to other peoples.) The figure of speech in *teo-nandcatl* was a living one in the 16th century, for Motolinia translates the term as *came de dies*, 'god's flesh', and then immediately this good Catholic offers his own substitute, *came del demonio*, 'Satan's flesh', thus illustrating the old truth that one man's God is another man's Devil. Perhaps the interesting thing about *nandcatl* is its plural form. In Nahuatl nouns representing inanimate things are invariable as to number, and by this grammatical convention the vegetable world is inanimate. But there are significant exceptions, of which the following three are outstanding:

	SINGULAR	PLURAL
Sky	<i>ilhuicatl</i>	<i>ilhuicame</i>
Mountain	<i>tepetl</i>	<i>tetepe</i>
Star	<i>dtldlin</i>	<i>citlaltin</i>

These exceptions are apparent rather than real, for the Nahua personified the sky, mountains, and stars, and the plural form simply expresses the way of feeling that attributed to these cosmic beings a soul. There are other exceptions

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similarly suggestive. For example, *tetl*, 'stone', becomes *teme* in the plural, but only when it refers to graven images. We believe that another exception is our *nandcatl*, a plural form expressive of the divine afflatus dwelling in the inebriating mushrooms.¹

How impressive is this grammatical evidence of the role of the mysterious mushroom in the Nahua mentality! It becomes all the more noteworthy when we discover a perfect parallel among another mycophilic people, in this case the Russians. At an early stage in the evolution of the Slavs there developed a tendency to substitute the genitive case for the accusative when a masculine noun representing an animate creature was the goal of the verb. Today this is the rule in the various Slavic languages. In folk Russian this genitive is used not only for nouns denoting animate beings, but also for the names of various mushrooms and sometimes for certain trees, when the mushroom or tree is individualized, i.e., is a single entity.² This use is widespread in Russian dialects, and occurs also in Ukrainian and White Russian. One hears *nashol griba*, 'he found the mushroom', **wither/fed** in the genitive case; *nashol grusdja, ryzhika, borovika*. Among the trees the oak is especially favored by similar treatment, e.g., *srubil duba*, 'he chopped down the oak'. The oak used to be worshipped in pagan times by the eastern Slavs as the thunder tree dedicated to the god Perun. Thus in the folk language we discover a grammatical expression of animism. It is possible to offer yet another example in Russian. In the standard language the mushroom known as the *masljenik* has a special plural form, *masljata*, and the plural of another mushroom name is *opjata* in certain uneducated circles. The plural suffix here used is normal only with certain nouns designating young animals, birds, and children! These peculiarities in Russian grammar show that our interpretation of *nandcatl* does not strain credulity. Parallels in unrelated languages and cultures of this kind reinforce each other; that is, they illuminate a common trait, in this case the inclination of peoples strongly mycophile to personify their beloved mushrooms.

After our long parade of early authorities and learned analysis, let us sum up what we have discovered. When the Spaniards arrived in Mexico, they found an inebriating mushroom in wide use among the Indians from the Valley

1. It goes without saying that for our discussion of Nahuatl linguistics we have relied on several of the outstanding Nahuatl specialists of our time, to wit, Professor Wigberto Jimenez Moreno of Mexico, Professor Charles E. Dibble of the University of Utah, and Dr. Arthur J. O. Anderson of the Museum of New Mexico in Santa Fe. We are the first to point out the significance of the plural form that we discover in *nandcatl*, a thesis to which the aforementioned authorities give their reserved and tentative blessing.

2. For guidance on this feature of Russian grammar see A. A. Shakhmatov's *Kurs Istorii Russkogo Jazyka*, St. Petersburg, 1911, vol. m, p. 338. We are also indebted to Prof. Roman Jakobson for his elaboration of the same theme in private correspondence.

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of Mexico southwards. This mushroom produced hallucinations that the Indians thought were divinely inspired. One author, Hernandez, says expressly that there were various species of such mushrooms, and as he was a botanist his testimony is weighty. The lexicographer Molina mentions five species. There is a multiplicity of names for the inebriating mushrooms in Nahuatl, for which various explanations may be offered. Each species would have its own name, of course, and furthermore the names might vary according to the region. A third possibility is that the divine aura bathing the mushrooms might cause people to take refuge in euphemistic alternative names. The mushrooms of course were wild and seem to have grown both in meadows and in the woods. (Jacinto de la Serna refers to them as *quautlannamacatl*, 'woodland mushrooms'.) As to one species, Sahagun says that they were small, with a stipe long for the height, thin and round. Sahagun describes these as black, but others speak of the inebriating mushrooms as golden or tawny or approaching red. In two authors we hear of ceremonies attending the gathering of mushrooms - nights of prayer and vigil. Four clearly associate the mushrooms with religious rites. Six agree that it was used in communal festivities that bordered on orgies and led to wild excesses. The mushrooms were eaten raw, and the taste was acrid or bitter, honey being used as the vehicle for swallowing them. There is no reason to believe that our Spanish witnesses tasted the mushrooms, for (unless they came from Catalonia) they were mycophobes and this cultural heritage would reinforce an initial repugnance for native 'idolatrics'. But some of our witnesses were Indians, albeit converted, and they must have known the taste and accurately described it. Sahagun alone speaks of a medicinal virtue in the mushrooms: he says that the *teo-nandcatl* were good for gout and fevers. But on this point it is noteworthy that the mushrooms are not even mentioned in the great medicinal herbal of the Aztecs, known as the Badianus manuscript, which was compiled in Sahagun's own convent, the Colegio de la Santa Cruz at Tlaltelulco, and doubtless under his supervision.¹

There may well be references to our sacred mushrooms in the old writers that we have not come upon, and in the voluminous archives of unpublished documents in Mexico additional references will surely be discovered. At the same time we must also stress the fact that by our method of culling and distilling the references to the sacred mushrooms we inevitably convey an impression of their importance that is scarcely supported by the whole corpus of docu-

i. The authors were Indian converts, Martinez de la Cruz and Badianus the translator. The ms. lies in the Vatican, but was published in facsimile by the Johns Hopkins Press in 1940, edited by Emily Walcott Emmart.

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ments relating to 16th century Mexico. That documentation is immense. Other narcotic herbs also play a role therein: *poyomatl*, *ololiuqui*, *peiotl*; and tobacco (*pisiete*) was also treated as though it belonged in the same category. There are important 16th century sources dealing with such matters where references to the inebriating mushrooms are strangely absent: one of these is that valuable work, *Problemas y Secretes Maravillosos de las Indias*, written by Juan de Cardenas and published in Mexico in 1591.

From the beginning of our inquiries into the sacred mushroom of the Nahuatl we were on the lookout for 16th century illustrations of it. The botanist Hernandez in his text said that he was depicting four kinds of mushrooms including the *teyhuinti*, but the 1790 edition carried no illustrations, and his drawings, which would have been precious for us, must have been consumed in the Escorial fire. However, our searches have not been bootless. In the Florentine Codex we have discovered one picture, hitherto unremarked by students, and Robert J. Weitlaner has drawn our attention to a second in the Magliabechiano Codex.¹ We take pleasure in reproducing both in faithful color, this being facilitated by a happy chance: the two codices, though lying in different libraries, are both in Florence.² The illustrations are singularly significant for us, being complementary, one of them executed by a Spanish artist and the other by an Indian in the tradition of his people, though he shows traces of Spanish influence. Both illustrations are in the nature of pictographs, vignettes intended to convey almost a verbal message. Neither tells the mycologist anything mycological about the sacred mushrooms, but both are eloquent and curious expressions of the contrasting attitudes of the two peoples toward them.

Sahagun's great work survives in two principal codices, of which the Florentine Codex, profusely illustrated, ranks first. Although most of the illustrations were done by native artists, some were by Spaniards, and it was a Spaniard who made the five small pictures representing various mushrooms that Sahagun

1. In 1952 Mr. Weitlaner discovered an old topographical codex or *lienzo* in the possession of the local authorities in the village of Tlacoatzintepec, three days' journey by foot or animal from Chiltepec, in the State of Oaxaca, where the people belong to the Chinantec culture area. A copy was made and is now preserved in the Museo Nacional. At one place in this chart, in a glade, there is a pair of crossed mushrooms. They might represent *teo-nandcatl*, but as the Indians are generally mycophagous, they might simply indicate a good spot for gathering edible fungi. That a *pair* of mushrooms is pictured may, however, be significant, as will become evident later in our argument.

2. What we call the Florentine Codex lies in the Biblioteca Laurenziana, Florence, where it is designated Med. Pal. 218-220. The Magliabechiano Codex is in the Biblioteca Nazionale, Florence, and carries the designation B. R. 232. The miniatures of the former were badly reproduced in the Paso y Troncoso edition (uncompleted) of Sahagun, Madrid, 1905-6. The Magliabechiano Codex has been twice published in facsimile, the so-called Loubat edition, Rome, 1904; and by the University of California, Berkeley, 1903, under the guidance of Zelia Nuttall.

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mentions. A close inspection of the five pictures and Sahagun's text makes it clear that the artist worked from the text, and possessed no knowledge of the mushrooms outside the text. When he came to the inebriating mushroom, he undertook to convey his iconographic message in a way natural to a 16th century Spaniard: a demon is portrayed rising from a cluster of tawny (not black) mushrooms, and the demon carries those conventional stigmata that



Fig. 14. TEO-NANACATL
as represented by a 16th century Spanish artist. From
Florentine Codex of Bernardino de Sahagun's *Historia de las
Cosas de la Nueva España*. Biblioteca Laurenziana, Florence.

commonly identified Satan in the Gothic and Spanish worlds. He is clothed cap-a-pie in fur, a huge beak emerging from his fur-enclosed face. For hands he has claws. One foot is unformed or malformed, perhaps a splay foot. This is the malformed foot that survives in the English 'cloven hoof', that led the French to speak of the Devil as *le Bot*, the Cripple.¹ In this French word and in this picture we find blended the recurring themes of our book - Satan portrayed as *le Bot*, a demonic mushroom, and offstage, by metaphoric transfer, the toad called *le hot* that constitutes the third of our unholy trinity.

The second illustration offers us three elements - mushrooms, a man eating mushrooms, and behind and over him a ghost. The reader will notice that the

I. Malformed and bestial feet characterize various Aztec divinities. Thus the demon Tezcatlipoca was distinguished by a club-foot, and Mictlantecullti had the claws of a gigantic bird. But in the demon of the Florentine miniature we think it is rash to perceive any influence of Mexican divinities. The craftsmanship reveals a European mind, and the imp is the obvious visual expression corresponding to the verbal denunciations that the clergy, as we know, were heaping on the demonic mushrooms.

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man holds a mushroom in each hand. According to Professor Jimenez Moreno, the ghost is probably Mictlantecuhtli, Lord of the Underworld, who is depicted on other pages of the same Codex. How far removed from the Spaniard's conception is the Indian's! Not only is the craftsmanship of these artists, contemporaries of each other, poles apart; their message is likewise. The Spaniard reports rather prosaically the existence of a demonic mushroom to his European

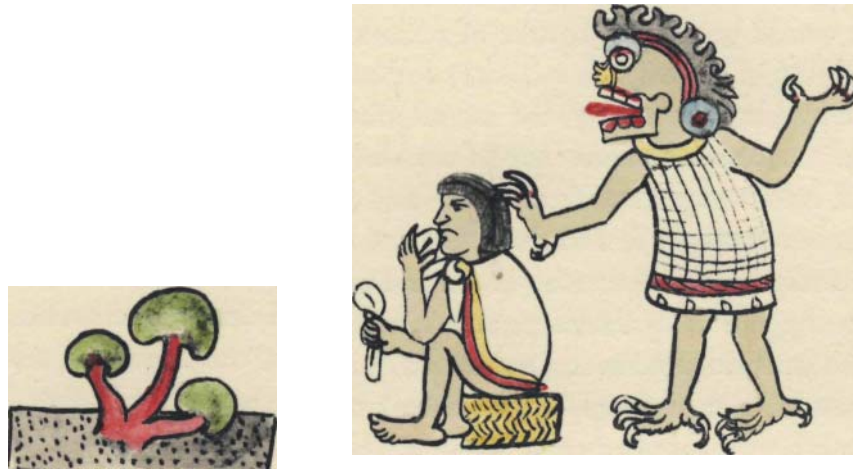


Fig. 15. TEO-NANACATL
as represented by a 16th century Mexican artist. From
Magliabechiano Codex, Biblioteca Nazionale, Florence.

public. The Indian, though undoubtedly a baptized Christian, conveys a sense of the awe that he still felt in the presence of the mysterious *teo-nandcatl*. That the mushrooms in this miniature are green should not disconcert the mycologist: green, the color of jade, meant in Mexican iconography that the object so depicted was of great worth.

The last of our citations from old Spanish documents was from the mid-seventeenth century: Jacinto de la Serna's episode with Chichiton. With him the references to the inebriating mushrooms ended. Thereafter observers no longer reported on the mushroom cult, and except in new editions of old books and in works based on them, the cult was never more mentioned. The cult itself was apparently extinct, and only a handful of specialists knew that it had ever existed. For example, Francisco A. Flores, when in 1886-8 he brought out in Mexico his three volume *Historia de la Medicina en Mexico*, listed the Nahuatl names for the inebriating mushrooms as given by Molina, translated

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them, and then rashly by sheer guesswork tried to identify them according to the classifications of mycologists. William H. Prescott in his classic *Conquest of Mexico* ignored the subject. Yet we know that he was familiar with it. He drew on most of the sources that we have cited, and in particular the two accounts of Montezuma's assumption of office. In Book II Chapter 6 he speaks of the 'honorable entertainment' offered to the Tlascalcan princes by Montezuma, but he deftly excises the reference to the sacred mushrooms. By now one is so used to the subconscious rejection of mushrooms by the mycophobic Anglo-Saxons that it would be more a matter of remark if Prescott had mentioned the *teo-nandcatl*.

Then suddenly one day the sacred mushrooms sprang to life again. On May 4, 1915, an ethno-botanist of established and deserved reputation, W. E. Safford, read a paper before the Botanical Society in Washington in which he flatly and sweepingly denied that there had ever been an inebriating mushroom in the indigenous cultures of Mexico. His paper was published later in that year in the *journal of Heredity*, and it was a full-dress presentation, richly illustrated and documented. Dr. Safford said that the Spanish 'padres' (as he somewhat condescendingly called them) had been confused: they had taken for mushrooms what had really been dried buttons of a cactus, the *Lophophora Williamsii*, the *peyotl* of Aztec times, the mescal button of Texas. He declared that three centuries had failed to reveal a fungal intoxicant in Mexico. He quoted Sahagun as saying that the Chichimecas had been the first Indians to discover the alleged intoxicating property of the 'mushroom'; he went on to say that the Chichimecas had occupied northern Mexico, that that was therefore the region where to seek the mushroom, that he had pushed his own researches exhaustively in those areas and in the Southwestern states of the United States, and that he had found nothing.

Dr. Safford's paper drew wide attention and was widely accepted. Many learned from it for the first time that there had been a belief in an inebriating mushroom, at the same time that they learned the mushroom had never existed. How ironic it will be if Dr. Safford himself, in the long run, should be remembered chiefly because of this resounding blunder that he made, a classic example of the fallibility of the specialist! For of course the Spanish 'padres' were right and Dr. Safford was wrong. Dr. Safford's paper was extraordinary for the vehemence (may we say 'telltale' vehemence?) that this Anglo-Saxon showed in rejecting the *teo-nandcatl*. It never occurred to him that he had to demolish not only the Spanish 'padres' but also all the native informants on whom they relied, and even the Nahuatl vocabulary that they used!

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The source of Dr. Safford's error lay in his misreading of Sahagun's sentence about the Chichimecas and the emphasis that he placed on this single misconstrued passage. Loosely constructed though the sentence is after the fashion of 16th century prose, its meaning is clear. The Chichimecas were the first to use *thepeyotl*, says Sahagun, and they used it in the way that we the Nahuatl (Sahagun's informants) use the inebriating mushroom. We may be sure that Dr. Safford canvassed the Chichimeca country thoroughly, and his negative findings there and in the Southwest of the United States tend to confirm our interpretation of Sahagun.

Just as toxins appropriately administered stimulate the growth of anti-bodies, so the Safford paper served a useful purpose in stimulating the inquiries of Mexican workers, who properly resented the charge that early Spanish observers could not tell a mushroom from a cactus button. The details of this inquiry need not detain us here. To Dr. Bias Pablo Reko, a Mexican of Austrian birth and Slavic provenience, belongs the primary accolade for persisting in the search for the mushroom cult. He was the first to declare his belief that the cult still survived. He so expressed himself shortly after the Safford lecture, and he began to look for the cult in the State of Oaxaca. To Robert J. Weitlaner goes the distinction of having first re-discovered the sacred mushrooms themselves. This excellent anthropologist and tireless worker laid his hands on samples in the remote town of Huautla de Jimenez, Oaxaca, in 1936. He sent them to Dr. Reko who in turn forwarded them to the botanical authorities at Harvard. They arrived in bad condition but could be identified as a species of *panaeolus*. Huautla is the chief town of the Indians known as Mazatecs.

In that same year Dr. Reko's cousin, Victor A. Reko, had published in Stuttgart the first paper challenging the Safford argument, *Magische Gifte: Rausch- und Betaubungsmittel der Neuen Welt*. In 1938 a young Harvard ethno-botanist, Dr. Richard Evans Schultes, visited Huautla and obtained additional samples of the mushrooms and photographs of them in a fresh state. With the help of Dr. David Linder of the Farlow Herbarium, Harvard University, he identified them as *panaeolus campanulatus* L. var. *sphinctrinus* (Fr.) Bresadola. His specimens, carefully preserved, were again examined in the fall of 1955 by Roger Heim, who confirmed without hesitation the previous identification. In that same year 1938, on the night of Saturday-Sunday, July 16-17, four white persons in Huautla attended a mushroom rite performed expressly for them. The four were the promising young anthropologist Jean Bassett Johnson, his wife Irmgard Weitlaner-Johnson, Bernard Bevan, and Louise Lacaud. In a paper published the following year Mr. Johnson gave to the world the first account of the ancient

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rite: there is no evidence that any white persons had ever before attended it.¹ He did not identify the mushrooms that were used.

In European sources there is some evidence of inebriating mushrooms in addition to the fly amanita. Indeed, the earliest recorded reference to psychic symptoms caused by mushrooms clearly did not relate to the amanita muscaria. Before describing the fly amanita Albertus Magnus in *De Vegetalibus* remarks on the propensity of certain mushrooms to bring about mental disturbance:

Signum autem, quod habent humidum vaporosum, est, quod comesti frequenter opilant vias spirituum animalium in capite, et inducunt insaniam.

[Op. cit., Book 2, Chap. 6:87]

Moreover, an indication that they [fungi] are of a moist humor is that when eaten they often stop up in the head the mental passages of the creatures [that eat them], and bring on insanity.

I. The Johnson paper is important. Entitled 'The Elements of Mazatec Witchcraft', it was published by the Gothenburg Ethnographical Museum in Sweden in 1939 as Ethnological Studies 9. Dr. Schultes published two papers, one as a Botanical Museum Leaflet, Harvard University, Feb. 21, 1939, vol. 7, no. 3, *The Identification of Teonanacatl*; the other, 'Teonanacatl: the Narcotic Mushroom of the Aztecs', in the *American Anthropologist*, n.s., 42, 1940. These three and Dr. Reko's *Mitobotdnica Zapoteca*, published by himself in 1945, constitute our basic modern bibliography. Victor A. Reko's *Magische Gifte*, of which a third edition appeared in Stuttgart in 1949, must be read with caution. For example, he guesses at the identity of the inebriating mushroom, postulating an 'amanita muscaria var. mex.' More disturbing is his assertion that *poyomatli*, a narcotic plant, was a mushroom. He arrives at this conclusion by misquoting a passage in Sahagun (substituting *llamados* for *llamada*), and by ignoring another passage in Sahagun where the *poyomatli* is described in detail as a plant. (See *Magische Gifte*, 1949, p. 126; Sahagun, Book X, Chap. 24, *Canute de Humo*; also Book xi, Chap. 7, Sec. 7.) Since Victor Reko published his work in German, German writers frequently cite him and are misled by him. The modern discussions of our subject are also bedeviled by two idle conjectures of the late Marshall H. Saville, the archeologist, who without a shred of supporting evidence suggested (i) that the Aztec ruler Tizoc had been murdered with poisonous mushrooms, and (2) that the astonishing dental work found in the teeth of Zapotec skeletons had been performed with the aid of mushrooms as narcotics. For the Tizoc reference, see J. Eric Thompson's *Mexico before Cortez*, Scribner's, New York, 1933, p. 31. As for the Zapotec dental work, Saville tossed out his fanciful notion in an extempore, unrecorded talk before the Explorers' Club, New York (*Explorers Journal*, 1934, vol. 12, p. 7) and a subsequent interview (*The New York Times*, April n, 1934). The Swedish archeologist S. Linne took Saville's dental suggestion seriously; see *Ethnos*, Stockholm, Jan. -June 1940, p. 7. Schultes in his two papers quotes Saville (via Thompson) on Tizoc. Safford's mushroomic nihilism may have led, by reaction, to Saville's postulating mushroomic agents right and left in pre-Conquest Middle America. As Saville never offered his mushroomic ideas formally, we infer that he regarded them as speculative. Bias Pablo Reko in his *Mitobotdnica Zapoteca* (pp. 13, 14, 44, 53, and 95) reported names for inebriating mushrooms in contemporary Zapotec, but he failed to place his informants. In a typewritten note of his left with Mr. Weitlaner he states that in 1935 he found the divinatory mushrooms in use among the Zapotecs of Santiago Yaveo and the Chiiiantecs of Teocalcingo, two villages situated hard by the Mije country. He gives Chinantec names for these mushrooms (*a-ni* and *a-mo-kia*). The Chinantecs generally do not know the mushrooms, and if Dr. Reko's report is reliable, we suspect a cultural borrowing from the neighboring Mijes. Our own efforts to discover knowledge of the divinatory mushrooms among the Zapotecs of Tehuantepec and the Valley of Oaxaca have been unsuccessful. Pedro Carrasco reports the present day use of the divinatory mushroom in Zapotec country, among the Zapotecs of the southern coast, in the western part of the district of Pochutla, in the village of San Bartolo Loxicha, where he says it is called the *santo nanacate*. See his 'Una Cuenta Ritual entre los Zapotecos del Sur' in the Festschrift entitled *Homenaje al Doctor Alfonso Caso*, Mexico, 1951, p. 93. On the strength of his evidence we visited the southern Zapotec country in 1955, with successful results. See pp. 307 ff.

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The great Clusius may have described, an inebriating mushroom. In the section on the *Fungi pernidaks* of Hungary he arrives at the eleventh of the evil species and says this concerning it:

Ungaricum nomen nullum intellexi, sed Germanicum est *Narrenschlvammen* ac si diceret fatuum vel fatuorum fungum, quoniam forte, si quis vescatur, mente turbetur . . . Corpore dum e sua volva erumpit, est boleto dissimili, longiore pediculo subnixum minimo digito graciliore, rescuncialis latitudinis, in metam assurgens, superna parte Candida, inferna camerata, & multis striis, a pediculo in ambitum productis, notata.

I did not learn its Hungarian name, but in German it is *Narrenschwamm*, i.e., 'foolish fungus' or 'fungus of fools', since one may see that he who eats becomes mentally upset... Its body, when once it has broken its volva, is unlike the Boletus, with a stipe thinner than the little finger, [the cap] less than 4 cm. in diameter, heading up into a conical top, white above, partitioned below with multiple furrows, radiating from the stem in a circle.

Our Hungarian friend, Dr. Stephan F. Borhegyi, has supplied us with the Magyar name that Clusius failed to get: *bolondgomba*, 'fool-mushroom', a term still familiarly used in Hungary, especially in the rural areas, as when one asks of a person behaving foolishly, "Have you eaten the fool's mushroom;"; or when one rejects a proposition by saying, "Do you think I have eaten a fool-mushroom, that I should do such a thing?" Or again: "He is laughing as though he had eaten fool's mushrooms." In Hungary the 'wise-woman', *javas asszony*, is said to use this same mushroom in love philtres, and the angry lover sends the philtre on to the object of his passion. We think this is the same mushroom that, as we saw on page 78, the Slovakian peasant calls *salene huby*. The Slovakian word finds a surprising echo in the 17th century verses of the Polish poet Wacław Potocki, which we mentioned on page 15. He is advising his readers about mushrooms, and warns them against a kind called *szmer*, lest it render the reader foolish (*szalec*) 'as from opium'! In Vienna one may hear the saying, *Er hat verrückte Schwammerln gegessen*, 'He has eaten the mad mushrooms.' Whether this is native to the Austrian countryside, or a loan made in imperial times from Hungary or the Carpathians, we do not know.

Thanks to Clusius and the Continental usage, John Parkinson in his *Theatricum Botanicum* (1640) speaks of the 'foolish mushroom', describing it rather well:

... about half an inch broad, spiring a little at the toppe, and being of a whitish colour, with a long stalke, of the thicnesse of ones little finger: this is called the foolish or the fooles Mushrome. [P. 1321]

What was and is this fool's mushroom that Albertus Magnus mentioned and Clusius described and the peasants of central Europe invoke in their old saws ?

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Our only good clue lies in the paintings that Clusius made, now preserved in Leiden: for Clusius the *Narrenschwamm* was, beyond a doubt, the *amanita vaginata*. Is it possible that this edible mushroom, if eaten raw, causes psychic disturbance? Clusius' identification is uncorroborated. Is it possible that he made a mistake, that his informants in Hungary were not heirs to the true tradition, that they were not privy to the secret? Perhaps the folklorists of Central Europe can yet run to earth the haunting reference incapsulated in the *Narrenschwamm*, with its echoes of far-off fungal knowledge.

We might have expected the 'fool's mushroom' to be a species of *panaeolus*, for there is medical evidence to support the intoxicating virtue of this genus of mushrooms. A surgeon named G. Glen, Esq., reported on a case in the *London Medical and Physical Journal*, 1816, on pages 451-3. It seems that on October 16 of that year a poor man living in Knightsbridge gathered a mess of mushrooms around a copse behind the Horse Guards barracks in Hyde Park. He thought they were field mushrooms, and after stewing them, proceeded to eat them. About eight or ten minutes later, when only six or eight mushrooms were left on his plate, he was seized with giddiness, dimness of vision, and a general loss of power. With utmost difficulty and only by the help of a friend whom he met, he made his way to Mr. Glen's consulting room five hundred yards away. He was reeling like a drunken man. It is noteworthy that Mr. Glen says his patient spoke with hesitation and reluctantly, and was greatly inclined to sleep. There was no nausea. By the next day the patient was well on the road to recovery, and Mr. Glen was inclined to the view, natural to medical men under the circumstances, that his own ministrations had either saved the poor man's life or spared him a prolonged illness. Mr. Glen examined the mushrooms left from the stew and also gathered fresh ones from the place where the first had been found. He identified them as *panaeolus campanulatus* Linn., and this was confirmed by a Mr. William Salisbury of Sloane Street, a person deemed competent in the matter. Mr. Glen drew attention to the fact that two parallel cases had been summarily reported in the August 1815 issue of the *Gentleman's Magazine*, the same species being held accountable in those instances also.

Exactly one century after Mr. Glen's experience, in the summer of 1916, an American surgeon, Dr. Beaman Douglass, gathered a mess of mushrooms that he believed were of the genus *panaeolus*, though the species remains uncertain. He, his wife, and the maid ate them, spreading the cooked mushrooms on toast. One hour later Mrs. Douglass developed psychic symptoms, and his followed shortly afterwards. Both lost their sense of balance and mental control. There was pronounced stimulation. Mrs. Douglass manifested "a tendency

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to be jolly, hilarious - she laughed and talked inordinately and foolishly." As for Dr. Douglass, this is what he recalled, "I wished to be noisy, to laugh and joke. My own trivial remarks met with my own warm personal appreciation . . . Thoughts flew through my brain. . . Objects near seemed far away, sounds were diminished. . . ." The maid underwent a similar experience. Six hours after eating and five hours after the first symptoms all evidence of intoxication had disappeared. At no time had there been nausea.¹

Mushrooms of the genus *panasolus* are found everywhere in the temperate and tropical zones, and there are many species. Henri Fabre knew them, of course, and we offer to our readers a reproduction of his painting of the *panaeolus campanulatus*. To us it seems outstanding in artistic composition, in the delicacy of the curves, the lilt of the caps. This mushroom is not normally eaten in France, but so far as we can learn it is not regarded as inebriating even by the mycophilic country folk of the Provence. There is no reason to think that Fabre considered it uncanny. Yet is there not something eerie about the cobra-curves of the little mushrooms in his painting, as though he sensed a secret >

There is a reproach to mycologists in these unexplored hints and evidence of psychic effects caused by mushrooms, hints deeply rooted in Europe's folkways, evidence clearly reported over centuries from Kamchatka, New Guinea, and Middle America. It seems strange that archaic peoples should still possess secrets of this kind that our laboratories have not exhaustively analyzed. Indeed, Swiss and English workers may lately have arrived, at last, on this exciting terrain for scientific inquiry. From the fungus known as ergot Swiss pharmacologists have recently isolated an alkaloid that causes massive psychic reactions in human beings, including hallucinations that duplicate with astonishing fidelity the testimony of our old Spanish writers. Experiments with this alkaloid in England and America seem to open up promising vistas for its use in the treatment of psycho-neurotic disorders.²

That Dr. Reko and Dr. Schultes brought back a *panasolus* from their quests for the divinatory mushrooms was not the full answer to our problem. Were there not other divinatory species, belonging to different genera? Both Dr.

1. For the Douglass episode see his papers on 'Mushroom Poisoning', published in *Torreya*, vol. 17, No. 10 and No. 12, Oct. and Dec. 1917. See also Louis C. C. Krieger, *A Popular Guide to the Higher Fungi (Mushrooms) of New York State*, Albany, N. Y., 1935, p. 147.

2. See, e.g., *Journal of Mental Science*, vol. 100, No. 419, April 1954: 'The Therapeutic Value of Lysergic Acid Diethylamide in Mental Illness', by R. A. Sandison, A. M. Spencer, and J. D. O. Whitelaw, pp. 491-507; and 'Psychological Aspects of the LSD Treatment of the Neuroses', by R. A. Sandison, pp. 508-515, being reports on the treatment of certain neurotic patients at Powick Mental Hospital, Worcestershire.

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Reko and Dr. Schultes thought so, and the former even obtained specimens of two other genera. Further questions suggested themselves, and we resolved to pursue our inquiry on our own account.

In response to an inquiry of ours, Dr. Reko wrote us on February 12, 1953, that he had nothing further to add to the information he had published, but suggested that we address ourselves to a Miss Eunice Victoria Pike, an American linguistic student and Bible translator who had been living for many months each year since 1936 among the Mazatec Indians, with her headquarters in Huautla. She spoke Mazatec, he added, and thus she had access to the thoughts and feelings of the monolingual elements in the population. Immediately after thus introducing us to Miss Pike, Dr. Reko died. We wrote to her, and she has proved a most helpful and understanding correspondent. Even Miss Pike after all these years has never attended a performance of the divinatory rite, but speaking the language and living among the people, she reports the words of those who know and understand, and their words are more valuable than would be the uncomprehending testimony of an outsider witnessing the event. Is there anything more difficult than to enter intelligently into the inner religious experience of a people far removed culturally from one's own; We reproduce in full Miss Pike's letter to us, as a primary source on a theme of absorbing anthropological interest, superior by far in quality to anything on the *teonandcatl* given to us either by the early Spanish writers or recent inquirers. There is an immediacy of experience, an intimacy, about this report that carries its own proof of credibility.

Here is Miss Pike's letter:

Huautla de Jimenez • Oaxaca, Mexico
March 9, 1953

Dear Mr. Wasson:

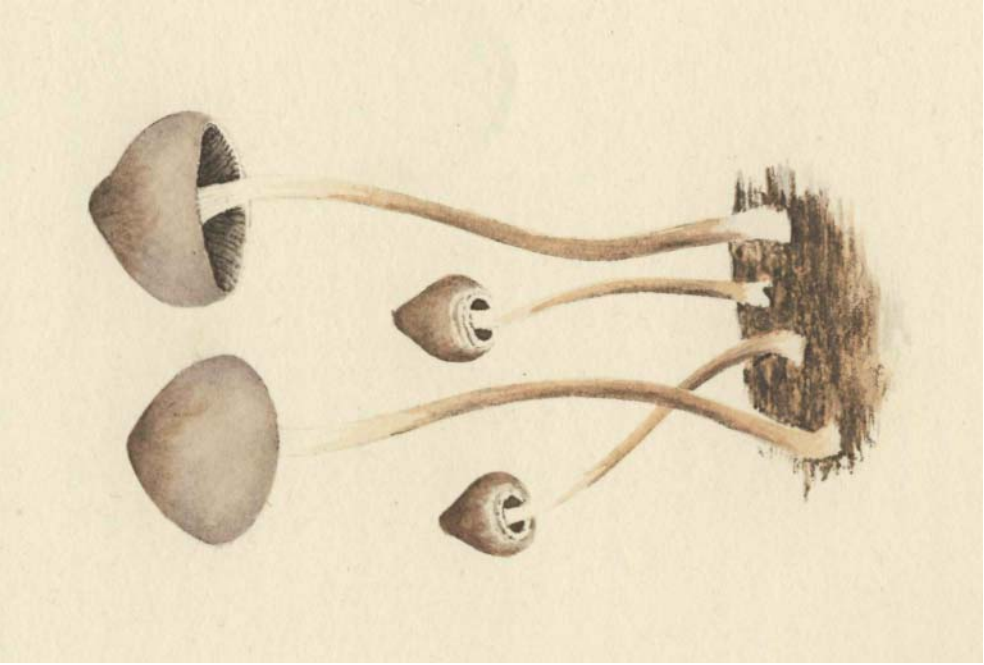
I'm glad to tell you whatever I can about the Mazatec mushroom. Some day I may write up my observations for publication, but in the meantime you may make what use of it you can.

Mazatecs seldom talk about the mushroom to outsiders, but belief in it is widespread. A twenty-year old boy told me, "I know that outsiders don't use the mushroom, but Jesus gave it to us because we are poor people and can't afford a doctor and expensive medicine."¹

Sometimes they refer to it as 'the blood of Christ' because supposedly it grows only where a drop of Christ's blood has fallen. They say that the land in this region is 'living' because it will produce the mushroom, whereas the hot dry country where the mushroom will not grow is called 'dead'.

i. Miss Pike informed us later that this and other translations were from the Mazatec, not from Spanish.

PLATE XXXIX Jean-Henri
Fabre. *Panseolus campanulatus* Fr. ex L.



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They say that it helps 'good people' but if someone who is bad eats it, 'it kills him or makes him crazy.' When they speak of 'badness' they mean 'ceremonially unclean'. (A murderer if he is ceremonially clean can eat the mushroom with no ill effects.) A person is considered safe if he refrains from intercourse five days before and after eating the mushroom. A shoemaker in our part of town went crazy about five years ago. The neighbours say it was because he ate the mushroom and then had intercourse with his wife.

- When a family decides to make use of the mushroom they tell their friends to bring them any they see, but they ask only those whom they can trust to refrain from intercourse at that time, for if the person who gathers the mushroom has had intercourse, it will make the person who eats it crazy.

Usually it is not the sick person nor his family who eat the mushroom. They pay a 'wiseman' to eat it and to tell them what the mushroom says. (He does so with a loud rhythmic chant.) The wiseman always eats the mushroom at night, because it 'prefers to work unseen'. Usually he eats it about nine o'clock and it starts talking about a half an hour or an hour later. The Mazatecs speak of the mushroom as though it had a personality. They never say, "The wiseman said the mushroom said..." They always quote the mushroom direct.

The wiseman always eats the mushroom raw; "If anyone cooks or burns the mushroom it will give them bad sores." There is no specified number of how many he should eat, some wisemen eat more than others, usually they eat four or five. If he eats a lot, it 'wants to kill him'. At such a time the wiseman falls down unconscious, and comes to little by little as the other people in the room 'pray for him'. This may also happen 'if he has had intercourse too recently'.

When all goes well, the wiseman sees visions and the mushroom talks about two or three hours. "It is Jesus Christ himself who talks to us!" The mushroom tells them what made the person sick. He may say the person was bewitched; if so, he tells who did it, why, and how. He may say the person has 'fear sickness'. He may say it is a sickness curable by medicine and suggest that the person call a doctor.

More important, he will tell whether or not the person is going to live or die. If he says he will live, then "he gets better even though he has been very sick". If he says he will die, then the family start making arrangements for the funeral and he tells who should inherit his property. (One of my informants admitted, however, that the mushroom occasionally makes mistakes.)

One of the "proofs" that it is "Jesus Christ himself" who talks to them is that anyone who eats the mushroom sees visions. Everyone we have asked suggests that they are seeing into heaven itself. They don't insist on that point, and as an alternative they suggest that they are seeing moving pictures of the U.S.A. Most of them agree that the wisemen frequently see the ocean and for these mountain people that is exciting.

I have asked what the wiseman looks like while under influence of the mushroom. They say that he is not sleeping, he is sitting up, with his eyes open, "awake". They say he does not drink liquor at the time, but that he may in the morning. Some of them go right out to work the next day, but some stay home and sleep "because they have been awake all night".

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Although we have never been present when the mushroom was eaten, we have observed the influence it has on the people. One of our neighbors had tuberculosis and was coming to us for medical help. Then one night they called in the wiseman to eat the mushroom in his behalf. It told them that he would die.

The next day the patient no longer had any interest in our medicines; instead he began to set affairs in order for death. He quit eating solid food, restricting himself to corn gruel. About two weeks later he refused even gruel, accepting only an occasional sip of water. A few days later even water was rejected. In less than a month after he had consulted the mushroom he was dead.

Another neighboring family had a series of sicknesses. They consulted the mushroom for their twenty-two year old son. The mushroom said he would get better, and he did. When their eighteen-year old daughter became ill, they consulted the mushroom. It said she would get better and she did.

Then the ten year old daughter became ill. The mushroom said that this one would die. The family were amazed because her illness had not seemed serious. Of course they were grief stricken, but the mushroom said, "Don't be concerned, I'll take her soul to be with me." So, following her mother's instructions the little girl prayed to the thing talking to her, "If you don't want to cure me, take my soul." A day or two later she was dead.

- Not all the Mazatecs believe that the mushroom's messages are from Jesus Christ. Those who speak Spanish and have had contact with the outside world are apt to declare, "It's just a lot of lies." Most monolinguals, however, will either declare that it is Jesus Christ who speaks to them, or they will ask a little doubting, "What do you say, is it true that it is the blood of Jesus?"

I regret the survival of the use of the mushroom, for we know of no case in which it has had beneficial results. I wish they'd consult the Bible when they seek out Christ's wishes, and not be deceived by a 'wiseman' and the mushrooms.

In answer to your questions:

The mushroom (called *si³tho³*, or affectionately '*nti¹ si³tho³*') is brown in color and grows biggest in June and July when the rainfall is heaviest. At that time they may be four inches across and about four inches tall. They are still plentiful in September and October. By March and April, the dry season, the mushroom is scarce, but small ones may still be found.

The mushroom grows in the grass, but when people are hunting for it, they look first in the places where cattle have been, because the mushroom is most frequently found growing out of cow manure.

They do not dry the mushroom. If they cannot find one growing, they go without. The person I asked doubted that it was possible to dry them. At first she thought they would not. Then she said that maybe they could be dried, but she doubted that they would serve as medicine that way.

I do not know that the Mazatecs ever use the mushroom in connection with a fiesta. For the most part it is used in connection with sickness. I have heard of one other minor use

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however. They say a man may slip a piece into an enemy's liquor while he is drinking in a saloon. If he drinks it while ceremonially unclean, he may go crazy. Or he might go crazy because the man who gathered it was ceremonially unclean. Wishing you success in your research,

Sincerely,

(Signed) Eunice V. Pike

Miss Pike's letter settled one question for us. For some time we had been considering a visit to Huautla. Now we were resolved to make it. Much of her information was of that precious kind which can only be obtained when one speaks with the Indians in their own language on terms of long standing friendship and complete mutual confidence. We could not hope to improve on her contribution. But there were many unanswered questions. For one thing, her mushrooms reached four inches in diameter; they could not belong to the genus *panasolus*. What then were they?

In the Mazatec country there are two seasons of the year when mushrooms should be abundant, at the beginning and at the end of the rains, in June and in the first half of August. We decided on August for our trip. Miss Pike would be absent then, but her colleague in Mexico City, Mrs. George Cowan, proficient in Mazatec and intimate with Huautla, would know how to help us get there. We also were successful in exciting the interest of Mr. Weitlaner, who agreed to accompany us. This was our greatest stroke of fortune, for with his knowledge of the country and the Indians, at least some measure of success was assured. Our objectives were simple: to obtain specimens of the sacred mushrooms, for purposes of identification and trial consumption by ourselves, to learn about the present state of the cult, and to attend the mushroom rite.

We set out from Mexico City on Saturday morning, August 8, 1953. Apart from the chauffeur we were four - Robert Weitlaner, whom we shall call hereafter Don Roberto, VPW, RGW, and our sixteen year old daughter Masha. On that day we drove through Puebla to Tehuacan, a watering resort, where we dismissed the car and spent the night. On Sunday we took the train to San Antonio, about two hours away, and from the mournful railroad station reeking in the torrid heat of a semi-arid countryside we drove a mile or so in a ramshackle bus, loaded with Spanish-speaking Indians and their worldly goods, over the worst road in the world to Teotitlan del Camino, a bustling market town and the stepping off place for the Mazatec country. We spent Sunday night there, in the inn kept by Julia Martinez, a woman unforgettably obese. Early the next morning Victor Hernandez was at the door with six animals, five mules and a horse, all of them miserably small and thin. He was a Mazatec

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from Huautla who spoke a fair amount of Spanish. He had come for us in response to a telegram that Mrs. Cowan had sent to a friend in Huautla, the school teacher Herlinda Martinez Cid. Our belongings in duffle bags and knapsacks were soon loaded, and off we started up the steep trail into the mountains east of Teotitlan. After two hours of climbing we reached San Bernardino, a village superbly perched on a mountain spur looking back over the hot low country that we had left behind. There we breakfasted on tortillas and beans and then off we went again, on a long steady climb until we arrived at the first of the passes, known as La Cumbre, perhaps 9,000 feet high. Here we thought to stop for a bite to eat from our provisions, but Victor would not hear of it. He said the Cumbre was a favorite spot for robbers, who would beset the wayfarers on animals spent from the long climb and then vanish in any of various directions down the slopes. We noticed for the first time that Victor was armed with a revolver at his waist. Later we learned that four robbers, many years before, had been hanged on the Cumbre, and their bodies left swinging for months in that desolate wind-swept place. And so we hurried on down into the next valley, and up again to a second pass, and down again, and finally up the last steep climb into the town of Huautla, itself perched on a mountain side at an altitude ranging from 5,500 to 6,000 feet. We had been on the road for eleven hours through country of wild grandeur, the mountains covered with vegetation, with only two or three thatched villages discerned in the distance. But on the trail itself there had been considerable traffic, as strings of animals kept passing us, laden with sacks of coffee and other produce bound for the market in Teotitlan. Like our Victor, the drivers were all on foot, barefoot or wearing sandals, hurrying along at a dogtrot. Their animals gave us some trouble in the narrow way, as the beasts, stepping along, would brush us with their heavy sacks and push us uncomfortably toward the precipitous outer edge of the path. Victor observed our difficulty, and soon it dawned on us that on-coming drivers were halting their animals and letting us pass. Victor had been notifying them of our approach and bespoken their consideration. He had not uttered a word, or so we thought. But we had read, in preparation for our trip, about the Mazatecs, and knew that the language could be whistled as well as spoken. Yes, in a well-modulated, penetrating whistle Victor had been conversing about us with the on-coming muleteers, even before they would come around a bend into view, and at his request they were letting us pass! At the end of the day, as night was falling, we walked our animals slowly up through the town of Huautla, across the public plaza, up the hill to the house where Herlinda was waiting for us, standing in her door and smiling at us.

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We were tired out, and the warm reception that this Indian school-teacher cheered us with was most welcome. That night we all slept on the packed-earth floor of one of her three rooms. Herlinda's aged mother lay moaning, critically ill, in the front room. On the following day we rented a new, unoccupied house nearby, paying five pesos (or fifty-five U.S. cents) for a week's

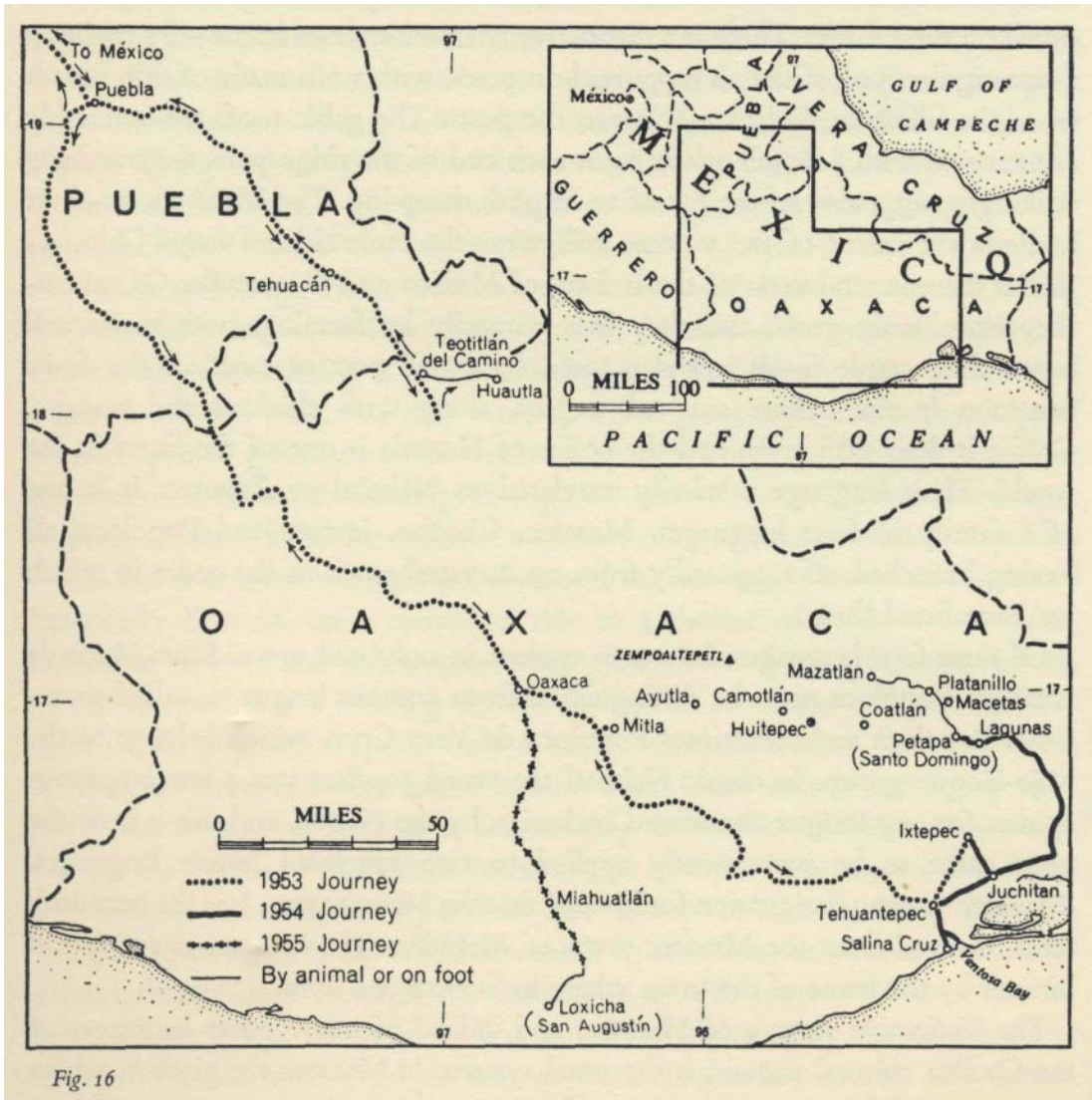


Fig. 16

use. There we also slept on the ground, and we had our meals with Herlinda, who stayed home from school to take care of us. From Victor and others during our stay we heard stories of the lawlessness of these Mazatec Indians, and it is true that no one goes abroad after nightfall, whether on the trails from one town to another or within the town itself; and armed with their machetes the Indians

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looked to us fearsome enough, when we would meet them on the road. But the fact is that they treated us always with perfect courtesy and gentleness, and those few whose aid we sought in confidence in our mushroomic inquiries were most understanding in their efforts to help us.

The Mazatec Indians number about 60,000, all of them concentrated in the mountains of north central Oaxaca. They live chiefly in villages, though some dwell on their farms. There is a distinctive Mazatec style of house - by tradition a rectangular roof of thatch supported on posts, with walls made of thin boards or adobe filling in the space between the posts. The gable roofs are invariably constructed with a thatch overhang at each end of the ridge pole, the overhang strikingly suggestive of the ear of an English sheepdog. The Mazatecs are short and stocky; many of the women still wear the embroidered *huipil* ('blouse') that is the ancestral dress of the Indians of Mexico and Guatemala. Of animals they breed only goats, and they live primarily by farming, with maize and beans their staple foods, supplemented by sweet potatoes and all the fruits common in the tropics and sub-tropics, along with chickens and turkeys. Coffee is their cash crop, and the coffee of Huautla is one of the finest in the world. Their language is wholly unrelated to Nahuatl or Zapotec. It is one of a family of four languages, Mazatec, Chocho, Ixcatec and Popoloca, all having branched off supposedly from an ancestral stock in the order in which we have listed them.

Of these four languages, Ixcatec is spoken in only one town, Santa Maria de Ixcatlan. Popoloca must be distinguished from another language, called sometimes Popoluca and sometimes Popoloca de Vera Cruz, which belongs to the Mije-Zoque group. In classic Nahuatl the word *popoloca* was a contemptuous epithet for any tongue considered barbarian by the Nahua, and this is how the term came to be permanently applied to two unrelated Indian languages. 'Mazatec' is not a designation for himself that the Mazatec uses. It is the outsider's term, derived from the Mazatec town of Mazatlan. The Mazatec is apt to call himself by the name of the town where he is born and lives.

The distinctive feature of Mazatec, and indeed of many other languages of the Oaxaca cultural mosaic, is the tonal system. In Mazatec the pitch at which successive syllables are uttered is of primary semantic importance. This is what makes communication by whistling or humming simple. The Chinese is a tonal language too, but the 'contour' tones of Chinese are basically different from the 'registered' tones of constant pitch in the language of the Mazatecs. When the Mazatec muleteer initiates a whistled conversation with a friend some distance away, the key that he adopts sets the key for his friend's answer

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and the whole conversation follows in that key. Anything that can be said in the language can be said whistling. Mrs. Johnson had sent by us some trinkets - earrings, a ring, a bracelet - to an Indian godchild of hers, living outside the village of San Andres, a few miles from Huautla. With Victor we walked thither along the ancient mountain path. He found the Indian cottage, high above the path. He tilted his head far back, and in a pleasant whistled discourse explained the circumstances - certainly unusual ones for this isolated Indian family. Soon there were signs of activity above, and down a precipitous footpath came three women - the grandmother, the mother, and the child herself, now sixteen. The grandmother and mother were bearing simple homespun textiles across their forearms, a gift to send back to Mrs. Johnson in exchange for her remembrance. None of the women knew a word of Spanish, and after a brief conversation through Victor as our interpreter, we withdrew, the women raising their hands, palms turned to us at shoulder level, and bowing us a friendly and moving farewell. By Victor's whistling they had learned exactly who had come to call and why, and they came down to greet us on the path equipped with reciprocal gifts, not to be outdone by our courtesy. There is a curious convention in Mazatec whistling: though women understand it and know how to do it, a rule of behavior makes it improper for a woman to whistle in public.

Huautla is a town with several thousand inhabitants. It could not be more beautifully situated, on a mountain side in a theater of verdant mountains, bathed in flowers and sub-tropical vegetation, free of mosquitoes by reason of the altitude. It is a bustling market town, full of movement and life. Yet most of the population speaks only a tongue that, until now, has never been written, and those few who know Spanish often know only a smattering of it. Most Mazatecs never sleep in a bed, rolling themselves in their sarapes on a mat on the beaten earth in their houses. Most of them have never worn shoes. Victor could not read time by a clock-face. Except in Huautla where there are wheelbarrows, there is no wheeled vehicle in the Mazatec country, and until a road thrusts itself through the mountains to this remote Mazatec world, most Mazatecs will continue to live and die without using the wheel. How strange to come upon a people remote from the modern world, still shut in by their mountains and the barrier of their difficult language, where we can see' how our own ancestors lived for most of human history, living almost solely in and for the present, but pursuant to patterns transmitted orally from one generation to another, a people abounding in vitality, intelligent, yet still largely untouched by the currents of the modern world!

At breakfast on the morrow after our arrival Don Roberto and RGW took

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Herlinda into their confidence and told her the purpose of our visit. She admitted that she, like her neighbors, had wondered why we were coming. A close friend of Victoria Pike and Florence Cowan, she had no faith in the sacred mushrooms, but she said she would ask her brother-in-law, Aurelio Carreras, widower of her late sister, to help us. He turned out to be a one-eyed Indian, about 45 years old, the owner of two or three houses built around a patio almost next door. He had learned Spanish from his wife, but could not read or write it. We bespoke his help to get the sacred mushrooms for us, and he promised to do his best, but the rains had ended prematurely and the mushrooms might be hard to find. He warned us to discuss the mushrooms with no one.

We walked through the town. Don Roberto dropped in at a little general store, and introduced RGW to the ancient woman behind the counter, Cleofas Cid, an aunt of Herlinda's. When no other customers were about, he asked her whether she could find the mushrooms for us. She told us that the *curandero*¹ who had officiated for the party in 1938 had died, and she knew not where to turn for another who would accommodate us, but there was Concepcion, the wife of a *curandero* who had taken to drink and gone to the dogs. She knew the mushrooms and would get them for us. Concepcion did not speak a word of Spanish. - When approaching the Indians with our inquiries, we were careful to speak of the mushrooms with the deepest respect. (After all, it was a bold thing that we were doing, strangers probing the innermost religious secrets of this remote people. How would a Christian priest receive a pagan's request for samples of the Host?)

On Wednesday word reached us from the priest of the huge church on the plaza that he would like to see us. We had already paid a courtesy visit on the Presidente, a big, tough-looking cacique who spoke good Spanish. Now we called on Father Alfonso Aragon. He turned out to be Indian, but Zapotec not Mazatec, and with most of his parishioners he could not converse. (In man's memory there had never been a Mazatec priest in Huautla.) He was curious about our visit. We explained our interest in the old customs of the Mazatecs, and then on his initiative he told us of the strange faith, ridiculous in his eyes, that the townspeople placed in certain mushrooms. Lately a physician in Puebla had asked him to forward a kilogram of them. Father Alfonso had succeeded in laying his hands on the mushrooms, and had wrapped them up. The parcel was still there, on the shelf in front of us, for he had lost the address of the Puebla

i. We have found no English word that renders *curandero*. Medicine man, shaman, witch doctor, sorcerer—all are misleading. The *curandero* heals with herbs and engages in divination. *Curandero* is the respectful designation of which *brujo* is the pejorative counterpart.

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physician. Did we care to examine them? We did not conceal our interest, and quickly untied the parcel. Alas, as was to be expected, the contents were reduced to a black and putrid mass.

We talked with Victor the muleteer about the mushrooms, and how we hoped we could consult a *curandero* in the course of our visit, and he set off full of promises, saying he would seek out either of two *curanderos* whom he knew in San Andres.

Then we waited.

And as we waited, we picked up more and more information about the sacred mushrooms. Herlinda talked freely with us. She knew much, though she professed to have little knowledge and certainly she had no faith in them. Victor the muleteer was captivated by our interest. He and Aurelio and Concepcion would come to us separately, often after dark, Aurelio and Concepcion with little parcels of a few mushrooms wrapped in banana leaves or a cloth, which they would deliver to us secretly and reverently. Aurelio and Victor would warn us to speak of the matter to no one, for it was *muy delicado*, 'Very perilous'. This was the expression they used independently of each other, for we talked with them always individually, but in the case of Concepcion, as she was monolingual, we had to bring in Herlinda to interpret for us.

We learned that the Mazatecs are mycophagous and many kinds of edible mushrooms are offered on market day in the plaza. Each has its own name and the general word for 'mushroom' is *tai³*, the *t* being explosive and each of the vowels being nasalized.¹ But this word embraces only mushrooms other than the sacred ones. Each of the sacred kinds has its own name, and all together they are called *si³to³*. This name is invariably preceded by another verbal element so that the normal expression is, as Miss Pike had told us, '*nti¹ si³to³*', the first syllable conveying a sense of deference and affection. (The apostrophe represents a glottal stop.) The word *si³to³* means literally 'that which springs forth', and while it is impossible for us to prove that this sense explains the name, in the context of the sacred mushrooms it is a felicitous mystical metaphor. Victor explained the name as meaning "that which comes of itself, no one knows whence, like the wind that comes without our knowing whence nor why" - *que viene por si mismo, no se sabe de donde, como el viento que viene sin saber de donde ni porque*. The word is saturated with *mana*: it is uttered in a whisper and Victor was loath to pronounce it at all; when he had to use it, he would substitute a gesture - his gathered fingers making an eating motion before his mouth.

In the Mazatec language there seems to be no name for the occupation of the

I. The superscript digits in Mazatec words indicate the pitch, V being the highest and '4' the lowest.

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shaman or *curandero*. In the proper context one speaks of him as 'he who knows', *co'td'ci'ne'*. Only on his advice should one eat the sacred mushrooms. The *curandero* himself does not necessarily gather the mushrooms; others may do this for him. Nor is the gathering attended by prayers and vigils. But according to Concepcion the best time to find them in good condition is early in the morning "when the air is fresh" - *con el fresco* - a turn of phrase that reminds us of the 'little breeze before dawn' that Jacinto de la Serna mentioned. The best time to find them is when the moon is new - *la luna tierna*. According to Aurelio, in and around Huautla there are today about twenty or thirty *curanderos*, roughly the same number as in the past, and women are as acceptable as men in this function. Usually the *curandero* takes in hand the instruction of his son or relative who will succeed him, but this presents no problem, for the neophyte learns in two or three months. After all, it is the mushroom that speaks, the mushroom that teaches the beginner what to say and do. The rite of the sacred mushroom is performed only as an *ad hoc* consultation, and the prevailing fee when we were in Huautla was from twenty to twenty-five pesos, from \$2.50 to \$3.00. For this service the *curandero* must fast from noon to noon, and drink no alcohol. He must be (ceremonially) clean, *nta³co⁴ta⁴*. He begins his session between nine and ten o'clock in the evening, and does not finish before three in the morning. But the trance leaves no unhappy after-effects. He can work the next day, and his head is so clear that he remembers all that he has said in the course of the night.

The *curandero* eats the mushrooms raw and unwashed and preferably fresh, but he may conserve them in a dried state for as long as six months. The *curandero* eats the mushrooms near the beginning of the seance, and at his discretion he may offer them to the family who is in attendance or to the patient whose fate is in the balance. Among our informants we found no one who had ever heard of a public communal feast of sacred mushrooms. This feature of the cult, so eloquently described by the old writers, seems obsolete. Here is an important alteration in the old customs, and for the change two explanations suggest themselves, either of which would be sufficient of itself. For public celebrations the mushroom could hardly stand the competition of distilled alcohol, and the unhappy addiction of the Mazatecs today to strong liquor is sufficient evidence of this. But there may be another reason. We know that from the earliest times the Catholic Church exerted itself to the utmost to extirpate the mushroom cult, and under that threat the use of the mushroom would be driven into hiding. Indeed this may be the forgotten but once powerful motive behind the atmosphere of secrecy that hung over all our discussions during our brief

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sojourn in Huautla, and what on its face looks like a reverential tabu may be merely a legacy of persecution.

How shall we convey the sense of gravity and doom that seemed to hang on Aurelio's words when he would whisper to us about the sacred mushrooms in the evening ? The mushroom itself 'is speech', *es habla*, he would say, and it speaks of many things, of God, of the future, of life and death, and also it tells where to find things that are lost. One sees everything, one sees where God is also-*se ve todo; se ve donde estd Dios tambien*. These were our good friend Aurelio's very words. We discovered that it is usual to talk of these mushrooms in pairs. The *curanderos* use four kinds, and each kind has its valence, so to speak, measuring its potency, and the *curandero* eats so many pairs of this kind, and a different number of pairs of another; or in case of a shortage, he can use two or more kinds, calculating the valence of each to arrive at the right dose. We discovered also that each of the four kinds has various specific names, and not all of our informants knew all of these names, but each was certain in his own mind of his own names. It is as though in a single community of a few thousand souls there were various oral traditions using different names, and the traditions did not intermingle and coalesce. On the last day of our stay in Huautla, Victor arranged for us to pay a visit to Teodoro Garcia, and it was obvious to us from his installation and bearing that he was a 'fashionable' *curandero*. He told us he was a native of Huautla, yet later we learned from Herlinda and Aurelio that neither had ever heard of him, and Herlinda suggested that he must hail from San Lucas, a Mazatec village some distance away speaking a dialect different from the dialect of Huautla. More probably 'Teodoro Garcia' was a fictitious name, invented on the spur of the moment. For the Mazatec his name is part of his very being. He is loath to disclose it, for he thereby places himself in the other person's power.

It was interesting to watch the behavior of our Indian friends as one by one they would talk to us about the mushrooms lying on the table before us in the shelter of our house. Victor would hold them to his nose and sniff them, and then report how much *gaz* the specimens contained. Aurelio would say of the little ones that they had a higher rating - *ten tan mas grades* - than the larger ones. They would tell us how many pair were to be eaten of each kind, and the maximum that a strong man might cope with. They told us the specific names for each kind, and from the variety of these it was clear that the names were euphemistic escapes, metaphors rather than names, metaphors expressing respect and affection. As soon as our friends would leave us, we would lay out the specimens, some to be photographed, and all of them to be either dried and

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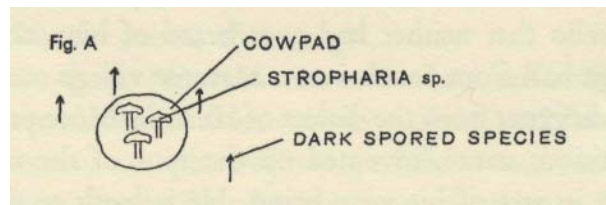
packed in cotton batting or else sealed in bottles with a formalin solution. In the course of our expeditions to Mexico we have collected hallucinatory mushrooms of many species, belonging to four genera. Professor Heim has defined them mycologically in the *Comptes rendus* of the Academic des Sciences, Institut de France, vol. 242, pp. 965-8 and 1385-95, sessions of March 12 and February 20, 1956. Here we add only these notes on the kinds used in Huautla.

1. Our Huautla specimens included many small mushrooms, some with black and others with purple-brown spores. The Indians esteem them highly and the *curandero* will take up to 15 or 20 pair. They grow in pastures and in the vicinity of dung but not in dung. They belong to various species but the Indians do not distinguish among them mycologically. In Spanish they are called *angelitos*; in Mazatec 'nti¹ si³tho³ ni⁴se^{3,4}, of which the distinguishing final element means 'bird'.¹

2. *Stropharia* sp. This is the largest of the hallucinatory mushrooms used in Huautla, and the least esteemed. It grows directly out of cow's dung. In Spanish it is called the *honguillo de San Isidro Labrador*, the little mushroom of St. Isidore the Plowman. In Mazatec, Concepcion called it the sacred mushroom of the bull's dung, 'nti¹ si³tho³ y'e⁴le* nca*ha*. Concepcion added that inasmuch as these grow in dung and the first kind around but not in dung, people say in Mazatec that these two kinds talk to each other. (See Fig. A).

3. *Psilocybe* sp. This is an ochraceous spored agaric. It is called in Mazatec 'nti¹ si³tho³ fe³5V, the 'landslide'.

"4. We were told repeatedly that another kind of mushroom growing on dead or dying trees is used, but we saw no specimens nor could we arrive at the native name.



As the days went by we felt increasingly disappointed that we were not amassing an abundance of the sacred mushrooms. The early ending of the rains had made them scarce. RGW depleted our precious store by eating three of the small ones and one of the large, but more could not be spared. Bitter to the taste, they were not sufficient to cause psychic symptoms.

We were even more disappointed by our inability to meet any of the *curanderos* and to engage one to perform the ritual for us. Our Mazatec friends seemed slow to bring us into contact with them. Apparently the initial pourparlers had to be conducted through an intermediary. At any rate, for days no one

1. In Mazatec words the apostrophe represents a glottal stop. In *stto*^ the letter Y has the same value as in English, the value that linguistic specialists conventionally represent by 'th'. Cf. spelling of this word in Miss Pike's letter.

PLATE XL

Ceremonial mushrooms.

- i. *Psilocybe mexicana* Heirn. 2. *Stropharia cubensis* Earle.
3. *Psilocybe cyanescens* Murr. var. *maxatecorum* Heirn (in dried state).

Water-color by Michelle Bory.

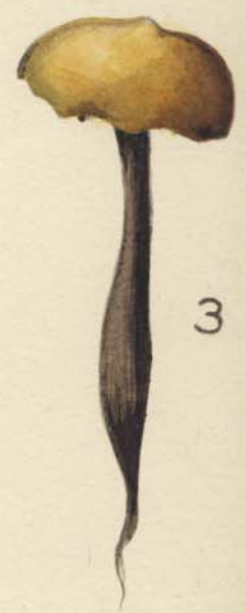


PLATE XLI

Accessories to the mushroom rite.

Pisiete, candil, kernels of maize, amate, guacamaya feathers, cacao beans, tapers, eggs (chicken and turkey), and sacred mushrooms.

Water-color by VPW.



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gave us so much as the name of one, and our friends spoke of them like real but rather mysterious characters who forever remained off stage. Here again there is perhaps a legacy of the era of persecution. Twice Victor disappointed us. He announced to us that first one and later another *curandero* of San Andres would minister to us, for a fee somewhat larger than the standard one. In each, case the *curandero* failed to keep the engagement.

To justify the ministrations of a *curandero*, the suppliant must present a specific problem on which he needs the advice of the divinatory mushroom. We had resolved that our problem lay in our anxiety over our 18 year old son Peter, working in an industrial plant outside Boston, from whom no news had reached us (naturally enough) since we had left home a few days before. This was not a good excuse, but it was the best we could conjure up and it seemed legitimate to our Indian friends.

Our itinerary was going to compel us to leave Huautla not later than Sunday morning the 16th. Saturday came, and we still had failed in our efforts to engage a *curandero*. At that point a brilliant idea came to Don Roberto: was it possible that Aurelio himself, our one-eyed Indian friend, was a *co⁴ta*ci*ne⁴*? Hardly had Don Roberto advanced this conjecture than Aurelio himself came into view, his sarape over his shoulder, approaching us discreetly with that quiet measured gait that by now we knew so well. We felt indebted to him for all he had done for us. Now the big test was to come. We chatted with him, and then, quite casually, Don Roberto asked:

"And tell us, Aurelio, when you give treatments [*hace curaciones*], are they successful?"

"Yes", he answered, "always."

For days we had been talking with a *curandero* all unawares.

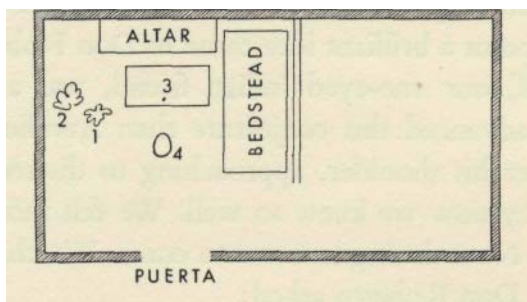
Don Roberto went right on. "Will you help us tonight?" Aurelio hesitated. He needed time to think the matter over. Why was he undecided? Was he perhaps ceremonially unclean? Was it because we were aliens to him and his people? Or was it because Herlinda's mother lay dying in the house and he was not in the mood? He went away and consulted Herlinda. This she told us later, explaining that her mother's condition was what had held him back, but she had advised him that we had come from afar, in need of the secret of his people, and he should help us. He came back to us, and told us to be ready at 9 o'clock in the evening. Then he went on to explain to us that different *curanderos* had different styles in performing the ritual. Some chant and sing and even shout. His own style, he said, was simple: he always remained composed and never raised his voice. But the mushroom speaks only in Mazatec, and he

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would have to have his son Demetrio with him. to interpret the mushroom's words for us. Before leaving us he obtained our assurance that we would discuss the matter with no outsiders in Huautla.

On the dot of 9 o'clock that evening Aurelio called for us, just as the last rays of daylight were vanishing. He led us by a short-cut across a corn patch or *milpa* to his houses, and we entered the door that he led us to. For hours we were to remain in the little room, perhaps eight feet square, where we now found ourselves. In front of us was a kind of shelf or mantel or altar. On the right there was a crudely carpentered wooden bedstead. Under it lay two small children, Aristeo and Julia Elvira, sleeping on a mat. Someone gently pulled the mat with them on it over the dirt floor to the other side of the partition that bisected the house. We were four in our own party. Then there was Aurelio and his grown-up son Demetrio (Figure B, i), and Demetrio's young and pretty

Fig. B



wife Clara (2), who lay on the floor in her clothes and wrapped in her sarape, and who seemed to doze through the night. Next to her lay her baby, born on June 4 and still nameless, for she was as yet unbaptized. Clara seemed to doze, but when her husband Demetrio faltered in translating the words of the mushroom, she had a way of interposing the Spanish words that he was seeking. We were eight in all, with the two children around the corner making ten. The setting for us' strangers had its unusual aspects. Throughout the long ceremony the only illumination inside the room came from tapers or an oil wick, and sometimes from a single taper, and for more than an hour we sat in complete darkness and silence. The air grew foul, for the bean-eating Indians are not an inhibited people. After n o'clock a terrifying rain storm with thunder and lightning broke on Huautla, and through the knot-holes and chinks of the flimsy board walls of our hut the lightning would suddenly reveal every detail of the room and the huddled figures in it. After the storm ended there was more excitement. A shot was fired in the night and Demetrio cried out, " *Un homicidio*" -a murder! Then there was the running of naked feet in the path

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outside our house, a loud knocking at a door not far away, and three more shots, but not a single human voice. Throughout the storm and the shooting Aurelio proceeded deliberately with the ritual.

With Aurelio's permission Don Roberto and RGW were taking notes, Roberto's being especially full and accurate. The following description is based on the notes that we both took. The successive steps seemed interminable, so slow were they, but each was executed with nice care for detail. There were knots to be tied, and then Aurelio sought the aid of his son, doubtless because his single eye made the tying too difficult. We shall describe the ritual as accurately as we can, and analogies with other religions may occur to the reader at certain points, especially when the mushrooms are consumed. But need we warn him that such analogies and correspondences are superficial; Students of religious rituals often observe similar gestures and acts in unrelated religions. The similarity is accidental. A given ritual is stamped with meaning by the myths, the theology, the creed, the emotional responses, the whole cosmology peculiar to the culture that has evolved it. The ritual of the divinatory mushroom must be interpreted against the background of all the religious beliefs and practices of the Indians of Middle America, an absorbing subject far too complex and difficult for us to cope with. Though we could not enter into the subjective associations that the ritual evokes in Mazatec believers, it was easy for us to perceive the mystery that bathes each successive step in the ceremony. For us as mycophiles and ethno-mycologists it was a stirring event to see our Mazatec *curandero* reverently raise the mushrooms from the cloth, pair after pair, a mushroom in either hand held by the stipe; and then see him eat the pair, first one and then the other, beginning with the pileus and then the greater part of the stipe, masticating each mouthful of the fresh raw mushroom a long time and then swallowing it, and depositing the stub of the stipe carefully in a piece of paper on one side. Yes, the *curandero* eats first one mushroom and then the other, holding one of the pair in either hand, exactly as the illustrator represented the act in the Magliabechiano manuscript. What we saw confirmed the meaning of that picture. What we saw was consistent with the hearsay accounts of the ritual handed down to us by Motolinia and Jacinto de la Serna. It confirmed in all essentials the account given by the late Jean Bassett Johnson of the performance that he and his party attended in Huautla on the night of July 16, 1938, fifteen years and one month before our experience.

Jrlere then is the order of the ritual of the divinatory mushroom as we witnessed and recorded it in Huautla de Jimenez. Our drawings were made by Robert

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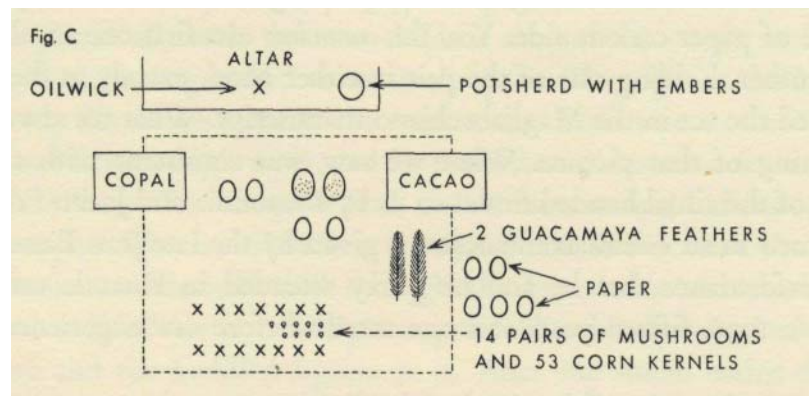
Weitlaner, and we are grateful to him for allowing us to use them and his notes. Our plate in color giving an impressionistic grouping of the accessories of the rite was done by VPW.

Though the room has a kind of altar, the entire ritual takes place on the floor, with Aurelio seated most of the time on a small, low stool (Figure B, 4). Later, when he consumes the mushrooms, he is kneeling on his folded sarape. In front of the altar and slightly to the right of center, he begins by laying a sack on the ground, and on it a square of cheap yellow sateen, and on top of this another layer of heavier material, dark blue, probably from a *rebozo* or shawl (3). We are lighted at first by a wick in an oil tin. Someone brings in a few glowing embers, which are placed in an old potsherd on the ground between the altar and the blue material. From first to last, except for the utterances and the long silences, the ritual consists of the ceremonial handling of accessories that are laid out on the blue cloth. Of these accessories all save the mushrooms can be seen for sale in the market place every day and are familiar to students of Middle American religious practices. These accessories are:¹

1. Lumps of copal, a pale resin used as incense.
2. A handful of cacao beans.
3. A handful of maize kernels. (The precise number in our case is 53.)
4. A heap of *pisiete* - ground green tobacco.
5. Four hen's eggs.
6. Two speckled *guajolote* (Mexican turkey) eggs.
7. Two brilliant feathers of the *guacamaya* bird, a kind of parrot.
8. Six rolls of bark paper, called *amate*.

Also tapers of virgin wax.

These with fourteen pair of mushrooms make up the accessories, and initially

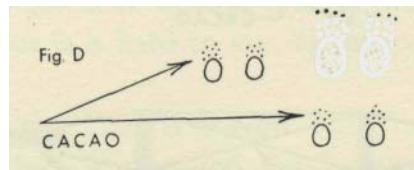


i. One of the *curanderos* in San Andres had told us through Victor that, in addition to the other accessories, we should provide a chicken. This suggests the possibility that some *curanderos* sacrifice a fowl during the rite.

they are laid out on the blue material as shown in Figure C. Aurelio takes a

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long time to arrange all this. He counts the mushrooms and the cacao beans, and then places five cacao beans next to each hen's egg and 13 next to each of the two turkey eggs. He divides the maize kernels roughly in half, picks up half, shakes them from hand to hand, casts them on the cloth, contemplates them, repeats the same steps with the other half, and separates out the two grains that he says are the Wasson children. He asks whether we are in agreement with what goes on and we say yes. He casts the kernels again, and a third time. Speaking of Peter, Aurelio says, in Demetrio's translation, "*Estd, pero iquien sake donde esta?*" - He is, but who knows where he is? It is now 10.15 o'clock.



To each of us he gives a piece of *copal* to hold in a clenched fist, and to VPW he gives two, one for Peter; then on his bidding we toss the copal into the embers glowing in the potsherd.

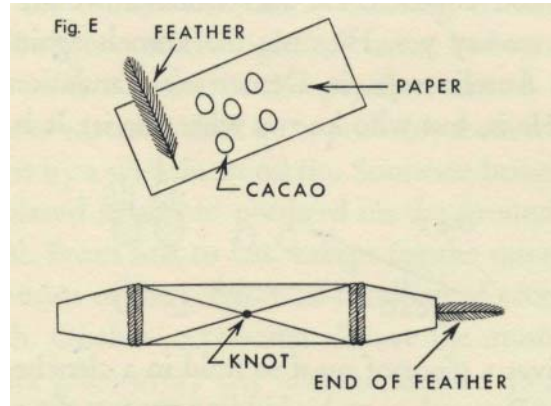
Aurelio kneels on his folded *sarape*, crosses himself, invokes the Trinity and some of the saints, takes a pair of mushrooms, holds them briefly over the burning copal, and begins to chew them. Now only a single taper is burning, aided by light from the embers. After chewing for a time, he swallows, and then does the same with the rest of the mushrooms, pair by pair, until 14 pair are consumed. He finishes eating them at 10.30 o'clock. He has now eaten a pair of the large ones and three pair of the others. Having finished the mushrooms, he binds his head tightly in a kerchief.

Throughout the night Aurelio's utterances are in a conversational tone, in Mazatec for the most part but toward the end in Spanish. VPW, being a physician, has arrived in Huautla equipped to examine the *curandero* during the performance with stethoscope, thermometer, blood-pressure gauge, and ophthalmoscope. Now that the moment has come, for many reasons each alone sufficient it seems hardly wise to inject these extraneous and exotic utensils into the proceedings. Aurelio breathes heavily and audibly, and his single eye often disappears for long stretches behind its closed lid. Aurelio's whole demeanor expresses concentration of mental effort. From first to last he manifests no unmistakable symptoms of trance or inebriation, but by this we do not wish to be understood as denying psychic effects from the mushrooms. Here is a matter that calls for serious study under controls.

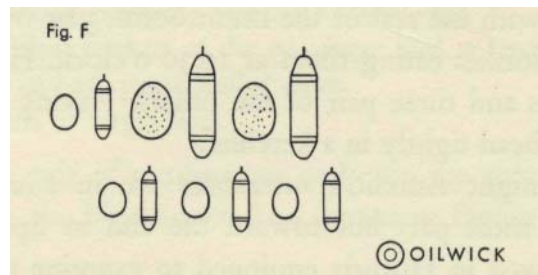
Immediately after consuming the 14 pair of mushrooms Aurelio takes the

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amate, rips off a part of a *guacamaya* feather, places it on the paper near the edge, and along with 13 cacao beans wraps it tightly in the paper, the end of the feather extending beyond the paper wrapping. He makes a neat little bundle, which he ties up with cotton threads that Clara has been preparing for him (Figure E). He puts the parcel by the side of one of the turkey eggs. He repeats this



with a second parcel and the second turkey egg. He puts the eggs back where they have been with the two parcels lying between them. Then Aurelio makes four smaller bundles, cutting out small rectangular pieces of *amate*, wrapping up in each one the piece of feather and five (instead of 13) cacao beans. The six parcels and the eggs are now disposed of as in Fig. F. We assume that the inebriat-



ing mushrooms are producing the desired effects while Aurelio busies himself with these duties.

Aurelio rolls up his sleeves, takes the *pisiete* or finely ground green tobacco, rubs it on his forearms, then on his exposed belly, the top of his head, and the back of his neck. He takes matches and places them beside the eggs. He picks up the kernels of maize and casts them with the right hand. He pauses as in thought, breathes deeply and audibly. He rises and then sits down on the stool, wrapping his sarape around him. He sits in thought. He asks where Peter is, and RGW replies that Peter is in Boston. It is now 11.05 o'clock.

Aurelio rises and goes to the dark corner near the door, where he sits down

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on a chair. The last waxen taper is now extinguished and we remain in complete darkness until 1.05 o'clock in the morning. The storm breaks on Huautla. Aurelio spits on his hands and rubs them together. He asks where we left Peter, in whose house. We tell him. He asks if it is agreeable to us that he should ask these questions, and we say yes. At about this time the shooting and the running by our hut take place.

Wrapped in his sarape, Aurelio sits on his chair deep in thought. He asks a series of simple questions about Peter, says he has trouble seeing Peter because he is so far away in a city big and strange. Finally he says that Peter is alive but 'they' are reaching out for him to send him to war. Possibly 'they' won't 'get' (= *agarrar*) him, but it is hard to say. Germany seems to enter into the situation.

Then Aurelio declares that Peter is in New York, not in Boston; that Peter's thoughts are on us, that he is in a turmoil, that he is well but in a difficulty that he can hardly cope with, that his thoughts are on us to the point of tears, that he is stumbling, that he is not used to this difficulty where he finds himself, and does not know how to go about writing us about it. Then Aurelio says suddenly that we may smoke, and the room is soon illuminated faintly by two cigars.

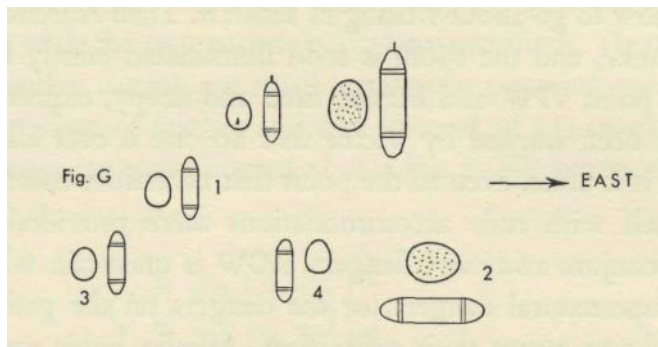
At about this point VPW and Masha, tired and sleepy, express a wish to go home. We have been warned by Victor that no one is ever allowed to leave the ritual before it is done, even to the point that necessities must be performed in the room itself with rude accommodations there provided. But Aurelio says that he can conjure away any dangers. RGW is uncertain whether Aurelio is referring to supernatural dangers, or the dangers on the path to the other house. Apparently to assure their protection, Aurelio holds each of them in turn for a long time by her right forearm, rubs the forearm with *pisieta*, and takes the pulse *with his thumb*. (Physicians always take the pulse with the fingers, for in the thumb there is a pulse beat that would confuse the count of the patient's pulse.) Demetrio accompanies them through the *milpa* to the cottage.

At 1.05 Aurelio lights the four tapers and contemplates the flames. He gives to Don Roberto and RGW a piece of copal each, stirs the embers in the potsherd, asks us to throw our copal on the embers, and under his breath utters a prayer or incantation. He asks us if we believe in one true God, and we so affirm. He holds the four tapers in his two hands, and then asks Demetrio to hold them, declaring then that nothing bad has happened to Peter. He asks how many are present - "Only four?" He asks whether one o'clock has passed, and when we say yes, he comments, "*Ya es buena hora*" -now a good hour has come. Then he asks RGW whether he believes in all that is going on here. Inexperienced,

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RGW begins to reply weakly that he thinks he believes, whereupon the experienced Don Roberto overtakes his words and in a deep, resonant, loud voice declares, "*Creemos*". Then Aurelio declares in a sure voice that nothing is wrong with Peter and that all goes well. A little later he says that what we are all witnessing is "*muy delicado*" - most perilous, and that of course we are not used to all this. He says that he can render treatment in absentia on our behalf, after we leave Huautla, and in fact he recommends that we ask him to do this. It is now 1.30 o'clock.

Aurelio mixes the maize kernels in his two hands, casts half of them and then the other half, and then all the kernels at one time, and then all the kernels a second time. He places one of the hen's eggs toward the left side of the cloth and casts the kernels for the fifth time. He places one of the large eggs on the right hand side, and points it in the direction that he says is east. He asks RGW when he will arrive in Mexico City and whether he has a house there. He casts the kernels again, for the sixth time, and then arranges the eggs and bundles in the fashion indicated in Figure G. Then he declares that a relative of RGW



is destined to fall seriously ill within the year, and he gravely fixes on RGW his single eye. It is now 1.45 o'clock.

Demetrio replenishes the supply of copal in the potsherd. Aurelio leaves the room a moment, taking some *pisieta* with him. He returns and again casts the kernels. One kernel happens to stand on end. Aurelio concentrates his attention on it, saying it is RGW's son. Then he repeats that a relative of RGW is destined



to fall ill within the year. Then he asks RGW whether he can carry bundle no. I to his home and keep it for 13 days, along with the corresponding egg. On the 14th day RGW may throw them into water or bury them. Aurelio takes one of

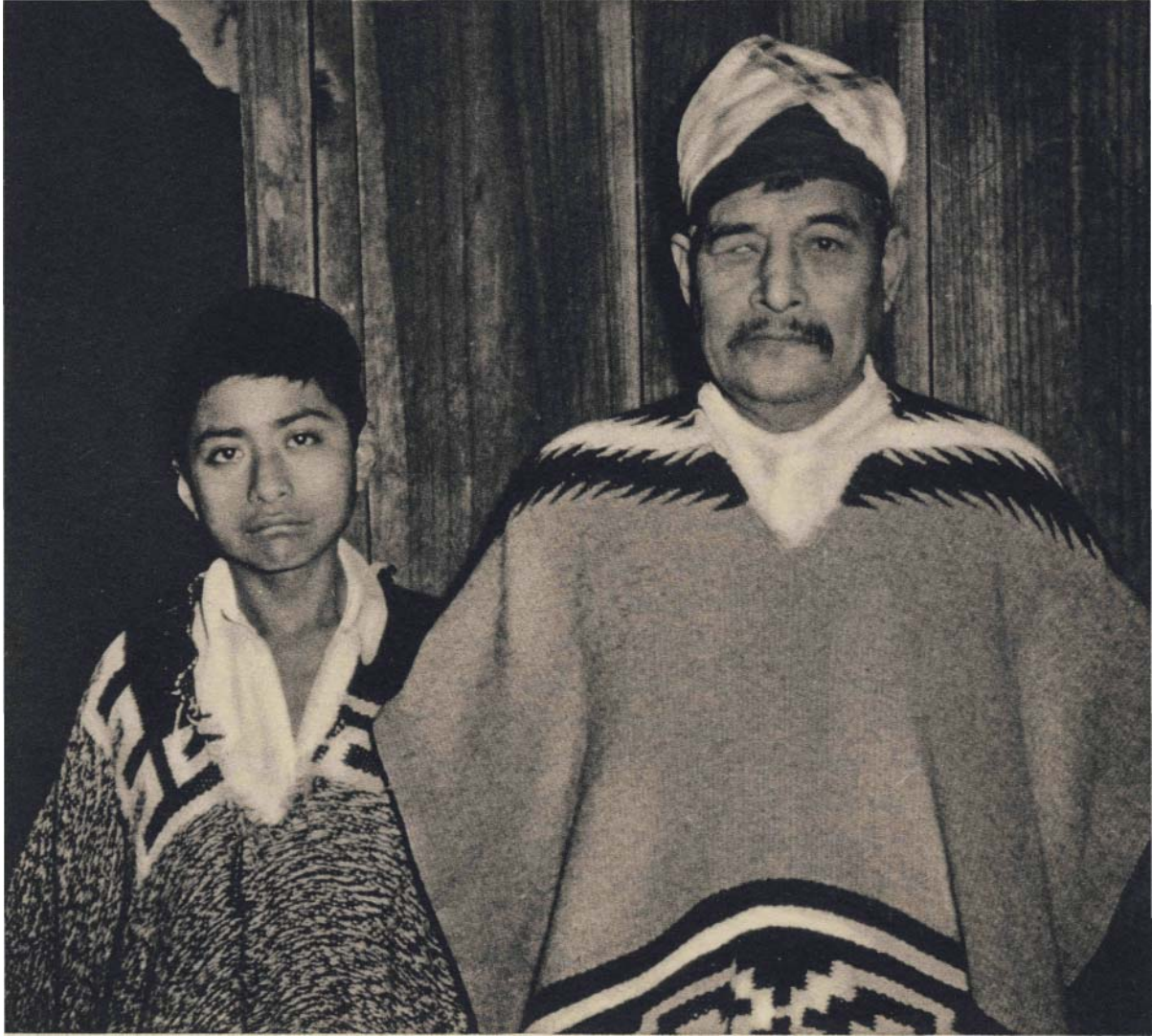
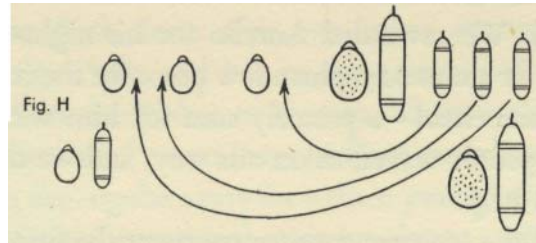


PLATE XLII. Aurelio Carreras, curandero, and his son Mauro.
Huautla de Jimenez, July 5, 1955.

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the turkey eggs and to the blunt end affixes a small lump of copal, which being hot and soft appears to adhere to the egg shell securely. He does the same with each of the hen's eggs and finally the other turkey egg. He places the eggs and



bundles as shown in Fig. H, but immediately shifts three of the small bundles to the places shown by the arrows. It is now 2.10 o'clock.

In another potsherd Aurelio stands the four tapers upright, and he asks RGW to sit on the chair and roll up his sleeves. Aurelio passes the potsherd with embers over RGW's head, along with two of the eggs and two bundles, praying the while, and then he gives the two bundles and eggs to RGW to hold in both his hands. He passes the potsherd under RGW's hands, and Demetrio stirs the embers. Aurelio then passes the potsherd with copal over RGW's head, then over the ground, then over his head and under his hands, repeating all this several times, relieving RGW of the eggs and bundles but only to hand him another pair of eggs and bundles; asking him then the name of his daughter and repeating the various passes, always making all the passes counter-clockwise. Then Aurelio empties the paper containing the stubs of mushrooms into the fire of the potsherd. He gives this little paper bag to RGW along with a second one, both containing now some *pisiete*, and he says to RGW that they contain something good from St. Peter and St. Paul. At this stage in the night Aurelio is speaking Spanish or Mazatec, passing from one to the other without apparent reason, and he addresses RGW with the familiar *tu* instead of the formal *Usted*. It is now 2.25 o'clock.

Then Aurelio gives RGW certain specific instructions. The turkey egg with copal on the blunt end is for him, and similarly a chicken egg for VPW, each with its respective bundle. These are to be held for 13 days, and then the eggs must be buried with the pointed end down and with the corresponding bundle buried next to each, perpendicularly, the bundle to be carefully placed on the *eastern* side of the respective egg. In the course of the closing phases of the ritual, Aurelio observes that *pisiete* is excellent for stomach troubles and that one may eat a little of it. He himself puts something in his mouth, between teeth and cheeks, and presumably this is *pisiete*.

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At 2.30 o'clock the session draws to a close, and Don Roberto with RGW leave the house to return to their own.

Before 7 o'clock on the following morning we were all in the saddle and away. Aurelio and Herlinda had arisen betimes, Herlinda to serve us breakfast and bid us godspeed. We rewarded Aurelio for his night-long vigil with us, giving him 120 pesos or about \$ 15, plus a few pesos for the cost of the accessories that he had used in the ritual - a princely sum for him which we did not begrudge. These good people waved us on our way, and we shall long remember their friendliness and help.

On our way out of the Mazatec country we spent the first night in the village of San Bernardino, lodging with the owner of the general store, Dona Toribia Cid de Mendes. This is the village, perched high on the edge of the mountains, that looks far down over the low-lying plain to the west of the Mazatec country. After we had eaten our tortillas and eggs and as we sipped our coffee and mescal, Dona Toribia captured our attention with stories of the Mazatecs. She was herself a Spanish-speaking Mazatec from Mazatlan. Before long she got on the subject of the miraculous mushrooms, and she went on and on until late in the night about the miracles they had worked in those mountains to the east, now sleeping in darkness, until in the end it seemed as though the very hills themselves, where the little mushrooms grow, were bewitched by them.

Jhlere we should prefer to bring our story of Huautla to an end, but candor compels us to add a few more lines. Our attitude toward the divinatory performance and especially the oracular utterances had been one of kindly condescension. We said to ourselves that it was cruel on our part to ask Aurelio, locked up in his unlettered Indian world, to enter understandingly into the problems of the Wassons of New York. His divinatory powers, put to this appalling test, had seemed to us pitifully thin, but of course we had duly entered in our notes all that he had said. In brief, he had declared that Peter was not in Boston but in New York, that Peter was alive but in a deep emotional crisis and longing for our help, and finally that the army was reaching out for him and might yet get him. There was a hint of foreign military service - Germany was mentioned. Later in the night Aurelio predicted ominously that a member of the Wasson family would be gravely ill within the year.

We reached home in the second week of September. In the kitchen of our New York apartment we found the leavings of a party that during our absence Peter and his friends had held. The bills from the purveyors supplied the date: the weekend of August 15-16! Peter easily confirmed this when we saw him.

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Laughingly we credited the sacred mushrooms with a hit, a palpable hit, and then gave the matter no more thought.

Aurelio's prediction about the army had seemed badly aimed. After all, Peter at the age of 17 had enlisted in the National Guard, and this gave him exemption from the draft. Soon after our return to New York, RGW left for Europe on a business trip, and late in the morning of Monday, October 3, he arrived at the Hotel du Rhone in Geneva. There a cablegram from home awaited him with sensational news: Peter had just made known his settled determination to enlist in the regular army for a three year term. He had come to this decision after a prolonged emotional crisis involving a girl, and that crisis, we now learned, had been boiling while we were in Mexico. Would RGW please send a cablegram at once begging Peter to postpone his rash step ? RGW sent the message but, before it reached Peter, he had signed up. The army, after all, had reached out and got hold of him! At the moment of the October crisis our thoughts were so far removed from Huautla that days passed before suddenly Aurelio's pronouncement came to mind. Another hit, a palpable one indeed!

A few months later, after the usual training period, the army sent Peter abroad for duty, but to Japan not Germany.

There remained one final prediction: grave illness was to strike the Wasson family within the twelvemonth. (In the Mazatec world the 'family' embraces all the kin.) This seemed on its face unlikely, for our families are unusually small. No one of the previous generation survives. VPW had only a brother and a sister and some nieces, as well as a few cousins and their children. RGW had only five first cousins and four first cousins once removed. In January one of RGW's first cousins, in his 40's and abounding in vitality, suddenly died from heart failure.

We record, as in duty we are bound to do, but without further comment, these strange sequelae to our Huautla visit.

On January 14, 1954, Robert Weitlaner wrote us exciting news: his daughter Irmgard Johnson had recently returned from a journey through the Mije country, and in San Juan Mazatlan a *curandero*, through an interpreter, had told her about two kinds of sacred mushrooms. The Mije are known as a remote people, shut off from the world and in turn disposed to shut out the world. Among them the mushroom cult might manifest archaic traits, and in any case would give us perspective on the Mazatec practices. Would we care to join him on a second pilgrimage in quest of the secrets of the sacred mushrooms ? The proposal was too tempting to resist, and through further correspondence

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the details were worked out for a fast incursion into the Mijeria, as the land of the Mije is called.¹ It proved impossible for VPW and Masha to leave New York, but others were recruited to take their places. Allan B. Richardson, a friend and photographer of New York, eagerly accepted the challenge and prepared himself to serve as official photographer. The Summer Institute of Linguistics consented to let Walter S. Miller join us: a professional linguist, he is the foremost student of the Mije language and culture. For guide, Don Roberto enlisted Francisco Ortega, known as Chico, a thirty-nine year old Zapotec living in Tehuantepec, whose extraordinary talents and character have given him an outstanding reputation among all who explore seriously in the remoter regions of Oaxaca and Chiapas. He in turn engaged a boy named Filemon to help with the animals, three horses and a mule.

Among those who know about the Indians of Mexico, the Mije enjoy a legendary reputation. It is said of them that in the old days of Zapotec power, centuries ago, the Mije stood off the Zapotecs, and the Spaniards never subdued them in war. They are seldom visited. Even famous writers about the Mexican Indians like Miguel Covarrubias discuss them by hearsay, never undertaking the arduous journey to their mountain villages. Their language for Europeans is of the utmost difficulty, with stress, quantity, and tone, palatalization, glottal stops, retroflexion, and numerous consonants unfamiliar to English or Russian ears. It belongs to a group of which the others are the Popoluca of Vera Cruz, Zoque, and the dying or extinct Tapachultec. Some 60,000 in number, the Mije live in the mountains of northeastern Oaxaca, these mountains rising to their peak in the famed Zempoaltepetl, almost 3,400 meters high. These mountains constitute part of the rugged massif where the Mazatecs live also, but the two peoples are far removed from each other. By comparison the Mazatecs are well advanced toward incorporation in the great world, and the two peoples are separated from each other by no less than three tribes. Next to the Mazatecs on the east live the Cuicatecs, then the Chinantecs, then a swath of Zapotecs, and at last come the Mije. To the east of the Mije lie their kin the Zoques in Chiapas and the whole world of the Maya. For us it might prove significant that this people shut off from the world had always been a culture contiguous with the Maya tribes. The reputation of the Mije is that while not aggressive they are uncommunicative with outsiders and even surly. For the most part they live at altitudes below 1,500 meters, and their mountains are clothed in

i. We use the spelling 'Mije' rather than 'Mixe', favored of scholars, because the value of the 'j' is that of standard Spanish, whereas 'x' in Mexico represents any of three consonants. The Mije must not be mistaken for the unrelated Mixtecs, of course.

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tropical vegetation and abound in wild life. They live on maize and beans, chickens and turkeys, and they sell to the outside world a small amount of good coffee. In all of the Mijeria there is not a single road for wheeled vehicles.¹

On Friday, May 21, RGW flew to Mexico City with Allan Richardson. On the following day, by the gracious generosity of the Banco Nacional de Mexico, the bank's De Havilland Dove with Captain Carlos Borja piloting lifted us to the airstrip at Ixtepec in the Isthmus, having stopped at Oaxaca on the way to pick up Walter Miller. At Ixtepec we met Don Roberto and Chico. After laying in some provisions at Ixtepec and Juchitan, we drove by car eastward along the Pan American highway, then north on the Trans-Isthmian highway, and finally westward down an execrable road through Laguna to Santo Domingo Petapa, a stretch of about fifty-five miles. This Zapotec village was our stepping-off point. Next day we set out for San Juan Mazatlan, sometimes called Mazatlan de los Mijes. After a long day we spent the first night sleeping in the school house at Platanillo. Then followed another long day of slow progress up mountains and down, and across arroyos. We slept the second night in the forest, and the following day shortly after noon we entered Mazatlan. From Platanillo to Mazatlan we had met only four Indians and had not seen a single habitation.

We happened on Mazatlan during the annual fiesta in honor of the Virgen de la Soledad. The village was thronged with Indians bedecked in their finest garbs and there was much music, dancing, and drinking. The thatched houses of the village, perhaps two hundred in number, are strung along the ridges of radiating mountain spurs, the mountain sides themselves being clothed in tropical vegetation and alive with brilliantly colored and highly vocal birds. On all sides the distant horizon is closed in with superb mountains. The altitude of the town is about 3000 feet.

We made our way to the Municipio, where we found the Presidente, the Secretario, and the Sindico busily engaged in supervising the progress of the fiesta. They received us with reserve, but after we showed our credentials they informed us that we might occupy the *curato*, the house that would belong to the priest if there were one, a one-room thatched adobe structure adjacent to the thatched church. This suited us admirably, and there we stayed for six

I. There exists one excellent study of the Mije and their culture, *Ethnology of the Western Mixe*, by Ralph L. Beals, University of California Press, 1945. Being of Anglo-Saxon origin, this excellent and respected ethnologist naturally failed to inquire about the role of mushrooms in the Mije culture. The divinatory cult completely eluded his attention. He dealt only with the western Mije, in Ayutla and thereabouts. The Popoluca-Zoque cultures were described by Frans Blom and Oliver La Farge in *Tribes and Temples*, Tulane University, Louisiana, 1926. They also seem to have made no ethno-mycological inquiries.

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days while we pursued our inquiries and took photographs. Allan Richardson with his cameras proved a sensational attraction for the Indians, whose reserve broke down as they besought him for *retratos* or 'portraits', and paved the way for our inquiries. We found that there were eleven *curanderos* in Mazatlan, four of them women. We talked with four of the men. Don Roberto and RGW called on one of the oldest, Francisco Policarpo, in his home, where we found him reclining in his hammock. He knew no Spanish, and through a feeble interpreter we finally learned that in his practice he had long since given up the use of mushrooms, relying instead on a certain *bejuco*, a plant of some kind, either a creeper or a climber, perhaps the *ololiuqui*. We also visited the *curandero* from whom Irmgard Johnson had learned in January of the use of the divinatory mushroom among the Mije, a discovery for which priority goes to her. She had known him as Francisco Jose, but with us he was Francisco Claudio. He remembered Mrs. Johnson's visit well. He spoke almost no Spanish, and his brother Alvaro was to interpret for us, but Alvaro was so sullen that our interview was a failure. We were fortunate, however, when another of the *curanderos*, Manuel Agustin, came to us with various ailments for treatment: Walter was skillful with massage and manipulation, and also relieved his pains with analgesics, whereupon the old man answered patiently all our inquiries. The *Vocal* of the town, Felipe Luciano, a leading citizen, also proved friendly, and persuaded the *curandero* Timoteo Quirino to discuss mushrooms with us. In addition to these local informants, we were the beneficiaries of a windfall, a delegation from another Mije village of whom we shall speak later.

The divinatory mushrooms play a role among the Mije as important as among the Mazatecs, with many similarities and many important differences. Like the Mazatecs, the Mije always speak of these mushrooms in pairs. For 'pair' they use in their language a word borrowed from Spanish, *casada*, which is invariable as to number and which in Mije is used only when 'pair' means a couple of opposite sexes. Here then is evidence suggesting that in the Middle American mushroom cult, the habitual pairing of the sacred mushrooms carries a sexual connotation. For this there is support also in a folk tale from the town of San Lucas Camotlan, which we shall recount shortly. But we must add that in Mazatec the word for a 'pair' of mushrooms, *nka*², has apparently no sexual association.

In Huautla our *curandero*, as he ate the mushrooms, bit off the caps and all but the butt of the stipes, chewing them thoroughly and then swallowing them. Among the Mije this is done differently. The caps are severed by hand from the stipes; the stipes are firmly attached to the caps and, for their size,

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tough. The stipes are put back into *thc*jicara or gourd bowl, while the caps are quickly swallowed, without chewing, one after the other. If the mushrooms do not take effect, then the suppliant addresses a prayer to the stipes in their *jtcara*, and eats more caps. Afterwards *the jicara* with the stipes is carried to a nearby cross and there, reverently, the stipes are spilled out as an offering, and a *vela* is lighted. All of our informants stressed the separation of the caps from the stems and the separate use of each.

The mushrooms come only during the rains of June and July, and they can be kept in a dried condition for only fifteen or twenty days. This limits their use to a short season. We arrived unhappily before the rains and we saw no specimens, nor could we see them in use. We were told that in the hot low country the mushrooms do not grow. The atmosphere of secrecy about the mushrooms that was so striking in Huautla is less heavy in Mazatlan, perhaps because this remoter people had never come under such close control by the ecclesiastical authorities. Indeed, there seemed no particular reluctance to discuss the mushrooms. On the other hand, the mushrooms are consumed in private, in the dead of night, if possible under conditions of absolute quiet, usually with only two persons present, the one who eats them and another. As in the Mazatec country, among the Mije we discovered no trace of a communal agape such as the early writers described.

In Huautla the *curandero* eats the mushrooms on behalf of his patient or client. Here lies the vital difference with the Mije. For in the Mije country the *curandero* never eats the mushrooms, except as he himself may wish to consult them. The sick person eats them, or the person who seeks tidings of absent relatives or help in finding lost and stolen property. Among the Mije the divinatory mushroom carries no hieratic attributes; it is secular. Everyone knows how to use the mushroom and the *curandero* is not usually a party to the performance.

Like the Mazatecs, the Mije possess a general term that embraces all of the divinatory species, but unlike them the Mije consider these species as a subdivision of the order of mushrooms. In Mije the word for 'mushrooms' is *mus*, and the collective word for all divinatory mushrooms is *na :swin mus*, of which the first word means the World, the Universe. This word enfolds a curious figure of speech: *na:s* means 'ground' and *win* means 'eye'. (Here and in other words the colon means that the preceding vowel is long in quantity.)

Manuel Agustin, an old man, disclosed to us a surprising fact: for *na:swin mus* there is a synonym, *tu:muh*. Our friend Felipe was helping Walter as our interpreter with Manuel, and Felipe changed the word to *tu:m 'ungk*, which another elder of the town, Geronimo Antonio, later confirmed. They and

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others knew the word and its meaning, and they all agreed that its inner sense was 'that which is born of itself', *lo aue nace por si mismo*. Here is the same figure that we find in the Mazatec *si³to³1 Tu:m* of itself means nothing in Mije and occurs elsewhere only in the distinctive Mije calendar of day names, where in the complicated rotation of the native calendar it might turn up in the combination *tu:m 'uh*. The term seems to be an archaism, with mystical implications that will have to be explored by further study.

Both Manuel and Timoteo agreed that there are three species of divinatory mushrooms, and their descriptions tallied also:

1. *pi:tpa*, 'thread-like', the smallest, perhaps two horizontal fingers high, with a cap small for the height, growing almost anywhere, often by the side of the mountain trails. Where one is found more should be sought. The cap is yellowish above and blackish below, and hemispherical.

2. *atka:t*, 'alcalde' or Mayor; like the *pi:tpa* but bigger, three or four fingers high, with a flatter cap.

3. *kong* or *kongk*, the 'chief or 'head-man', which is the biggest, perhaps eight fingers high with a stem $\frac{1}{2}$ inch in diameter, the color of the cap being more yellow than the others.

Our informants agreed that the three kinds differ as to species and not merely in age. They agreed that these mushrooms, eaten raw (either fresh or dried), have an agreeable odor like flowers. The taste is like nothing else. One informant said that in the throat they felt like soda water. As for the dose, every man figures it out according to his tolerance for *mescal*. Of the *pi:tpa*, some take six pair, but others take eight, ten, or even twelve; of the *atka:t*, from three to six pair; of the *kong*, if two mushrooms are available, one eats around the edge of the two caps; but if only one is available, then one entire cap.

Anyone may gather the mushrooms. On finding them you may send a sigh of thanks to God, but this is as you please. On the evening when they are to be eaten, toward nightfall, you carry them in *ajicara* to the church. If the church is locked, you seek out *the fiscal* or *mayordomo* and he opens it for you. On the altar you place the *jicara* with the mushrooms, and burn *copal* or incense, and either one *vela* or three. You invoke God's blessing and his permission to consult the mushrooms, and you promise him alms, one peso or two or two and a half. Then you bear the mushrooms to the house. A house on the edge of the village is best, where all will be quiet. You place the mushrooms in *the jicara* on the ground before the household altar, with one *vela* burning. Someone now goes back to the church with the promised alms.

The person who is to eat the mushrooms has been on a ceremonially restricted

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diet for four days. According to Timoteo, for four days you cannot take coffee or liquor, nor eat of any fowl, nor eggs, nor anything fat, nor flesh of pig. But you may eat beef and beans and maize (*tortilla* and *atole*), and cheese. During this period you must have no carnal relations. On the morning of the appointed day you may breakfast on the fourth part of a tortilla, a little *atole*, and a bite of cheese. From then on you fast, eating no lunch or dinner or supper, so that you eat the mushrooms on an empty belly, *barriga vacia*. Then for the four ensuing days you are on the same diet. A woman with child must never take the mushrooms, for she is sure to go raving mad for good, but they cause no abortion. Our informants were ready with specific instances where this person or that had gone mad for breaking the rules. There was that woman in Platanillo, for example. Being ill, she took the mushrooms, and then, feeling better, she ate chicken forthwith, whereupon she went mad. That was around 1947. She wandered raving through the Mijeria for a long time, until finally she disappeared in the mountains. If a woman with child needs to consult the mushrooms she may take them vicariously, a relative or friend eating them for her.

The reader will observe that the Mije sense no impropriety between the ancient cult of the divinatory mushroom and the cult of the Christian God. In Mazatlan the pagan and the Christian legacies - the latter a comparatively recent innovation - seem fully blended, to a degree remarkable even for Latin America. No priest is in residence in Mazatlan and visits by one are rare. The Sunday services, well attended, consist of readings by a cantor, while the *curanderos*, men and women, at the very altar, under the compassionate countenance of the Virgen de la Soledad, treat the sick and infirm and halt with prayers and ritualistic gestures and the application of eggs to the ailing organs according to pagan rites of great antiquity. To all this we ourselves were witnesses.

Now we return to the mushroom ceremony. It is night and you hope that all will be quiet. You have eaten the mushroom caps, swallowing them fast, one after the other. The stipes lie in *thejicara* on the ground in front of the household altar, with one *vela* burning. You and a friend or relative are alone, the second person to watch over you and listen to you, but he says nothing. If the mushrooms work, they work rather fast, in fifteen minutes or a half hour. If they don't work, then you make supplication to the stipes, and perhaps light three *velas* instead of one, and perhaps then they will work. When they work, you begin to talk and you ask questions of the mushrooms and the mushrooms answer. You go on and on with this dialogue until the cock crows, when the talking ends. The person who is with you hears everything but never says anything. It is good to have a relative or friend with you. The whole performance

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is *muy delicado*, not to be taken lightly. If someone happens to pass by and perceives what goes on, he withdraws quietly. Afterwards you are faint and weak, and for a time you cannot walk, but you remember all that was said.

When the mushrooms do not work one should look for either of two explanations. Perhaps there was an interruption. Any undue noise, the wailing of a cat, the braying of an ass, a child bursting in - these things are enough to put the mushrooms off. Or again if the person eating the mushrooms has spoken ill of them, or even thought disrespectfully of them, there will be no success. If he is guilty of this sin, then the mushrooms cause him to see horrible visions of snakes, *tigres*, and such like. But when all is well, then he who eats the mushrooms begins by invoking San Juan, the patron saint of Mazatlan, and then says the Pater Noster, the Credo, and the Confiteor,' and the mushrooms begin to speak, and they are likely to answer not merely the questions put, but all other questions too. Manuel remembers when the prayers were all said in Mije, but now they are said in Spanish, even by people who know no Spanish. All is according to the ordinance of God and the World, says Timoteo. Here again the World - *na :swin* - appears. With good fortune a virtuous man hears music and may see heaven. As the evening wears on, the mushrooms themselves dictate the program, ordaining such things as the number of *velas* to be lighted.

In Mije the cap of the mushroom is called the 'head' - *kobahk* in the dialect of Mazatlan. The top of the cap is the *kopk* or summit. The stipe is the *tek* or leg. The edge of the cap is the '*ai*, 'leaf. It will be recalled that in the case of the *kong*, sometimes only this edge is eaten. The lamella or gill is *pa:t*. Let the reader bear in mind that the cap or pileus is called the 'head'.

To the south of Mazatlan, ten hours away by foot, lies the Mije village of Santa Maria Nativitas Coatlan. One of Walter's colleagues, Searle Hoogshagen, is working there, and we had been in Mazatlan only a few hours before he called on us. Moreover, on his bidding two Mije boys of Coatlan came too, Severiano Sanchez, age 33, and Candido Faustino, age 25. Both of these young men proved first rate as informants, speaking Spanish and understanding the purport of our questions. They described vividly the effect of the mushrooms, how the eater behaves like a drunken man, and how he carries on both sides of a colloquy, posing questions to the mushrooms and then voicing the mushrooms' answers, for hours on end, in the presence of a relative or friend. They also knew the *pi:tpa*, the *atka:t*, and the *kong*. Of the former the dosage in Coatlan is significant-for children, 6 pair; for grown-ups, 9 pair, or if this be not enough, 13 pair, or at most 18. The dosage jumps thus from 6 to 9 to 13 to 18. According to native belief, the World or Universe - *na :swin* - is served by nine Lesser

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Servants and by thirteen Major Servants. The nine pair and the thirteen pair of mushrooms represent the Lesser and the Major Servants. The word for 'Servant' is *tungmi:tpa*. Is it a coincidence that the Mije calendar has eighteen months, and that the Mije week consists of thirteen days, each with its name? A number of other native calendars in Middle America likewise divide the year into eighteen months and the week into thirteen days. Dr. Borhegyi makes a further observation. In the cosmology of the Maya there were nine gods of the Underworld and thirteen gods of Heaven. Are not these the Lesser Servants and the Major Servants of the World of the Mije? If so, we discover here a significant cultural correspondence between the Mije and the Maya.

Candido and Severiano told us an extraordinary story of a recent development in the use of the divinatory mushroom in their town of Coatlan. These boys, cousins, have an uncle, Feliciano Faustino. In former times only the *curanderos* knew the secrets of the mushrooms, but this changed in 1943, when their uncle, Don Fehciano, took in hand a famous *curandero* of the neighboring town of Santa Margarita Huitepec, by name Pe:t Murnt. (Pedro Mundo in Spanish, 'Mundo' rendering the Mije word *na:swin*.) One day at about three in the afternoon Don Fehciano with *mescal* put Pedro Mundo into a state where he disclosed all the secrets of the mushrooms, and straightway the whole of Coatlan learned the story. From that day on the use of the divinatory mushrooms in Coatlan has become general, everyone invoking the aid of the *na :su>in mus* when they are available and needed. Both Don Feliciano and Pedro Mundo are still alive and they will tell you about all this. (We do not-question the good faith of our informants when we suggest that their story is a myth-in-the-making to explain the secular possession of holy mysteries.)

Long before Walter Miller had heard of the mushroom cult or of us, he was living in the Mije town of Camotlan, twenty walking hours to the west of Mazatlan.¹ There he had put down on paper the folk tales that he heard from the mouths of the Mije, and in the course of that work he came upon tales of strange mushrooms, some with a power to heal, and others divinatory, and others of a kind to drive people mad for good. Here is what he heard:

I. Enigmatic but relevant to our theme is the following information supplied by Walter Miller. Just to the east of Camotlan, in the *llano*, there is a hill (*kopk*) that the people call *muzut kopk*. No one recalls the origin of the first part of this name, but it could be *mus hut*, 'mushroom cave'. In this hill there is a cave that the villagers call *muzut hut*. The supposition suggests itself that the hill was called after the 'mushroom cave', and long afterwards, when the origin of the name had been forgotten, the cave in turn was called after the hill. Deep in the cave the floor is strewn with fragments of ancient pottery and other artifacts, but there are no representations of mushrooms. A local informant has told Mr. Miller that on the top of the hill can be seen a stone shaped to resemble a gigantic spindle whorl, *malacate*.

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Of mushrooms there are various kinds. One kind has been used as a medicine, says Jose Trinidad. His own nephew, Alefonsa, had been ill for five years with an unnamed illness. He could not walk but moved around on a stool. He would sit in the patio and slide the stool from place to place. Then they gave him a kind of mushroom to eat, and he was cured and began to walk as before.

Jose says there is another kind of mushroom about which there is a belief that it will induce a dream, a particular kind of dream, one in which two *duendes* or spirits appear to the eater, one male and the other female. They talk with him, and he asks questions and they answer. They will tell you where lost things may be found, and name the thief who has stolen something and say where the stolen thing is. When you plan a trip, they will tell you what luck you will have on the journey. Cerilo of Santa Margarita Huitepec has eaten these mushrooms several times. The first time they didn't give the result. Cerilo has a son named Delfino. When he was about to eat the mushrooms, he was afraid and so he had Delfino watch over him. When he had eaten them, sure enough the spirits appeared. He talked with them and asked about the trip he was going to make, for he had five burros and was about to set out for the Isthmus with Delfino. The spirits told him not to go for the burros would all die. They talked about different things. Then the spirits said, 'We must go, for the cock is crowing.' The spirits disappeared and Cerilo awoke. Straightway he asked his son if the cock had crowed and was told that it had. But he didn't believe the spirits and went on his trip anyway. Just as the spirits had said, all five of his burros died on that trip.

Another who used these mushrooms was a woman of Camotlan named Rosa. She was of a family from Zacatepec who had moved to Camotlan to live. Later she lived with her own father as his woman. He finally died in Huitepec. So Rosa ate the mushrooms and began to tell the people that the world was coming to an end. And she began to say that she was the mother of the Virgin. She was really deceiving the people very much. Many folk went to her place daily and there they were all day, waning and weeping about their sins. Then some of the younger ones who had been to school talked to the town authorities and got them to threaten to jail her if she didn't stop it. The authorities told her they'd run her out of town if she ate any more of those mushrooms. Why, people were taking offerings to her and getting her to pray for them. That was in 1945. She stopped it then, but some say she seemed to go crazy and wandered around in the woods. She died several years later.

Here end, for the present, our notes on the role of mushrooms in the Mije culture. On Monday, June 1, we set out on our return journey, and Allan Richardson and RGW reached New York on June 5.

We have now brought to a close our account of the divinatory mushroom cult in Mexico, insofar as it is known to exist today and is recorded in the annals. Here we would stop, were it not for evidence of an order different from anything so far mentioned, evidence that, if relevant, vastly extends the former range of the Middle American mushroom cult both in time and space. If this enigmatic



PLATE XLIII. Mushroom stone. Attributed to early classic period, Highland Maya, c. 300 A.D. to c. 600 A.D.
About 30 cm. high. *Zurich, Rietberg Museum.*



PLATE XLIV. Mushroom stone. *New York, Collection of Hans Namuth, Esq.*

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evidence really relates to mushrooms, as we believe it does, a cult of the sacred mushroom goes back among the highland Maya of Guatemala at least to B.C. 1000, and in that area persisted for close to 2,000 years, until the archeological evidence fades out in what is known as the late classic period, around A.D. 900.

On September 9, 1952, Dr. Hans Mardersteig of Verona wrote us that he had observed in the new Rietberg Museum of Zurich a curious stone statuette, about one foot high, representing a mushroom with a human face carved in high relief on the stipe. The Museum attributed this artifact to Middle America but seemed to know no more. It had come to the Museum as one of many items in the collection of a private donor. With this letter and this artifact our inquiries into Middle American ethno-mycology began. We reproduce photographs of the remarkable Rietberg mushroom stone.

By almost the same post Robert Graves sent us a cutting from a pharmaceutical publication¹ referring to the 16th century use of an inebriating mushroom among the Indians of Mexico. This was our first intimation of a mushroom cult in Mexico. At once we embarked on a double-barreled inquiry, pursuing on the one hand the secret of the mushroom stone and on the other hand the cult of the mushroom in Mexico.

From Dr. Gordon Ekholm of the American Museum of Natural History we quickly learned that the Rietberg artifact was one of many 'mushroom stones' known to Middle American archeologists, almost all of them discovered in the highlands of Guatemala, most of them in that part of the highlands now inhabited by the Quiche Indians, but a few apparently found to the east across the border in Salvador and to the west in the Ocosingo region of Chiapas, the Mexican state adjoining Guatemala. We quickly made another discovery. In scanning the references to the mushroom stones in specialized publications, we came upon a reproduction of our Zurich artifact in *Globus*, a learned periodical published in Brunswick, with commentary by the geographer and ethnologist Carl Sapper. The notice appeared in 1898, and it turned out that this Rietberg specimen, unbeknownst to the Rietberg Museum itself, was the earliest mushroom stone to have drawn the attention of the learned world. In its excellent state of preservation and the bold simplicity of its lines, it remains to this day one of the most striking examples of its kind.

Dr. Sapper described the artifact as mushroom-shaped but he did not suggest that the carving might really represent a mushroom. From Dr. Sapper's day

i. CIBA *Symposia*, vol. 5, Feb. 1944, No. n, published in Summit, New Jersey.

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to now all archeologists know these artifacts as 'mushroom stones', but not one has ever come to grips with the possibility that they represent what they look like. Indeed it is customary to set off the designation in inverted commas and the learned writers often add a safety clause expressly saying that of course the designation is only one of convenience. Have we not here yet another example of the subconscious rejection of mushrooms by scholars of the mycophobic West; The pattern is too consistent to be accidental. Gitlow shows no curiosity about the mysterious inebriating mushroom in New Guinea. Prescott in his *Conquest of Mexico*, exercising his editorial discretion, chooses to pass over in silence the inebriating mushrooms of the Nahuatl. Safford denies their very existence with a vehemence suggestive of a violent gastrocolic upset. Beals overlooks the mushrooms in the Mije culture. The archeologists fail to see mushrooms in the 'mushroom stones'. But, after all, are not these the phenomena that we should expect? The anthropological traits of the anthropologists (which of course they ignore) poise them in a precarious relativity vis-a-vis the cultures that they observe with a god-like superiority, and introduce into their findings a big coefficient of defective perception.

As we progressed in our inquiries we made a further discovery. None of the archeologists who had contemplated the mushroom stones had ever heard of the mushroom cult of the Indians in Mexico. Conversely, none of the anthropologists of Mexico who knew about the divinatory mushroom had ever paid attention to the mushroom stones of Guatemalan provenience. Apparently we were the first to suggest (be it noted: we do not *assert*) that the 'mushroom stones' were actually stone effigies of mushrooms, that there had been at one time a cult of the mushroom in the highlands of Guatemala, and finally that the possibility should be considered of a kinship between such a cult and the surviving divinatory rite of the inebriating mushrooms in Mexico.

No sooner had we raised the question of the mushroom stones with Dr. Ekholm late in 1952, than he informed us that a brilliant young anthropologist and archeologist of Hungarian origin, Dr. Stephan F. Borhegyi, was at that moment engaged on the first comprehensive and intensive study of all the mushroom stones known to exist. He was in Guatemala City on a Bollingen Foundation grant, engaged primarily in a reorganization of the collections of the Museo Nacional. We communicated at once with him, contributing our mushroomic suggestions, and thus there began a collaboration that for us was most fruitful and exciting. After our visit to Huautla in August 1953, we motored down through the valley of Oaxaca to Tehuantepec and the famous Isthmus. There, on the airstrip at Ixtepec, the private plane of the Banco Nacional de Mexico

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met us and lifted us to Guatemala City, a few hours away. Thereupon for almost three weeks we devoted ourselves with Dr. and Mrs. Borhegyi to an intensive ethno-mycological inquiry among the Indians of the Guatemalan highlands, to discover whether there was any surviving trace of a mushroom cult.

Dr. Borhegyi had already brought close to completion his minute examination of all the known mushroom stones, totalling more than a hundred. Additional

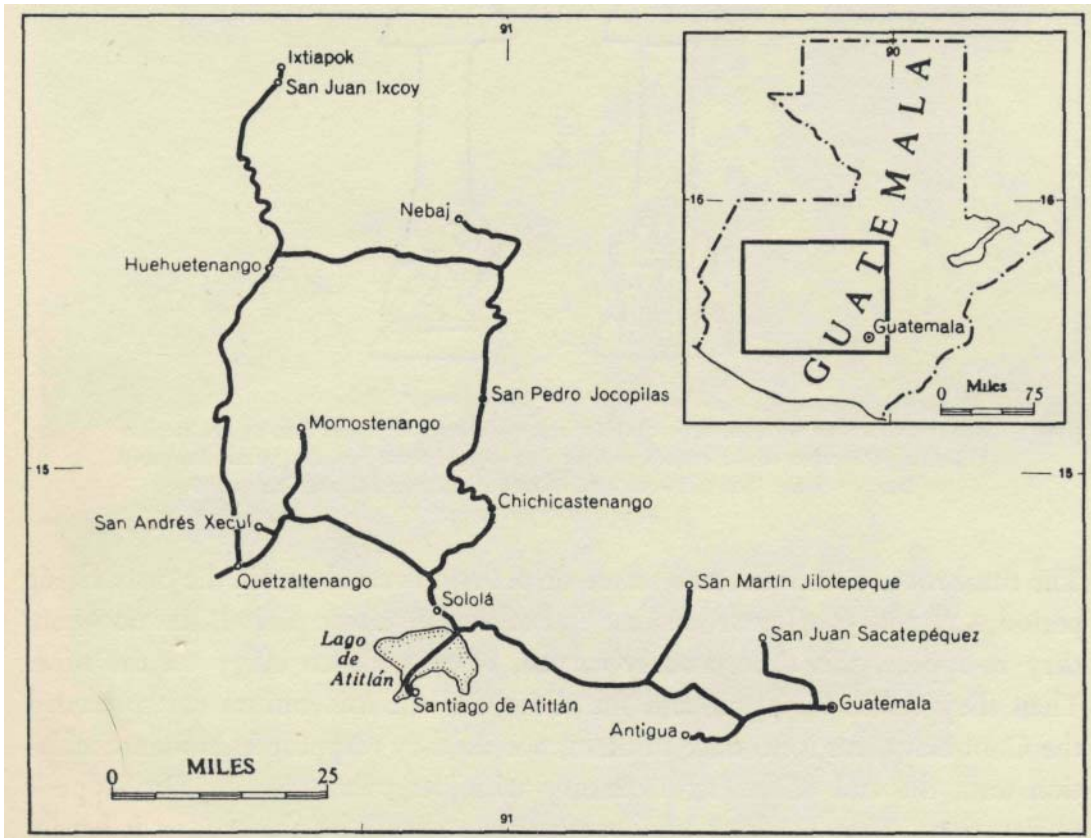


Fig- 17

ones are certain to be discovered as time goes on. They are an extraordinary cultural expression for several reasons. The earliest seem to go back to the period known to Maya students as the early pre-classic or developmental era, in the second millennium B.C. In general the early ones for the layman are the most striking: they are beautifully carved and the figure jutting out from the stipe is often gripping in the vitality of the facial expression. We reproduce one of the best of these, from the collection of Mr. Hans Namuth of New York. This one is late pre-classic, that is, dating from the long stretch of years from B.C. 500 to A.D. 200. The Rietberg specimen appears to be also from the same period. Instead of a human figure, the carved effigy is often of an animal

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or bird - a jaguar, *pisote*,¹ deer, a stylized bird impossible for us to identify, and-here is for us a surprising discovery - the toad! We reproduce by line block the best example of a toad mushroom-stone known to us, in profile and full face. The face itself is anthropomorphic, but the four toes are the sure stigma of the amphibian. Dr. Borhegyi considers this specimen pre-classic.

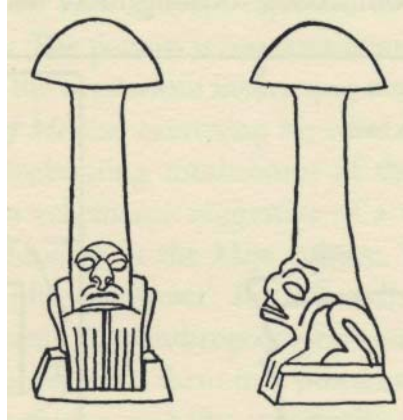


Fig. 18 MAYAN 'TOADSTOOL'

Represents a toad with anthropomorphic face; tentatively identified thus by Dr. Stephan F. Borhegyi because of the crouch and the four-digited front feet. Ht. 35 cm. Probably late pre-classic (500 B.C. -200 A.D.). Cerro Alux, near Mixco, Guatemala. Museo Nacional 2209.

The mushroom-stones become scarce or perhaps even absent in the early classic period, A.D. 200-500, but around the end of the late classic period, A.D. 600-900, they re-appear, this time crudely carved, often with no effigy on the stipe. Then they vanish for good, and for about the half millennium that preceded the Conquest there is no trace of them, nor do they reappear in human circulation until the end of the ipth century with the publication of Dr. Sapper's observations. That the later mushroom stones should be the crudest is hardly surprising: a cult in its pristine vigor expresses itself most freshly.

Dr. Borhegyi has generously made available to us his chart of the mushroom stones, typing them by chronological and geographical provenience, and we reproduce it here for the first time folded in the pocket at the end of our book.

The Maya still live in the Yucatan peninsula, Chiapas, Tabasco, and Guatemala. All of the many Indian languages spoken in Guatemala today, both in the low-lying Peten and the Highlands, belong to the Maya family. In the Highlands there are several linguistic families, but three of the languages form

I. This is the native name of the coatimundi (*nasua narica*), of the same family as the raccoon, a family distinguished anatomically by the fact that the males possess a phallic bone. The *pisote* was associated with phallic matters by the Maya, but no phallus is present in any mushroom stone so far discovered. In Mexico the *pisote* is called the *tejon*.



PLATE XLV. Cayetano's House, Huautla de Jimenez. June 1955.

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a contiguous and kindred nucleus, the Quichoid family - the Quiche, Kakchiquel, and Tzutujil. Most of the prehistoric mushroom-stones have been found roughly in the area known today as the Quiche and Kakchiquel country. We visited Indian villages of these three peoples, and also Nebaj and San Juan

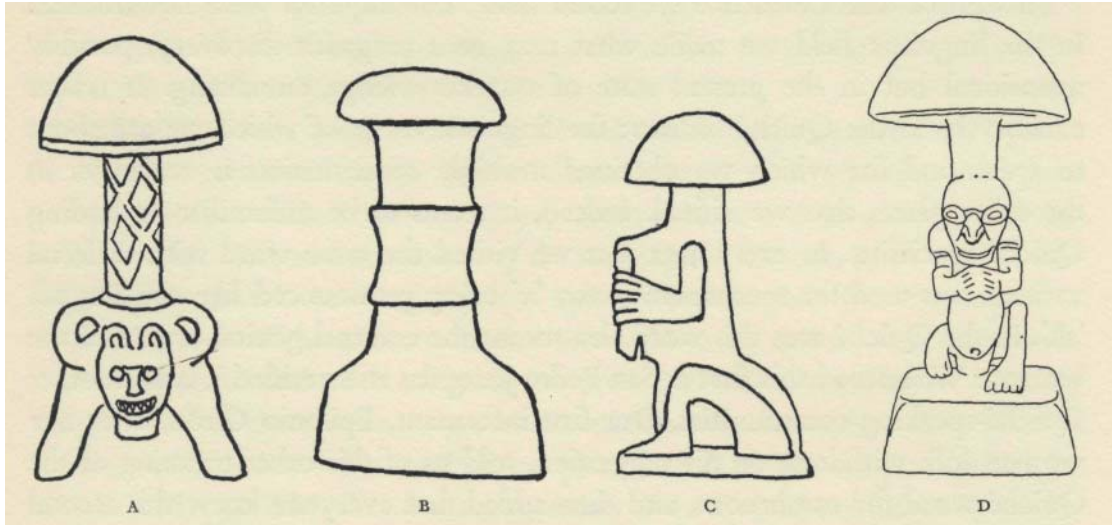


Fig. 1. MUSHROOM STONES

A. Represents a jaguar, traces of red paint still visible. Kaminaljuyu, Mound £-111-3, tomb I. Ht. 37 cm. Miraflores phase, 1000-500 B.C. Museo Nacional, Guatemala, 3450.

B. Ocosingo, Chiapas, Mexico. Now in regional museum of Tuxtla Gutierrez. Probably late pre-classic (1000 B.C. - 200 A.D.) or early classic (200-500 A.D.)

C. Represents a pisote (*nasua narica*) in characteristic pose with forefeet over nose. Salcaja, near Quetzaltenango. Ht. 25.5 cm. Late pre-classic or early classic (Vitalino Robles collection).

D. Formerly in Museo Nacional, Guatemala. Probably late pre-classic.

Ixcoy, where Ixil and Kanjobal are spoken, languages related to the important Mam-Maya group. We did not visit the Peten or Yucatan, as no mushroom stones have yet been reported from those regions.

So far as a living mushroom cult or knowledge of such a thing is concerned, our findings were conclusively negative. The elders in the villages that we visited¹ were friendly and not reticent. We would bring the conversation around to

i. For workers in the field we supply the names of our informants and their towns. Kakchiquel-speaking: San Juan Sacatepequez, the official interpreter Bravlio; San Martin Jilotepeque (the language here influenced by ancient Pokomam occupation), Don Francisco Martinez del Rosal, owner of finca Las Pilas, and Alberto Calan, 3rdregidor; Solola, Nicolas Akichi, textile vendor. Quiche-speaking: Chichicastenango, Miguel Ignacio, the maker of wooden dance masks, and Diego Panjojehan, who lives in Chujupen; San Pedro Jocopilas, Epilonio Giron, head of the municipal guard, and Don Ignacio Barrios, Mayor; San Andres Xecul, Pedro Raimundo Hernandez; Momostenango, Aparecio and Santiago Lajpop. Tzutujil-speaking: Santiago de Atitlan, the cripple Don Salvador Ramirez and the artist Juan Sisay. The following are sub-divisions of the Mam group. Ixil-speaking: Nebaj, Trinidad Gomez, candle-maker. Jacalteca-speaking: Concepcion Huista, Antonio Ramirez Paz, former alcalde. Kanjobal-speaking: San Juan Ixcoy, Mateo Velazquez, alcalde, and F. Ruben Gonzalez, first official.

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mushrooms, collect vocabulary, and finally begin to discuss the inebriating virtue of certain kinds. Our informants were invariably surprised to learn that such mushrooms existed, and showed themselves most curious and even envious as we described the divinatory mushrooms of the Mazatecs.

Though of direct evidence we found none, our inquiries were not fruitless. In the linguistic field we made what may be a pregnant discovery, possibly sensational but in the present state of our knowledge tantalizing. It relates exclusively to the Quiche Indians: the linguistic usage of which we are about to speak and for which we obtained multiple confirmation is unknown in the other places that we visited. Indeed, it seems to be unfamiliar to leading Quiche specialists. In every area that we visited the same word with dialectal variants was used for mushroom: *ocox*, V being pronounced like the English 'sh'. In the Quiche area this word also means the external genital organs of the woman. We learned this first in San Pedro Jocopilas and verified it later in other Quiche-speaking communities. Our first informant, Epsilon Giron, after our women folk withdrew on his suggestion, told us of this other meaning of the Quiche word for mushroom, and then added that everyone knew this second sense, but that one should never use it. In short, it is tabu. In Momostenango Suzanne Borhegyi and Masha, off on their own, accompanied by a young Indian woman as interpreter, broached the subject with a flock of Indian women there, whom they discovered washing clothes in the rushing stream. Their inquiries evoked peals of merry laughter, but no elucidation whatever. The women refused to develop the subject, and who shall blame them?

In our Mazatec inquiries we had uncovered a curious linguistic usage concerning mushrooms. The reader will recall that there is no single Mazatec word that embraces all the mushrooms. There are two, one for all kinds save the divinatory species, and another general term for the various species held in honor as vehicles of divine inspiration. The Indians of Guatemala are not so mycophagic as the Mexicans, but in the market places there mushrooms of various kinds are on sale, and we were startled to discover in Guatemala city that the Spanish word *hongo* covers all species except one. That one is the favorite for the table and its common name is *anacate*. In all likelihood *anacate* is an eroded form of the Nahuatl *nandcatl*. Whether the borrowing took place before or after the Conquest, we do not know, but already when the Spaniards arrived the Nahuatl influences in the Maya area were powerful. This verbal fission, dividing the mushroom world into two without an overriding collective term, is a curious thing, especially as it recurs in two places as far removed from each other as Huautla and Guatemala City. We took pains to identify the

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anacate of Guatemala, eating it in quantity and in San Juan Sacatepequez going out after them in the woods with our interpreter Bravlio. We found them exactly where the market women of Guatemala City had said we should, among the *encinos blancos*, 'white oaks', which turned out to be the oak known to botanists as the *quercus fulva*. The mushroom could be taken either for a large *cantharellus* or for a *craterellus*, and it is in fact the *craterellus cantharellus* Fr. ex Schw. It is a chanterelle without lamellae.¹

Dr. Borhegyi later combed the Quiche and Kakchiquel chronicles and legends for references to mushrooms. There come down to us from early times two native narratives of the Highland Maya, one in Quiche and the other in Kakchiquel, the *Popol Vuh* and the *Annals of the Kakchiquels*. Written in the native languages, they have been translated into Spanish and English. Dr. Borhegyi discovered in each of them one reference to mushrooms, and in each case mushrooms are associated with religious observances. These texts were certainly composed after the era we assign to the mushroom stones, but they give us documentary evidence that mushrooms played a role in the religious life of the Highland Maya. (We realize that the ancestors of the Quiche and Kakchiquel peoples are supposed to have arrived in their present location as conquerors around the 12th century, but whoever the conquerors may have been, it is probable that the indigenous culture absorbed them.) Here is the passage in the *Popol Vuh*, as presented in the English text by Delia Goetz and Sylvanus Griswold Morley:

And when they found the young of the birds and the deer, they went at once to place the blood of the deer and of the birds in the mouth of the stones, that were Tohil and Avilix. As soon as the blood had been drunk by the gods, the stones spoke, when the priests and the sacrificers came, when they came to bring their offerings. And they did the same before their symbols, burning *pericon* and *holom ocox*.

[University of Oklahoma Press, 1950, p. 192]

We do not know what *pericon* was.² 'Tohil' was the Quiche variant of the Toltec Quetzalcoatl, the 'feathered serpent', but we know not how the god Avilix looked. *Holom ocox* means 'mushroom head'. In San Martin Jilotepeque our informant Alberto Calan had told us of an unwholesome mushroom known to him as the *holom ixpek*, 'toad's head', a name doubly interesting for us because it links the mushroom with the toad and because of the fungal use of the word for 'head', reminding us of the passage in *Popol Vuh*.³

1. Our specimens of the *anacates* were the subject of a note by Professor Roger Heim that appeared in the *Revue de Mycologie*, April 1954, Tome xix, Fasc. i, pp. 53ff.

2. If it is the plant known commonly in Mexico today by the same name, it is the *tagetes lucida* Cav.

3. The Quiche word for 'toad', *ixpek*, is startling because of its superficial resemblance to the Indo-European

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The passage in the *Annals of the Kakchiquels* as translated from the original by Adrian Recinos and into English by Delia Goetz reads thus:

At that time, too, they began to worship the devil. Each seven days, each thirteen days, they offered him sacrifices, placing before him fresh resin [i.e., *copal*], green branches, and fresh bark of the trees [i.e., *amate?*], and burning before him a small cat, image of the night. They took to him also the mushrooms of the trees, and drew blood from their ears.



Fig. 20. INDIAN DRINKING FROM A SPANISH GOBLET
As represented by a 16th century Spanish artist; from Florentine Codex
of Bernardino de Sahagiiin's *Historia de las Cosas de la Nueva España*.
Biblioteca Laurenziana, Florence.

Again the words in the original tongue are *holom ocox*, 'mushroom heads', and they are described as 'of the trees'.¹ We had learned in Huautla that one of the four kinds of sacred inebriating mushrooms grows hi trees, and Juan de Cordoba in his Zapotec lexicon calls it the *nocuana peneeche*. Here then hi the Kakchiquel

root discussed on pp. 92 ff. We found several variants — *xepék, ixpuk, xpuk* —• in the towns we visited. In all cases V has the phonetic value of English 'sh'. The word carries other meanings, such as 'cave' in Quetzaltenango. In Chichicastenango we found that a similar word relates either to the vagina or the womb. We are told that in the Zapotec dialect spoken at Mitla *xkep* means 'womb'. We had neither time nor competence to explore the suggestion here of a cultural association linking toads to fertility such as we find in Europe. I. In the Recinos-Goetz translation, University of Oklahoma Press, 1953, pp. 82-83, the passage is rendered thus:

... the mushrooms (which grow at the foot) of the trees ...

The interpolated words are obviously superfluous, the translators presumably not knowing that many mushrooms grow in trees. This reference to tree fungi reminds us of a curious passage in the *Relation de las Minas de Temazcaltepec*, where Caspar de Covarrubias enumerates briefly the kinds of food that the people eat, and in the brief list he finds place to include *ongos de arboles*, 'tree-mushrooms'. See *Papelcs de Nueva España*, Paso y Troncoso, Madrid, 1905, vol. vn, p. 31.

Juan de Cordoba's 16th century Zapotec lexicon refers to arboreal fungi, and in Huautla our *mrandero*, Aurelio Carreras, spoke of a divinatory species growing on wood. It seems probable that arboreal fungi play a distinct role in Middle-American fungal lore, one that remains to be explored.

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text, which was put down on paper after the Conquest under Spanish influences but which recalls pre-Conquest events, we read of a religious rite in which arboreal mushrooms were used.

Both the Quiche and the Kakchiquel narratives use the same expression - *holom ocox*. Obviously this should be translated as 'mushroom caps', and we know from our Mije notes that the cap in Mije is a 'head'. We find the same metaphor in Mazatec, where the cap of the mushroom is the *hko*⁴, meaning 'head'. Perhaps the reader has hit on the further observation that we now make. The Mije and Mazatecs in their mushroom cult lay stress on the separation of pileus from stipe, and the virtue lies primarily in the pileus. They are still following the practice recorded for us by the ancient Quiche and Kakchiquel narrators, still decapitating their ceremonial mushroom.

As we thumb through the pages of Sahagun's immense work, in the Florentine Codex, we discover yet another miniature relevant to our argument. Executed by an Indian under Spanish influence, it is pregnant with mushroomic meaning. On the left we discover an Indian drinking from a Spanish goblet. On the right are two mushroom caps, 'heads', the Quiche *holom ocox*, the Mije *kobahk*, the Mazatec *hko*⁴. There are a pair of these caps, i.e., the Mije *casada*. A decapitated stipe stands on one side. Thus in this picture we come upon themes familiar to us from present-day usages among the Mije and Mazatecs and in the pre-Conquest annals of the Quiche and Kakchiquel peoples. We have found in Sahagun's text no passage that this miniature illustrates. What does it mean? We venture a rash but tempting guess. There must have been a moment in the social history of 16th century Mexico when the fire-water of the Spaniards confronted the inebriating mushrooms of traditional use with a challenge deeply disturbing to the emotions of the conservative Indians. Does not this miniature illustrate that moment of challenge? The mushroom caps are disproportionately big: this is the artist's device for showing their subjective importance, just as in the earlier miniature, on page 235, Mictlantecuhtli, Lord of the Underworld, hovers with giant stature over the Indian who is eating his pair of *teo-nandcatl*.

In the indigenous cultures of Middle America one of the crucial problems for anthropologists is the interplay, over thousands of years, between hieratic cultures on the one hand, rising and falling spasmodically and sporadically and often leaving behind spectacular monuments, and on the other hand, the folk cultures of the farming population, simple, relatively homogeneous, and singularly tough in resisting outside influences.¹ Humble artifacts such as incense

I. For an illuminating discussion of this problem see Stephan F. Borhegyi's 'Cultura Folk y Cultura Compleja

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burners, figurines, and clay effigies fashioned so as to serve also as whistles have been made in virtually the same styles for three thousand years and are still being sold at the present hour in the native market places. The mushroom stones do not belong to this folk culture. If they are a clue to a mushroom cult, we must suppose that the cult was hieratic, the attribute of a priestly elite, and that that cult passed away with that elite. The highest achievements of the Mayan culture, which are known to have been hieratic, belonged to the lowland Maya of the Peten and Yucatan, where no mushroom stones have been found.¹ However, there could also have been priest-governed societies in the Highlands, and in fact in the Highland excavations at Kaminaljuyu, near Guatemala City, there has been found in a pre-Classic tomb that was probably sacerdotal one of the effigy mushroom stones, representing a jaguar.² We suggest that there was once a mushroom cult in the Highlands in the formal, organized sense, a liturgy administered by priests on set occasions, perhaps for the laity to join in. How different such a cult would be from the intimate, family use of the divinatory mushrooms that we have witnessed among the Mazatecs and Mije, where the mushrooms are consulted, when available, if needed, in the dead of night, with only two or three gathered together! But there is no necessary contradiction here. Our 16th century writers tell us of the large gatherings where the mushrooms were consumed in public. And what could have been more inviting to a priestly elite than to take over from the folk culture their divinatory mushrooms, and clothe the deeply stirring faith of the people in those divine mushrooms with the ceremonial habiliments that an elaborate ritual would have required? As we review our evidence, we discern an endemic use of inebriating mushrooms from earliest times in the enduring folk culture of Middle America, not in the low, hot country, but throughout the higher country, over an area extending from the Valley of Mexico into Guatemala and Salvador. We see this endemic folk usage seized upon, taken over, lifted up, and reverently exploited by the sophisticated priestly elite in certain hieratic phases of the upland cultures.

Certainly we have not discovered the tie that would unequivocally bind the mushroom stones of Guatemala and Chiapas with today's intimate folk cult. That

en el Area Maya Meridional", *Ciendas Saddles*, published by the Pan-American Union, Washington, D. C., vol. v, No. 26, April 1954.

1. Is it coincidence that, just as the mushroom stones are found only at a certain altitude and never in the hot, low country, so according to our informants in Huautla and Mazatlan, the use of the divinatory mushroom is unknown among the Mazatecs and Mije living today in the *tierra caliente*?

2. For further illustrations and discussion of this remarkable specimen, one of the oldest known, see Publ. 596 of the Carnegie Institution of Washington, 1952, which is vol. xi of the series of *Contributions to American Anthropology and History*, paper No. 53, 'Mound E-m-3, Kaminaljuyu, Guatemala', by Edwin M. Shook and Alfred V. Kidder, fig. y8fand 13 (No. 193), and p. 112. We reproduce this mushroom stone in fig. 19 A.

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such a link will be discovered is unlikely but not impossible. Perhaps on some holy hill or *ce.no*, or deep in the recesses of some cave, in a remote corner of Oaxaca or Chiapas, the Indians still direct their humble supplications to a stone image of a mushroom, unbeknownst to circumambulating ethnologists. Unless someone discovers such a survival, how can we hope to establish a connection between the ancient stone carvings and the divinatory mushrooms ;

Yet the evidence that we have assembled points toward such a connection. We know that the Indians of Middle America are mycophiles with extensive knowledge of mushroomic properties and corresponding vocabularies. In their cultures mushrooms have always been emphasized, not ignored. Among these Indians religious associations have always interpenetrated every aspect of human existence, and it would be rash to assume that this fusion of daily life with religious beliefs excluded the fungal world at the time when the mushroom stones were carved. We know furthermore what a profound hold the ceremonial mushrooms have to this day on certain of the remoter Indian tribes, and the range of this cult doubtless runs beyond the limits that we have had opportunity to explore. In the case of the Mije, their country overlaps the area where the later mushroom stones seem to have been found. We know from surviving annals that before the Conquest ceremonial mushrooms were used in religious observances in the Guatemalan Highlands, where most of the earlier stones have been found. A divinatory mushroom grips the imagination, and it would justify the functional use, in religious ceremonies, of the mushroom stones. The presence of a divinatory mushroom is rare in human cultures: would it not be extraordinary to find a mushroom cult in the same area with the mushroom carvings - themselves unique - and yet unrelated to them? Whereas in the past no one was suggesting a mushroomic explanation for the mushroom stones, we think that the presumption favors such an explanation now, and that the burden of the argument must be on those who oppose it.

Meanwhile many exciting questions remain unanswered and cry for the further field work that we cannot undertake. We have not fully identified the divinatory mushrooms that the Mazatecs and Mije use, to say nothing of other peoples where the cult may survive. They must be securely identified, with multiple corroboration. Their specific properties as understood by the Indians must be fully set down. Then they must be proved empirically, under controlled conditions. The Mije have developed sweeping explanations for any failures in the use of their divinatory mushrooms: this suggests that auto-suggestion plays a role, or that sometimes the wrong mushroom is taken, or that the virtue

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varies under differing circumstances. The difficult task of chemical analysis, with the isolation of the active agents, will be the final achievement.

The Mije are related linguistically to the Zoques, their neighbors to the east in Chiapas. What do the Zoques know of the divinatory mushrooms? If they use them, perhaps we shall discover, after all, that the Maya peoples immediately to the east of them also share the cult, or remember having practiced it in the past.¹ Robert Weitlaner knows the Chinantecs as well as any other living anthropologist. Among them he has failed to find any trace of the divinatory mushroom, though they live between the Mazatecs and the Mije. How strange this is! But it only points up the importance for all workers among the Indians of Middle America, both linguists and anthropologists, to include the divinatory mushrooms in their inquiries, and to report their findings whether negative or positive. Where the cult does not survive, memories of it may, and where no memories exist, perhaps in the names for mushrooms the linguists may trace forgotten knowledge. Slowly we should begin to pinpoint the results of such inquiries on a cultural map of Mexico keyed to the mycological lore of the Indians. But the search for evidence should not be limited to our contemporary world. The whole corpus of surviving pre-Conquest artistic expression in the highland areas of Middle America should also be reviewed, on the chance that divine mushrooms figuring therein have hitherto escaped detection. Later we shall venture some suggestions of our own in this archeological field.

I. There are grounds for linking together the Maya and the Mije-Zoque cultures, the two linguistic groups being perhaps descended from a common parent stock. See J. Alden Mason's paper on Middle American linguistic groupings in *The Maya and Their Neighbors*, D. Appleton-Century, N. Y., 1940 (a Festschrift in honor of A. M. Tozzer), p. 72.

*TEO-NANACATL**The Mushroom Agape*

With the concluding words of the previous section we had thought to end our discussion of the divine mushrooms. But in 1955 we returned again to Mexico to push our inquiries, and, at last breaking through the barrier of native shyness, we penetrated into the mushroom cult much more deeply than before, eating the mushrooms ourselves as participants in a communal agape. We experienced subjectively for the first time what we had previously been able to describe only as witnesses from the outside or at second hand by the testimony of informants. Just as our book goes to press we add the following notes on our 1955 adventures.

On Friday, June 24, VPW, Masha, and RGW flew to Mexico City. We installed ourselves in a small villa in San Angel, at Reyna 9, which we had rented with servants as a base for our excursions. Thither we could return and relax in the quiet of a lovely garden, the high walls festooned with blooming bougainvillea, after our sorties into the Indian country. Two days later Allan Richardson joined us, to serve again as our photographer, and on Monday he and RGW set out for the heart of the Mazatec country. By Tuesday night we were bedded down with a Mazatec family in one of the villages of that remote world in northern Oaxaca. On this trip Robert Weitlaner was prevented by other duties from accompanying us, and we therefore considered ourselves doubly fortunate when almost at once, in a new circle of Indians, we found ourselves received as friends.

We shall call our host Cayetano and his wife Guadalupe. Intelligent, vigorous, and gentle, this couple, in their thirties, were the key to the success of our expedition. As soon as RGW imparted to them in confidence his interest in the sacred mushrooms, they pledged their cooperation, and they more than made good their pledge.

Cayetano and Guadalupe's house is on the outskirts of Huautla de Jimenez and opens directly on the village thoroughfare that runs along a mountain-side. With roof of thatch and adobe walls, it has two storeys. You enter on the upper level from the street, and then by a small trap-door in one corner you climb down a steep and twisting stairway to the floor below, where the events that we shall relate took place. This lower storey is built on one side against the mountain face, and on the other side by a door it opens on a terrace perhaps six feet wide, which then falls sharply away to the ravine hundreds of feet below.

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Across the valley and beyond, the Sierra Mazateca in all its verdant glory fills the distant view. On the terrace at one end of the house a flimsy wooden and thatch annex has been constructed to serve as kitchen. The interior is divided by a whitewashed adobe wall into two rooms. There is no window in either room, but over the door on the terrace an aperture allows in some light. This room was well sheltered from the life of the village, and doubly so at night when Mazatec villagers refrain from stirring abroad. The family circle was large: our hosts' small children were numerous, and Cayetano's brothers and parents were also much in evidence, as well as other kin. Chickens and turkeys had the run of the lower floor. A hen sitting on her eggs on one of the cluttered tables was a silent witness to all that went on.

On the day after our arrival, early in the afternoon of Wednesday June 29, Cayetano and his brother Genaro took us down the mountain side to the edge of the stream in the gully. In the lower reaches of our descent we skirted a field planted to sugar cane, and then arrived at the spot where it is the custom to mill the cane, a flat space the size of a threshing floor, thick with rotting bagasse, as the refuse from the mill is called. There in the bagasse, just as Cayetano had promised, we found an immense crop of mushrooms, of the sacred kind known to our Mazatec friends as *ki³so* 'landslide'. We photographed them to our hearts' content. We gathered them in a pasteboard box: the sacred mushrooms must always be carried in a closed parcel, never exposed to the view of passers-by. They were a noble lot, mostly young, all of them perfect in their moist health and fragrance. Then we carried them up the steep mountain side to the house. We were warned that if we saw any dead animal on the way, the mushrooms would lose their virtue — happily we saw none. It was in the rainy season, and in the humid heat of that sunny afternoon the climb was long and exhausting.

Hardly had we arrived back when Cayetano sent us, with his brother Emilio as interpreter, to a cottage some distance farther up, where he said we would find a *curandera de primera categoria*, a *cumndera* of the first class, Maria Sabina by name. We were to ask her whether she would help us that night. We found the Seiora, as our hosts always called her, resting on a *petate*, or mat made of a certain palm. She was alone with a daughter who was up and about. After introducing ourselves through Emilio, we showed them our mushrooms, whereupon the two women went into raptures over their fine condition and beauty. We put our question to the Senora, and without hesitation, looking steadily at us, she said yes. Neither she nor her daughter spoke a word of Spanish. We do not know whether they had been told to expect our visit.

Maria Sabina is a woman in her fifties, grave in demeanor, with a grave smile,

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short of stature like all Mazatecs, dressed in the Mazatec *huipil*. Her daughter is in her thirties and in all respects takes after her mother. She is following her mother's vocation. The Senora herself is at the peak of her powers, and it is easy to see why Guadalupe had said to us of her that she was *una Senora sin mancha*, a lady without blemish, immaculate, one who had never dishonored her calling by using her powers for evil. She alone, said Guadalupe, had brought the latter's children through all the diseases that take a frightful toll in early childhood in the Mazatec country. After that initial talk we were to pass two all-night vigils with Dona Maria and her daughter, and we can testify that she is a woman of rare moral and spiritual power, dedicated in her vocation, an artist in her mastery of the techniques of her office. It was her example that drove home for us for the first time a rule that must govern all field anthropologists. In the archaic cultures as among advanced peoples, there is a hierarchy of excellence when it comes to the individuals who are the culture-bearers. It is not sufficient to rely on the first informants that present themselves, on any shaman who is willing to talk. The whole cultural area must be discreetly surveyed and communication must be established with the finest exponents of the old traditions. None of the formidable difficulties of physical existence in these remote regions nor of communication should be permitted to blunt this obligation.

On that last Wednesday of June, after nightfall, we gathered in the lower chamber of Cayetano's house. In all, at one time or another, there must have been twenty-five persons present, mostly members old and young of Cayetano's family. The Senora came with her daughter Polonia. They and all the others were pleased when we photographed them, and we took numerous pictures throughout the preliminaries. But the Senora requested through Cayetano that when the power would seize her — *cuando la fuerza le aganara* — we should desist, and of course we did so. Cayetano served us chocolate to drink, somewhat ceremonially. (RGW's thoughts went back to Sahagiin in the 16th century, who had said that chocolate was served before the mushrooms were taken. Cayetano also offered us coffee and sweet wheaten bread, neither of which had been known to his ancestors in pre-Conquest Mexico.) Both Allan Richardson and RGW were deeply impressed by the mood of the gathering. We were received and the night's events unrolled in an atmosphere of simple friendliness that reminded us of the agape of early Christian times. There was no familiarity. The mushrooms were treated respectfully, as sacred, but without marked formality. The proceedings went forward with an easy decorum. Neither on this occasion nor at any other time or place did we ever see or hear the mushrooms

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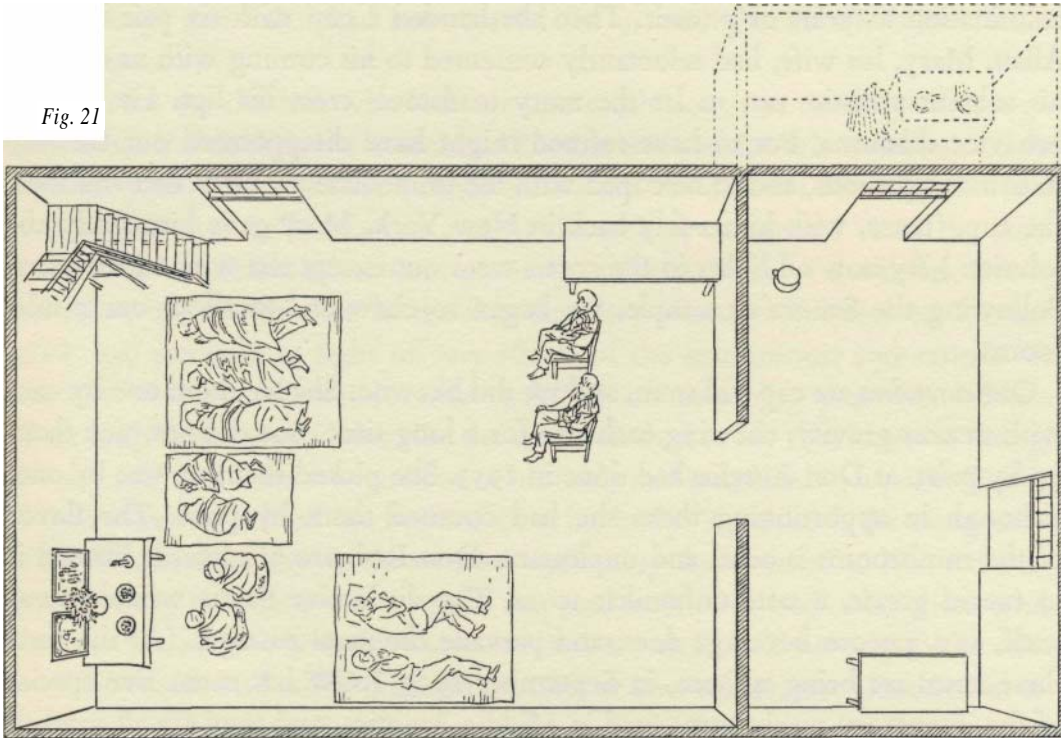
treated as a subject for jocular vulgarity, of the kind that often marks the use of alcohol among fully civilized peoples. The atmosphere of respectful friendliness was infectious, and we enjoyed reciprocating the welcome extended to us. There is no record that any white men had ever attended a session of the kind that we are going to describe, nor that white men had ever partaken of the sacred mushrooms under any circumstances. For reasons deeply rooted in the mortal cultural conflict of Spaniards and Indians, it is unlikely that any unrecorded event of the kind had ever taken place. By hearsay the early Spanish writers had reported gatherings of Indians where the mushrooms were served to many, but we had thought from our previous visits to Mexico that such observances were today unknown. We were now to learn that they still go on, and that they are even today a central experience in the culture of the Mazatec people. The only change is that the gatherings now are held behind closed doors. Cayetano told us early in the evening that no one on any account should leave the house before break of day, and for the necessities of nature he showed us the rudimentary provision that had been made in one corner of the other room. The contempt of the Spaniards for indigenous rites and the Church's condemnation of them as idolatrous heresies have not killed these assemblies of ancient lineage, but have driven them under cover.¹ Our hosts were obviously pleased by our intense and sympathetic interest in all that went on before our eyes. The very fact of our participation must have made the evening memorable for them. They were dressed up for the occasion. Genaro in particular was resplendent in his handsome striped sarape and his freshly washed white cotton trousers or bags, which Indian-style were buttonless, being supported by strings tied around the waist. By our respectful behavior we did all we could to make clear that for us the rite we were witnessing possessed full religious stature. We were mindful of the drama of our situation. We were attending as participants a mushroomic Supper of unique anthropological interest, which was being held pursuant to a tradition of unfathomed age, possibly going back to the time when the remote ancestors of our hosts were living in Asia, back perhaps to the very dawn of man's cultural history, when he was discovering the idea of God.

There were a few home-made wooden chairs in the room, and in the beginning Allan and RGW used them. Cayetano's brother Genaro and possibly one other

1. Dr. Harold Alexander Abramson of New York, a specialist in psychotic research who has studied the action of lysergic acid diethylamide and other hallucinogens, believes that persecution was certainly not the only reason for holding the mushroomic agape behind closed doors. He is sure that the participants, if released from the centripetal influences of the intimate circle, would sometimes behave in extreme ways, even killing themselves or murdering others or engaging in assaults. When he expressed this view, Dr. Abramson knew nothing of the 16th century accounts of those very excesses perpetrated by persons who, having eaten the mushrooms, went out on the town.

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remained seated on chairs the whole night through. The others lay or reclined on mats on the floor, wrapped in *sarapes*, except of course for the Sefiora and her daughter, who, wearing clean *huipiles* with identical reddish-yellow birds embroidered on them in front, sat before the altar-table on mats. They sat with what seemed a half-studied formality, the daughter a little behind her mother and slightly to her mother's right. Later, in the dark, we could barely discern their



triangular shadows as first one and then the other lifted her voice in song. It was then, when the details were erased by night and only the geometric mass persisted, that they suddenly reminded RGW of the pyramids that are the outstanding feature of architecture in pre-Conquest Mexico. Could the pyramids have been originally a geometric stylization of the worshipping Indian seated on his mat, of the gods that were his magnified projection of himself?

At about 10.30 o'clock the Sefiora and her daughter took their positions before the small table that served for an altar. On it were two holy pictures, on the left the child Jesus and on the right the Baptism in Jordan, with a bouquet in front of them, a crucifix hidden in the flowers, three lighted candles of virgin beeswax, and a lighted wick in a glass of wax. There were also two pottery bowls and some cups. The Senora then went through our box of mushrooms, brush-

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ing off with her fingers the grosser pieces of dirt and passing them in her hand over copal that was burning on a metal lid on the floor. Into each of the two bowls she put 13 pair of mushrooms; one bowl was for her and the other for her daughter. Into each cup she put four pair, or five, or six, and then handed the cups to the grown-ups that were to take them. The children received none, and we were told that she never gave mushrooms to children. To RGW she handed a cup with six pair. Our readers will imagine his joy at this dramatic culmination to years of pursuit. Then she handed a cup with six pair to poor Allan. Mary, his wife, had reluctantly consented to his coming with us only on his solemn promise not to let the nasty toadstools cross his lips. He faced a behavior dilemma, but to have refused might have disappointed our friendly Indian companions, and so he coped with the immediate problem first and took the cup. (Later, with him safely back in New York, Mary gave him ready absolution.) By now all lights in the room were out except the wick in the glass. Following the Seiora's example, we began to chew and swallow our mushrooms.

Our *curandera* ate cap and stem, and we did likewise. She ate them one by one, with utmost gravity, chewing each one for a long time. She did not pick them up by pairs, as Don Aurelio had done in 1953. She picked them up one by one, although in apportioning them she had counted them by pairs. The flavor of the mushrooms is acrid and unpleasant. Don Roberto afterwards likened it to rancid grease, a taste unfamiliar to us. The distinctive flavor would repeat itself, as a gaseous beverage does, and pervade the nasal passages. (At the time these notes are being written, in September 1955, RGW has eaten five species of the divinatory mushrooms used in Middle America, and they are all marked by this singular and unforgettable taste and after-taste, which seem to be the veritable signature of the divine species.)

We all ate our mushrooms facing the wall where the small altar table stood. We ate them in silence, except for Cayetano's father, Don Emilio, who was consulting the mushrooms about his infected left-forearm. He would jerk his head violently with each mushroom that he swallowed, and utter a smacking noise, as though in acknowledgement of their divine potency. The Senora had asked us to take care not to invade the corner of the room on the left of the altar table, for down that corner would descend the Holy Ghost. We sat near-by, taking about a half hour to eat our six pair of mushrooms. By 10.40 o'clock we had all finished our respective portions, the Sefiora crossing herself with the last swallow. Then we waited in silence. After about twenty minutes the Senora plucked a flower from the bouquet and with it put out the last of the *velas*. We

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should have been in Stygian darkness, but by good fortune the night was clear and a gibbous moon, by the opening above the door, gave us just enough light to make our darkness visible.

At about 11.20 o'clock Allan leaned from his chair and whispered to RGW that he was having a chill. We wrapped him in a blanket. A little later he leaned over again and said, 'Gordon, I am beginning to see things,' to which RGW gave him the comforting reply that he was too. Allan lay down along the wall on the large *petate* that had been spread for us, and shortly afterwards RGW joined him.

Except for the children who had eaten no mushrooms, no one slept that night until about 4 o'clock in the morning. (The last entry in RGW's notebook carries the hour 3.50.) There was no inclination to sleep. At all times we were alert both to our subjective hallucinations and to the goings-on around us in the dark. RGW took imperfect notes intermittently and kept track of the hours. But he and Allan were both alive to the fact that they were not themselves. Though RGW had resolved to fight off any effects of the mushrooms and remain the detached observer, the mushrooms took full and sweeping possession of him. There is no better way to describe the sensation than to say that it was as though his very soul had been scooped out of his body and translated to a point floating in space, leaving behind the husk of clay, his body. 'Landslide', the designation of the Mazatecs for the mushroom we were using, had seemed to him a clumsy name before; now its awesome truth imposed itself. Our bodies lay there while our souls soared. We both felt nauseated; RGW twice made his way to the other room to vomit, and Allan three times. One or two others, not identified in the darkness, did likewise. But these episodes seemed of no moment. For we were both seeing visions, similar but not identical visions, and we were comparing notes in whispered interchanges. At first we saw geometric patterns, angular not circular, in richest colors, such as might adorn textiles or carpets. Then the patterns grew into architectural structures, with colonnades and architraves, patios of regal splendor, the stone-work all in brilliant colors, gold and onyx and ebony, all most harmoniously and ingeniously contrived, in richest magnificence extending beyond the reach of sight, in vistas measureless to man. For some reason these architectural visions seemed oriental, though at every stage RGW pointed out to himself that they could not be identified with any specific oriental country. They were neither Japanese nor Chinese nor Indian nor Moslem. They seemed to belong rather to the imaginary architecture described by the visionaries of the Bible. In the aesthetics of this discovered world attic simplicity had no place: everything was resplendently rich.

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At one point in the faint moonlight the bouquet on the table assumed the dimensions and shape of an imperial conveyance, a triumphal car, drawn by living creatures known only to mythology. With our eyes wide open, the visions came in endless succession, each growing out of the preceding one. We had the sensation that the walls of our humble house had vanished, that our untrammelled souls were floating in the universe, stroked by divine breezes, possessed of a divine mobility that would transport us anywhere on the wings of a thought. Now it was clear why Don Aurelio in 1953 and others too had told us that the mushrooms would take you *ahi donde Dios estd* — there where God is. Only when RGW by an act of conscious effort touched the wall of Cayetano's house, would he be brought back to the confines of the room where we all were, and this touch with reality seemed to be what precipitated nausea in him.

On that night of June 29-30 we saw no human beings in our visions. On the night of July 2-3 RGW again took mushrooms in the same room, with the Senora again serving as votary. If we may anticipate our story, on that second occasion RGW's visions were different. There were no geometrical patterns, no edifices of oriental splendor. The patterns were replaced by artistic motifs of the Elizabethan and Jacobean periods in England - armor worn for fashionable display, family escutcheons, the carvings of choir stalls and cathedral chairs. No patina of age hung on them. They were all fresh from God's work-shop, pristine in their finish. The beholder could only sigh after the skill that would have fixed those beauteous shapes on paper or in metal or wood, that they might not be lost in a vision. They too grew one out of the other, the new one emerging from the center of its predecessor. Here as in the first night the visions seemed freighted with significance. They seemed the very archetypes of beautiful form and color. We felt ourselves in the presence of the Ideas that Plato had talked about. In saying this let not the reader think that we are indulging in rhetoric, straining to command his attention by an extravagant figure of speech. For the world our visions were and must remain 'hallucinations'. But for us they were not false or shadowy suggestions of real things, figments of an unhinged imagination. What we were seeing was, we knew, the only reality, of which the counterparts of every day are mere imperfect adumbrations. At the time we ourselves were alive to the novelty of this our discovery, and astonished by it. Whatever their provenience, the blunt and startling fact is that our visions were sensed more clearly, were superior in all their attributes, were more authoritative, for us who were experiencing them, than what passes for mundane reality.

Following the visions that we have already described, on both occasions RGW saw landscapes. On Wednesday they were of a vast desert seen from



PLATE XLVI. Maria Sabina and her daughter Polonia, curanderas.
Hautla de Jimenez, June 29, 1955.



PLATE XLVn. Maria Sabina, curandera, passing mushrooms over incense (copal);
also her daughter Polonia and Cayetano's mother.
Hautla de Jimenez, June 29-30, 1955.



PLATE XLVIII. Adoration of the mushroom. Maria Sabina, curandera, and her daughter Polonia.
Huatla de Jimenez, June 29-30, 1955.

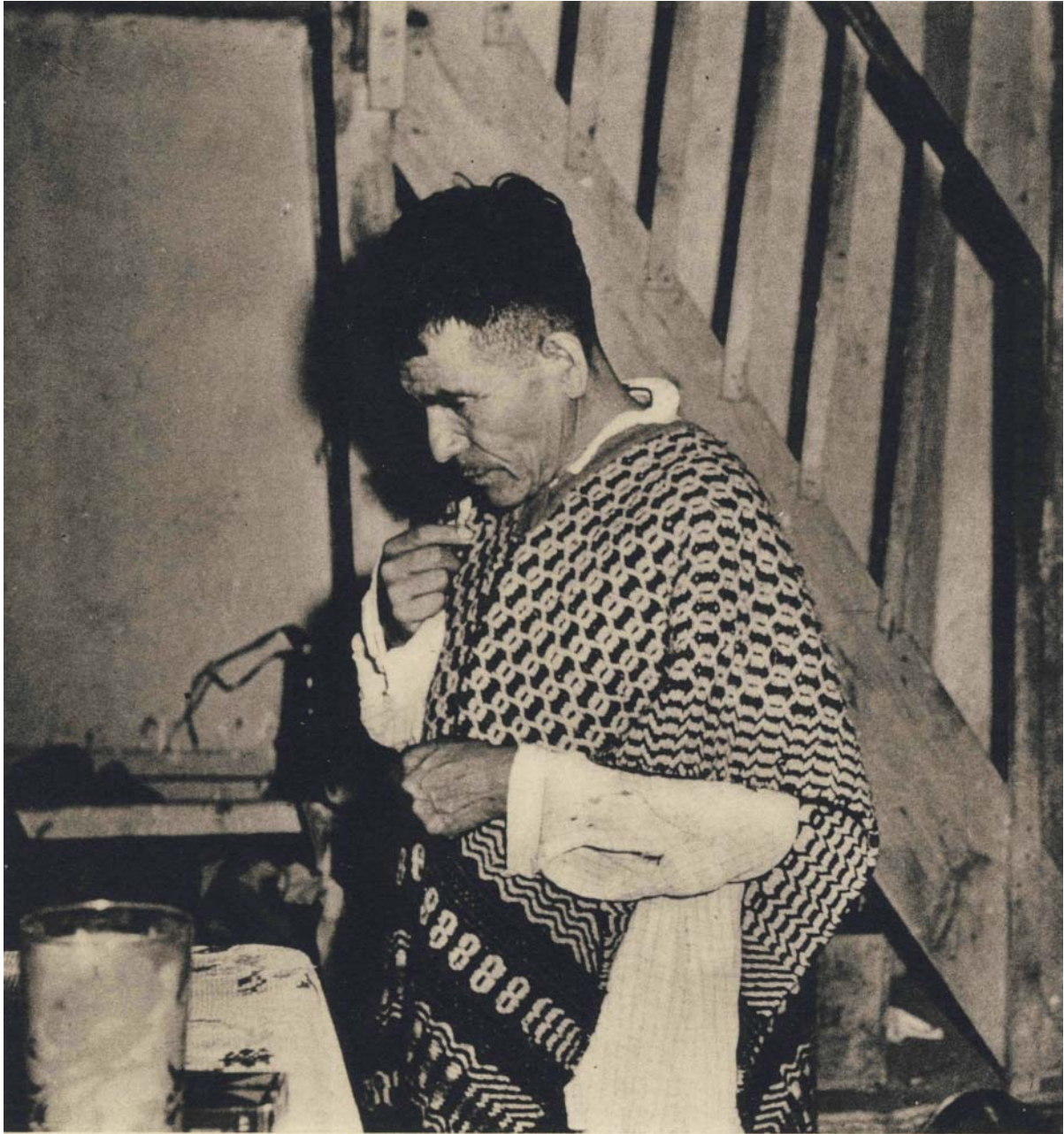


PLATE XLIX. Emilio Garcia taking *Teo-nandcatl* or 'God's Flesh'.
Huatla de Jimenez, June 29, 1955.

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afar, with lofty mountains beyond, terrace above terrace. Camel caravans were advancing across the mountain slopes. On Saturday the landscapes were of the estuaries of immense rivers brimming over with pellucid water, broad sheets of water overflowing into the reeds that stretched equally far from the shore line. Here the colors were in pastel shades. The light was good but soft as from a horizontal sun. On both nights the landscapes responded to the command of the beholder: when a detail interested him, the landscape approached with the speed of light and the detail was made manifest. There seemed to be no birds and no human life in the river estuary, until a rude cabin suddenly appeared with a woman motionless nearby. She was a woman by her figure and face and costume, and of course the vision was in color. But she was a statue in that she stood there without expression, doing nothing, staring into the distance. She might be compared to those archaic Greek sculptures where the woman gazes into space, or, better yet, the departing woman on the Greek funerary stele who looks into eternity, except that our vision was of a living woman whereas the Greek sculptures, marble white, are mere imitations in stone of what we were seeing.

On both nights RGW stood up for a long time in Cayetano's room, at the foot of the stairway, holding on to the rail, transfixed in ecstasy by the visions that he was seeing in the darkness with his open eyes. For the first time that word 'ecstasy' took on subjective meaning for him. 'Ecstasy' was not someone else's state of mind. It was no longer a trite superlative cheapened by overuse. It signified something different and superior in kind, about which RGW could now testify as a competent witness. There came one moment when it seemed as though the visions themselves were about to be transcended, and dark gates reaching upward beyond sight were about to part, and we were to find ourselves in the presence of the Ultimate. We seemed to be flying at the dark gates as a swallow at a dazzling lighthouse, and the gates were to part and admit us. But they did not open, and with a thud we fell back, gasping. We felt disappointed, but also frightened and half relieved, that we had not entered into the presence of the Ineffable, whence, it seemed to us at the time, we might not have returned, for we had sensed that a willing extinction in the divine radiance had been awaiting us.

We know not what manner of visions is induced by opium or hashish or coca or mescaline, nor whether the agent in our mushrooms that releases the visions is related to the agents in them. Later in the Zapotec country, the *curandero* Aristeo Matias told us that it takes three or four experiences with mushrooms to overcome the initial surprise and the disorder that marks the sequence of

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visions on the first occasions. (Here was fatherly advice from an old hand to us who had told him that we aspired to enter upon his vocation.) This would suggest that there is or at least can be a growth, an evolution, in the hallucinatory experiences induced by the mushrooms.

Throughout the night we were strangely split in the very core of our being. On one level space was annihilated for us and we were traveling as fast as thought to our visionary worlds. On another level we were lying there on our *petates*, trying to take notes, RGW and Allan exchanging whispered comments, alive to every twitch and twinge in our heavy (oh so heavy!) earth-bound bodies of clay. At the same time we were both held in thrall by what was going on in the room around us. For the Senora and her daughter were engaged all night in a religious performance that we had not expected and that no one had ever described to us.

Before we go further we must mention that when we had bespoken the Senora's services in the afternoon, she had asked us what problem was troubling us. Once again RGW trotted out the question of his son Peter, now in the army. How was he? Alive or dead, or ill, or in good spirits, or in some trouble; This had seemed to her a sufficient justification. We had counted on Cayetano to stay with us through the night as our guide and interpreter. We observed that neither he nor Guadalupe were taking the mushrooms. As we were finishing ours, Cayetano informed us that he and his wife were withdrawing up the stairs and through the trap-door to the room above, where they would guard us against interruptions from the street. He was leaving his brother Emilio to act as our mentor. We sensed that each of the other adults who were taking the mushrooms was consulting them, as we were, about individual problems.

After the Senora had put out the last *vela*, a silence of perhaps twenty minutes followed. The moon was shining brightly outside, and its orbit was such that the shaft of moonlight entering above the door fell squarely on the altar-table, but it did little to relieve the general darkness in the room. Suddenly the Senora began to moan, low at first, then louder. There were silent pauses, and then renewed humming. Then the humming stopped and she began to articulate isolated syllables, each syllable consisting of a consonant followed by a vowel, sharply pronounced. The syllables came snapping out in rapid succession, cutting the darkness like a knife, spoken, not shouted. After a time the syllables coalesced into what we took for words, and the Senora began to chant. The chanting continued intermittently all night, first by the Senora and then by her daughter, and afterwards alternately by one or the other. The chanting was in Mazatec, and there was no one to translate the words for us. Neither Allan nor RGW is

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instructed musicologically, and we cannot say whether the provenience of the music was European or indigenous. That the chanting was in Mazatec, and not in Latin or Spanish learned by rote, adds point to this question. (If the chants are old, the language may be archaic, which would be a discovery of high interest for the handful of first-rate scholars who have devoted themselves to Mazatec linguistics.) Both women chanted in that distinctive way which seems always to mark the intoning of age-old chants; the singing was soaked in weary melancholy. Our Senora's voice was not loud, probably not loud enough to be heard in the village thoroughfare. But there was a confidence and resonance in her primitive utterance that imposed itself. There came a moment late in the night when the Sefiora made her way to the door on the terrace and went outside, holding her hand on the door. (To this extent she was free of the prohibition laid on the rest of us not to leave the house.) When she re-entered, she left the door slightly ajar, and we saw her advance *on her knees* across the open space in the room, and then turn to the right toward the altar-table. Her hands were uplifted to shoulder-level, palms exposed. As she slowly progressed, she sang a canticle that seemed like an introit, indescribably tender and plaintive in its musical phrases. Her daughter sang well too, but lacked her authority. From time to time, as they sang, the men who had taken the mushrooms, notably Genaro and young Emilio, ejaculated words, groans, short sentences, and vocal noises. We know not "what they said, but they seemed to intervene with their voices to suit the singing, in such a way as to produce a strange, barbaric harmony.

The singing was not continuous. For stretches the Senora would talk, as though invoking the Spirits or as though the Holy Ghost was speaking through the mushrooms. We heard the names of Christ (which she pronounced with an intrusive V, *Khristros*), of St. Peter and St. Paul. We heard her cry out 'Pedro' repeatedly in an imploring tone, and knew that the mushrooms were wrestling with the problem of Peter. Emilio made his way to us and whispered that Peter was alive and well, and contrite for not having let us hear from him. We asked for further details, but Emilio said that since we ourselves had eaten the mushrooms, we could expect them to speak to us directly. Our interpreter Emilio then vanished into the darkness for the rest of the night.

Unlike the chants, the spoken utterances were fresh and vibrant and rich in expressiveness. The mushrooms were talking to the point. We had never suspected how sensitive and poetic an instrument the Mazatec language could be. The intermittent snatches of the Senora's monologue seemed quick with subtle feeling, laden with dramatic import. In our very presence a priestess of the old

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religion was pronouncing oracular dictates in spurts, hot and firm with authority. How we regretted that we had no means to record her voice! (At the time we asked ourselves, and we have repeated the question often since then, whether our critical faculties were deranged by the effects of the mushrooms, so that we over-rated the quality of the Senora's performance. Perhaps so. But if this is an aberration typical of the syndrome of mushroomic ecstasy, our account at least serves to document it for the record, and to establish that our hallucinations were auditory as well as visual.)

The chanting and the oracular utterances turned out to be only a part of what we were to witness. At an early stage we sensed that the Senora was either kneeling or standing before the altar-table gesticulating with her arms. We detected this by ear and confirmed it uncertainly with the aid of the meager moonlight. Then, much later in the night when her daughter took over the chanting, the Senora made her way to the open space between us and the door, and she embarked on a kind of dance that must have lasted for two hours or more. We do not know precisely what she did, because of the darkness, but she was between us and the aperture above the door, and we could just make out that she was turning clock-wise, facing in succession each of the four compass points, at the same time raising and lowering her arms. Her daughter was singing, but she was not silent. She was engaged in a lengthy, rhythmic percussive utterance of a kind unfamiliar to us. There was a differentiation in the pitch of the beats, and at times the pattern or phrases seemed to us complex. We cannot say for sure how she made her sounds, but we are almost sure that she clapped her hands, slapped her knees, smacked her forehead, and whammed her chest. We were impressed by the cleanness of the utterance. Every clap or slap or smack or wham was resonant. Remembering the role played by pitch in the Mazatec language, we asked ourselves whether the Seiora was speaking percussively. On each of our two nights with her, she rinsed her mouth once with water, and the gargling was also rhythmic, and perhaps tonally differentiated. Then she would spit out the water on the ground unrhythmically. On Saturday night, in a moment of illumination by flashlight, we saw and heard her twicking her long finger nails rhythmically. A remarkable feature of her percussive utterance on Wednesday night was its ventriloquistic property. For a long stretch we were in the blackest darkness while the daughter sang and the Senora was performing her strange dance with percussive accompaniment. As she would snap out her resonant claps and smacks, we seemed to catch them out of the night from various directions. Let the reader remember that all the while we were seeing our visions *and* attending to the auditory sensations served to us by the two women. There

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we were, visually suspended in space before the vast panorama of, say, the Gobi Desert, with a singing accompaniment and with percussive cracks assailing us, now from above, now here, now there, exactly like Hamlet's ghost *hie et ubique*, hitting us with a cutting crispness from unpredictable quarters, as though an air-borne choir of invisible creatures was peopling the dark void around us, perplexing us with their assorted and shifting cries. Possibly this ventriloquistic effect was caused by the Senora's turning in different directions as she performed, so that the sound caromed to us from the ceiling or walls. And all the while there was the irregular chorus, subdued in volume, of ecstatic exclamations from the Indians reclining on the ground. Confined though we were in a room without windows or open door, at one point we felt a swish of air, just as though we were really suspended in the great outdoors. Was this too an hallucination? If so, all shared it, for when the wind blew on us, there was general excitement, flashlights were switched on, and our Indian friends were sitting up, amazed at being stroked by the Divine Afflatus.

At one point in the night RGW made a discovery. In the light of a cigarette that someone was inhaling, he saw the Seiora, who was performing her dance, lift a small bottle to her lips. From her posture the bottle seemed almost empty. A few minutes later she began to thump the butt end of the bottle on the *petate*. She did this with a fast, uniform, perfect beat, perhaps a hundred to the minute, and she kept at it for an eternity, minutes on end, until Allan and RGW could hardly stand it any longer and groaned in agony. The iterated thump, somewhat resonant, became excruciatingly painful, a torture such as Poe might have described. After the night had passed and we were all getting up, RGW made a point to find the bottle and smell it. There could be no doubt: it was the familiar six-ounce bottle of *aguardiente*, a distillate of cane. Presumably the Sefiora had shared it with her daughter, but of this we are not sure. We asked Cayetano about it. Yes, invariably the person who retains the Seiora is expected to present her in advance with a *cuarto* (fourth of a litre) of this strong drink. We in our ignorance had neglected our duty, but Cayetano had come to our rescue. Recalling as we did how Don Aurelio and our friends in the Mije country had all said that alcohol was tabu before, during, and after the consumption of the mushrooms, we are still at a loss how to reconcile the conflicting evidence. But of course the Senora's performance from first to last had differed from what Don Aurelio had shown us in 1953. We had now attended two all-night vigils, both using the sacred mushrooms, but otherwise utterly different from each other. Don Aurelio's divinatory liturgy, with the elaborate role in it of accessories, could conceivably go on without mushrooms, but in Cayetano's

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house the mushrooms were the key to everything. We spoke to Cayetano about that other performance that we had seen in the Mazatec country in 1953. He knew all about that kind too, and he told us that the Senora was equally proficient in both ceremonies. We failed to learn, however, when one method is used in preference to the other.

At intervals throughout the night, perhaps every forty minutes or so, there would be what we can only describe as intermissions. After working up to a powerful climax in utterance, the Senora and her daughter would subside into silence. We recall one such climax when the Senora, half-singing, half declaiming, spat forth in endless repetition and with barbaric violence the two syllables *chung-ha* (the first element riming, not with 'sung', but with the Chinese 'Sung'); we were never able to learn what this meant. After such climaxes our two votaries and our reclining Indian friends would light cigarettes (ordinary ones) and smoke and engage in the most animated conversation. Clearly they were discussing what was happening, but we had no interpreter. They would light the electric torches. We took advantage of these moments to study the Senora. She was not in a trance. That is to say, she was one of us, talking and smoking. But she was in a state of excitement, her eyes flashing, her smile no longer that grave smile which we had observed before, but now quick with animation and, if we may use the word, *carltas*. For there is another aspect to the mushrooms that we must mention. The spirit of an agape of which we have already spoken was a prelude to a wave of generous or tender feelings that the mushrooms aroused in everyone. To illustrate this, we recall how, when nausea first sent one of us into the adjoining room to vomit, the Senora, who had been in full song, immediately stopped the performance, and she and the others manifested the most embarrassing solicitude about the unhappy episode, which after all was wholly unimportant. On the two nights that we passed in Cayetano's house, we were aware of no erotic stimulation among those present and we think there was none. But the feeling of brotherly affection was strong indeed. Twice in the course of that first night the Senora reached out her right hand to RGW and sought contact with his fingers in friendly greeting, across the chasm of the language barrier. The Indians of Middle America are known for their reticence in the display of affection, even within the family circle. It was now clear that the mushrooms emancipate them from inhibitions of this kind, and what we witnessed on Wednesday night was abundantly confirmed during our second session on Saturday, July 2.

After the first performance Allan and RGW, quite stunned and even numbed by what we had witnessed, were disposed to say, 'Never again'. But by Saturday



PLATE L. Maria Sabina, curandera, and her son Aurelio under the influence of mushrooms.
Huautla de Jimenez, June 29, 1955.

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morning there were many questions that we needed to clarify, and so through Cayetano we asked the Sefiora if she would give us a repetition. This she agreed to do. We pled with her to let us take a few photographs by flashlight while the power was on her. She said yes, and in the course of that night from Saturday to Sunday Allan took perhaps twenty pictures in the darkness, guessing of necessity as to the distance and direction. (It was raining in torrents all that night, and so there was no moon.) But the Senora's behavior differed much from what we had seen the first time. Everything was reduced in scale. There was no dancing and virtually no percussive utterance. Only three or four other Indians were with us, and the Sefiora brought with her, not her daughter, but her son Aurelio, a youth in his late teens who seemed to us in some way ill or defective. He and not we were the object of her attention. All night long her singing and her words were directed to this boy. Her performance was the dramatic expression of a mother's love for her child, a lyric to mother-love, and interpreted in this way it was profoundly moving. The tenderness in her voice as she sang and spoke, and in her gestures as she leaned over Aurelio to caress him, moved us profoundly. As strangers we should have been embarrassed, had we not seen in this *curandera* possessed of the mushrooms a symbol of eternal motherhood, rather than the anguished cry of an individual parent. But by any interpretation this untrammelled and beautiful outpouring, touched off in all likelihood by the sacred mushrooms, was behavior of a kind that few Middle American anthropologists would ever expect to see.

On this second occasion Allan took no mushrooms, for the sake of his photography. The Sefiora asked RGW how many pair he would take, which he interpreted as a compliment to his status as one already initiated, and he said five. The effect seemed as strong as he had experienced from the larger dose on Wednesday, but this time there was no nausea.

Both of our nights with the Sefiora drew to a close in the same way. On the night of Wednesday-Thursday, our last notes seem to have been scribbled a few minutes before 4 a.m., and soon afterwards we slipped off imperceptibly into a dreamless slumber. Apparently everyone else did likewise. At any rate, at about 6 o'clock we woke up, our heads clear. Some of the others were already stirring, and in a few minutes everyone was on his feet. RGW changed the roll in his camera and resumed picture-taking, as did Allan. Cayetano and Guadalupe asked after our welfare but were discreet in their inquiries about the night's doings. They served us coffee and bread. By 7 o'clock we were ready to sally forth into the world. We felt no untoward sleepiness that day.

Perhaps in some respects we can define better than we have done the psychic

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disturbance caused by the sacred mushrooms. On the one hand, they unhinge one's sense of time. Visions that seem to last an aeon run their course in a minute or so. Only by reference to a time-piece does one keep track of the passing hours. On the other hand, the faculty of memory is heightened by the mushrooms. All the impressions, visual and auditory, are graved as with a burin in the tablet of the memory. Our narrative of what took place has been checked with the notes that we jotted down at the time, but our memory is far richer and fuller than those notes.

What can we say about the source of our visions ; Did they bubble up out of our own past ; We have no conscious memory of having viewed previously the scenes that we saw. There was nothing in them that repeated themes familiar to us in our adult experience, no modern highways, cars, cities. Yet all that we saw could be related to themes latent in our imagination, not necessarily things seen, nor even things seen in graphic representation, but those things transmuted afterwards in the imagination, imagined from reading, seen in the mind's eye. All of the visions had that pristine quality which we associate most often with the magic of supreme literary expression, especially great poetry. In the lives of us all, even those who are most earth-bound, there are moments when things, even the most humdrum, suddenly and unaccountably clothe themselves with beauty, haunting and ravishing beauty. It now seems to us that all such flashes must emerge from the subconscious well where our visions have all this time been stored, for the mushroomic visions are an endless sequence of those flashes. There are those like Keats who have possessed the power to see such visions in abundance without the mushroomic stimulus. Could the mushrooms have done better by Keats than he did without them; What would they have shown him that he did not see; What precisely do our Indian friends see, with their different background; Clearly the visions come from within the beholder, either from his own unconscious or, as some will surely think, from an inherited fund of memories of the race. What an amazing thing that we should all be carrying this inventory of wonders around with us, ready to be tripped into our conscious world by mushrooms! Are the Indians far wrong in calling these divine; We suspect that, in its fullest sense, the creative faculty, whether in the humanities or science or industry, that most precious of man's distinctive possessions and the one most clearly partaking of the divine, is linked in some way with the area of the mind that the mushrooms unlock.

We believe that the mushrooms are not habit forming. If we are right, they differ in this respect, not only from alcohol, but from the drugs such as opium and marihuana that are reputed to stimulate beatific visions. In the course of

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our three expeditions to Mexico, covering four cultural areas, we never heard of a mushroom addict. We believe that use of the mushrooms does not affect the threshold of tolerance for them; that is to say, one does not raise the dose on successive occasions to obtain the same effect, either for the short run as when we used them twice in four days, or over the long term. Our Sefiora and her daughter took more than twice the dose of the others, but this quota goes with their vocation. Everyone's dose seems to remain constant throughout life, though the dose varies somewhat from person to person. We have seen no evidence that the mushrooms can cause harmful psychic effects but our experience is too limited for us to generalise about this. Are persons with neurotic or psychotic inclinations endangered by the mushrooms? After a life-time of use do mushroom-eating *curanderos* show mental deterioration; May there be individuals whose mushroomic visions are horrifying and who are stimulated to violence by them; We do not know. In considering the clinical effects of the mushrooms, let us not overlook the extraordinary performance of the Sefiora and her daughter. They had each eaten more than twice as many pair of mushrooms as the rest of us, and they not only kept hold of themselves: they staged a liturgy that called for disciplined virtuosity of a high order.

On Friday, July 1, VPW and Masha joined us in our village. We had all planned to leave immediately after the Saturday night experience, but the rains came and we found ourselves marooned among our Mazatec friends for most of the following week. On Tuesday the 5th VPW and Masha, having nothing else to do, took the mushrooms in the afternoon, VPW five pair and Masha four, and then they lay down in their sleeping bags. This was the first occasion on which white people ate the mushrooms for purely experimental purposes, without the aura of a native ceremony. They too saw their visions, for hours on end, all pleasant, mostly of a nostalgic kind. They felt little or no nausea. Their pupils dilated and failed to respond to our flashlights. The pulse showed a tendency to slow down. There were no auditory hallucinations. But six weeks later, when RGW in New York took the mushrooms for the third time on August 12, his visions were accompanied by an insistent beat with variation of pitch, perhaps an evocation of the Senora's percussive performance. The beat was not unpleasant. It seemed freighted with meaning, as though it was the rhythmic pulse of the universe. When the Sefiora had performed for us, we had passed most of the night in virtual darkness - an environment adapted to dilated eyes. Our experience in New York took place in a room illuminated by lights from the street, and moreover on that night of the 12th a hurricane known at the time as Connie was brushing by the city. We found that the mushrooms

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had retained their full potency in a dried state, if indeed their power had not increased. We made another discovery. As we stood at the window and watched the gale tossing the trees and the water of the East River, with the rain driven in squalls before the wind, the whole scene was further quickened to life by the abnormal intensity of the colors that we saw. We had always thought that El Greco's apocalyptic skies over Toledo were a figment of the poet's imagination. But on this night we saw El Greco's skies, nothing dimmed, whirling over New York.

Now we come to the end of our Mazatec experience. We had agreed from the beginning to pay the Senora her usual fee for her services. We paid her fifty pesos for each night, which was somewhat more than she expected. In dollars this meant \$ 4.00 a night, but in her world the fee meant much more, perhaps subjectively as much as \$ 50.00 in New York. Before we left the village we asked Cayetano what we could pay him for his contribution to the success of our visit. He turned to his wife and let her speak. *'No hicimos esto par dinero'*, she said, which is to say, 'We did not do this for money', and they would accept none. We were especially grateful to the Senora for having allowed us to take photographs while the power of the mushrooms was on her, during that second night. It had not been easy for her to consent to the rude interruption of the flashlight, and we ourselves knew also that the pictures would be misleading, as they would convey no idea of the darkness that Allan and ROW will always associate with the mushroomic agape. We noticed at the time that the flashlights upset the pace of her performance, interrupted the spontaneity of her singing. On the morning after, a messenger came to us from her. We were welcome to the pictures, she said, but would we please refrain from showing those particular ones to any except our most trusted friends, for if we showed them to all and sundry, *sena una traidon*, it would be a betrayal. We are doing as the Senora asked us, showing these photographs only in those circles where we feel sure she would be pleased to have them shown. In order that she be not disturbed by the importunities of commercially-minded strangers, we have withheld the name of the village where she lives, and we have changed the names of the characters in our narrative. On our next visit we shall ask for permission to publish our pictures for general circulation.

On Friday evening, July 8, we all arrived back in our home in San Angel, and after a good night's sleep we were ready on the following day to pursue our quest for the divine mushrooms in new directions. RGW had received a letter in May from Mrs. Carmen Cook de Leonard of

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Mexico City, the well known student of indigenous cultures, with surprising information. It seemed that she and her colleague, Miss Bodil Christensen, had discovered that the use of the divine mushrooms still survived in a village not far from the capital city. They would be glad to place their information at our disposal, and to try to arrange for a *curandera* to consult the mushrooms on our behalf. After our arrival in Mexico and while we were in the Mazatec country, Mrs. Cook de Leonard and Miss Christensen talked with their *curandera* and she agreed to serve us on the evening of Saturday, July 9.

On that Saturday afternoon we drove out to the town of Amecameca some forty miles away, and thence by a dirt road three miles to the bleak forbidding Indian village of San Pedro Nexapa. (The -x- in this name has the sound of a Spanish -/-.) We were now on the slopes of the volcano Popocatepetl, at about 8,000 feet altitude, above the Valley of Mexico. This was Aztec country, where even now the old people still can speak classic Nahuatl. We sought out the humble house where the *curandera* Marina Rosas lives, a flimsy wooden structure that freely admitted the cold, dank breezes. We found the aged lady seated on a *petate* and wrapped tight in her shawl near the wood fire on the floor. Though she must have known Nahuatl, Spanish was clearly her language of preference. She informed us that she was ill and therefore could not help us. She was sorry, but what could she do? She was ready to appoint another day, and we settled on Saturday, July 30. If we may anticipate the later events, we returned three weeks later, on that appointed day, only to discover that Marina Rosas, seated on the same *petate* in the same place, was again unable to help us, not because of illness this time but because, doubtful whether we were really going to arrive, she had broken her fast and eaten a midday meal. *Para aue contesten ellos, ha de ser limpio el estomago* - for the mushrooms to reply, the stomach must be clean. The old lady was lovable in her excuses and protestations, but RGW felt that she really did not wish to eat the mushrooms for us.

But our visits to San Pedro Nexapa were not fruitless. We learned from Marina that only one kind of divinatory mushroom is known in the village and we obtained a small packet of dried specimens. As in the Mije and Mazatec regions, one considers that the mushrooms speak, not the person who eats them. The mushrooms are gathered in September, around the time of the Cholula fair, above the village on the slopes of the volcano, perhaps as high as 10,000 feet. In the Mije and Mazatec regions we had learned that in the hot low country the mushrooms are not used. Now we discovered that the higher limits are high indeed. They are eaten only in a dried condition and they keep for a year, until the next ones are gathered. According to Marina, the whole mushroom is

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eaten, pileus and stipe. Marina never used the word *curandero*. He who knows how to use the mushrooms is a *trabajador del cielo*, a heavenly worker. Sometimes the *trabajador* gives them to the sick person to eat, but the mushrooms will not speak through the sick person because he is not chosen. We discovered from Marina that she customarily takes six pair, but with the six pair she also takes twelve seeds possessed of parallel psychic powers. These seeds are called in Nahuatl 'bird's-eyes' and in the Spanish of Mexico *colorines*. To botanists they are the seeds of the *rhynchosia pyramidalis* (Lam.) Urban, also known as the *rhynchosia phaseoloides* (Sw.) DC. They are bright red with a large black spot, the size of a bird's eyes. The black spot does not cover the hilum or eye of the seed, and this is precisely what distinguishes the seeds used by Marina from the poisonous seeds of the *abrus precatorium* L., which superficially look alike but whose hilum is black. Marina spoke of the divinatory mushrooms as *los niños*, 'the children'. The significance of this name becomes apparent only when we learn that the Nahuatl term in Marina's village is *apipiltzin*, wherein *-tzin* is the diminutive suffix, *-pipil-* means 'children', and *a-* stand for *atl*, 'water'. In this village high in the mountains where classical Nahuatl is spoken, our mushrooms are the 'little children of the waters'. There will be occasion elsewhere to revert to this name. Marina told us that the mushrooms 'speak' only in Nahuatl. If she is right, the divinatory mushrooms would seem to be linked irrevocably with the fate of the old language, and doomed to disappear when the old generation fades out.

For some years Robert Weitlaner had been hearing rumors, which he conveyed to us, that the mushrooms were still being used in the Valley of Toluca about two hours by car from Mexico City, where the altitude is also around 8,000 feet. During our stay in Mexico Donald Leonard, the husband of Carmen Cook, made two trips thither for us, accompanied on one occasion by Don Roberto. They went first to Tenango del Valle, the very town mentioned by Jacinto de la Serna in his account of mushroomic idolatries in the 19th century. In the market place of that town they learned from an old woman that two kinds of divinatory mushrooms are still being used thereabouts, the larger known as *mujerdtas* and the smaller as *hombredtos*, the little women and little men. Collectively they are called *niños* or *nandcatl*. These mushrooms are not exposed in the market place but are obtainable there. The supply comes from a village called San Pedro Tlanixco, only a few miles away, where it seems that the people make a specialty of gathering and preparing these 'children of the waters'. Mr. Leonard brought back specimens of both kinds.

Thus thanks to the diligence of the Leonards and Miss Christensen we have

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discovered the mushroom cult surviving to this day in the very land of the Nahuatl. Whereas forty years ago W. E. Safford was denying that any such cult had ever existed, we now find it on the door-step of the capital city of Mexico. In the Valley of Toluca the Aztecs overran and superseded the earlier Matlatzinca population, of whom there still exists one village speaking the old tongue, and the region where the people speak Mazahua is hard by. We know from our early quotations that both these peoples knew the mushroom. Where is the anthropologist who will do the study that cries for doing in the Valley of Toluca and thereabouts? He might well start in San Pedro Tlanixco. Here apparently he would confront a most curious problem in economics, a village that specializes in supplying consumers with a sacred product that never enters the ordinary channels of trade. The student should try to discover the circumstances surrounding the mushroom harvest, attend the drying of them, learn where and how they are stored, and as best he can trace them to the ultimate consumers, recording for us all the associations, religious, social, folkloric, and linguistic, that accompany them on their way. Here is a study in little things pregnant with cultural meaning. Who knows? Perhaps he would discover that some of the product reaches Mexico City itself, and that heavenly workers in its very precincts are still consulting the little children of the waters.

In 1949 Dr. Pedro Carrasco, the gifted Mexican anthropologist, visited a number of villages in the coastal sierra of southern Oaxaca, a region almost unknown to travelers. He gave his account of this trip in the paper that he contributed to the *Festschrift* honoring Dr. Alfonso Caso, which appeared in 1951, and in it he dropped the remark that the villagers were still using the sacred mushrooms, as well as other hallucinogens. One of the goals of our 1955 trip was to repeat Dr. Carrasco's visit and amplify his observation. For our guide we engaged once again our friend from the Mije trip, Francisco Ortega, known as Chico, who at our behest made a quick trip to the area early in June to learn whether it was at all accessible in the rainy season. He reported that the trip was feasible, but that the villagers were suspicious of strangers and inhospitable, and that we should not think of going unless we carried letters of commendation to the local authorities from the Governor of the State and the Commanding General of the Military Zone.

Equipped with these credentials, we set out from the city of Oaxaca on Friday morning, July 15. Our party, in addition to Chico, consisted of our old friend and mentor Robert J. Weitlaner, Professor Howard E. Brunson of the East Los Angeles Junior College, and RGW. In the afternoon of the following day

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we reached the town of San Agustin Loxicha,¹ a cluster of houses on a mountain ridge, some 1,700 meters high, that looks south across rugged and verdant terrain to the Pacific Ocean some ten or fifteen miles away. The town is almost due south from Oaxaca and about 100 miles by road and trail. In the rainy season the mornings are usually bright and clear, so clear that the breaking surf can be descried in the distance. But soon the clouds roll in from the sea and the rain is likely to come down in torrents for hours on end. The town is idyllic in its loveliness, almost all of its houses of adobe with roofs either of thatch or home-made shingles beautifully weathered, everything washed clean by the rain, the air pellucid in the morning sun, the whole sparkling community perched as it were in an upper balcony of a vast amphitheater of mountains overlooking the distant Pacific sea. We arrived at the moment when the *floripundio* was in bloom, a tree arrayed in trumpet-like blooms, dazzling white, that greets the eyes at every turn. This is the angels' trumpet of Florida, the *datura suaveolens* of botanists.

The people of this area are Zapotecs, speaking one of the several Zapotec languages. But these languages differ much from each other, and Chico, versed in the tongues of the Isthmus and the Valley, could not cope with the speech of San Agustin. There was an element in the village who were hostile to us from the beginning, just as Chico had warned us to expect, and we were glad for the measure of protection that our letters gave us. The hostility grew as the days passed, but the concern that we felt at times for our safety is, in retrospect, merely an incidental phase of travel such as this, and we shall not dwell on the details beyond saying that we were all relieved when we had left the town behind us on Saturday morning, July 23, after we had stayed there one week. All the experience and tact of Don Roberto and Chico had been needed to keep the hostility in bounds.

In June Chico had made contact with a leading villager of San Agustin, Ismael Jimenez Reyes, a store-keeper and coffee grower, who had promised Chico the cooperation of a *compadre* of his, a *curandero* of the first rank, Aristeo Matias by name. We called on Ismael at once. In fluent Spanish he told us that he himself never has recourse to the mushrooms, but he knew much about them by hearsay and he told us all he knew. What he said echoed many things that we had heard in the Mije and Mazatec country, in Miss Pike's letter, and in the old books. Like our Mije friends, he said that if a dog barks or if a cock crows

I. This is one of nine towns or settlements in the region to the names of which 'Loxicha' is added, the others being Santa Catarina, San Bartolo, Magdalena, San Francisco, Buena Vista, Candelaria, Santa Marta, and San Baltasar. Scholars seem not to have arrived at the meaning of 'Loxicha', in which the 'x' has the phonetic value of V.

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nearby, nothing can be expected from a mushroom vigil thus interrupted. Reminding us of the 16th century botanist Francisco Hernandez, he said that one kind of mushroom makes the eater give himself over to sheer laughter, *pura risa*. (Later Don Aristeo corrected this. There is no such species, he explained, but any of the divinatory mushrooms can provoke this effect when taken by weaklings or cowards.) Ismael told us a story that reminded us of an episode in Miss Pike's letter. On his farm Ismael had once had a hired hand, a *mozo*, who fell ill. " 'They will never cure me with medicine,' the *mozo* said; 'I am going to take me a mushroom.' And so he did. Then he said, 'Give up hope. I am going to die.' Still possessed by the mushroom, he added, 'I no longer live'. 'They have already come, and taken hold of me, and are carrying me away.' Shortly afterwards he really died. Yes, with the mushrooms he saw how his soul was already being torn from his body. His soul was already in the other world."¹ This episode, told to us with moving simplicity by Ismael, serves to illustrate a fact about the use of divinatory mushrooms in Middle America that all our evidence supports. The mushrooms play a major role in the folk medicine of the various archaic cultures where they are used, but in native thinking never as therapeutic agents. The Indians use them for diagnosis and prognosis. The mushrooms are expected to reveal the cause, nature, and course of the illness, and if the outlook is not hopeless, to declare what must be done for the patient to recover. Under the spell of the mushrooms, the *mozo* in the story saw himself die, and he accepted the death verdict. (Of course by modern medical criteria the mushrooms produce a powerful psycho-catharsis with somatic consequences.)

Aristeo Matias the *curandero* was working his acres when we arrived in San Agustin. Ismael sent his son-in-law Pedro Garcia to fetch him, first to a *rancho* three hours below, and then, not finding him there, to another *rancho* high in the mountains in a different direction and also far away. At last he found Don Aristeo and they arrived back in San Agustin on Sunday evening, joining us where we were all huddled together in Ismael's little store. Don Aristeo presented an extraordinary appearance, a little man, clearly weighing less than a hundred pounds, in his fifties, with an expressive little face and almost no teeth. He had no Spanish whatever, and during the long hours that we were to pass with him during the following week, we had as our interpreters Ismael, Pedro, and his own son Serafin. Don Aristeo was an informant of value in the sense that he

I. In Ismael's words: Tuve una vez un mozo en la rancheria, y se enfermo. 'No me curan con la medicina,' me dijo. 'Me voy a tomar un hongo.' Tomo. Entonces me dijo, 'Pierda la esperanza. Yo me voy a morir.' Y murio. Antes de morir dijo, 'Yo ya no vivo,' y despues, 'Ya vinieron y me agarraron y me llevaron.' Le habian ya sacado el alma. El alma ya estaba en el otro mundo.

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was a product of his world little touched by outside influences, but his responses were slow, it was difficult for him to grasp the import of our questions, and patience was often needed to arrive at his meaning.

We told Don Aristeo that we had come from far away to learn the secrets of the sacred mushrooms with the idea that we might take up his vocation, and we asked him also for news about the fate of RGW's son Peter. All this seemed reasonable to him, but the Zapotecs are a race notorious for their hypertrophied pocket nerve, and the next day, before we got down to work, Don Aristeo sent us word by Ismael that he would help us for 1,000 pesos. There were further interchanges through our intermediaries Ismael and Cliico, and we finally settled on 500 pesos, or about \$40 U.S. How different from the nobility of Cayetano and Guadalupe in the Mazatec country! But when we had once agreed on the price, Don Aristeo kept his bargain, and some days later, on the eve of our departure, we kept ours, paying him off, and our interpreters too, with solemn formality, by the light of a candle, in Ismael's store.

The *curandero* in San Agustín is called *menjak*,¹ 'he who knows', exactly the same figure of speech that we had found in the Mazatec country. The designation *menjak* retains its literal sense, so that instead of *menjak*, in the appropriate context one uses *sanjak*, 'that man knows'. In speaking Spanish Ismael rendered the Zapotec words by *sabio*, the wiseman, rather than by *curandero*. Don Aristeo told us that his father had given him the mushrooms for the first time at the age of 12. His father had been a *menjak*, and his father's father before him. But his son Serafín showed little promise; alcohol was his undoing. Women are just as good as men in this vocation, perhaps better, he said, for they are not given to alcohol; and he cited one Ebrigida Santiago, in the village, to illustrate his point. The woman who pursues this calling is a *ngol'njak*. Don Aristeo said that the beginner must take the mushrooms several times before he can cope with them as a *menjak*. 'On taking the mushroom for the first time, the mushroom introduces himself to the novice, *Asi me llamo yo* ['thus am I called'; note the parallel with Exodus 3 :i4]. Then terrible things happen, but one must not be afraid. You rush to the sea, you plunge in, you go up to heaven, there where Jesus Christ is, and then to hell where the criminals are. You see the whole world lying in the middle of the sea. On the second try you are thrown into the sea, but be not afraid. Then you see two women and two men who are gathering up the blood where Christ was born [sic]. On the third try everything changes, and now you are strong and the voices begin to come. Then on the fourth try you

I. In Zapotec there are three tones: high indicated by', low by', middle by no accent. In our spelling, 'j' is as in 'judge'. A synonym for *menjak* is *ngwe'dz*, the apostrophe here as elsewhere representing a glottal stop.

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arrive there where the Virgin Mary is, and the Lord Jesus Christ, and then they explain good things. Then all the Spirits come, all the Virgins, all the Saints. Then you know, and you are *menjak*? From that moment the mushroom teaches you all things.'

Don Aristeo told us that all the *curanderos* of the region are known to each other, and that there are three elders among them, of whom he is one. The three take counsel together from time to time, when questions come up, and in difficult cases one of them calls in another, who takes the mushrooms and wrestles with the problem. For four days before taking the mushrooms the *menjak* must refrain from alcohol, even beer, and also from sexual relations. But you may eat any food and smoke tobacco. The four day period is called a *noven*, adapted from the Spanish *novena*, and you count back from the end of the mushroom session. Thus if the session ends at dawn on Friday, then Friday, Thursday, Wednesday, and Tuesday are the four days, and you begin to observe the regime from Tuesday noon on.

The word for 'mushroom' in the Zapotec of San Agustin is *mbey*, and this appears to be the basic word in all the Zapotec languages. There is no other word to designate the sacred mushrooms, but this function is served in some measure by *mbeydo*', an important and curious term that is a 'collective': it means a batch or lot or mess of sacred mushrooms. It is never used for mushrooms other than the sacred ones. The cap or pileus of the mushroom is the *yek*, 'head', the same figure that we have found in the Mije and Mazatec country. The stipe is the 'leg' and the gills are the 'inside' of the mushroom.

Don Aristeo uses four kinds of mushrooms for divinatory purposes. First, there is the *piule de churls*, wherein *churls* means 'the small ones'. *Piule* is a word widely used in Mexico in the vocabulary for the hallucinogens, but its etymology, range, and application seem not to have been a subject of study. In this case the *piule de churls* is a mushroom that grows in pastures and cultivated fields. Don Aristeo gave us samples. (Query: Is *piule* derived from *peyotb*.)

The second and third kinds are both called *piule de barda*, wherein *barda*, 'thorn', stands for Christ's crown of thorns. One of these species grows in clumps near but not in marshy ground, and it is black, and it stains the ground and plants nearby with its own blackness. It appears to be abundant, and Don Aristeo had a large supply which he had gathered lately and dried in the sun. The other kind is much larger, rising to six or seven inches in height. It grows in the shallow water of marshy land, singly, and it is much harder to gather in quantity. The upper surface of the cap is bright yellow, but the gills and stipe are dark. To distinguish this from the first, it is called in Spanish the *grandote*,

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'big fellow'. It is said to appear on the day of St. Anthony, June 13. In the Zapotec country the marshy places are considered holy, and these two kinds of mushrooms are linked with the holy marsh land. They told us that beneath the marsh a great *culebra* or serpent (*mjd'mdo'* in Zapotec) lives. I asked what it looked like, and they said no one had ever seen it. Thus the belief in the Middle American serpent deities lives on to this day.

The fourth kind of divinatory mushroom, of which we saw no specimens, is the *ndotan de venado*, the Lord of the Deer. While all four kinds can be used in substitution for each other for all purposes, this one is especially good for help in hunting, because you see in your visions where all the animals are, in a great corral, shepherded by the *Dueno de Todos los Animales*, Lord of all Animals, another survivor of the pre-Columbian divinities of Middle America. According to Don Aristeo, this mushroom is some five inches across, and yellow above and below, growing in dry earth near any ditch, along any roadside, especially in low country.

Don Aristeo said that the mushrooms were just as potent when dried as fresh and that they keep for months. When there are no mushrooms, the *menjak* uses instead either of two kinds of seeds, and by extension the word *mbeydo'* embraces a dose of divinatory seeds, just as though they were *mbey* or mushrooms. This usage indicates that in the thinking of these Zapotecs the role of the vegetable hallucinogens is secondary. Both in San Agustin and in the Mazatec country it seems that there is recourse to the seeds or leaves only when the mushrooms are not available. In the Zapotec of San Agustin the two kinds of seeds are called the yellowish piule and the black piule, *men nagadz* and *men nagat*; in Spanish, 'the male' and 'the young lady', *el macho* and *la Senorita*. We brought back with us seeds and leaves of the second kind, and they were later identified by Joseph Monachino of the New York Botanical Garden as *ololiuqui*, the famous Aztec hallucinogen known to botanists as *rivea corymbosa*.

Early in our visit we asked Don Aristeo to give us a mushroom session, and this he did on the night of Thursday, July 21. Don Roberto called on him that afternoon to pursue further the calendar problem, and found him casting kernels of corn. There was a heap of 51 kernels disposed in little piles, and he went through the casting five times, to learn what fortune he would have with us that night.

We arrived at Don Aristeo's house shortly before nine o'clock in the evening. We were eight, our *menjak*, Don Roberto, Howard Brunson, RGW, and Chico; Ismael, Serafin, and Pedro. The house was on the outskirts of town, down the mountain side, well secluded. It was a typical one-room adobe cottage

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with thatch roof, no windows, and a door in the middle of the long side. There was a table on the right as one entered, and a wood fire was burning in a circle of stones in front of the table. Don Aristeo's place was next to the fire, where he alternately lay and sat *onapetate* covered with sacks. There was a bench for some of us to sit on, and the rest lay on *petates* where they pleased. The embers of the fire and a candle were our only illumination.

Slowly the program got under way. Don Aristeo prayed at length under his breath, and then opened a paper wrapping in which he had a large supply of

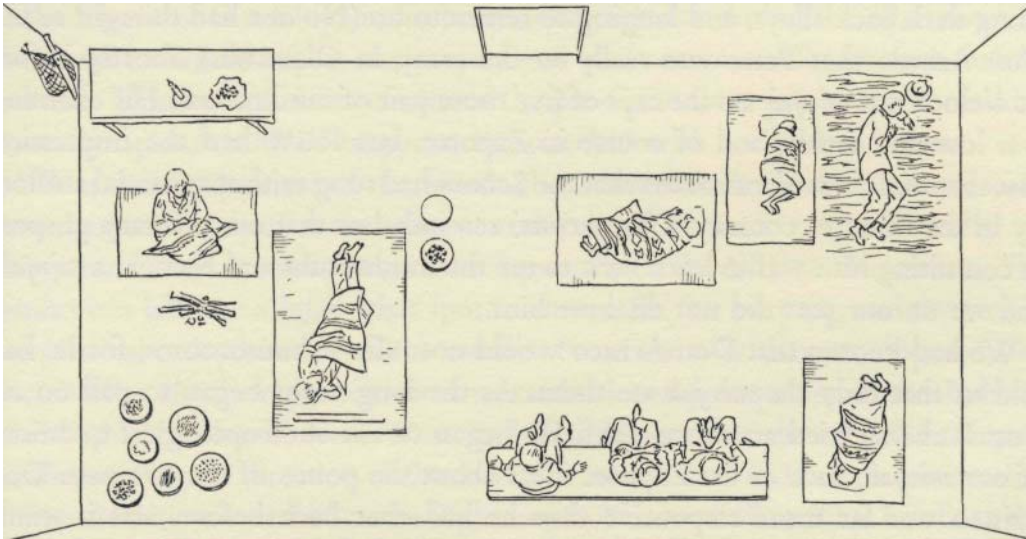


Fig. 22

piule de barda. He took out the mushrooms pair by pair, rinsed each pair well in a bowl of water, and placed the clean mushrooms in another empty bowl, praying the while. Having rinsed enough mushrooms, he tied up the rest in the paper wrapping, poured out the water on the ground, and then, pair by pair, took the mushrooms from the second bowl, severed the caps from the stems, placed the caps in the empty bowl, and held the stems in his hand. To our surprise he severed the caps of 25 pair of mushrooms. He explained to us that the stems are never eaten: they are respectfully laid aside and on the following day they are scattered (not buried) in any place off the beaten track where people will not pass.

Shortly after 9 o'clock, seated on the sack, he began to chew and then swallow the mushroom caps, scooping them out of the bowl in one big handful after another, seven mouthfuls in all, chewing them at length. By 9.35 he had finished them. He lay down for a time, his head on a rolled blanket. Then he sat up,

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lighted a cigarette, and spoke conversationally. Toward 10 o'clock he began to hum, and this became a musical hum, which in turn grew into a chant. He was lying on his right elbow and made sweeping gestures with his left arm. He asked our religion, and we thought it best to say Catholic. Then he said in Zapotec that our son Peter was alive and would return to us, that we should address prayers to St. Augustine, the Holy Virgin, and St. Joseph; and that we should burn votive candles of virgin wax in Oaxaca before the Virgin of Solitude and later make a similar pilgrimage to the Virgin of Guadalupe. He said that Peter was in Vera Cruz, plunged in sadness, living a hidden life, slinking along dark back alleys, and longing to return to us. (No one had thought to tell Don Aristeo that Peter was really in the army in Okinawa.) Shortly before 11 o'clock our *menjak* ate the caps of five more pair of mushrooms. His chanting was low and feeble, and of course in Zapotec, but RGW had the impression that the music was identical to what the Seiora had sung with magisterial authority in the Mazatec country. Don Aristeo reminded us that our primary purpose in consulting him was to learn how to use the mushrooms and become a *menjak*, and we on our part did not disabuse him.

We had known that Don Aristeo would not offer us mushrooms, for he had told us that only the *menjak* ate them. As the long night began to pall on us, Don Roberto tried an experiment. He began to ask anthropological questions of our *menjak*, such as the Zapotec ideas about the points of the compass. Don Aristeo was far more responsive than he had ever been before, and it seems possible that the mushrooms offer a key to half-remembered things, a key that might be used in anthropological inquiries. But when all is said, it must be admitted that Don Aristeo's performance dragged, his vitality seemed low, and we were heavy with sleep. At one o'clock he told us we could go home. We think he felt the evening was unsuccessful: the initial dose of mushrooms that he took was abnormally large, and he followed it with a booster dose, as though the response was not to his liking. However, we were well pleased with the rich evidence that he had given us of the mushroom cult in this Zapotec area, the fourth cultural area in Middle America where we now know that it survives.

But we have not done with Don Aristeo. In the course of our talks with him he had made a revelation to us that was so startling, so enigmatic in its implications, that we have left our discussion of it to the last.

Two of our early Spanish authors wrote of the religious observances that accompanied the gathering of the sacred mushrooms. The 16th century botanist

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Francisco Hernandez spoke of. the 'night-long vigils, awesome and terrifying', that accompanied the quest. Half a century later, Jacinto de la Serna said that the priests spent the whole night in prayer and entreaties before going out at dawn to look for the mushrooms. Our informants in the Mije and Mazatec regions had known of no such religious practices, but Don Aristeo did.

Our *menjak* told us that when he gathered the sacred mushrooms, he would cross himself, kiss the mushrooms seven times, and say in Spanish or Latin (learned by rote, of course) five Pater Nosters, seven Ave Marias, five Credos, and seven Salve Reina Madres. He would place the mushrooms before the image of the Virgin of Guadalupe in his house, and each day during the observance of the *noven* he would repeat the prayers and wash ceremonially his face, hands, and feet. Thus in Don Aristeo's world the pre-Columbian practices recorded by the early Spanish authors reappear, but overlaid with a Christian veneer.

When the mushrooms of the fourth class, the hunter's mushrooms, are consumed, immediately after they are eaten the *menjak* places five righted candles on the ground, one at each corner of a square with the fifth in the center. The mushroom tells the *menjak* what spot to choose for this purpose, and flowers or leaves are also deposited with the candles. From the way they are disposed, the five candles clearly represent the five cardinal compass points of the Indians' world - North, South, East, West, and Zenith - and are the *menjak's* compass for discovering the direction of the deer. The *menjak* then addresses an invocation to five divinities: to *mdldo'* or the 'lightning bolt', to *mdida* or 'Our Lord', to the Divine Pastor, to the Divine Huntsman, and to San Pedro Chapa in the Church of San Pablo Mitla. Only two of these five divinities bear a Christian aspect. (The Divine Pastor belongs to the Middle American pantheon.) Here we discover our first association in Middle America of the sacred mushrooms with the lightning bolt, *el rayo*.

There is a third rite. Four days after the *menjak* gathers any of the divine mushrooms, he returns to the spot where he has found them and with candles and flowers he gives voice to a supplication for an increased yield of mushrooms in the following year. He addresses his prayers to five divinities: -

- 1 the earth,
 - 2 God the Father Most Holy,
 - 3 the Trinity,
 - 4 the Great Lightning Bolt that bred [*crio*] the *piule* (*mdi'ndd' pse' btul*), and
 - 5 the Great Lightning Bolt that put blood into the *piule* (*mdi'ndo' bio ren blul*).
- In Spanish: *El gran rayo que le echo sangre al piule*.

The second and third of this quintet are, clearly, Christian interpolations. Omit-

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ting them, we have left a religious explanation, wholly pre-Columbian, for the generation of the divine mushrooms, and that explanation lies in the union of the lightning bolt with the fecund mother earth. As Don Aristeo put it through our interpreters, *el rajo es la fuerza de la tierra*, the lightning bolt is the earth's force.

Those of our readers who have long memories will recall that in Section 7 we drew attention to the extraordinary range of the archaic belief in lightning as the generative agent for mushrooms. We documented this belief in ancient India, Greece, and Rome, and in modern Kashmir, Persia, and the Pamirs. Outside the Indo-European world, we found it among the Semitic Bedouin, the Chinese, and the Polynesians of New Zealand. Now, thanks to the experienced handling of our difficult informant by Robert Weitlaner, we rediscover this self-same belief in a Zapotec village where the ancient Zapotec culture strongly survives. And in this Zapotec recension we pinpoint it with greater precision than elsewhere: for Don Aristeo and his people the divine mushrooms are the progeny of coitus between the lightning bolt and our mother earth.

At once the question posed by our evidence assumes new and deeper meaning. Parallels in mythic beliefs among archaic peoples are of course numerous, but is there any other example that is as specific in explaining a simple phenomenon in nature? Plutarch pondered over the very belief that Don Aristeo, the Zapotec *menjak*, holds today, and Plutarch's puzzlement is as nothing compared with ours, now that we discover the belief even in Middle America. Plutarch asked why men believed that lightning made mushrooms grow. Have we perhaps, at the end of a long trail, discovered the answer >.

No mycologist thinks that lightning causes or encourages mushrooms to grow. It is therefore impermissible to suppose that the various branches of the human family arrived independently at this notion by close attention to nature. (We must not wholly exclude the possibility that the mycologists will change their minds. Scientists are as dogmatic about the knowable as churchmen about the unknowable, but there is a difference: the dogmas of the Church are immutable, whereas men of science change theirs daily without a blush.) Perhaps someone will suggest that just as men of science, unknown to each other, often hit on the same idea at about the same time, so archaic cultures may hit on the same mythic beliefs. But the analogy in its application to our enigma is invalid. Scientists are working in a closely integrated, homogeneous intellectual atmosphere, and even if two workers have never heard of each other, they handle identical data and ideas. But who will assert that cultures far removed from each other in time and space must inevitably, in an early phase of their evolution, link

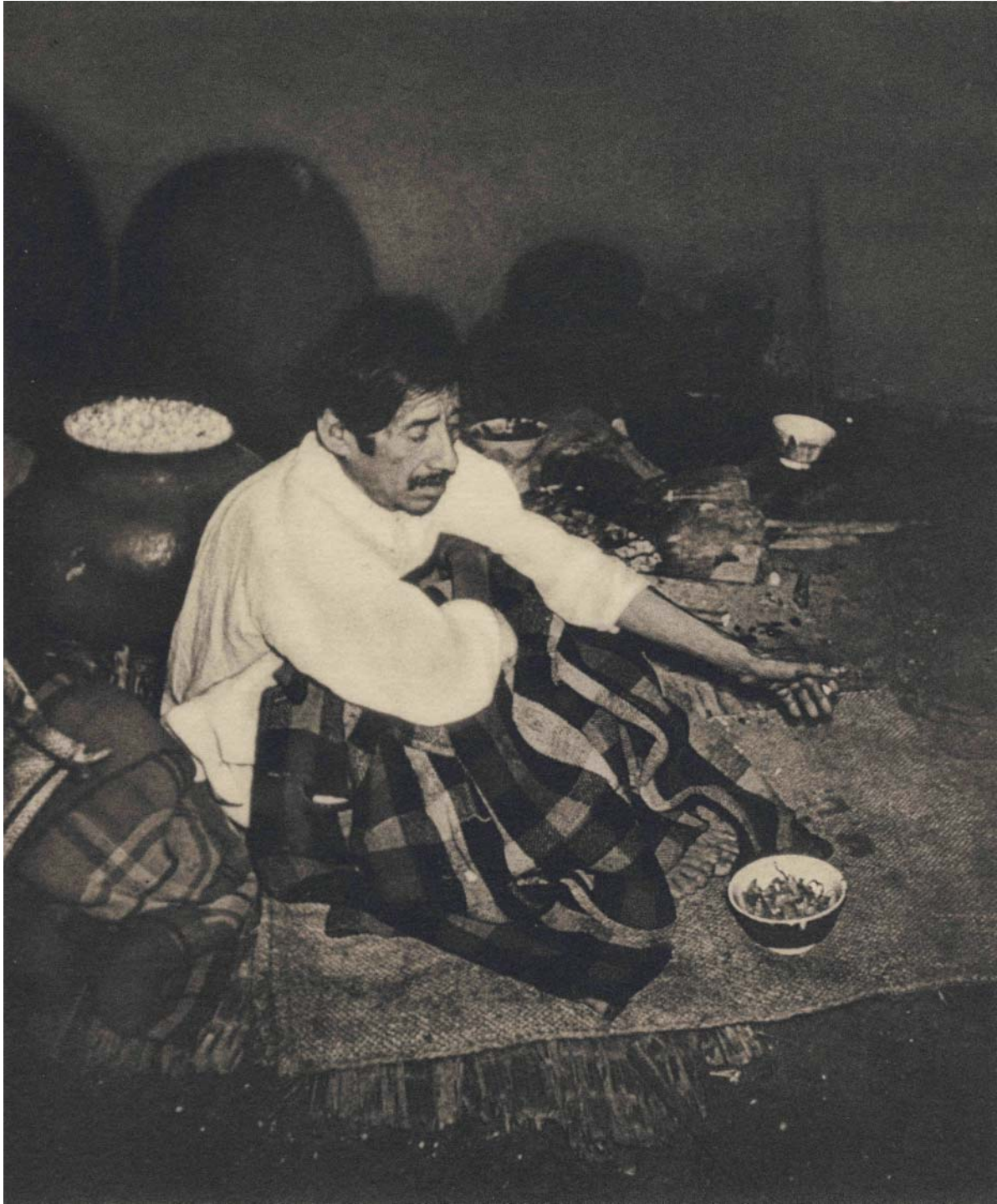


PLATE LI. Aristeo Marias with bowl of divine mushrooms.
San Agustin Loxicha, July 22, 1955.

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lightning with fungal procreation? Surely independent genesis is highly improbable.

But how about a simple diffusion of the idea? Today students of the neolithic and later cultures know that cultural communication was active in those early times over large areas. Technological discoveries, artistic and magical motifs, and certain kinds of products would spread quickly to distant parts, thanks to contacts from village to village or to travelers plying the trade routes. The alphabet was invented only once, in the Near East, and by diffusion, that first alphabet led to the birth of scores of alphabets elsewhere. When tobacco was released from the New World, it penetrated everywhere in a few years, faster than explorers and geographers could travel. But was it not always the new idea or gadget that spread thus by diffusion, rather than mythic beliefs as old as the hills? Sometimes with the birth of a new and aggressive religion, its mythology would burst forth like a tidal wave and inundate an area before its strength was spent. But if anyone is bold enough to say that the link between lightning and mushrooms was a belief propagated in this way, at what point in time did the diffusion take place and from what focus;

There is the third possibility. Was not our belief handed down lineally for many thousands of years? Do we not discover in it a surviving trace of an early cosmology elaborated when the ancestors of the Zapotecs and Greeks and Semites and Polynesians and Chinese were neighbors, were not yet differentiated, in their Eurasian home-land? The Zapotecs link lightning, not with all mushrooms, but only with those that by divine grace translate the eater to Paradise. Perhaps their belief is the original one. On an earlier page we saw how mushrooms as primary tinder were linked with fire, and the procreation of fire with their aid was a divine event and a sexual act. Was it not a natural extension of ideas to suppose that the spark or spunk of fulminating Jupiter procreated the divine mushrooms? The Zapotecs could have answered Plutarch's question, but he clearly had never heard of our miracle-working mushrooms. The popular belief that puzzled him was an archaic survival in Greece that had lost its meaning. If the divine mushrooms were still being used in the Aegean, they were the secret of initiates in the mysteries. When myths lose their vitality like molluscs their shells last on, and the figures of speech, the anecdotes, being curious in themselves, inspire popular etymologies, those explanations that are more or less inept after-thoughts. In this way the lightning that had once generated only the divine mushrooms became associated with truffles and *terfezia*, with mushrooms generally. The 'fly-mushroom', which we think had once harbored the demonic fly of our sacred mushrooms, shrank to an ineffectual insecticide.

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With our Mexican experiences fresh in mind, we re-read what Jochelson and Bogoras had written about the Korjaks and Chukchees. We discovered startling parallels between the use of the fly amanita in Siberia and the divine mushrooms in Middle America. In Mexico the mushroom 'speaks' to the eater; in Siberia 'the spirits of the mushrooms' speak. Just as in Mexico, Jochelson says that among the Korjaks "the agaric would tell everyman, even if he were not a shaman, what ailed him when he was sick, or explain a dream to him, or show him the upper world or the underground world, or foretell what would happen to him." Just as in Mexico on the following day those who have taken the mushrooms compare their experiences, so in Siberia, according to Jochelson, the Korjaks, "when the intoxication had passed, told whither the 'fly-agaric men' had taken them, and what they had seen," In Bogoras we discover a link between the lightning-bolt and the mushroom. According to a Chukchee myth, lightning is a One-Sided Man who drags his sister along by her foot. As she bumps along the floor of heaven, the noise of her bumping makes the thunder. Her urine is the rain and she is possessed by the spirits of the fly amanita.

There must have been a potent reason why from western Europe to Eastern Greenland people have believed down to our own days in the demonic nature of mushrooms, and we think that reason lies in the strange hallucinatory powers of certain species. From Eastern Siberia to France these mushrooms are linked with 'flies', i.e., the insect world that is itself saturated in demonic *mana*. Suddenly the Tadzhik myth of the falling 'lice' which give rise to a crop of mushrooms takes on meaning. Those lice are falling demons, falling 'angels' if you will, and naturally they yield a crop of demonic mushrooms. And now suddenly Bosch's painting of those falling angels as 'flies' (= lice) takes on fresh meaning. In that left-hand panel of the Hay Wain God sits on a thunderhead, and from the billowing folds of his garments tumble forth the expelled 'angels' that will yield the crop of demonic growths, where the demonic toads dwell. The Tadzhik myth, the falling 'flies' of Bosch, the 'flies' of the Paleo-Siberian tribesmen, all begin to relate themselves to the primitive myths of our own tradition.

Our divine mushrooms, along with the secondary vegetable hallucinogens, may have played a role in the origins of human culture. How the strange virtue of those little children of the lightning must have stirred the soul of early man! Here is our remote ancestor of the Old Stone Age emerging from the mental confines of his animal background, possessed of only the most rudimentary tools and skills, knowing the emotion of fear but not yet acquainted with awe. He discovers the secret of our mushrooms. They produce in him a self-limiting pseudo-psychosis, the fission of his soul. (How cold, condescending, and dubious

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do such medical labels as 'psychosis' seem to one who has known the truth of the divine mushroom!) He experiences self-perception. He visits heaven and perhaps hell, he holds the key to the miraculous. Yes, our mushrooms must have unlimbered the imagination of those first men who ate them, stirred their curiosity and speculative faculties. Our mushrooms could have sparked in them the very idea of God. When Don Aurelio and our other friends tell us that the mushrooms translate them to God's domain, perhaps this is no modern figure of speech devised for our benefit. The phrase that seems to us fresh and arresting may have been the conventional one for thousands of years. We may be tapping the very well-spring of the religious idea.

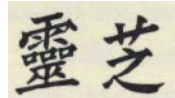
Let us pause for a moment to consider the name that the Nahua gave to the divine mushroom - *teo-nandcatl*, God's flesh! How those words echo down the centuries of religious experience! (In the Book of Common Prayer, in the Prayer of Humble Access, the faithful are summoned to eat 'the flesh of thy dear son Jesus Christ'.) The Christian doctrine of Transubstantiation is a hard saying, calling for great faith. (Who was that Saint who, in piety, said that of the miracles there were three above all the rest, the Virgin Birth, Transubstantiation, and, the greatest of the three, the faith given to man that enables him to believe in the other two?) The Mexican Indian with his *teo-nandcatl* has no need for Transubstantiation because his mushroom speaks for itself. By comparison with the mushroom, the Element in the Christian agape seems pallid. The mushroom holds the key to a mystical union with God, whereas only rare souls can attain similar ecstasy and divine communion by intensive contemplation of the miracle of the Mass. Our Sefiora took of two elements, the mushrooms and *aguardiente*, but the second she withheld from the laity.

Is not the odd phenomenon of mycophilia vs. mycophobia a latter-day echo of early man's shattering experience when he discovered the potent mushrooms, a response, positive and negative, divine and diabolic, to these holy miracle-workers? The toad of our 'toadstool' is that daemon which the Great Lightning Bolt seeded in the mother earth and which sprang forth in the little mushrooms.

Our readers will recall that the same word for 'mushroom' is shared by the Indo-European peoples, the eastern Finnic peoples, the Paleo-Siberian tribes as far as the eastern tip of Siberia, and perhaps even the Eskimos and the Arabs. Do we not now discover the potent secret of the mushrooms that might explain the wide dissemination of a single pre-Indo-European word? For the cultural historian it becomes imperative that the surviving traces of the mushroom cult among the peripheral peoples of Siberia be minutely and sympathetically examined on the ground by anthropologists and linguists, and likewise the similar use of a mush-

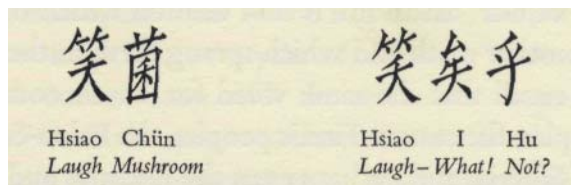
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room in the interior of New Guinea. It becomes imperative for the anthropologists everywhere to take cognizance of ethno-mycology as an avenue for promising cultural inquiry. In various directions there seem to be fruitful areas for the re-study of ethno-mycological evidence, such as, for example, the strange absence of mushrooms from the immense corpus of ancient Egyptian art and texts. Is this because the Egyptians ignored the fungal world or because Egyptologists have ignored it; In China, long before the Buddhist era, in the Taoist philosophy of Lao-Tse, we discover the theme of the *ling-chili*:



wherein 'ling' means spiritual or potent or divine, and 'chih' is a word for 'mushroom'. According to the legend as it survives today, the *ling-chih* was a mushroom that conferred immortality on the eater. Overlaid in the course of time by the artificialities of Chinese literary and artistic sublimation, this theme must have had its genesis in the country-folk and in a mycological fact. "Was not the divine mushroom of the early Chinese our divine mushroom? Modern commentators such as S. Wells Williams in his *Syllabic Dictionary of the Chinese Language* (1909) report that the *ling-chih* was the *fomes fomentarius* or *fomes igniarius*. This could hardly have been so in the beginning, for these hard, bitter tree fungi are inedible; though they could have been ground to a powder and drunk in a potion. Perhaps it is significant that as the source of primary tinder they are linked with fire, and thus with the lightning bolt, and this may explain why they were chosen as evasive substitutes for hallucinatory mushrooms.

Dr. Hu Shih, alive to our interest in mushrooms, has given us additional evidence of a knowledge of hallucinatory mushrooms in China. In the *Ching-i lu*, usually attributed to T'ao Ku who lived in the 10th century, there is a reference to a mushroom which, when eaten, will cause the disease of the dry laugh.



The natives call it the *hsiao-i-hu*, which can be translated either by 'Shall-we-laugh?' or by 'Laugh - What! Not?' But Dr. Hu tells us that such a name is on its face a literary invention. This mushroom is the 'Laugh-mushroom', as it is more commonly called, of which the statesman and writer Yeh Meng-te (A.D. 1077-1148) speaks in the *Pi-shu lu-hua*, 'Notes of a Summer Vacation':

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... the Maple tree Mushroom which, when eaten, causes the eater to laugh without stopping, and is called the *hsiao chun*.

or 'Laugh-mushroom'. What can this be but the mushroom *de pura risa* of our friends Ismael and Don Aristeo, of the botanist Hernandez, the *Nanenschwamm* of Germany and the *bolondgomba* of Hungary?

In the Buddhist world there is another clue to explore. According to orthodox tradition, the Buddha died after a Last Supper with his disciples at which he reserved for himself a dish of tender boar's flesh, *sukara-maddava*. Some have seen not pig but mushrooms on that fateful plate. *Sukara* is cognate with the Latin *sus*, English 'swine'; our readers will recall that *suillus* in Latin is also a fungal name. In Russia there is also a 'swine-mushroom', the *svinukha*. In the light of our discoveries, should not this problem in exegesis be re-examined? That the Buddha should have died as a sequel to eating bad pork seems a shocking discord in the rarefied spirituality of the Buddhist legend. What could be more fitting than for the Master to be translated to Nirvana by the divine mushroom >

THE DIVINE MUSHROOM
Archeological Clues in the Valley of Mexico

if, as we believe, the hallucinatory mushroom persists even today as a major theme in the emotional and religious lives of many of the more withdrawn Indian peoples of Oaxaca, and if, as we believe, the 16th century writers bear witness to the important role of the mushroom in the Indian cultures as far north as the Valley of Mexico and among the Otomi and Tarascan peoples, it is fair to look for the mushroom also in the archeological evidence of far earlier times. That archeologists have not revealed it to us is not necessarily conclusive - they have not been on the lookout for it. Furthermore, in spite of the spectacular discoveries made in Middle America by archeologists in the past, what they have done until now may some day seem only a beginning by comparison with the discoveries that he in the future, so many are the major sites that have not been fully explored or even touched.

There is the further question of the role that the mushroom might be expected to have played in Middle American art. On this *a priori* opinions are of little value. In Christian art the cross as a symbol is all-pervasive, and it would be natural to look for the mushroom in a similar role. If we are right, the mushroom stones of the early Maya periods in the highlands confirm this analogy. But it does not follow that a major idea always receives corresponding direct emphasis in art. Take for example the Host in the Christian world, the Divine Wafer that is the daily reiteration of the Christian's faith in the miracle of Christ's unique mission on earth. The Mass is the very heart of all Christian liturgy, and the Mass hangs on the elements of Bread and Wine. By comparison with its importance the bread of the Sacrament appears surprisingly seldom in religious paintings. In representations of the Last Supper the faces of Christ and the Apostles take priority over the loaf. For more than a thousand years the best artistic talent was occupied with representing altars, ecclesiastics habited to officiate at Mass, and churches that housed the altar and the Sacrament. All of this pictorial eloquence took for granted the central feature, the miracle of transubstantiation and the Holy Communion. How seldom, relatively, did the artist stop to paint the Host itself! So may it have been with the mushrooms in pre-Columbian Mexico. We may discover its accidental appearance and at the same time begin to sense its constructive presence there where it does not appear.

In 1954 Mrs. Irmgard Johnson drew our attention to certain mushroomic

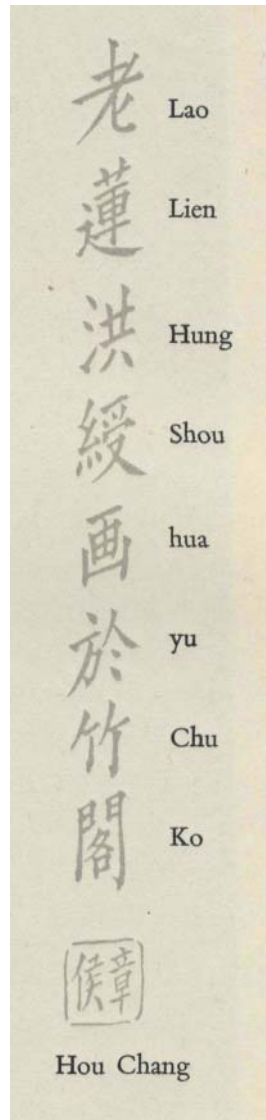


PLATE LII Chinese sage

contemplating *Ling-chih*, the Divine Mushroom.

Painted by Chen Hung-shou (1599-1652), probably late in life in early years of Ching dynasty. This artist was an eminent figure- and landscape-painter, known as an individualist. 'Lao-lien' and 'Chang-hou' were his fancy names. 'Hua yu' means 'painted in', and 'Chu-ko' means 'Bamboo Pavilion', doubtless a studio that he frequented.

Reproduced by courtesy of Wango Weng, Esq.

老蓮此如百丈竹園



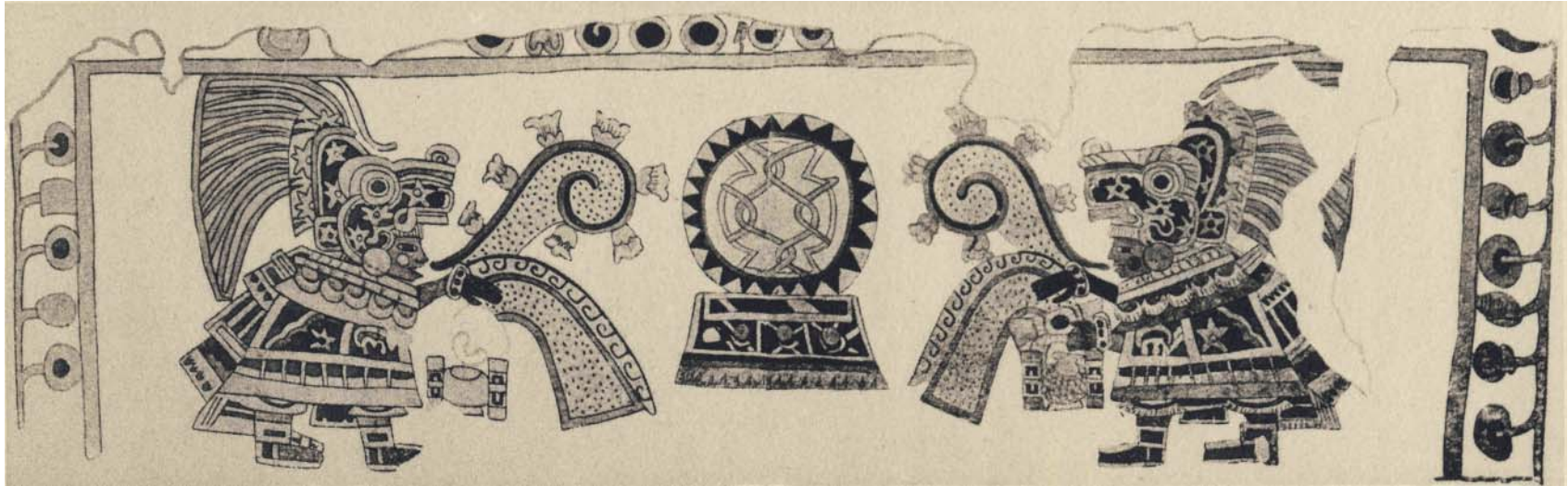


PLATE LIII. Teopancalco fresco. Teotihuacan, in the Valley of Mexico.
From Teotihuacan III period, A.D. 300-600.

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shapes in the border of the famous Teopancalco (or Teopancaxco) fresco in Teotihuacan. Discovered in 1894, this fresco was carefully copied soon afterwards by Dr. Antonio Penafiel and Miss Adela Breton.¹ Two pre-Columbian priests facing each other are engaged in a rite, wearing the vestments of their office, their heads burdened with serpent masks. It is supposed that they are pouring *pulque* on the ground, and if so the rite is associated with inebriation and divine possession. In the center, between the two priests, is a motif of interlaced cords, symbol of the mat (*petate*) that is in its turn a symbol of authority in Middle America. It is surrounded by a circle of outward pointing triangles, and this design rests on a ceremonial stand. The border consists of a sequence of repeated motifs. On the right hand side are three shapes that look mushroomie, separated from each other by designs that we know represent sea-shells. The sea-shells are of two kinds, conch and bi-valve.² The shells and the mushroomic shapes stem from a stream of water that flows around the outside border of the fresco. No Americanist has ever suggested that the mushroomic discs are mushrooms and at first the idea seems unlikely. The combination of mushrooms with sea-shells is, *a priori*, disparate. Why should not these discs be some other sea growth, not yet identified? There seems a further objection to the mushroomic possibility. The 'stipes' of the 'mushrooms', if we judge by the sea-shells, are simply streamlets from the mother stream, so that we are left with mushroomic discs balanced on the end of these little tributaries. But then we remember that the virtue of the hallucinatory mushrooms resides in the pileus or 'head', and the stipe is secondary, and these 'stipes' could serve a dual purpose, as stipes and as the umbilical cord through which the life-giving 'blood' (to use the word of our Zapotec *curandero*) flows into these 'children of the waters'.

This fresco dates from the period known as Teotihuacan III, extending from c. 300 A.D. to 600 A.D. This was a period rich in cultural achievements. There is no way to determine what language was then spoken in the Valley of Mexico, but it could have been an early form of the classical Nahuatl. The archeological

1. See *Teotihuacan, Estudio Histórico y Arqueológico*, by Dr. Penafiel, Mexico City, 1900, chap. xm, plates 81 ff. Dr. Eduard Seler's analysis of the fresco will be found in *Gesammelte Abhandlungen zur Amerikanischen Sprach- und Alterthumskunde*, Berlin, 1915, vol. v.

2. For an excellent discussion of the role of sea-shells in the culture of the Valley of Mexico, see Hasso von Winning's paper, 'Shell Designs on Teotihuacan Pottery', in *El Mexico Antigua*, vol. 7, Dec. 1949. Possibly we discover the explanation for the shells in the Valley of Mexico in Wm. E. Safford's paper on the psychogenic snuff derived from the plant known as *piptadenia peregrina*, which is used by the Indians of the Orinoco. Safford drew attention to the use of snail shells in conjunction with the snuff, the shells being burned to quicklime whiter than snow, and then mixed with the *yupa*, as the natives call their product. See Safford's 'Identity of cohoba, the narcotic snuff of ancient Haiti', *Journal of Washington Academy of Sciences*, 1916, pp. 547 ff. Could a similar use of lime have been known in Mexico in former times?

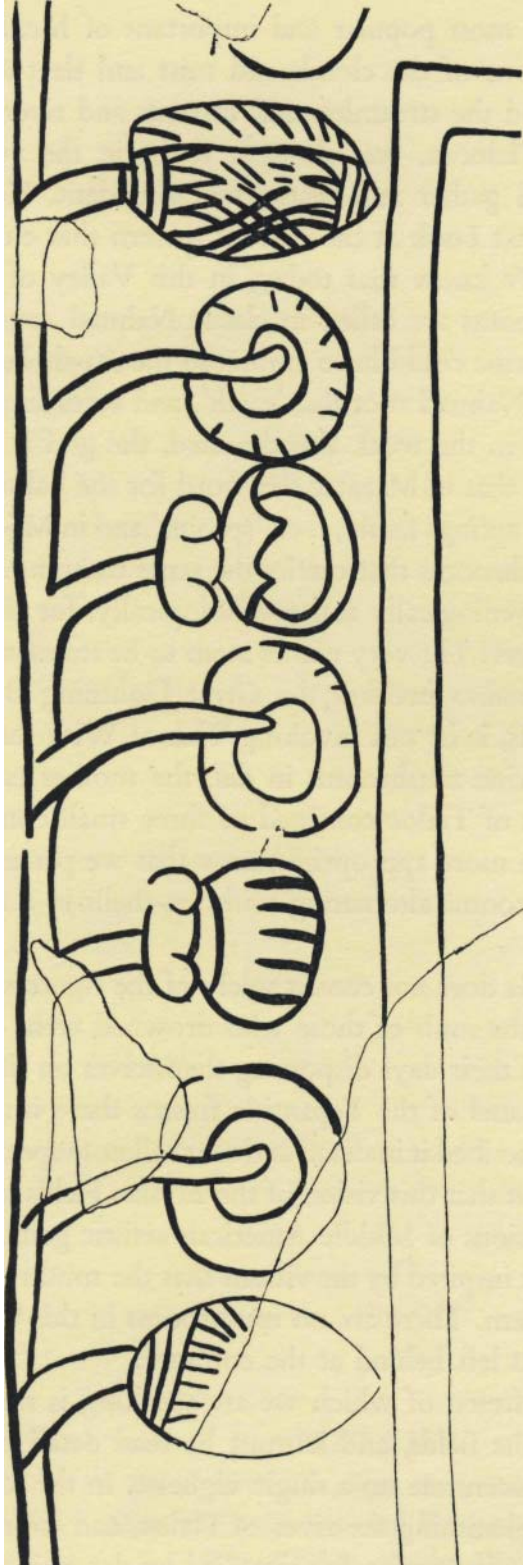
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excavations of this period in the Valley have produced large numbers of sea-shells, and whoever the people were, it is clear that in their ceremonials sea-shells played a conspicuous, if for us undefined, role. In Plate XLI we have illustrated the accessories of the divinatory mushroom rite as it is practiced today in the Mazatec country: these accessories, for one unfamiliar with Middle American anthropology, make up a disparate lot. If we postulate for the Teotihuacan period a liturgical use of shells with hallucinatory mushrooms, this border becomes intelligible. The fresco itself, according to Seler, invokes the rites of inebriation, which is consonant with our hypothesis of hallucinatory mushrooms.

We examined the Teopancalco fresco in the summer of 1955, and found it sadly deteriorated but with the surviving portions now well protected. On the wall of the little room immediately to the right of our fresco, there had once been another one of which only a stretch of the border survives in good condition, and this border repeats the motif of the one we already know! Mr. Eduardo Noguera has graciously copied it for us, and we publish this design here for the first time. Again the mushroomic meaning suggests itself, tempting but uncertain.

Dr. Gordon Ekholm has drawn our attention to the identical pattern of motifs in the Tepantitla fresco, dating from the same period and only a mile or so away from the first. This is an elaborate composition sufficiently well preserved for its meaning to be analyzed.¹ There is a representation of the rain god Tlaloc, and a more aquatic divinity was never portrayed. From his hands drip great drops of water, and a stylized river with star fish and shells flows in both directions from the base of the figure. Beyond the big drops of water, on both sides, from the fingers of other hands drop streamlets of water, and from the side of these streams nearest to the central figure we discover the same series of shell and disc motifs with which we are already familiar. Seeds are scattered on the other side of one of these streamlets. Were these seeds mere symbols of fertility, one would look for kernels of maize among them. But maize is absent. If our surmise about the divine mushrooms is justified, we should expect hallucinatory seeds. The ones in the fresco are diverse, but among them we discover some that forcibly suggest the *colorines* used with mushrooms for divinatory purposes in the Valley of Mexico to this day. They are red and black, with the hilum, quite properly, in the red field.

I. This has been done with magisterial authority and consummate literary grace by Dr. Alfonso Caso in his paper entitled 'El Paraiso Terrenal en Teotihuacan', published in *Cuadernos Americanos*, Nov.-Dec. 1942, Mexico City. For an earlier analysis of the role of Tlaloc in the pre-Conquest religion of Middle America, see Eduard Seler's volume entitled *Codex Vaticanus No. 2775*, published in German and English in Berlin and London in 1902-3, pp. 106 ff.



F/S- 23
TEOPANCALCO FRESCO
Detail, reduced to half
of original size.

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Tlaloc was one of the most popular and important of Mexican deities. He was the god of the waters, of the clouds and mist and sleet and hail, of the lightning bolt, of rain and the streamlets and torrents and rivers and lakes and the ocean. His home, Tlalocan, was thought to be in the verdant uplands, where the clouds would gather and water was abundant. How was Tlaloc related to our mushrooms? Look at the curious pattern that emerges from the philological evidence. We know that today, in this Valley of Mexico where the fresco is, the mushrooms are called in classic Nahuatl *apipiltzin*, 'children of the waters', and this name could have embraced the sea-shells too. The name 'Tlaloc' comes from the Nahuatl root *tlal*, 'earth', and according to the etymology elaborated by Seler in the work already cited, the god is 'he who makes things sprout'. "We recall that in Mazatec the word for the hallucinatory mushrooms means 'that which springs forth', i. e., 'sprouts' and in Mije we discovered a word for the same mushrooms that carries the same meaning. How felicitous are these names, both mycologically and psychologically, for the divine mushrooms with delphic powers! The very names seem to be translations of Tlaloc'. When our Zapotec *curandero* invokes the Great Lightning Bolt for a larger yield of these mushrooms, is he not invoking Tlaloc? With the lightning bolt Tlaloc engenders the divine mushrooms in *tlal*, the mother earth. We know that one of the emblems of Tlaloc consisted of three small conches in a triangular sac. What could be more appropriate, now that we perceive the context, than hallucinatory mushrooms alternating with sea-shells in a fresco honoring Tlaloc?

The fresco of Tepantitla does not consist solely of the figure of Tlaloc. It was the Mexican belief that the souls of those who drowned went directly to Tlalocan, where they passed their days disporting themselves on the playing fields of Paradise. In another panel of the Tepantitla frescos there is a picture of this Paradise. Dr. Caso has described it in detail and we shall not repeat the description here, beyond pointing out that this vision of the Elysian Fields is one of the few lovely and gentle expressions of Middle American artistic genius. We ask ourselves whether it was not inspired by the visions that the mushrooms of Paradise give to those who eat them. There are no mushrooms in this vision, of course, for the key to Paradise is left behind at the entrance.

The panorama in the fresco of which we are speaking is made up of small figures scattered across the fields, and it must be read detail by detail, pictographically. We shall concentrate on a single vignette. In the lower right hand corner there is a lake replenishing the river of Tlaloc, and from it there emerges the unclothed figure of one who has just died by drowning, the water still

PLATE LIV

Detail of Tlaloc effigy. Tepantitla Fresco.
(See text, page 324, and Fig. 24, page 327.)

Reproduced by Marilyn Weber.

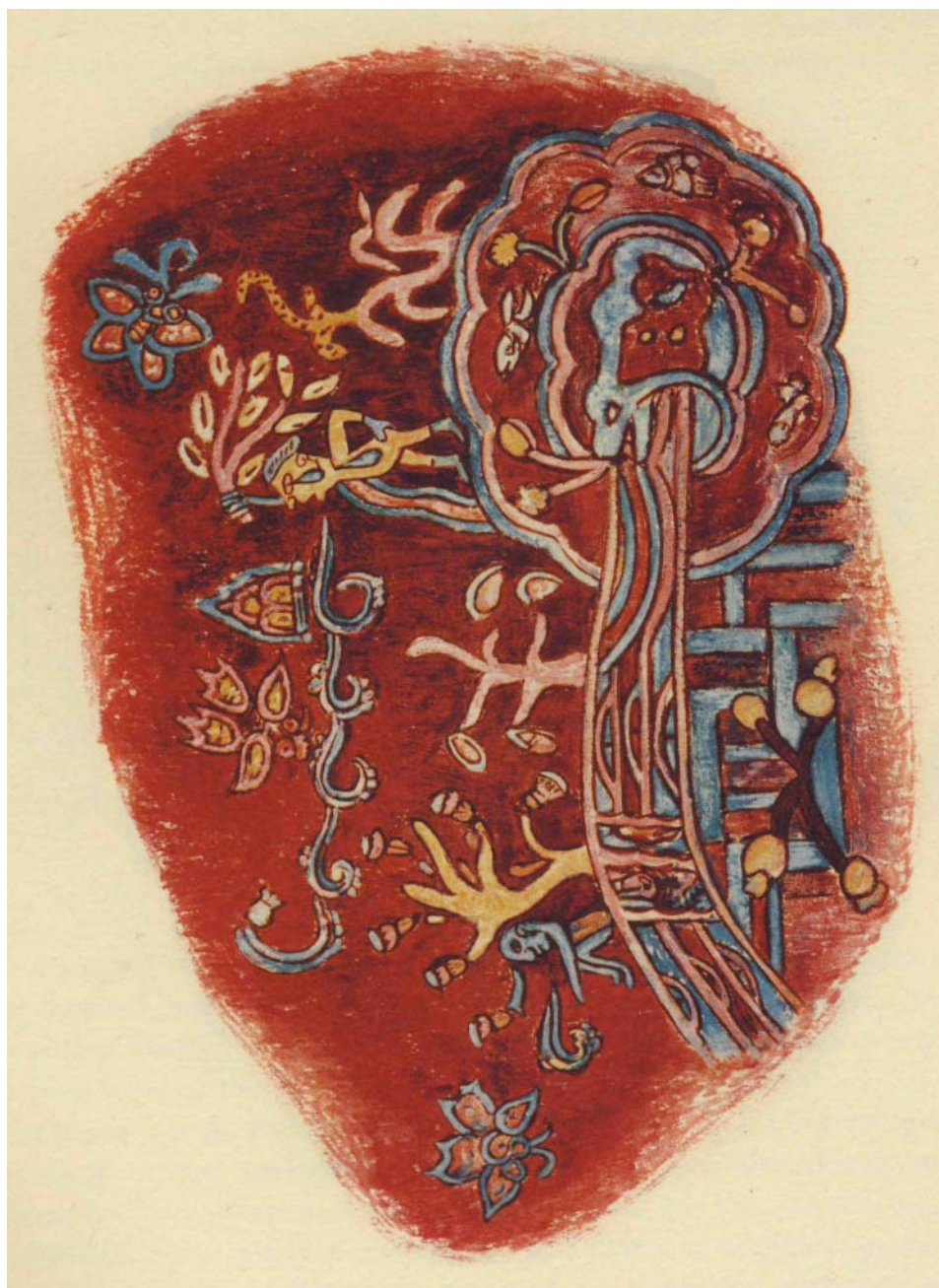


PLATE LV

Tepantitla Fresco.

Detail: Soul arriving on the playing fields of Paradise.

Reproduced by Marilyn Weber.



THE DIVINE MUSHROOM

gushing from his lungs. Facing toward the left where lie the fields of Paradise, two great tears of nostalgia still falling from his eyes, with a branch of luxuriant foliage in his uplifted right hand, confidently he advances singing an anthem, which is represented by the five-fold scroll emerging from his mouth. Above that scroll is the emblem of Tlaloc (the three-fold sea-shell) and a butterfly, which in Middle America (as in European folklore) is frequently the reincarnation of

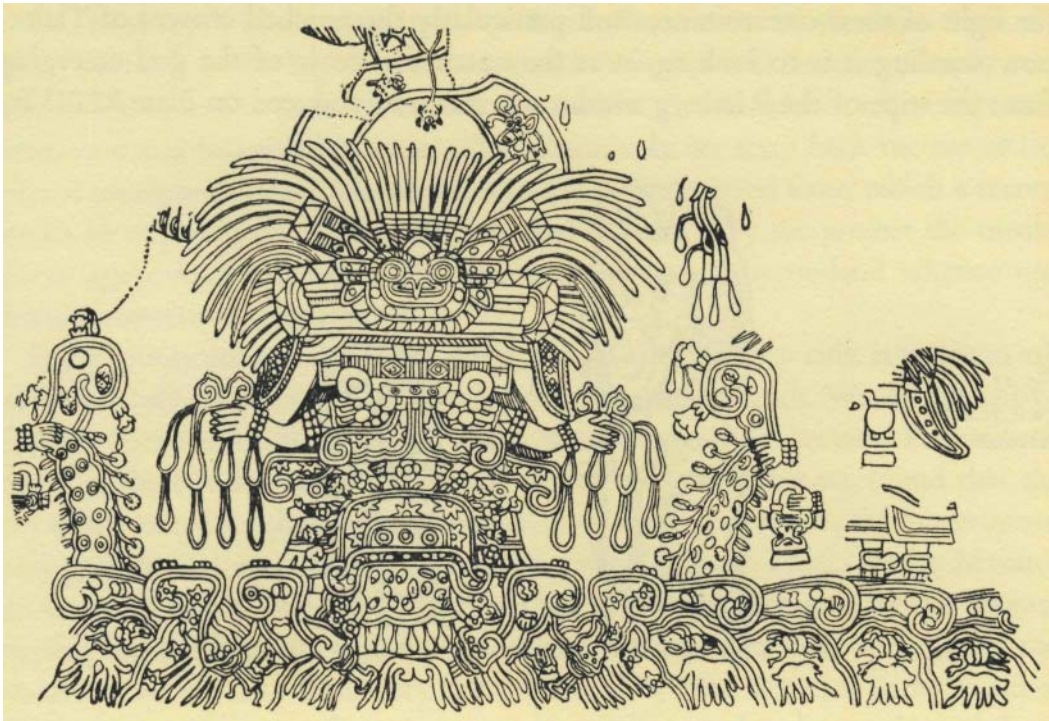


Fig. 24. THE TEPANTITLA FRESCO

a defunct soul. In the lake, below the human figure, we are delighted to discover, thrice repeated, what we will tentatively call the shell-and-mushroom motif. How fitting that the divine mushrooms should have been present when our hero takes leave of this world to enter the Paradise of Tlaloc!

Seler found that the stylized features of Tlaloc evolved in the beginning from intertwined serpents, perhaps the very serpents that specialists identify in the headdresses of the priests in the Teopancalco fresco. He also pointed out that the effigies of Tlaloc are often surmounted by a crown of triangular peaks, and with some supporting evidence he ventured the suggestion that these peaks were stylized mountain heights around which the waters of the god would gather. Seler in his work on the Vatican Codex accompanied his exposition

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with cuts of two such effigies, which we here reproduce. The crowns remind us of the circle of triangular peaks that is an obvious symbol of divinity in the Teopancalco fresco. As others have pointed out, this fresco manifests Maya influence. The Teotihuacan III period, contemporary with classic Maya, was notable for the cultural interchanges that were taking place between the two civilizations. Kidder has shown how the butterfly symbol of the Valley of Mexico at that very time made its appearance in the Highland Maya area.¹ In the light of these circumstances and particularly the notched crowns of Tlaloc, how startling it is to look again at the notched aureole of the god emerging from the stipe of the Rietberg mushroom stone, reproduced on Plate XLIII! By



Fig. 25
TWO TLALOC
EFFIGIES

the Borhegyi dating, the Rietberg artifact would be either late pre-classic highland Maya, or early classic. And there is that other mushroom stone, much earlier, found at Kaminaljuyu, with the triangular design on the stipe, which we reproduced on page 279. This last one is early pre-classic, c. 1000 B. c.

The use of the mushrooms distinguished the upland cultures, the very slopes of Tlalocan, the home of Tlaloc, where mushrooms abound. The kinship of sea-shells with mushrooms, which left us at first nonplussed, now seems natural. If we were to postulate mushrooms in pre-Conquest art in Mexico, we would direct our search precisely to frescos dealing with Tlaloc and the Paradise of our mushroomic visions, to the very frescos where we have found mushroomic shapes. The mushrooms here are casual, incidental, like the bread in paintings of the Last Supper. In the notched motif of the Rietberg mushroom

1. See *Excavations at Kaminaljuyu, Guatemala*, by Alfred V. Kidder, Jesse D. Jennings, and Edwin M. Shook, Carnegie Institute of Washington, 1946; p. 220.

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stone we may even have hit on a direct link between the mushrooms of the Valley of Mexico and the mushroom stones of the Guatemala highlands.

The little houses where the Tepantitla and Teopancalco frescos survive may have been two of many where the devout once gathered to receive and consult the divine mushrooms in the sacred purlieus of Teotihuacan. If sea-shells were used in the rites, this explains the large numbers still found in those precincts, within sight of the great pyramids.

Dr. Borhegyi's chart suggests to us that hallucinatory mushrooms were the focus of a cult in the highland Maya world that goes back at least to early pre-classic times, to B.C. 1000 or earlier, the earliest period when technically such artifacts could be carved in stone. Thus tentatively we trace back the use of the divine mushroom in Middle America to the earliest period from which a record could be expected to survive. Beyond that horizon may we project the mushroom agape back through millennia, to the Eurasian home-land whence our Indians' ancestors migrated?

If the 'mushroom stones' were accessories in a mushroom cult, it is fair to ask why that cult disappeared long ago from the Maya highlands. We do not know, but the social institutions of the Maya world suggest an answer. Let us look again at the Mexican evidence. In the remote Mije country we found that the use of the sacred mushrooms was secular. Everyone there knows the mushrooms, and gathers and uses them. No *curandero* is needed for them. In the Mazatec country we find a dual cult. There was the superb performance by the Seilora, sharing the mushrooms with her coven and leading it by song and dance; and there was an intricate divinatory rite celebrated by Don Aurelio, with the aid of divers accessories, according to a complicated liturgical sequence. Don Aristeo in the Zapotec country followed the Senora's procedure, but withheld the Element from his congregation. Do we not discern here, in contemporaneous celebrations, the distinct phases of a cult that might mark a chronological evolution and in certain circumstances lead to its extinction > The sacred mushrooms with their miraculous powers could have been bathed in *mana* from an early time, and become the exclusive privilege of the priesthood, and ultimately of the highest priest-kings. As the mushrooms are not habit forming, there was no popular addiction to them that would have been an obstacle to this trend. When the regime of the priest-kings toppled over, the secret of the mushrooms, like so many other secrets of the Maya theocrats, disappeared with them.

'GAMA NO KOSHIKAKE' AND 'HEGBA MBODDO'

Our inquiries into the toadstool world are mostly confined to Europe and the Indo-European fungal vocabulary, including the diffusion of the European words across Siberia. We have brought in the Eskimos, the Maoris, and the Tanala people of Madagascar; and we have traveled in Middle America. But the extent to which toads and fungi are associated with each other in the minds of other branches of the human family remains unanswered, and offers endless perspectives for research. We leave most of those inviting prospects for others to explore. (If this announcement inspires in the reader heartfelt Hosannas, let him imagine how much greater is our relief!) For those who take up the pursuit, we here submit two tantalizing items of information, plus a note on Chinese mycophagy.

The Japanese people are mighty mycophiles, possessing a large mushroom vocabulary and an especially warm affection for several edible species. In the hierarchy of esteem, they place first the *matsutake*, a gilled species that grows in red-pine woods, related to the genus *armillariella*, and famous for its inviting aroma. The *matsutake* of the Kyoto woods are the most highly prized, and in the fall of the year picnics are organized to hunt them. Old records speak of *matsutake* as far back as the 13th century; before then a species known as the *hiratake* appears to have occupied the premier position among the Japanese. The *shiitake* is a related species that grows on the trunks of certain trees, and that is cultivated in large quantities on trunks cut down for that purpose. Both the *matsutake* and the *shiitake* are species peculiar to Japan and perhaps Korea. The *collybia velutipes*, gathered young and small, is a favorite in soup; it bears many names, of which *nameko* is the commonest. An important role is also played by the *rhizopogon rubescens*, known as the *shoro*. But the species that is of immediate interest for our purpose is the inedible shelf-mushroom known normally in Japanese as the *saru no koshikake*, the 'monkey's stool'. We have discovered that in certain villages of Chiba prefecture, across the bay from Tokyo, the peasants call this fungus *the gama no koshikake*, or toad's stool; notably in three northern *gun* or townships of the prefecture, by name Imba, Katori, and Sousa. *Gama* is the name for 'toad' in the Kanto dialect of Japanese, spoken in Tokyo and thereabouts. On pushing our inquiries, we discovered that *gama no koshikake* was an alternative expression for *kama no koshikake*, which would mean the stool of the household furnace god *o-kama-sama*, and the longer expression and more old-fashioned would be *o-kama-sama no koshikake*. Toads are associated in the pea-

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sants' minds with the big stove that occupies an unfloored part of their houses, and there may be a genetic relationship, or at least a semantic association, between the word for toad in the Kanto dialect and the names of the furnace god. The peasants regard the toad with no repugnance; its presence is even considered auspicious in some regions.¹

Thus in Japan we have irrefutable evidence of an association between toads and fungi of indigenous inspiration, and for us the astonishing feature is that this association is tied to fire and a fire divinity.

Professor Roger Heim described in his *Revue de Mycologie* in February 1936 three giant boleti of Madagascar and tropical Africa. One of these bears the scientific name of boletus (*Xerocomus*) *sudanicus* Har. et Pat., and is native to Central Africa. In the course of Professor Heim's article there appears a footnote wherein the reader is told that in the region known as the Chari the native name for this edible and highly esteemed boletus is *hegba mboddo*, and that this means literally 'toad's stool'. The Chari is an important river running north and west through French Equatorial Africa, emptying into Lake Chad. For our inquiries Professor Heim's report was of the highest interest. Was it conceivable that a people in the heart of Africa used the same fungal metaphor as the peoples in the North Sea basin? In the cultural crazy quilt of darkest Africa could we discover the race for whom *hegba mboddo* was a fungal designation? Our explorations (by correspondence) covered the Sara and certain other Sudanese languages, and also five of the languages of the Sudan central tribes: Kara, Banu, Gbe, Kaba, and Sango. In every case the results were negative, as they were at first among the Bantu peoples. At this point we consulted Professor Archie N. Tucker, of the School of Oriental and African Studies at the University of London, and he knew the answer at once: *hegba mboddo* is a term used by the little known people of Bongoland, described by the German explorer Georg Schweinfurth following his visit to the Bongo country in the 1860's. His book appeared in English in 1874 as *The Heart of Africa*, and he is the authority for the use of the term that interests us. In Schweinfurth's time no white men had previously visited the Bongo people and observed them, and there can be no possibility of European influence. The Bongo live in the very heart of Africa, in two enclaves, north of the 7° parallel North and to the westward of the 29° East longitude. They are a farming folk. Here is what Schweinfurth had to say about the mycophilia of the Bongo people:

I. We are indebted for our information to Professor Kunio Yanagita, the eminent Japanese authority on folklore and dialects, to Mrs. Chiyo Omachi who assembled and interpreted in English the evidence, and to Professor Toyohiko Kawabata of Chiba University for verifying the usage in the various *gun* of his prefecture.

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During the rainy season the country is prolific in many kinds of funguses. The Bongo have a great fancy for them; they keep them until they are on the verge of decay, and then dry and pound them. They use them for the purpose of flavouring their sauces, which in consequence are enriched by a *hautgout*, which without depreciation may perhaps be compared to rotten fish. Throughout the country I never saw any funguses but what were perfectly edible, and some of them I must confess [sic] were perfectly palatable. The natives call them all 'kahoo', while to the larger species they give the special name of 'hegba-mboddoh', which is synonymous with the Low German 'poggen staul', or with the English 'toadstool'. 'Hegba' is the name which the Bongo give to their little carved stools, and 'mboddoh' is the generic term for all frogs and toads, and the proper name for the *bufo pandarinus* in particular. This 'hegba mboddoh' which has thus suggested the same idea in very remote parts of the world, is here a gigantic polyporus; not infrequently specimens may be found of it which grow to a height of nine inches, and a foot in diameter and weigh nearly fifty pounds. In form, size, and color they are not unlike the grey clay edifices of the Termes mordax . . . The funguses which are the most common, and which are moreover the most preferred, are the different species of coprinus, marasmius, rhodoporus, and the tough but aromatic lentinus.

The Bongo have been neglected by anthropologists: Schweinfurth is still the principal authority on them. His testimony about the *hegba mboddo* is certainly trustworthy, but it should be verified and amplified. The giant fungus is eaten by the Bongo: for them the association with the toad is not an epithet of mycophobic rejection. Who will discover for us the full meaning of the toad in the culture of the natives of Bongoland? Must we go there ourselves to arrive at the answer? The language of the Bongo is one of a large group including Sara (of which Kaba is a member), Kenga, and Bagirmi.

The discovery of the 'toadstool' in Bongoland is sensational for us with our peculiar interest, but this is not the end. Professor Tucker happened to lay our question before Mr. Jalo Gombe, an African in London at the time our letter reached him. He belongs to the Fulani people, in Nigeria, far to the west of the Bongo and separated from them by many African peoples. He is a teacher in the senior high school at Gombe, a community that one reaches by way of Jos. 'Fulani' is the name of this people in the Hausa language. The French call them 'Peul'; in their own language one Fulani is 'Pullo', more than one 'Fulbe', and they call their tongue 'Fulfulde'. It is essential to set forth these various words, as they are all in current use and can cause confusion. Mr. Gombe in a long and informative letter apprises us that in his native language the general word for all wild mushrooms is *kow.wal pa:bi*. (The colon indicates a long vowel; the *b* in this word, like the *dd* in *hegba mboddo*, is what linguists call 'implosive' or 'ingressive'.) *Koro:wal* means 'stool' and *pa:bi* is the word for frogs and toads. Mr. Gombe further informs us that wild mushrooms are not

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eaten by the Fulani, nor do they eat frogs or toads though certain neighboring tribes do so. The Fulani consider toads unclean and some, especially among the women, fear them. Toads are used in folk medicine. There is a disease of the forehead called in Hausa 'monkey's forehead' (*goshin* Inn); to treat it the Fulani rub the forehead with the belly of a living toad, and it is said that the patient then recovers and the toad, thrown away, dies. The skin of the toad is used as a charm and when "placed somehow may cause someone impotency". A certain toadstool mixed with a certain tree fungus and soaked in water is used in treating venereal disorders.

Our African inquiries led us to a third discovery. In Uganda the principal province is Buganda (of which 'Uganda' appears to be a corruption), and the principal native clan in that province is known as the Baganda, whose language, called Luganda, belongs to the immense Bantu family. All of the clans of Buganda are valiantly mycophagous, according to our gifted native informant, M. B. Nsimbi, of Kampala. The Baganda are known as the 'mushroom clan', for they have as their totem two kinds of mushrooms, known in Luganda as the *bubaala* and the *namulondo*. By the native gastronomes of Buganda the *bubaala* are the most highly prized of all mushrooms, but the Baganda must deny themselves these delights, for they may not eat their own totems. For us the interesting feature of the fungal vocabulary of the Baganda is the presence of the toad. There is a mushroom known in Luganda as the *ngngoma-ya-kikere*, which means 'drum-of-toad', and which no one eats. In shape it suggests the native drum, which in Africa is traditionally a symbol of authority, analogous to the parasol in India.

In conclusion, then, we discover in the interior of Africa two peoples, both of them remote from each other geographically, linguistically, and culturally, who possess indigenous terms for mushrooms that are semantically identical to the 'toadstool' of the North Sea basin. One of these peoples, the Bongo, appear to be mycophiles, and the other, the Fulani, are mycophobes. In addition, we discover a third people, who associate a drum-shaped mushroom with the toad. Among Africans both the drum and the stool sometimes symbolize authority.

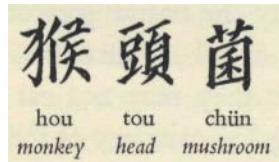
Up to this point in our book we have only touched on China and the cult of the mushroom in the Chinese cuisine. The subject is vast and the sources of information are inaccessible. We shall do no more than offer two samples of Chinese lore that have happened to come to our attention.

There is the problem of *mo-gu*. This is the colloquial name in northern China of the *clavaria pistillaris*, one of the mushrooms most highly esteemed by

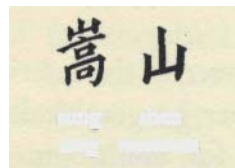
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Chinese epicures. In the Mongolian language we discover a general word for mushrooms, *rndgti*, and the Chinese word may have been imported with the *clavaria pistillaris* from Mongolia. Is it possible that the Mongolian word was a borrowing from Indo-European, being in short another member of our sponge cluster of fungal words descended from the same root as *σπόγγος*? The phonetic evolution in Mongolian is not impossible. An initial 'p', passing through 'b', would become 'm'. The alternation between 'b' and 'm' in Mongolian is well attested, e.g., *becin* and *mecin*, meaning monkey. There is also precedent in Mongolian for dropping an internal nasal in borrowed words.

In the fungal hierarchy of the Chinese cuisine the highest rating belongs to the Monkey Head Mushroom, concerning which Mr. K. C. Wu, the former governor of Formosa, has given us curious information. This is a rare mushroom, sells at a high price, and never passes through the vulgar marketplaces. Its *parfum* is of exquisite delicacy, and it transforms any dish that it flavors. So precious is it that only the best cooks are entrusted with it. The Monkey Head Mushroom is represented in Chinese characters thus:



It is found only in the high mountains of Central China, and the best come from the sacred range of Sung Mountains :



They grow out of the trunks of trees, and are of the size of small monkey heads, with yellow hair, two dots for eyes, and curves that are singularly suggestive of a nose and mouth. We are told that where one grows another is always to be found, and they are considered mates, male and female. When you find one, you follow the direction of its eyes, and there on another tree is the other one. They gaze on each other in a perpetual trance. Who is the mycologist that will identify for us the Monkey Head Mushroom?

18 THE ANATOMY OF MYCOPHOBIA

In the course of these pages we have often spoken of the different emotional attitudes toward wild mushrooms that mark the members of the European family of peoples. Heirs of a common Indo-European culture, sharing the same linguistic heritage and folklore, their diversity of response to the fungi is amazing, and, we must admit, baffling. Our information is insufficient in extent and precision for the compilation of a *carte mycophagique* of Europe. But by pulling together the threads of evidence available to us we may suggest what such a map would show, and draw attention to the curious traits that compose the mycophobic syndrome.

In the first place, the feelings of a people for wild mushrooms are unrelated to the supply. Wonderful mushrooms are abundant in both Norway and Muscovy, but the mushroom lore of the Norwegians is poor. The Portuguese are almost as steeped in mycophobia as their neighbors in Castile, though Portugal is by comparison rich in fungi. The Catalans live next door to the mycophobic Spaniards, and yet the Catalans are to be numbered amongst those rare peoples whose folk knowledge of the wild mushrooms is breath-taking in range and subtlety. But perhaps the classic illustration of the point we are making is to be found outside Europe.

The Arabian desert is not a land that mushroom-eaters would think to visit on pilgrimage; nonetheless, we discover that the Bedouin are passionate mycophiles. An authority on the Arabian nomads, Colonel H. R. P. Dickson, mentions this repeatedly in his admirable work on *The Arab of the Desert*, and in a letter to us he has nobly developed the theme. While the Arab eats various kinds of mushrooms with relish, the desert 'truffles' are his favorites. These fungal growths, which never emerge to the surface of the earth, are usually called 'truffles' by Europeans, but in fact they belong to a different genus, the *terfezia*. From classical times they have been esteemed in northern Africa, and in the market of Damascus they are sold in quantity under the local name of *kame*.

According to Colonel Dickson, scattered over Northeast Arabia, on Bahrain Island, and in the Qatar peninsula, there are spots well known to the Arabs where *terfezia* grow, always in the company of the rug-rug bush, known to science as the *helianthemum Lippi*. The Arab cannot count on his mushrooms. He keeps on the lookout for heavy rainfalls in the *wasm* season, which corresponds to our October, and if the rains then are heavy, and if they are accompanied by thunder and lightning, and especially if the rains recur throughout

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winter and spring, then the Arab knows the year will be good for mushrooms. When the conditions are propitious, in February and March the black-tent folk strike their tents, and journey to the familiar places, and then the women and children go forth early in the morning for the sunrise, or late in the day for sunset; and the shepherd boys, out with their flocks, are on the lookout too. For as the slanting rays of the twilight sun streak across the horizontal earth, the practiced eyes of the women and children detect the slight shadows cast by the monticules that the swelling *terfezia* are pushing up. During the spring months of a good year, these growths are as satisfying as meat to the Bedouin. He eats them roasted in hot ashes and dipped in salt, or fried slightly (after soaking in water with a pinch of salt) in clarified or fresh butter. The Arab women also slice them and dry them in the sun, and then keep them for eating in summer, or even for years as a food reserve. There are two kinds of these *terfezia* known to Colonel Dickson, the white *zobaidi*, which are the best, and the *khlās*, smaller, brown, and less tasty.

Europe is sharply polarized, mycophagously speaking. At opposing ends of the Continent there are two areas where the folk knowledge about mushrooms is prodigious, sometimes truer than the manuals, and where the affection for them is wide and deep. There are also two areas of Europe, poles apart, where mushrooms are generally ignored or loathed. In between are all the other peoples, with varying degrees of knowledge and subtle gradations of feeling.

The Great Russians are a mycolatrous folk, and of this some readers will consider our book manifest proof. The Poles, the Slovaks, and the Czechs are ardent mycophiles, and are sure to resent as an impudent and even imperialistic pretension my view that the Great Russians are in a class by themselves in this respect. I have never heard a contemptuous remark about mushrooms from a Great Russian; I recall none in our literature. But on an earlier page we have seen what Poland's greatest poet says. The Czechs know their mushrooms like few others; but why are they in deadly dread of the *boletus satanas* > This is a mushroom that, properly cooked, strong stomachs can tolerate; yet the Czechs shun it like the deadly *amanita*. Our neighbors the Lithuanians are great mushroom eaters. I do not know enough about them to give them a rating. Is their appetite for mushrooms indigenous or borrowed from the Slavs > Here is a pretty problem to be coolly considered. It is certain that the interest in mushrooms among the Slavs slides off as one goes South. The Ukrainians show less interest, and the Balkan Slavs are almost apathetic; it is said that the monastic clergy in Rumania and the other Balkan countries maintain a mycophagous tradition well above the level of the surrounding peasantry.

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The Finns present an interesting pattern. By tradition mycophobes, they still reject most mushrooms. But over much of the country they have learned from the Russians to eat lactarii, and in Carelia, where Russians used to go on vacations, they know and love many species. In the south-west there is a small area where only the chanterelle is eaten - clearly a cultural emanation from Sweden.¹

The focus of mycophagy in the West lies in that stretch of Mediterranean littoral which embraces Catalonia and the Provence. In what is perhaps the best list of vernacular names for mushrooms ever assembled, the Catalan savants Joaquim Codina and P. Font Quer brought together a vocabulary of about 220 words, all of them genuine, identified with the localities where they were heard.² The country folk of Provence are similarly proficient in mushroomic lore. Whether this intensive mycophilic knowledge prevails west of the Rhone and in Roussillon, thus linking Provence with Catalonia, we do not know.

Just as Muscovy and Catalonia may be taken as the citadels of mycophagy, so as to mycophobia the foci of infection are found on the one hand among the Celts and Frisians along the shores of the Atlantic and the North Sea, and on the other hand in Greece. The Greeks have always been mycophobes. All of the early Greek poets - Homer through the dramatists - ignore the mushrooms. The earliest references to them are in the fifth century, and, as is fitting in a mycophobic world, both refer to poisonings.³ Next we encounter Nikander of Colophon, the didactic poet of the 2nd century B.C. whom we have already cited. In his *Alexipharmaca* he speaks thus of the mushroom tribe:

Let not the evil ferment of the soil injure a man; it will often swell up in his chest, at other times it will choke him, when it is fostered over the viper's coil deep in its lair, sucking up the monster's venom and the noxious breath from its moutn. This is the evil ferment which they call Fungi in general. [Quoted by courtesy of Cambridge University Press from translation by A. S. F. Gow and A. F. Scholfield]

From beginning to end in the writings of the ancient Greeks we find not one enthusiastic word for mushrooms. Even Athenaeus, that addict to the fleshpots whose lengthy writings give us an invaluable picture of daily life in ancient Greece, was no friend of the mushroom world. "Mushrooms grow on the ground," he said, "and few of them are edible. Most of them cause death by choking." The botanist Theophrastus was incompetent in his discussions of the fungi, and while Dioscorides and Galen were better, many of their observations

1. The Finnish attitude toward mushrooms is discussed in detail in Toivo Rautavaara's *Suomen Sienisato*, published in Helsinki; for English summary see pp. 420-1.

2. See the botanical journal *Cavanillesia*, vol. m, Barcelona, 1931.

3. Athenaeus quotes Eparchides concerning a tragic episode that came to the attention of Euripides. The other early reference is in Hippocrates, *Epidemicorum*, Book vii, par. 102.

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were grossly inaccurate, and they are interesting on this subject chiefly for the further proof they offer that the Greeks were mycophobes. To this day the Greeks pay no attention to wild mushrooms, like the English eating only the psalhota campestris, which they call μανιτάρι, a word descended from the classical άμανιταί.¹

We believe that this mycophobia of the Greeks holds the key to the meaning, hitherto unperceived, of a famous anecdote about Nero that Suetonius recorded. Suetonius, writing a half century after the event, accused Nero of having been privy to the murder of Claudius, supporting his charge by an inference: 'for Nero used afterwards to laud mushrooms, the vehicle in which the poison was administered to Claudius, as gods' food [*deorum cibum*], as the Greek proverb has it.' This witticism, alluding to the posthumous deification of Claudius, is stale now from age and repetition, but thanks to it we possess a Greek saying nowhere else recorded. Dio Cassius told the same story later, and later still we find it in the writings of Petrus Patricius, a contemporary of Belisarius,² who adds a telling detail. When the mushrooms came on, a guest remarked that they were gods' food, θεών βρώμα. This gave Nero his opening, and how the murderous implications of his retort must have chilled the sycophantic company! What did the Greeks mean by 'gods' food' ? Certainly not 'food fit for the gods', which would have called for different phrasing. Robert Graves suggests an answer. We know from Pliny that in the fashionable circles of Rome mushrooms were all the rage. But not so with the Greeks. It was surely a mycophobic Greek who interposed the Greek saying when he saw the mushrooms arrive, just as an Englishman on the Continent turns from a dish of morels because for him they are toadstools, or just as a Fleming in former times would have scorned *duivelsbrood*, 'devils' bread'. 'Gods' food' and 'devils' bread', in their innermost meaning are synonyms, verbalizing the ancient tabu. We suggest that they go back to the time when the divine mushroom was holy and therefore unclean for all save the king-priest.

In one striking respect the lands of extreme mycophilia and extreme mycophobia are alike: they are equally free of mushroom poisonings. Your Frisians never die from toadstools, for they never touch any wild fungi. And your Provençal villagers are equally safe, for they know which to eat. Henri Fabre in

1. On Mount Athos Russian and Greek monastic communities have lived in close proximity for centuries. In the Eastern Church the dietary rules and customs of the monks play a big role, and it would be interesting to learn how the addiction of the Russian monks to mushrooms has affected their mycophobic Greek brethren. We have done our utmost, by correspondence, to arrive at the facts concerning this cultural tide-rip on Mount Athos, but without success: the good monks seem unable to enter into the spirit of our humanistic inquiry.
2. The three versions of the episode are to be found in the Loeb editions of Suetonius and Dio Cassius.

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The Life of the Fly tells us that during his thirty years in the Provençal village of Serignan, he had never heard of even the mildest indisposition from mushrooms, and this in face of the fact that his neighbors habitually ate many species described in the manuals of the day as poisonous or suspect! Fatalities from mushrooms take place where peoples are in transition, moving up in the scale of mycophagy.

There is abundant evidence that slowly, very slowly, the peoples of Europe are learning to eat wild mushrooms. Their progress is reflected in their vocabulary. Some words that were born with a pejorative curse rise in status and acquire excellence in the course of centuries; such, we believe, are *mousseron* and *cepe* in French, and *boletus* in Latin. More often a new and appetizing word is borrowed from a mycophagic people to designate a mushroom that, seen in a new light, has come to be esteemed for food. Such is 'mushroom' in English, and *champignon* throughout the other Germanic lands, and *boletus*, which in German has become *Pilz*. Specially interesting is the Swedish name for the cep: *Karl Johans-svamp*, named after the founder of the present royal family, King Charles XVI John, a Frenchman, who having risen from the ranks to become Napoleon's General Bernadotte, was elected to Sweden's throne in 1818. It was he who drew the attention of Swedes to the succulent properties of the *boletus edulis*. We discover without surprise that the Bernadottes were a Gascon family, hailing from that province of France which is renowned for ceps. A good Gascon, General Bernadotte was a missionary of mycophagy to the mycophobic Swedes.

The mycophobic peoples seem to acquire their knowledge in little leaps, suggestive of the quantum theory, learning to like one species after another. The English generally know only the *psalliota campestris*, and the Norwegians the *cantharellus cibarius*; the Spaniards of Castile eat two kinds, the *mizcalo* (a *lactarius*) and the *seta de cardo* (*pleurotus eryngii*), by contrast with the vast command of the subject enjoyed by the Catalans. The poverty of the Spanish language when it comes to mushrooms occasionally works a hardship on Spanish writers: in the Spanish encyclopaedias the authors of the articles on *hongos* must resort to Catalan and Basque words to piece out the poor Castilian vocabulary. The Spanish public has never been offered a Spanish mushroom manual, and if a Spaniard should seek to explore the mushroom world, he must resort to a Basque work, *Setas u Hongos del Pais Vasco*, a treatise in two slim volumes written in Spanish by Telesforo de Aranzadi and published in 1897. Based entirely on observations in the Basque country, it is precious especially for the wealth of Basque vernacular names that it records. The public demand for this work must have been modest, for the original edition is still in print and copies are available generally in Spanish book shops.

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In Portugal the peasants know chiefly the *lepiota procera*, which they call the *nisco* or *centeiro*. The Basques, with a substantial vocabulary, are well advanced in mycophagy, but many of their words are borrowed, and mycophagy among them is perhaps not indigenous. Strangely, they possess no name for the *lactarius sanguifluus*, which is esteemed by both Catalans and Castilians. On the other hand, we can testify that in Viscaya the Basques manifest an addiction for the *russula virescens*. In the west of that western Basque province, this mushroom, which is the best of the *russulas*, is called by a specific name - *guibelurdina*, but in Guernica it appears to so dominate the field of mycophagy that it becomes simply the 'mushroom' - *perretxiko*.

Various strands of evidence support our view that Western Europe is progressing in mycophagy. Take Italy, for example. Today immense quantities of mushrooms are eaten there, and the local names are numerous. But we observe that poisonings often occur - a sure sign of imperfect knowledge. From Pliny and other ancient writers we know that certain mushrooms were fashionable among the fastidious elite in imperial Rome, but if we ask our question about the rest of the population, we must admit that we know little. Apicius gives us various mushroom recipes, and Pliny describes several kinds with sufficient detail for us to guess at their identity, in two or three cases with confidence. But Pliny himself looked down his nose at mushrooms, and there is one sentence in his *Natural History* that, almost by inadvertence, reveals his own mycophobic leanings. With some impatience he admits that others know more about mushrooms than he. "Who, in fact," says he, "is able to distinguish among them, except those who dwell in the country, and those who are in the habit of gathering them?" That is, who knew the mushrooms except the untutored rustics, mute for us, and the minions of the epicures in the great city? As to the epicures, Pliny with disdain tells us that mushrooms were the only dish they would prepare with their own hands, thus relishing them twice over, once in anticipation and once in the eating. Here are the rich phrases of Pliny's Elizabethan translator, Philemon Holland:

. . . our fine-mouthed and daintie wantons who set such store by their tooth, take so great delight to dresse this onely dish with their owne hands, that they may feed therupon in conceit and cogitation all the while they bee handling and preparing the same, furnished in this their businesse with their fine knives and razors of amber, and other vessels of silver plate about them.

On an earlier page we saw *that fungus* was an epithet in ancient Rome, the equivalent of 'dunce' or 'gump' in English - an indication that the people who so used the word had little esteem for mushrooms.

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Jumping now to Renaissance times, we open the earliest printed cookbook, entitled *De Honesta Voluptate*, attributed to a Vatican dignitary named Platina and printed in Rome c. 1474. There we find a section on mushrooms, and it is a farrago of mycophobic nonsense, of a kind that would not be tolerated by discriminating Italians today. It must have expressed more or less the sentiments of the upper crust in the Rome of Platina's day. This work was translated into many languages and it almost monopolized the cookbook market for a century and more. The French version, of which we have consulted an edition published in Lyons in 1505, has a peculiar linguistic interest: the translator uses various words for 'mushroom' and among them is *fonge*. This may have been the translator's bookish invention; at any rate/ongé never took hold in France, the only part of Romanic Europe where *fungus* has had no verbal progeny in the vernacular.

Two centuries before Platina another Italian, Aldobrandino da Siena, composed in French a medical treatise, *Le Livre pour la Sante du Corps*, at the behest of the Countess of Provence, Beatrice of Savoy. It appears to have been finished in the year 1256 and it survives in many manuscripts copied in the course of the ensuing centuries. Aldobrandino relied heavily on the writings in Arabic of a 10th century physician living in Egypt, Isaac Judaeus. Here too we find a chapter on mushrooms. Aldobrandino writes in the purest mycophobic vein, the best that he can say of mushrooms being this, that some there are which are not so bad. Though written in French, the Aldobrandino work cannot of course be taken as an expression of a French attitude. It is of special interest to us for the illuminated initial with which the chapter on mushrooms begins.

Coming to France itself, we begin by observing that the French Canadians know nothing of wild mushrooms and never eat them. Their ancestors came largely from Poitou, with a sprinkling of Basques, Bretons, Channel Islanders, and Normans. A conservative people, the *habitants* would not have given up mycophagy in the New World, where the forests are rich in kinds that are common in France. It seems probable that in their ancestral lands mushrooms were not eaten three centuries ago, and certainly this is still true of the Bretons. Mycophagy in France is spreading north from the Midi and Gascony. The reports of poisonings, the modern diffusion of new names like *cepe*, the constant revision of municipal regulations governing the sale of mushrooms - these all bear witness to growing pains as mycophagy gains ground. Though wild mushrooms are commonly offered in the marketplaces of France in the appropriate seasons, it is not unusual to meet French folk who know nothing whatever about them, not even the names of some of the common kinds. Van Sterbeek

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in his *Theatrum Fungorum* on page 117 quotes Clusius, native of the French city of Arras and father of modern mycology, as saying that he had never eaten a mushroom! An underlying mycophobia would explain the readiness of the French to associate wild mushrooms with toxic properties. The king of the elephants in *Babar* dies, in defiance of nature, from eating a fly amanita; and the death of this beloved albeit imaginary beast implants the microbe of mycophobia in the defenceless minds of countless children. One of the best French movies, Sacha Guitry's *Le Tricheur*, hangs its story on the death of a whole family from mushrooms. Jules Romains in his play, *Knock ou le Triomphe de la Mededne*, introduces a lady of the French landed aristocracy who sells a property called la Michouille where mushrooms never grow, the very name being derived from *mycodium*, 'hate of mushrooms', a strange conceit that we think only a mycophobic writer would invoke. But in Marcel Moussy's *Arcole ou la Terre Promise* there is an idyllic setting in which a young couple go mushroom gathering.

Certain *gastronomes* among our French friends resent our imputation of mycophobia to the French. But take Montaigne. This giant of the Renaissance, who poured the rich contents of his mind and feelings into his essays, ignores the fungal world. Not even truffles are so much as mentioned by this son of Perigord. True, Montaigne had apparently little interest in food and drink of any kind. But then let us look at his elder contemporary, whom he admired, François Rabelais. When Epistemon visits the abode of the damned, he discovers there all the personages of antiquity, and finds that for all eternity they are condemned to menial and insignificant occupations: Alexander the Great darns breeches while Dido peddles mushrooms! Elsewhere Rabelais presents to his readers an obnoxious character called Lent-observer whose pinched soul knows only denial. He had a *potiron*, mushroom, for a chin, and his excrement consisted of morels and toadstools. There is never a kind word for mushrooms in Rabelais, this native of Chinon in the very heart of France.¹

It is never easy to trace down the centuries the gastronomic role of a kind of mushroom. Perhaps the distinctive truffle offers us the best opportunity for such a chronicle, yet here too we encounter contradictions. According to M. G. Malençon in *Les Truffes Europeennes*,² for a thousand years after the fall of the Roman Empire no one in Italy or France paid attention to truffles. In the 14th century they reappeared. During the Renaissance the truffle of Perigord - *tuber melanosporum* - established its ascendancy, and with some ups and downs thereafter maintained a secure place high in the firmament of gastronomic

1. Rabelais refers to mushrooms in Book n, chap. 30; and in Book rv, chapters 31, 50, 57, and 60.

2. Published as *Memoir hors-serie N° i* by the *Revue de Mycologie*, April I, 1938.

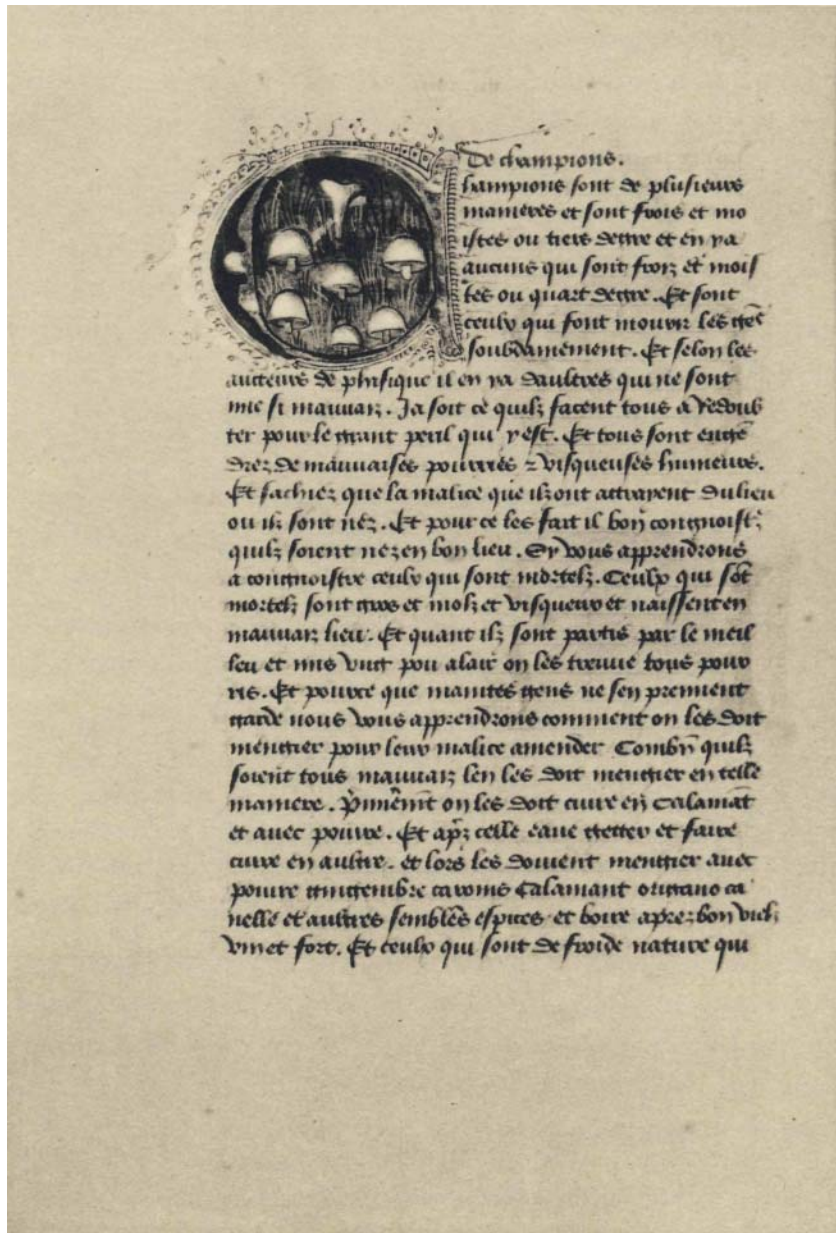


PLATE LVI. Illuminated initial from a 15th century manuscript (No. 165) of *Le Livre pour la Sante du Corps*, by Aldobrandino da Siena, 1256. New York, The Pierpont Morgan Library.

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values in the most exalted circles of France. We have already seen that the English diarist Evelyn was making the acquaintance of truffles in Vienne in the 17th century, and after the Restoration in England they begin to appear in cookbooks across the Channel. Yet we have also seen that Brillat-Savarin in the early 18th century considered the truffle a modern innovation in Paris. These seeming contradictions can be reconciled when we remind ourselves that we are dealing with accidental references by writers belonging to the articulate elite of France and England. In our section on the truffle we produced linguistic evidence showing that the truffle was always an article of commerce in the humble market-places of the Mediterranean peoples, bought and sold and consumed by countless generations of unlettered folk.

In the beginning the Germanic world was steeped in darkest mycophobia. Certainly nowhere in European literature is there a more perfect expression of loathing for mushrooms - all the more eloquent because taken for granted - than in the writings of Saxo Grammaticus, the Danish historian who flourished about A.D. 1200. He was telling of a military campaign waged in Sweden by Hadding the Dane in the 10th century, and how the Danes ran out of provisions, and were driven to the last extremities of hunger. Here in Book I: viii: 7 of his *Saxonis Gesta Danorum* we discover the low opinion in which the Danes of olden times held wild mushrooms:

. . . After the spring thaw, Hadding returned to Sweden and there spent five years in warfare. By reason of this lengthy campaign, his soldiers, having consumed all their provisions, were reduced virtually to starvation, and resorted to forest mushrooms to satisfy their hunger. Finally under pressure of extreme necessity they ate their horses, and in the end they satisfied themselves with the carcasses of dogs. Even worse, they did not scruple to eat human limbs.

Now that the passing centuries have dimmed for us the personal sufferings of Hadding's host, we may permit ourselves to be amused by the graduated stages¹ of their desperation as reflected in their diet, and our thoughts turn to what soldiers of other origins would have done in a like pass. Had they been Celts, they would surely have eaten horses, dogs, and each other before turning to the

I. An amusing parallel to the plight of Hadding's host is to be found in the Spanish classic, *El Viage Entrtenido*, by Agustin de Rojas, a contemporary of Shakespeare. This narrative gives a vivid picture of the miseries and adventures that were the lot of strolling players in Spain at that time. The troupe are making their way from Barcelona towards Madrid:

After having exhausted our money [five *reales*], sold everything that we had left, *often eaten of the mushrooms that we gathered along the way*, slept on the ground, tramping barefoot (not for the mud but because we had no footwear), helped muleteers load their beasts, fetched water for the mules, and sustaining ourselves on turnips for four days and more — stealthily one night we came up to an inn-----
The italics and translation are ours.

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foul fungi of the forest. If they had been Slavs of the North, they would have been feasting on those noble mushrooms from the outset of their long campaign, and, fortified by the delectable fare, would have engaged the enemy like lions, and most certainly turned the tide of war. Until General Bernadotte, when King of Sweden, spoke well of ceps, neither Lapps nor Swedes ate mushrooms. We know this because Linnaeus tells us so. In the section on the fungi in his *Flora Lapponica*, he observes that in Sweden only foreigners consider mushrooms fit for eating, nor does he except himself from the general rule. What a pity that the great Linnaeus was a mycophobe!

As for the Lapps, Linnaeus in the same work tells us where their fungal interest lay, and the passage is unique in ethno-mycological records. Linnaeus devotes a lengthy section of his work to the fungi of Lapland, and as he comes to the end and is describing *Boletus* 522, which he calls 'suavaeolens', he reports that the young Lappish swains when stepping out to keep company with the Lappish girls would carry this fungus in a little bag over the male member, that its scent might please the nymphs. The 'boletus' used in this way, according to Professor Heim, was undoubtedly the *trametes suavaeolens* Fr. ex Linn., conspicuous for its strong odor of anise. Linnaeus was frank in his description:

Adolescentes hunc inventum sollicite servant in *marsupio ante pubem pendulo*, ut gratiorem odorem spirantes nymphis suis placeant. [Italics ours.]

When Knut Hagberg brought out his life of Linnaeus in 1939 he deprived this delightful passage of its sap by translating *ante pubem pendulo* as 'on the stomach' (*pa magen*), and his English translator further diluted Linnaeus by hanging the fungus 'from the waist'! Such is the prudery that censors the classics! The Lappish custom moved the mycophobic Linnaeus to indulge in a discursive rhapsody of the kind that lesser scientists frown upon:

O ridicula Venus, tibi, quae in exteris regionibus uteris caffee & cocholata, conditis & saccharatis, virus & bellariis, gemmis & margaritis, auro et argento, serico et cosmetico, saltationibus & conventiculis, musica & comoediis, tibi sufficit his solus exsuccus fungus.

O whimsical Venus! In other climes you ask for coffee and chocolate, pickles and sweetmeats, wines and goodies, gems and pearls, gold and silver, silks and cosmetics, balls and parties, music and the theater. Here your wants are met with a little withered fungus!

We can show that long after Saxo Grammaticus, and even after the Reformation, mycophobia was still rampant in Germany. A few years ago there was discovered in the Copenhagen Royal Library a document of high cultural interest. It was penned early in the lyth century by a Hanseatic merchant of

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Lubeck who had sojourned long enough in Pskov to learn the Russian dialect of that city. The manuscript is a textbook of colloquial Russian, giving as exercises in Russian phraseology authentic dialogues recorded by the author. Among them are a few between Russians and Germans in which each side praises the life of his own home town. In the course of one such colloquy we come upon a German mycophobic boast of priceless value for our argument, proving as it does the contrast between Russian and German attitudes toward the fungal world. Here are the texts in the Russian dialect of Pskov and the German dialect of Lubeck, along with an English translation by Mrs. Elizabeth van Schooneveld, who is now editing the manuscript for publication:

Nashi nemetzkie ljudi zhivut kak [g]ospodari, svezhe mjaso da svezhi ryby jedjajt da vina da pivo p'ju[t], da vashi ljudi kak psy borzye, ryzh[i]ki griben jedja[t] da p'ju[t] vodu i kvas.

Unse dutsche lude leuen also heren ehten fersch flesch und fersche fische, und drincken wyn und beer, und juwe volk also beste und wynthunde ehten poggenstole und drinken wahter und qwasz.

Our German people live like lords, eat fresh meat and fresh fish and drink wines and beer, and your people like beasts and coursing hounds, eat toadstools and drink water and kvas.

The aspersion thrown into the teeth of the Russians by the merchant of Lubeck is corroborated by linguistic evidence of singular probative value. The Jews of Germany some centuries ago migrated east into the Slavic lands, taking with them their language based on medieval German dialects, which we know as Yiddish. The mushroom vocabulary in Yiddish is largely Slavic, borrowed after the migration. The generic term for 'mushroom', however, is *shveml*, a diminutive form from the German *Schwamm*; the favorable *Pilz* has no continuation in Yiddish. It is clear that when the Jews migrated to Poland, they took no tradition of mycophagy with them. Apparently the Germans began eating mushrooms late in the Middle Ages, and needing a word to dignify the new dish, they turned to the Latin *boletus*, which in Valerius Cordus (1551) had become *Boltz* and in Clusius (1601) was *Btiltz* and is today *Pilz*. Thus *Pilz* entered Germany's fungal vocabulary at the top, to suit the dinner-table, while at the lower end of the scale the pejorative *Krotenschwamm*, also recorded by Clusius as current in his day, fell into disuse and finally disappeared from High German. Here we see how a change in names reflected, and at the same time encouraged, a change in attitude toward the eating of wild fungi. It is noteworthy that the growth of mycophagy in Germany appears to have been a response

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to Mediterranean influences descending culturally from above, rather than an eruption of the Slavic substratum that was still strong in Central Europe.

Today in Sweden and Denmark and Southern Germany and German Switzerland, bands of young people go out in season from the cities to gather mushrooms. The market places of Southern Germany and Switzerland are well stocked with many kinds of wild mushrooms. Is not this interest a modern thing, perhaps as modern as the sport of mountain-climbing ? Do the rustics know their mushrooms as these city youths do - except as the market demand of the cities has led the country folk to respond by gathering the appropriate kinds > Is there not here a cultural penetration that began with the sophisticated city circles and spread thence to the countryside ? Dr. J. Schlittler, Pilzkontrolleur of Zurich, confirms our suspicion. He tells us that in the back valleys of the Alps the peasants still reject all mushrooms, still view them through medieval eyes, clinging to the old mycophobic beliefs. We also learn that the Romansch-speaking country folk of the Surselva and the Engadine know nothing of edible wild mushrooms and care nothing, though in these lovely valleys they grow in abundance. There is evidence that while Otto Bismarck was serving as Ambassador in Russia around 1860 he discovered and mastered the art of mushroom knowing, and acquired a taste for mushroom hunting and marinated mushrooms that he took back with him to Germany.¹

Though we think mycophagy among the Swiss is a modern growth, its hold is already secure. A story, told to us in Geneva as true, bears witness to this. An aged countryman in the Suisse Romande found himself borne down by the infirmities of age and the loss of those dearest to him. There came a time when he invited a young friend to pass a long and arduous day with him in the mountains. A glorious day it was, in the course of which the old man took pains to reveal to his companion with painstaking precision all of the spots known to him where mushrooms grew, various kinds of mushrooms but especially morels, knowledge slowly gathered on solitary rambles made for that purpose over the course of a long life. Marveling to himself at this untoward behavior, the young man showed proper appreciation and made careful note of all the locations. That night the unhappy octogenarian took his own life. His penultimate act had been to pass on to the youth of his choice his precious possession, a worldly legacy that no testamentary provision could have conveyed.

Indifference that overlies a sleeping hostility is the attitude toward wild mush-

i. See letter written by Konstantin Leont'ev dated Dec. 3, 1887, published in *Bogoslovskij Vestnik*, 1914, No. 4, pp. 776-7. Professor Cizevsky, who discovered this reference, raises the further question whether the sour cream often served with 'Bismarck herring' was not borrowed from the Russian cuisine, perhaps from a favorite way of serving mushrooms.

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rooms of the typical mycophobe in a country like England. He and his neighbors think alike about these creatures; rather, they react alike, for they do not think, ignoring as they do their own infirmity. The mycophobe does not initiate a discussion about wild mushrooms. If the subject comes up in his presence, instantly he is on his guard. He is almost sure to recall some fatal episode involving poisonous mushrooms that, he says, came within his personal experience. He admits grudgingly that some good wild mushrooms exist, but his strongly held view is that all are dangerous save a few, and these no amateur can be relied upon to identify. Yes, identification is difficult and never sure. As like as not, the mycophobe will tell you that every good kind has its deadly counterpart, as though Divine Providence had deliberately laid booby traps to catch the fool who insists upon hunting mushrooms. He is apt to go on and suggest that kinds familiar to you in your country may well be deadly hereabouts. He volunteers his advice for your own good, as one who wishes to be clearly on record that your death will be on your own head. He is dogmatic, his voice has a cutting edge. If you are bold and put questions to him, you discover at once that he knows nothing about wild mushrooms, and that he is happy and even determined to remain in invincible ignorance, feeling that that way safety lies. Furthermore, this mycophobia of the North Sea basin is a dominant trait. The English-speaking mycophobe when he goes to live in a mycophagous country seldom learns to know the mushrooms and avoids eating them. By contrast, the mycophagous Slavs who live in England or the United States sometimes succumb, albeit slowly, to the steady pressure of the hostile environment, weakly accepting the facile advice of well-meaning but ignorant neighbors who assure them that the species they knew and loved in the lands of their childhood become deadly, for some mysterious reason, inside the political frontiers of an English-speaking world. How truly John Parkinson spoke for his countrymen when in 1640, in his *Theatrum Botanicum*, he begins his chapter on the 'Dangerous Mushrooms' with the observation that he can be brief about them, for it would be to little purpose (as he says) to dwell on them, inasmuch as the English need no caution "to beware of the bad, seeing our Nation is not so enclined to the good".

The Englishman's rejection of the mushroom tribe is a Pavlov reflex. We have known Englishmen who retch at the thought of eating a wild mushroom, just as some orthodox Jews do at the thought of pork. Wilmarth Lewis, presiding over the world of Horace Walpole, has drawn to our attention a delightful passage in a letter that Walpole wrote on October 17, 1758, to Lady Hervey. On the flimsiest provocation, the Duke of Newcastle had lately given an exhi-

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bition of violent mycophobia that must be considered classic. For the sake of a quotation from Jeremiah, Walpole changes Newcastle's famous chef Chloe into a woman. Here is the episode in Walpole's words:

This will be a melancholy letter, for I have nothing to tell your Ladyship but tragical stories. Poor Dr Shawe being sent for in great haste to Claremont (it seems the Duchess had caught a violent cold by a hair of her own whisker getting up her nose and making her sneeze) — the poor Doctor, I say, having eaten a few mushrooms before he set out, was taken so ill, that he was forced to stop at Kingston; and being carried to the first apothecary's prescribed a medicine for himself which immediately cured him. This catastrophe so alarmed the Duke of Newcastle that he immediately ordered all the mushroom beds to be destroyed, and even the toadstools in the park did not escape scalping in this general massacre. What I tell you is literally true. Mr. Stanley, who dined there last Sunday, and is not partial against that court, heard the edict repeated, and confirmed it to me last night. And a voice of lamentation was heard at Ramah in Claremont, *Chloe* weeping for *her* mushrooms, and they are not!

There is a striking contrast between mycophobic and mycophilic peoples when it comes to fungal vocabularies. In Muscovy and Provence and Catalonia the countryfolk possess a huge vocabulary, familiar to all, and ancient. If in those countries there be any who do not know their mushrooms, these benighted individuals are pitiful city-bred waifs, cut off from the land that gave them birth and from their proper cultural heritage. In mycophobic countries, the farmers know almost nothing about wild mushrooms and speak of them with two or three indiscriminating words. But in the cities there will be found little circles of amateurs who make a hobby or cult of their mushroomic knowledge, and who learn from manuals a large vocabulary that circulates only on their lips. The run of rustic English folk know 'toadstool', 'mushroom', 'puffball', and possibly a few localisms. If the countryman knows 'fungus', it is as a learned word. Only in cities and in esoteric circles, does one hear of truffles and morels and ceps, not to speak of death-cups, destroying angels, shaggy-manes, and all the other book-words that the manuals carry. The reader of these manuals is at a loss about these so-called vulgar names. Some are clearly of venerable lineage. For example, no mycologist would have invented the 'horse mushroom' for the *psalliota arvensis*; the term belongs with 'horse-radish', 'horse chestnut', and 'horse mussel', wherein the first element means 'large' or 'coarse'. We think also that 'shaggy mane' for the *coprinus comatus* may be a word of respectable lineage: as long ago as 1802 A. F. M. Willich in *The Domestic Encyclopedia* was writing about the 'shaggy spunk', a mushroom known to science in his day as the *boletus hirsutus*. On the other hand, where a common name is wanting, the

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mycologists seem to have invented fanciful neologisms to meet the need, without troubling to distinguish genuine localisms from the fruit of their own fancies. Today there are excellent mushroom manuals in France and England, but until our generation the manuals in those countries were often saturated with mycophobic caution. I possess the Russian manual, published in 1903, that originally belonged to Tatiana, daughter of Nicholas II, in which in childish handwriting she wrote her name. It is a delightful book, full of friendliness for wild mushrooms, all of which seem to be considered good except two or three kinds that are cursorily dismissed. By contrast, some of the older manuals of France and England deliberately set out to frighten the reader. They are filled with labored warnings, giving the impression that all mushrooms are bad except a few kinds that even the careful reader can hardly hope to learn, even if he uses utmost care. By a curious twist of fate, this excess of caution in the manuals once accidentally contributed to the undoing of a murderer, as we have seen in our account of l'affaire Girard.

Wild fungi are an emotional trip-hammer for mycophile and mycophobe alike, and in the poets with their heightened sensibilities the contrast in the response to fungi is sharpest. Professor Roman Jakobson was spending the summer of 1919 in Pushkino, near Moscow, with the poet Vladimir Majakovskij, who would go out almost daily into the forest to look for mushrooms. He would usually return with a large basket full of them. He knew them all and where to look for every kind. He told his companion that mushroom gathering offered the ideal accompaniment for the composition of poetry, and in the course of that summer he composed the best parts of his epic, *150 Million*, while engaged in this pastime. During the previous season, in 1918, he had conceived his play *Mystery Bouffe* in the woods among the mushrooms.

Now contrast Majakovskij's feelings with those of D. H. Lawrence. Not long after the scene in Pushkino, the Englishman wrote his poem entitled *How Beastly the Bourgeois Is*, and to match the repugnance that he felt for his subject, he resorts to mushrooms for his analogy:

How beastly the bourgeois is
especially the male of the species -

Nicely groomed, like a mushroom
standing there so sleek and erect and eyeable -
and like a fungus, living on the remains of bygone life,
sucking his life out of the dead leaves of greater life than his own.

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And even so, he's stale, he's been there too long, Touch
him, and you'll find he's all gone inside just like an old
mushroom, all wormy inside, and hollow under a smooth
skin and an upright appearance.

Full of seething, wormy, hollow feelings
rather nasty -
How beastly the bourgeois is!

Standing in their thousands, these appearances, in damp England
what a pity they can't all be kicked over
like sickening toadstools, and left to melt back, swiftly
into the soil of England.

Here then in these two literary artists we discover the perfect mycophile and
the perfect mycophobe. For the Russian a world carpeted with mushrooms is
Elysium. For the Englishman that same world conjures up foul exhalations rising
wraith-like from rotting swamps, and the mephitic horror turns his stomach.

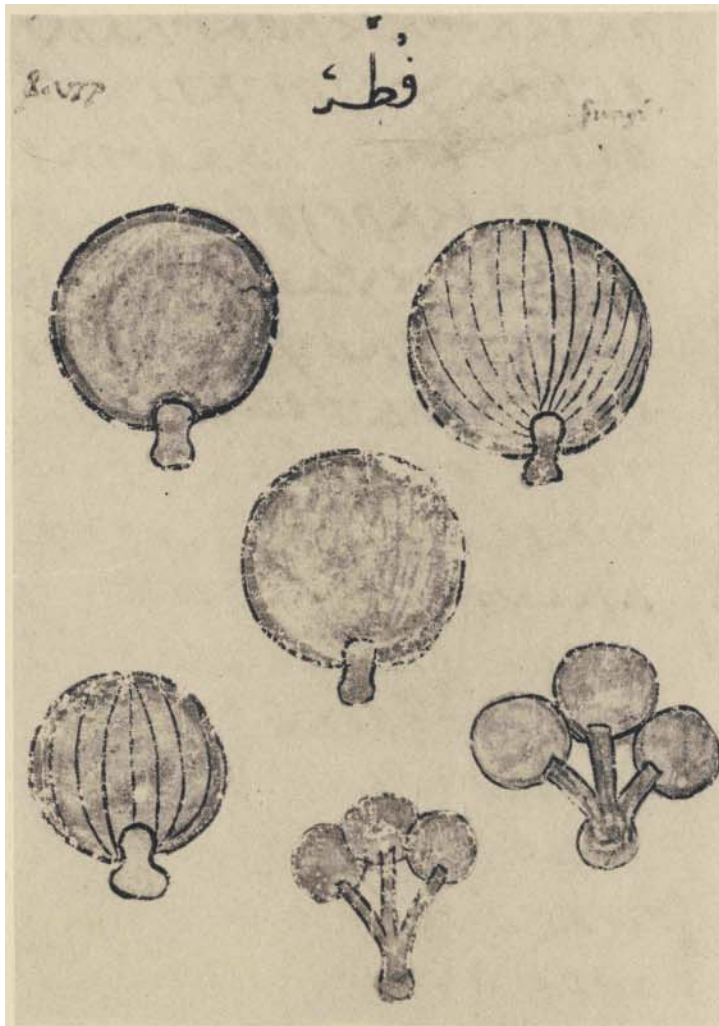


PLATE LVII-A. Mushrooms. Miniature from a 5th century codex (Grec 2179) of Dioscorides. P^m, *Bibliothèque Nationale*.



PLATE LVII-B. Mushrooms. Miniature from a 9th century manuscript (Arabe 4947) of Dioscorides. *Paris, Bibliothèque Nationale*.

σὺρ οἶρον· τρυζὶς οἴρου· λιβαυμὲρ ἡμισυδατος καὶ χαλίου
ἄψοσσιωόζη· ῥάφαρος κῆρας· κῆρα δάμορ καὶ θιομά...

ΜΥΚΗΤΑΙ:-

ΜΥΚΗΤΑΙ:



¶ ἕτος· γύτσο δὲ πο· θῆσα πριγμὸρ βρωσιόλιθου μάλκ· ὅθεν
μῆα βράμδῃ· τὰ παρὸ αὐτοῦ σμυλῆτασ ἀρμόζορι αμοκθῆμασ
διδομτασ καὶ βῆταῦ τῶν τό τῆσ μαλαχῆσ ἀφθῆμασ
ὁ παραλητασ βρωσῆσ τῶν βλαίου· μῆα παρὸ γὰρ ὀρβρωσῆσ
μῆσθα· ὀμσθσ βρωσιούμ· οὐκ αὐλατὰ ζύσθα τασώματῶν·

PLATE LVIII. Mushrooms. Miniature from a 10th century manuscript (No. 652) of Dioscorides.
New York, The Pierpont Morgan Library.

MUSHROOMS IN ART

Mushrooms are rare in art. In the Christian world they appear first and chiefly as illustrations for mycological texts, primarily utilitarian in purpose. Today our mycological illustrations approach perfection in some of the slick color engravings of modern mushroom manuals. Henri Fabre's water colors might also fall under this heading. But Fabre succeeded in doing more than merely catch the details significant for the student of mushrooms. He perceived and caught with his brush the eerie strangeness of these diverse creatures, he caught their grace and mystery, and in his finest compositions he far transcended the humble functions of the faithful illustrator.

In the earliest illustrations of mushrooms there was a singular unevenness of quality. Already in Plate XXXII we have shown how excellently a miniaturist in the 16th century represented the truffle, and how absurd was the first printed representation of that same truffle (fig. 10), published in Mainz in 1491. On Plate XXII we reproduced from the same 16th century Codex the illustration of the *fomes officinalis*, and in contrast with the excellence of the truffle, the miniaturist here indulged in a startling aberration based on a popular notion that this shelf fungus possessed sexuality of a quasi-human kind. On the other hand, in the *Hortus Sanitatis* where the ill-begotten truffle appeared, the *fomes officinalis* was rather well portrayed, growing correctly on the trunk of a larch.

The successive scribes who copied the manuscript of Dioscorides seem to have followed various traditions in their illustrations, imitating the predecessor whose work lay before them. The earliest mushroom miniature known to us is in the 6th century codex of Dioscorides now lying in the Bibliotheque Nationale.¹ There the mushrooms look like balloons or cherries or gooseberries. In the same library there is an 8th century (or slightly later) Arabic manuscript of Dioscorides, and it is clear that here the miniaturist was working in the same uninspired tradition, if indeed he was not copying from the 9th century manuscript directly. The Freer Gallery in Washington possesses a page from yet another Arabic version, this one written in the year 1224, and here the same globular forms have degenerated far indeed.

On the other hand, in the Morgan 16th century codex there appear three capped mushrooms of superior lineage, and we permit ourselves to believe

I. In our quest for early mushroom miniatures we have concentrated on mss. of Dioscorides. There are other promising possibilities that we have not explored, i.e., the mss. of Theophrastus, Nikander, Athenaeus, Galen, Pliny, and St. Isidore.

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that they originated with the same artist who depicted the truffle. How exciting it would be to discover who he was and when he lived, the original begetter of this truffle and these mushrooms! Was he perhaps Dioscorides himself, or that mysterious master whom Dioscorides revered - Cratevas, attendant at the Court of Mithridates Eupator a century before Christ ? Except in the various recensions of Dioscorides, we have found mushrooms in only one medieval

CHAMPIGNONS.



Fig. 26. Illustration from Matthiolus' Commentaries on Dioscorides, Paris 1578.

manuscript, the illuminated initial in Aldobrandino da Siena's *Le Livre pour la Sante du Corps*. And here we discover for the first time a sense of composition. Six of the mushrooms in this initial might stem back to the illustrations in the Morgan Dioscorides, but boldly rising above them is a good representation of a craterellus. We reproduce on Plate LVI this illuminated initial from the Aldobrandino manuscript in the Morgan collection, written probably in Rouen about the year 1450, but copied perhaps from earlier versions going back a century or two.

With the *Hortus Sanitatis* in 1491, the tradition of the printed illustration of mushrooms began. In the 1550's the Italian Pietro Andrea Mattioli brought out his *Commentaries* on Dioscorides, and this important book quickly passed through many editions. From the French version published in Lyons in 1578 we reproduce the woodcut accompanying the chapter on mushrooms. Here for the first time we discover mushrooms in their habitat, growing around a stump, with snakes about and 'flies' in the air. The illustrator was doing his best to cope with his text and for the first time mushrooms were being portrayed against their natural background, as it was then conceived.

MUSHROOMS IN ART

Europe's storehouse of art is primarily religious in inspiration, and the religious art of Europe ignores the whole fungal world. This is not surprising, for mushrooms are not mentioned in the Bible¹ nor in the Apocrypha nor in the writings of the Early Church Fathers. Unless we make an exception for the Czech folk tale that we recounted in Volume I, mushrooms seem never to figure in hagiographical legends. The deplorable truth must be faced: the Christian religion has no mushrooms in it anywhere. True, four Saints speak of them, but of these, three were scholars writing on natural history.² This leaves the fourth, and let us turn to what that great man had to say.

We have seen on an earlier page in what low esteem the Protestant divine Jeremy Taylor held mushrooms. Only a few decades before Taylor's disparaging remarks, St. Francis of Sales in Geneva was giving vent to kindred emotions in that extraordinary classic of Catholic piety, the *Introduction to the Devout Life*. St. Francis and the Protestant clergyman speak from the identical mycophobic tradition, and undoubtedly in the case of these moralists the vogue in their day of certain fungi as aphrodisiacs reinforced their natural feelings. In Chapter 33 of Part 3 of St. Francis's book, he turns his attention to 'balls, and other permissible but dangerous pastimes', and then he goes on:

I say to you about dances, Philotee, what the doctors say about *potirons* and *champignons*, the best are worthless... If nevertheless you must eat mushrooms, see to it that they are well prepared. If for some reason you cannot get out of going to a dance, see to it that your dancing is well considered . . . Eat few mushrooms and eat them seldom, say the doctors, for no matter how well prepared they are, in quantity they are venomous. Dance little and seldom, Philotee, for otherwise you expose yourself to the danger of becoming addicted thereto. According to Pliny, mushrooms being spongy and porous easily draw to themselves any infection in the neighborhood, so that when near serpents they draw to themselves the serpents' venom.

Similarly, continues St. Francis, dances attract vice and sin. And just as after mushrooms it is wise to drink precious wine as an antitoxin, so after dances one should concentrate on holy thoughts.

With mushrooms virtually ignored in Christian writings, it is not surprising that they hardly figure in the mighty river of traditional European art. When

1. In Leviticus xrv: 34-53, there is a description of a 'plague of leprosy in a house' and some mycologists have seen in it a visitation of the fungus known as the *merulius lacrymans*. The difficulty with this conjecture is that the house in question was constructed primarily of stone and mortar, as the text itself makes clear, and the stone and mortar were infected. The *merulius lacrymans* attacks timber.

2. St. Isidore of Seville, St. Hildegard, and Albertus Magnus. St. Hildegard was a German nun who in the nth century composed a medical work entitled *Liber Subtilitatum Diversarum Naturarum Creaturarum*. In Book i, 'De Plantis', she described the physiological effects (as she understood them) of the kinds of fungi that grow on the different species of trees. See J. P. Migne: *Patrologics*, vol. 197, col. 1194.

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once we leave aside the illustrations to mycological texts and turn to the main corpus of European painting, they are almost wholly absent until the 18th century. We have already discussed on pages 87 ff. the effigy of a Satanic boletus in Bosch's *Hay Wain*. This is the earliest mushroom known to us by an Old Master.

The second is in the same tradition, by a Fleming who was surely a mycophobe, Peter Brueghel the Elder. In his allegorical painting *The Misanthrope*, dated 1568 and now hanging in the Museo Nazionale in Naples, an aged man clothed in mourning advances to the left across the open fields, leaving behind him an horizon apparently aflame with fire and war. A thief, having overtaken him from behind, is slyly cutting the cord from which the old man's purse is hanging. The thief is enframed in a shadowy sphere that represents The World. Beneath the painting is an inscription in Dutch:

Om dat de Werelt is soe ongetru
Daer om gha ic in den ru.
Because the world is so untrue
Therefore go I in mourning.

The face of the old man is not saintly, and it is said that Brueghel himself hesitated about the name to give to the picture: *False Hermit* and the *Hypocrite* were two of his choices. (Here is our perfect illustration for *Tartuffe!*) On the path before the pilgrim are three caltrops, sharp metal points of the kind that the soldiery in Brueghel's time would strew for enemy horses to step on. For us the exciting detail in this picture is the presence, close above the metal points, of two mushrooms, and a cluster of vaguely discernible mushrooms to the immediate right of the tree stump. Here again is the 'Devil's bread' of Bosch. These mushrooms suggest boleti, but with the passing centuries the painting has deteriorated and the species cannot be identified. Surely it is fair to assume that they are the *heksenzwam* or *satanzwam*, bathed in the aura of witches or Satan. Bosch in his painting developed his own iconographic idiom. It is Christian but unconventional: the *Hay Wain* is a strange allegory framed inside the Christian cosmogony. Brueghel's mushrooms are an iconographic symbol in a painted homily of profane rather than sacred inspiration. Within the confines of conventional Christian iconography we know of only two paintings, in all the wealth of Christian art, where mushrooms figure. We are indebted to the Director of the Prado Museum, Dr. Sanchez Canton, for drawing to our attention one of them. In the Prado there hangs a superb *Adoration of the Magi*, painted c. 1610 by Juan Bautista Mayno, an artist of the Spanish school about

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whom little is known beyond the fact that he was a Spanish Dominican born in Italy. His *Adoration* bears witness to his high quality as a painter. His craftsmanship is impeccable, his composition noble, the delicacy of the figures and faces breathtaking. In the foreground, down below, are two inconspicuous mushrooms growing among some leaves by the side of an unhewn stone. The mushrooms belong to the agaricaceae, for one of them shows a ring. The base of the stipe is concealed by vegetation: we cannot say whether there is a volva. The mushrooms and their boulder are a sinister counterpoise to the Light of the World shining through the aperture from above. Exactly what do they mean?

For Bosch in the *Hay Wain*, for Brueghel in *The Misanthrope*, mushrooms were a symbol of the forces of Satan, and we think that the same meaning attaches to the mushrooms in Mayno's painting.

The Virgin on her finely chiseled block of stone is goodness, truth, and beauty. The boulder with the mushrooms growing in a marshy spot is the realm of unregenerate nature that is now to be offered redemption. Mushrooms belonged to that armory of demonic symbols which painters used in the 15th and 16th centuries when preaching to the world about Satan and his works. It is true that they used mushrooms sparingly, but the symbolism is abundantly clear. Much more common as symbols of the infernal forces were serpents, lizards, frogs and toads, beetles, and flying insects; in short, all those creatures commonly thrown together under the pejorative name of Vermin'.¹

Our interpretation of these early mushrooms finds support in a painting by a fourth master, Herri met de Bles known as Civetta, 'the Owl', who died in 1550. Of the Flemish school, by cultural heritage he belonged to the world of Bosch and Brueghel. In the Gemaldegalerie der Akademie der bildenden Künste, Vienna, there hangs his *Christ Bearing the Cross*, a small and exquisite canvas. The field of the iconographic message in this painting is enframed in the foreground by a close-up of rough untilled land. We were the first to detect in this foreground, near the center, two clumps of minute and delicately delineated mushrooms, and a third clump of the same genus is in the lower right hand

I. The corpus of paintings and sculpture expressing the demonic theme from those centuries is considerable, and has been the subject recently of an illuminating monograph, Enrico Castelli's *Il Demoniaco nell'Arte*, Milan and Florence, 1952.

But mushrooms in the 16th century were not always the stigmata of Satan. In the only etching executed by Peter Brueghel the Elder, *The Rabbit Hunt*, dated 1566, two mushrooms appear in the lower right foreground. They carry no iconographic message. Albrecht Dürer was responsible for a mediocre woodcut of a polypore, dated 1513; see F. Lippmann's corpus of his works, No. 912, or F. Winkler's, No. 632. In Michelangelo Caravaggio's *Christ with Disciples at Emmaus* (National Gallery, London) there is a basket of fruit among which the mycologist will detect an apple infected with a fungal parasite.

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corner. Only by the aid of a powerful magnifying glass can they be fully perceived and properly admired. These mushrooms are off-stage, so to speak, and they might be dismissed as a graceful but meaningless phantasy, did we not recall the sinister meaning of the mushrooms in the works of Bosch and Brueghel. We lean to the view that here also the mushrooms are symbolic of the Powers of Darkness, who in this case are working out their woeful role on the highway to Golgotha.¹

In the Dutch still-life paintings of the 17th and 18th centuries there was a delayed manifestation of the demonic theme in art, a strange and lovely after-glow that is of peculiar interest to us for the role in it of mushrooms. Among the scores of accomplished Dutch artists who were at work between 1640 and 1770 were a handful who chose woodland settings for subjects, closeups of woodland undergrowth, in which we discover serpents, lizards, frogs and toads, beetles, and flying insects. Often the artists added mushrooms of various species. These Dutch masters were offering to their customers paintings of 'Vermin', creatures that from earliest times had symbolized the Satanic powers. A century had elapsed since the elder Brueghel's day, and the world had gone through the spiritual upheaval of the Reformation. The minor creatures of the woodland still trailed clouds of evil, but the dark emotions that they now evoked were only reflexes of the former nightmares. They were terrors recalled in tranquillity and suitable for esthetic delectation.

The originator of this theme in Dutch still-lives was none other than Otto Marseus van Schrieck, whose *Moth with Mushrooms* we have already discussed. Born in the second decade of the 17th century, he died in the late 1670's. No one knows under what master he studied. Little is certain about his life beyond the fact that he lived long in Italy, that he was in Rome in 1652, that he enjoyed considerable success in his day, and that his peculiar choice of subjects set a fashion which persisted for a century and more. It is said that, after his return to Holland, he kept a small private zoo in the garden of his home near Amsterdam where the creatures that he loved to paint were always ready for his brush. He was surnamed 'Snuffelaar', one who ferrets.

Van Schrieck was an artist whose work records a deep cultural transition. On the one hand, he was saturated in the sinister folklore attaching to the humble creatures that he put on canvas, the dark heritage of past beliefs. Was he not in

i. The Art Museum of Princeton University has lately acquired a companion painting by Civetta, representing also the procession on the road to Calvary. Strikingly similar in many respects, it even includes mushrooms, in the foreground on the right hand side, below the owl that is the artist's signature. But they are hesitant and uncertain as compared with the authority of those in the Vienna painting.

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fact the last genuine painter of the demonic tradition > On the other hand, he was the discoverer of beauty in the lowliest and most despised woodland creatures. He raised even Vermin' to the democracy of the artist's beauteous world. For the first time snakes and toads were to give esthetic pleasure. He was the first European to perceive and proclaim the visual beauty of mushrooms. He studied nature with minute care. A snake was no longer just a snake: it was a particular species of snake. A mushroom was not just a toadstool, not the Idea of a fungus such as Bosch had given us. The mushroom world was peopled with an infinite variety of discrete growths, each worthy of distinct and precise delineation.

Was not Van Schrieck, in a significant sense, the earliest of the nature painters? Of course many artists before him had caught the beauty of a landscape. Giants like Diirer and Leonardo had executed superb studies of individual plants or animals. Various miniaturists had ornamented the margins of manuscripts with the profile of a bird or bush, catching to perfection the distinctive line of each. But Van Schrieck added a new element: centuries before Audubon and before scientists began to talk about 'ecology', this Dutch painter sensed the importance of the ensemble of nature, the interdependence of plants and insects and mushrooms and the wild creatures that lived in the undergrowth. Long before Linnaeus and the classification of species, he was distinguishing the species with his artist's eye, and observing the cycle of life in which each lives as a link. He was the first artist whom naturalists can call their own. All those who hold wild nature in honor, and especially all amateurs of mushrooms, will pay homage to this neglected Dutch master, this pioneer in the exploration of nature's wonders.

A peculiarity of Van Schrieck was his addiction to nocturnal settings. Was there ever other artist who so specialized in painting the night ? How sensitive his imagination was to the Stygian blackness of deep night in the woodland undergrowth! He seems to begrudge even that light which he is forced to use to give us a picture at all. What we discover in his paintings is caught by the dazzling illumination from an off-stage light, and the shaft that comes from off stage stops short with the creatures that he paints. The moth is caught in air as by a flashlight, but the light does not race on around the moth to strike elsewhere. This effect reminds us of those modern spotlights designed with mathematical nicety to illuminate the exact area of a canvas or a sculpture. Of course Van Schrieck's settings are artificial, like most settings in museums of natural history, but each component in the picture is vibrant with life and individuality. The artist is not content with painting symbols and effigies as iconographs.

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He is not content with dead models. The demonic message is there in the nocturnal scene, but conveyed by living individuals caught in the dance of life and death. His settings suggest in a way an aquarium, for the buoyancy of the night air makes itself felt in the way all the creatures and the vegetation seem to float in a life-sustaining medium. The three Van Schriecks that we reproduce are chosen for their emphasis on mushrooms. Almost all his paintings include mushrooms, but these are extreme in this respect, as also for the blackness of the night.

Our artist's peculiar qualities find full expression in the painting that hangs in the Herzog Anton Ulrich Museum in Brunswick. Dated 1662, it was probably executed in Amsterdam. Van Schrieck had just returned from his long sojourn abroad. As usual, the setting is crepuscular. A tulip is overborne in the coils of a snake of the species *elaphe quatuor-lineata*. To the right flies one of the saturnine moths. A viper is hissing below, and on the ground we discover a *bufo calamita* ('calamity toad') licking up a slug. This is the toad that the English name the natterjack. On the left a snake that herpetologists call the *coluber viridi-flavus* emerges from behind a *clavaria botrytis* and then curls through a cluster of three mushrooms, of which the one in the middle is a *russula* and the others are Csesar's *amanitas*. Flies are crawling on the *amanitas*, and as *Fliegenschwamm* in Van Schrieck's day was a name bestowed on various species, he may have expected his public to call these mushrooms by that name. The air hangs thick with evil import, yet each detail is executed with the care of one who enters fully into the beauty of nature's cruel cycle. Van Schrieck's painting long antedated the scientists' nomenclature, of course; with the artist's eye he was anticipating their labors.

Van Schrieck's success in his lifetime should not surprise us. He was born into circles with a sophisticated palate for art, and his contribution was an original and notable one. He disclosed the beauty of the wilderness with a subtlety that far surpassed his predecessors. The labored efforts of the early scientific writers were tedious by comparison with his discourses on wild nature expressed in line and color. His mushrooms are incomparably superior to those of the professional illustrators who supplied woodcuts for the text of Clusius, Bauhin & Co. His influence soon took hold of other artists, some of whom achieved a more lasting reputation than he. The Neapolitan painter Paolo Porpora surnamed Pavoluccio Napolitano, a contemporary, imitated Van Schrieck repeatedly: two Porporas painted in this vein hang in the gallery of the Banco di Napoli in Naples, and of these we reproduce one.¹ Abraham

I. This little known artist is the subject of a study by Raffaello Causa in *Paragone* (published in Florence by Casa Editrice Sansoni), March 1951.

PLATES LIX, LX



PLATE LIX. Pieter Bruegel the Elder. The Misanthrope. *Naples, Museo Nazionale.*



PLATE LX. Pieter Bruegel the Elder. *The Misanthrope*. Detail. *Naples, Museo Nazionale*.

PLATES LXI, LXII



PLATE LXI. Juan Bautista Mayno. *The Adoration of the Magi*, c. 1610.
Madrid, Prado Museum.



PLATE LXII. Juan Bautista Mayno. *The Adoration of the Magi*, c. 1610. Detail.
Madrid, Prado Museum.

PLATES LXIII, LXIV



PLATE LXIII. Herri met de Bles (Civetta% Christ bearing the Cross. Vienna, *Gemaldegalerie der Akademie der bildenden Künste*.



PLATE LXIV. Herri met de Bles ('Civetta'). Christ bearing the Cross. Detail. *Vienna, Gemaldegalerie der Akademie der bildenden Künste.*



PLATE LXV. Otto Marseus van Schrieck. Poppy with mushrooms.
New York, Metropolitan Museum of Art.

PLATES LXVI, LXVII



PLATE LXVI. Otto Marseus van Schrieck. Mushrooms. *Brunswick, Herzog Anton Ulrich Museum.*



PLATE LXVII. Otto Marseus van Schrieck. Mushrooms. Detail.
Brunswick, Herzog Anton Ulrich Museum.



PLATE LXVIII. Paolo Porpora, d. 1673. Still life. *Naples, Banco di Napoli.*



PLATE LXIX. Abraham Begeyn. Still life. *Rome, Galleria d'Arte Antica.*



PLATE LXX. Frans Hamilton. Still life. *Munich, Bayerische Staatsgemdldesammlungen.*



PLATE LXXI. Rachel Ruysch. Still life. *Oxford, Ashmolean Museum.*

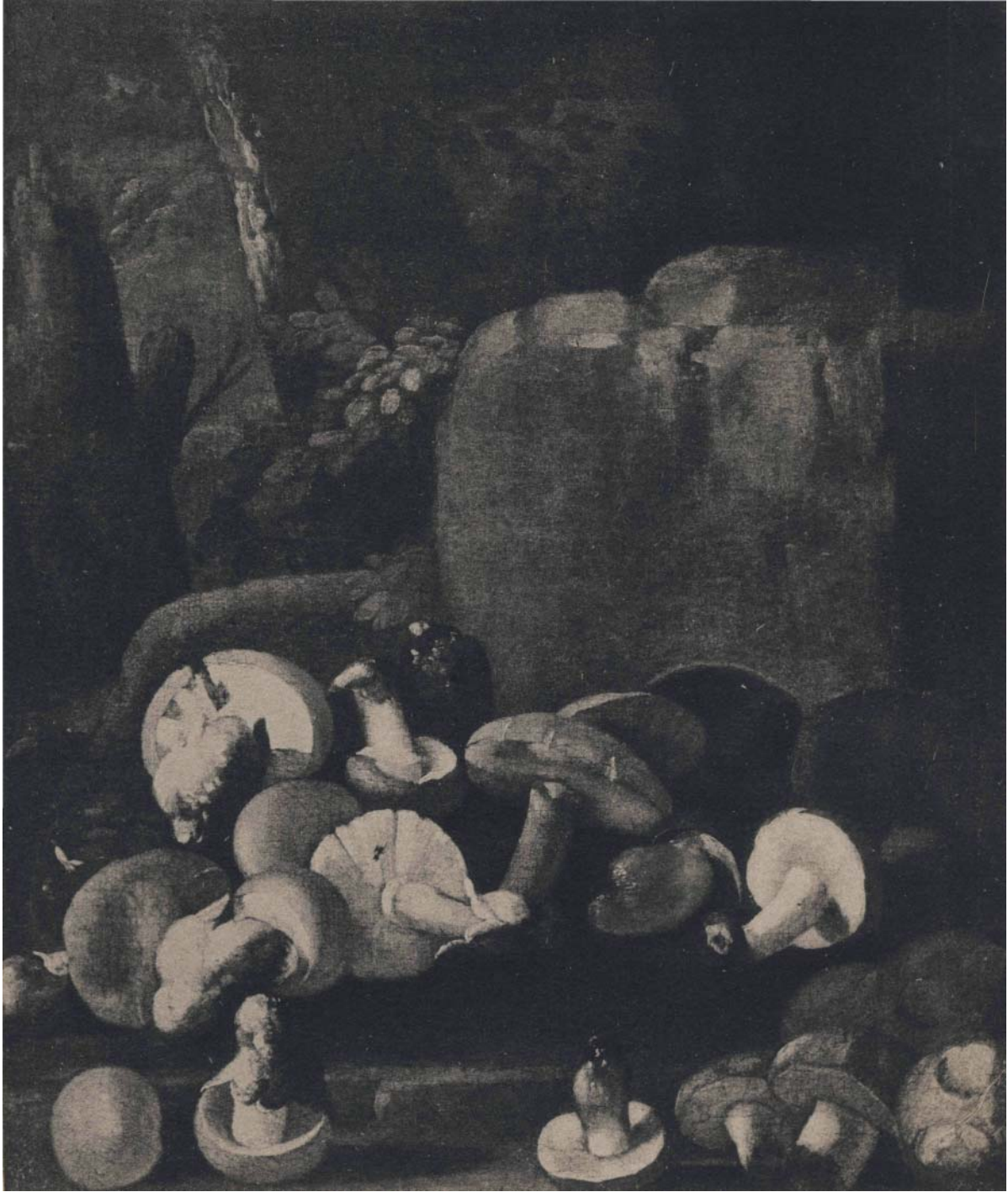


PLATE LXXII. F.W.Tamm. Still life. *Private collection.*

PLATES LXXIII, LXXIV



PLATE LXXIII. Melchior de Hondecoeter. Still life. *Amsterdam, Rijksmuseum.*



PLATE LXXIV. Melchior de Hondecoeter. Still life. *London, National Gallery.*



PLATE LXXV. School of Zurbaran, 17th-18th century. Chestnuts, cheese, grapes, almonds, and mushrooms, sp. *tricholoma personatum*.
Chicago Art Institute.

PLATE LXXVI

Mushrooms. From a fresco found at Herculaneum,
probably executed about A.D. 50. *By*
courtesy of the Museo Nazionale, Naples.





PLATE LXXVII. The dream. Woodcut after J.-J. Grandville.
From the *Magasin Pittoresque*, 1847.

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Begeyn, about twenty years younger than Van Schrieck, revelled like him in woodland subjects and mushrooms, as did also the mysterious Frans Hamilton,¹ Anthonie van Borssom, and the German, Johann Albert Angermayer. Later in the same vein came Rachel Ruysch, who lived into the mid-18th century, and Franz Werner Tamm, born in 1724. All of these distinguished artists loved their mushrooms and knew them, though not like Van Schrieck. Van Schrieck's influence went even beyond them. It may be said of him that he effected the integration of mushrooms into the idiom of painters. Before him in all of the painting of Europe the absence of mushrooms is conspicuous, if not absolute. In settings where mushrooms would seem almost compulsory, there were none, as though good taste compelled good artists to rub them out. After Van Schrieck, mushrooms are never again a surprise. Though rare, they recur sporadically and naturally whenever barnyard and outdoor themes seem to call for them.

Those other painters who borrowed Van Schrieck's peculiar theme were less attached to the demonic import of the subject matter than he was. They admitted more light than he did. They would show a patch of daylight sky. They introduced daytime birds. They prettified the whole setting. Van Schrieck's paintings repel the uninitiated by their darkness, while his followers' possess a superficial charm as quaint period pieces. But what they gained in gentleness they lost in focus. They were satisfied with fewer species of mushrooms, and showed a tendency to stylize them, like stage properties. Their snakes and insects tend to be less sharply delineated. In those art circles where the extraordinary merits of the Dutch still-life painters are esteemed, Mignon and Ruysch today rank above Van Schrieck. From one point of view this is a mistake. For connoisseurs both of cultural history and natural history Van Schrieck should stand first. He is unique, a cultural *trait d'union* between the world of demonic folk beliefs and the beautiful world of nature, where even the lowliest creatures are infinitely precious for the understanding eye.

By good fortune we are privileged to attend the very act of artistic alchemy by which Van Schrieck's peculiar quality was transmuted to suit the conventional taste. The year is 1668. Van Schrieck after years of wandering is back in Amsterdam, active and honored, in his early 50's. Melchior de Hondecoeter, a brilliant

I. At a time when painting in Scotland was still in its infancy, a cluster of accomplished artists bearing the name of Hamilton were in fashion in central Europe, exponents of the Dutch school. There were James and Frans, whose earliest works seem to date from the 1660's, and James in time gave to the world three sons and one grandson who were painters. James and Frans were presumably kin, but this is an inference unsupported by evidence. It is a fair surmise that they emigrated from Scotland as small children under the Commonwealth, for their schooling in art was wholly Continental. Such biographical data as appear in the reference works about them are meager and dubious. It is strange that Scottish genealogists have failed to identify these distinguished Continental Scots.

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young artist of 34, paints a picture after the Van Schrieck manner, with mushrooms, lizard, and butterflies. We can study it today in the Rijksmuseum in Amsterdam. He retains Van Schrieck's nocturnal effect, devising a powerful off-stage light to the left to bathe with dazzling effulgence the foliage and mushrooms on the right. The mushrooms, well delineated, belong to the genus *hypholoma* and are probably of the species *hypholoma fasciculare*. Finches in full panoply occupy the center of the canvas, aroused by the presence of a lizard. Some daylight enters from the upper right. The artist signs his painting on the tree-trunk below the knot-hole, and no one challenges the attribution. Hondecoeter was destined to win renown for his skill in painting birds. Almost two centuries before Audubon, he achieved the impossible by catching the stance of a bird in its moment of intense vital performance, and in this work he was already on his chosen path of special achievement.

Now let us turn from the Hondecoeter in the Rijksmuseum to another version of the same painting in the National Gallery in London. It is signed above the knot-hole and dated 1668.¹ Here the artist has reassembled the mushrooms, foliage, birds, butterflies, tree-trunk, and patch of sky. Each of the elements carries the same light effects as in the Amsterdam work, but with the redistribution of the parts, the Van Schrieck effect of concentrated off-stage highlighting is sharply diminished. In these two paintings we see the brilliant artist of the younger generation, still under the spell of Van Schrieck, experimenting with the master's methods. In the second he retains mushrooms and Vermin' but abandons the nocturnal trance.

1 here is a noteworthy thing about the mushrooms painted by Van Schrieck and those who followed in his wake: for them all, the attraction of the mushroom seems to have been visual. They discovered that mushrooms, bathed in folklore, were also beautiful, and then they stopped. Is there a single Dutch or German painting of the 17th or 18th century in which mushrooms appear in a context of food; These hereditary mycophobes permitted themselves to be seduced by mushrooms, but not all the way. More than a century before Van Schrieck, Jan Brueghel the Elder, known as Velvet Brueghel, executed

1. In the past this painting has been attributed to Abraham Mignon. We discovered its kinship with the Hondecoeter in Amsterdam and submitted to Frits Lugt, the authority on Dutch still-lives, the problem presented by the diverse attributions. After carefully examining the picture in London, Professor Lugt wrote us that he failed to see in it the harder, more metallic style of Mignon. Of the signature in the London painting, only 'M' clearly survives, and he interpreted this as the 'M' of 'Melchior d'Hondecoeter'. Afterwards, applying a lens to the area of the signature, we clearly distinguished also the 'd' that precedes the artist's surname. The traditional attribution to Mignon is certainly erroneous, based on a mistaken interpretation of the surviving initial of the name.

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two series of paintings to illustrate the corporeal senses, and today they hang in the Prado. Twice he represented the delights of the palate in a riot of foods of all kinds, but among them are no mushrooms. Admirable as Van Schrieck and his followers were, it seems certain that they followed in Jan Brueghel's train and never knew the epicure's delight in a cep or morel. As in the case of Thoreau, mushrooms never made their saliva run. When they painted mushrooms with exquisite perception, they made no distinction between the edible and the inedible: clearly for them all were inedible. Thus Paolo Porpora in his canvas that we reproduce coils his serpents and lizards through a cluster of delectable morels. A painter discovers and reveals such truth as lies within the compass of his visual dimension, and these Dutch artists triumphed over their ancestral mycophobia within the medium at their command but no further.

In Van Schrieck's time we have seen that mycophagy was burgeoning among the Flemings, but this cultural innovation seems to have had no parallel among the Dutch. How odd that the line of demarcation between the Protestant and Catholic worlds should also separate the mycophobes from the mycophagists! There must be exceptions, but just as no Dutchman or German seems to have painted mushrooms in a context of food, so we have found no painter after Brueghel identified with Brussels or Antwerp who used mushrooms as a demonic symbol. Though the still-life artists of the 17th century never tired of painting food, it is a fact that even in Flanders mushrooms figure seldom in those paintings. In addition to those that we have discussed on pages 130 if., there is a superb still-life of the school of Zurbaran in the Art Institute of Chicago, wherein two specimens of the *psalliota arvensis* (as we think them to be) appear, along with chestnuts, cheese, almonds, and grapes. Robert Graves in Majorca possesses a canvas dated 1656 with a fine show of *rovellons* (*lactarius sanguifluus*), which the Catalans esteem above all others, and this canvas is attributed to the Majorcan artist Antonio Mesquida.

The oldest painting of mushrooms in the world is a fresco discovered in the excavations at Herculaneum early in the 18th century and now hanging in the Museo Nazionale in Naples. It must have been executed around A.D. 50, perhaps at the very moment when Pliny was composing his chapters on the fungi for his *Historia Naturalis*. These mushrooms seem to belong to the genus *lactarius* and are obviously for eating. All of the specific names for mushrooms that we know from classical Latin have been securely identified, and there is none that we can attach to those in this ancient fresco. Here is a wholesome reminder of how little we really know about the mycological knowledge of the ancients, for we may consider it virtually certain that the ancient in-

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habitants of Herculaneum knew the mushrooms of the fresco well and had a name for them.

There is a remarkable thing about this Herculaneum fresco. Let the reader compare our reproduction of it with Jan Fyt's canvas, Plate XXIV. In both, mushrooms are scattered in the foreground. In both there are thrushes, stiff in death, laid out on a ledge above and behind, in the fresco mistle thrushes or *turdus viscivorus*, in Fyt both mistle thrushes and fieldfares or the *turdus pilaris*. These artists separated by sixteen centuries hit on the same objects for their two still-lives, and the same composition. The fresco could not have influenced Fyt, of course, for apparently it was not exhumed from its volcanic grave until a century after Fyt's time.

The mushroom in Renaissance art was originally and principally demonic in suggestion, as we have seen. In the lovely paintings of Rachel Ruysch and F. W. Tamm this demonic vein had spent itself, petering out in the placid calms of the 18th century enlightenment. Mycophagy was gaining ground, and in addition Gainsborough and later Corot discovered the idyllic beauty of mushroom gathering - a far cry from the terrors of the mushroom in the world of Bosch and Brueghel and Civetta. But the old theme was not altogether dead: after all, it had sprung from the very tap roots of Europe's earliest cultural world, the mycophobia of the Germanic world that gave us Bosch and Brueghel. One of the eminent illustrators in 19th century France was the artist J.-J. Grandville. He died in the spring of 1847, at 44 years of age. On the eve of his death he submitted to the *Magasin Pittoresque* two woodcuts of astonishing quality, which in due course that journal published.¹ These last works of his were pictorial representations of dreams. The first does not concern us. We reproduce the second and suggest that the reader examine it with some attention. Grandville submitted his explanation for this dream, a banal sequence of meaningless images, as he thought. Perhaps this design expressed more than even so sensitive an artist as Grandville was aware of. Reading from top to bottom, the sliver of a moon emerges as a mushroom. By way of an intermediate metamorphosis, the mushroom becomes a parasol, the *chattrā* that was the Sanskrit metaphor for the mushroomic world. The parasol then transforms itself into a bat, *le hot volant* of French demonic folklore. The bat, in turn, becomes a bellows, one of that family of distensible sacs which we found metaphorically linked with the fungal world in various primitive usages. By a strange chance, a number of these successive designs are emitting a flame, that very flame which with its

i.pp.210-214,1847.

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supernatural and erotic meaning seems to have been at the taproot of Europe's fungal associations. The bellows, indeed, becomes two flaming hearts transfixed by a sword, which in turn give way to a rolling spindle, and then a four-wheeled chariot drawn by flaming steeds in the direction of a starry firmament.

How strange it is that Grandville in the final emanation of his genius should have struck a chord so nicely attuned to the whole argument of our book! It is as though in his subconscious being this ipth century Frenchman recapitulated the emotions of his race vis-a-vis the fungal world since earliest times, and then gave those emotions expression in a design of breathtaking simplicity and beauty. It is almost as though, with a hundred years of anticipation, he was putting the seal of his subconscious approval on a number of our suggestions.

UNSCIENTIFIC NOMENCLATURE

My mycologists sensitive to the fitness of things are the first to admit that their nomenclature for mushrooms offers a spectacle of unscientific confusion, an accumulation of infelicities. Scientific names should be keyed to significant aspects of the organisms that they designate, and there should be uniformity in use. Instead, many of the scientific names for mushrooms serve only to remind us of the errors of early mycologists, and any given species is likely to carry two or more names that are in simultaneous currency in different countries. It even happens that a single scientific name is commonly employed for different kinds! (It seems certain, for example, that two of the famous mushrooms, the *amanita muscaria* and the *amanita phalloides*, are different species in Europe from their American namesakes and it is perilous to assume that attributes securely established for them in one continent hold true across the ocean.)

In formal use, following each name is the surname of the mycologist who described it, or perhaps two such names, and so the objectivity that is the proper virtue of science becomes tintured with the frailty of those who gladly permit their names to be hitched to a mushroom, perhaps tempted by a vain hope for worldly immortality, if only in union with a fungus.¹

Mycological nomenclature got off to a bad start with Carolus Linnaeus, the 18th century Swedish name-giver. Like Adam he surveyed the living world and bestowed names on all the flora and fauna, but he seems to have hurried a little impatiently over the numerous and baffling and humble fungi. He chose to make use of terms drawn from ancient Greek and Latin, but did not pause to ascertain their rightful meanings. He misapplied almost every one of them. But by the weight of his immense prestige, he stamped the old words with his new meanings, and these are now current the world over. They are current the world over - save here and there among the peasants of Greece and Italy and France, where vernacular variants of the words used by their ancestors two thousand years ago still circulate with their ancient sense, and hold their own against the new-fangled meanings that prevail in learned circles.

In extenuation of the Linnaean terminology it can be pleaded that the classical words had already been misused by his precursors, such as Clusius and the

1. In this book we have not capitalized scientific names, thereby wilfully violating accepted practice. Only in High German are common nouns capitalized, and this German usage disfigures the page with capital letters; it is not to be encouraged. Scientific names are not proper nouns: they designate congregations of similar individuals. There is no more reason why 'lycoperdon' should be capitalized than the synonym 'puffball'.

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Bauhins, and that he merely refined the application of names accepted in scientific circles since the Renaissance. Even if this be true, we may regret that the great Linnaeus did not rise to the occasion, and with his papal authority impose a sound system of names conforming to the classical meanings of the words that he was using. There was no difficulty about those classical meanings. Before the century was out, the French mycologist, Jean-Jacques Paulet, in his *Traite des Champignons* published in Paris in 1793, was discoursing on the nonsense of the official nomenclature and elucidating the classical usage.¹

Take the Latin *boletus*, for example. In imperial Rome this was the name of the superb amanita Caesarea, that yellow-capped gilled mushroom which was the favorite of emperors and epicures. It was undoubtedly borrowed from the Greek βωλίτης which in turn was derived from βῶλος, meaning a clod of earth.

Mushrooms smell and sometimes look like earthy excrescences, and in *boletus* we discover another of the basic metaphors used in the fungal world, of which we have already identified many others. The same figure underlies the famous Russian *gruzd'*, a derivative of *gruda*, meaning 'clod'. The Greek term must have been pejorative, but when fashionable Rome took to mycophagy, *boletus* acquired an aura of excellence that survives to this day. Caesar's *boletus* is said to be still called *thefongo bolado* or *bole* around Verona, and *boule* in some parts of Provence. *Bolet* is the general term for fungi, especially those with gills, among the mycophilic Catalans. When the Germans needed a new and favorable word to make mushrooms acceptable on the table, we have seen that they turned *boletus* into *Pilz*; and one of the general words for 'mushroom' in Rumanian is *burete*, with the same etymology.

In the light of this history, it is disappointing that Linnaeus ratified the severance of that fine old *boletus* from its ancient moorings, and assigned it to capped mushrooms with a spongy undersurface. The untutored peasants of the Mediterranean lands who still apply the word to gilled mushrooms speak with an authority derived from far older credentials than the mycologists can show, and - who knows? - possibly their usage will outlast the new.

The mushrooms that mycologists call 'boleti' were the *suilli* of the Romans, the swine-fungi, a name that comes down to us in modern Italy in the translation *porcino* (*boletus edulis*) and *pordnello* (*boletus scaber*). The books are wrong when they explain these names by an alleged fondness among pigs for the boleti. These are the species that develop a greasy texture suggestive of pork

i. The meanings of the classical words for the fungi have been examined twice by English students: (i) by the Rev. Wm. Houghton, 'Notices of Fungi in Greek and Latin Authors', in the *Annals & Magazine of Natural History*, Series v, vol. 15, Jan. 1885, pp. 22 ff; and (2) by Prof. A. H. R. Buller, 'The Fungus Lore of the Greeks and Romans', *Transactions of the British Mycological Society*, vol. v, part I, May 10, 1915, pp. 21 ff.

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when cooked in the fresh state; and when dried, they taste like dried meat. This meatiness explains why they are great favorites among the monks of the Russian Church in the long fasts. Today these 'swine-fungi' are considered *kosher* among the Jews of Eastern Europe, but our friend Professor Uriel Weinreich, authority on the Ashkenazic culture, reports to us a curious fact. From an informant of Polotsk he learned that in that area the Jews down to modern times have regarded the *boletus edulis* as *treyf*, or unclean, and have not eaten it. May not this be a survival of a very old tradition? For the Jews of Russia mostly migrated thither from the West, passing a long stage in Germany on the way, and the association of these mushrooms with the pig in Italy may well have eliminated them from the diet of Jews.

Reverting now to the mycologists, we find that they have borrowed the Greek word for truffle, ὄβον, to apply to the wholly different hydneae family, and the Greek word for puffball, πῆλιξ, to apply to the wholly different peziza group, and the Greek word for the field mushroom, ἀμανῖται, to apply to the clan known nowadays as the amanitas. The Latin word for truffle, *tuber*, alone survives in its original meaning. No purpose was served by these shifts in meaning: they were merely an evidence of bad classical education and an unscientific carelessness with words.

Another example of this abuse of language is the fate of the Latin word *agaricum*, the Greek ἀγαρικόν. Surprising as it may seem, the ancient Romans were not unfamiliar with the fungi of the region that we call Russia. Today 'agaricus' is the name for the gilled fungi, but it was Linnaeus who imposed this meaning. The ancients applied the word to the shelf-fungus that grew on the larch, now known as the *fomes officinalis*, used since ancient times medicinally. Dioscorides explained for us that the name was taken from the land of Agaria, lying on the northern shores of what we call the Sea of Azov, there where mariners would steer their course by Point Agarum, halfway between the mouth of the River Don and the ragged peduncle by which the Crimean peninsula hangs from the Continental land-mass. The physicians of Agaria enjoyed renown in those times, and at the Court of Mithridates the Great some of them were always in attendance. Probably the medical school of Agaria was the first to discover the medicinal virtue of the ancient *agaricum*.

On the shaky foundation of Linnaeus' basic names for the mushrooms, errors and infelicities have continued to pile up. There is the spring-tide amanita, or amanita verna, which grows in the autumn. There is the amanita phalloides, which ought to be 'phallus-like'. Not at all! To explain that name we must look at another fungus, most distantly related, which does resemble a phallus and

PLATE LXXVIII

Jean-Henri Fabre. *Lactarius deliciosus* Fr. ex Lin.
French: *sanguin*; Russian: *ryzhik*.



PLATE LXXIX

Jean-Henri Fabre. *Lactarius sanguifluus* Fr. ex Paul.
French: *vineux*; Catalan: *rovelU*.



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which is called the phallus impudicus. Around the base of the stem of the amanita phalloides there grows a 'cup' that superficially resembles the 'cup' of the phallus impudicus, and this feature, unrelated to any phallus but shared by the two species, is the trivial justification for the name of the amanita phalloides! There is the gyromitra esculenta, widely sold in the market places of Europe, but whose esculent virtues have been occasionally tarnished by mysterious fatalities. Linnaeus himself bestowed on the lactarius deliciosus its misleading name. It seems that reports reached him of the esteem in which a certain lactarius was held in the south of Europe, and he assumed that it was the one with which he was familiar in Sweden, and so bestowed on the kind he knew the name that rightfully belonged to another.¹ By this blunder he started endless confusion and misunderstanding. The lactarius deliciosus is not delicious, and the species that Linnaeus thought he was baptizing is now known as the lactarius sanguifluus, the *rovello* of the Catalans, the species on which the Majorcans bestow the delightful name of *exclatasangs*, or 'blood-spatterers'. The milk of this kind is reddish, whereas the so-called lactarius deliciosus yields saffron droplets.

One of the greatest of mycologists was Elias Fries, also a Swede. About him there is a story to tell that, so far as we know, has never been told before. Men of learning are sometimes inclined to patronize lesser mortals, but they are themselves subject to occupational hazards of their own, pedantic errors and odd manifestations of ignorance, and Fries offers us an instructive example of the pedantic fallacy.

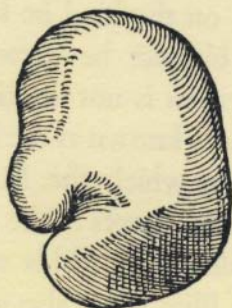
It was in 1601, as we have said on an earlier page, that the Frenchman known as Carolus Clusius published his great herbal, *Rariorum Plantarum Historia*, in which he devoted many pages to descriptions of the fungi of Hungary. Among others, he discussed the species known to the French as the *mousseron*, and to science as the *tricholoma gambosum* or *tricholoma georgii*. We reproduce in facsimile the relevant passage of his text. The reader will observe that Clusius begins by giving the Hungarian and German names of the mushroom, *Szent Gyewrgi gambaia* and *Sant Georg schwammen* respectively. Both names mean the same thing, viz., St. George's mushroom, *gambaia* being the appropriate grammatical form of the Magyar word *gamba* or *gomba*, 'mushroom', a word borrowed from the Slavs and cousin to the Russian *guba*.

More than two centuries later, in 1821, Elias Fries published his *Sy'sterna Mycologicum*, one of the classics of mycological writing. In it he bestowed on the species that Clusius had already described the name *agaricus gambosus*, adding

I. Roger Heim retells the story of the misnaming of the lactarius deliciosus in the *Revue de Mycologie*, vol. xv, fasc. 2, July 1950.

111. Genus esculentorum Fungorum.

Tertiū genus
fung. esculēt.
Szent Gyevvrgi gambaia.
S. Gözög
schwāmen .



Natales



Parandi ratio.

di, quæ inter binas lances reposita, inperfo oleo olivarum vel butyro, & pipere addito, super prunas coquuntur: aut cum larido inijcitur jusculum ex lactis cremore paratum, quod Germani *Milchtraum* appellant.

GENVS II.

V LTRA Balatonem lacum Vngariæ, in parva insula cui nomē *Fanot*, Simidiensi Comitatu, Aprili etiam mense nasci intelligebam Fungi genus delicatissimi saporis, cujus nomen indicare nemo poterat: sed illi similis esse ferebatur, qui inter perniciosos & lethales Decimum sextum genus est, & ab Vngaris *Kygio gomba*, à Germanis *Matter schwammen* dicitur: pyramidali tamen dorantaliq; apice & angusto hunc fungū esse.

GENVS III.

T E R T I I generis, quod Vngari *Szent Gyewrgi gambaia*, Germani *Sant Gözög schwammen* appellant, quia circa diē D. Georgio sacrum (qui in vicesimum tertium Aprilis incidit) invenitur, unicam observabam speciem.

Parva autem illa est, duarum unciarū amplitudinem vix æquans, orbiculari ferè formâ, supernè quidem aliquantulum extuberante, & quodâmodo pulvinatâ: infernè verò concameratâ, & quibusdam veluti venis distincta, pediculo crasso, breviqu; coloris exalbidi, cui flavi quidpiam admistum sit.

Crescit in siccioribus atque pascuis pratis: & fortasse is erit fungus, quem Horatius satyra quarta lib. I I. Sermonum, optimum pronunciat his verbis,

———— *pratensibus optima fungus*
Natura est: alijs malè creditur.

Est verò Tertium hoc genus, aliorum fungorum modo præparandus, qui repurgati, ut plurimum elixari solent, & in frusta concilli-

Fig. 27. EARLIEST DESCRIPTION OF TRICHOLOMA GAMBOSUM by Carolus Clusius, in *Rariorum Plantarum Historia*, Antwerp, 1601.

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the comment that he suspected this was edible because of its odor of fresh flour! (There speaks the mycophobic Swede.) He thought it was the true *agaricus georgii*, as to which there had been much confusion. Here are Fries's words:

Hunc pro vero *A. Georgii*, quo nil magis confusum,
et ob odorem farinse recentis edulem suspicor.

Fries did not explain his use of *gambosus*, but he referred to the very passage in Clusius that we have reproduced, and therefore it was not at all surprising when, in 1827, a learned confrere, Kurt Sprengel, in editing the 16th edition of Linnaeus' *Sy sterna Vegetabilium*, retained the older name, *agaricus georgii*, and then added, again in Latin, a slighting reference to Fries's term, saying that it was derived from the Hungarian word in Clusius and that it was an unhappy choice; which indeed it was.

In the following year, 1828, Fries gave vent to his pique at this reprimand in his *Elenchus Fungomm*. Again using Latin, he said that Sprengel, 'most learned in botanical literature', was mistaken in tracing the excellent name, *agaricus gambosus*, to the Hungarian *gambaia*, which he had never thought nor even heard of. Instead, the nature of the mushroom had inspired him to borrow from the Latin author Vegetius the word *gamba*!

This was a most unwise assertion for the great Fries to make. Despite his assertion to the contrary, he was, as his text had expressly said, familiar with Clusius. He had clearly misread Clusius, construing *gambaia* as a specific name rather than the Magyar word for 'mushroom'. When challenged, he took refuge in a late Latin writer's use of *gamba*, which in Vegetius, as we have seen, meant a swelling on the hock of a horse. Certainly no one, not even a Swedish mycologist, would associate by first intention the lovely *mousseron* with a swelling on the hock of a horse! Nor even with a hoof of a horse, which is an alternative meaning. By devising the name '*agaricus gambosus*', Fries unwittingly was describing the *mousseron* as of the genus '*agaricus*', species '*fungus*'.

By reason of Fries's error, the mycologists have inherited, apparently in perpetuity, an absurd scientific name for the simple *mousseron*, a name that survives in the modern '*tricholoma gambosum*'. If, as we argued on an earlier page, the word *gamba* in Vegetius was a borrowing from the barbarians of Central and Eastern Europe, then that was the same *gamba* that appears in Clusius, and Fries did not advance his cause in the slightest by digging up the writings of the Roman veterinary.

How refreshing it is to turn from the unhappy nomenclature of the mycologists to the genuine words devised over the ages by humble peoples! Some

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of these hide their secret meanings successfully, such as *mizcalo* in Spanish, and the generic word for mushrooms in Romany, *x* or *xuxur*. To illustrate the complexity of the problems presented by popular mushroom names, we shall cite the case of the delectable mushroom known to science as the tricho-loma equestre, which in the mushroom world holds the rare distinction of growing in sand. It enjoys great renown along the coast of the Landes, in Gascony, under the name *bidaou*. Some miles to the east, in the sauterne country around Podensac, this same mushroom, highly esteemed, is the *pied d'ane*, or ass's hoof. In the neighboring region of Entre-deux-mers, famous among wine-lovers, it is the *Catalan*, a name used elsewhere in the Gironde for the lactarius deliciosus. Beyond the Dordogne around St. Andre de Cubzac, it becomes the *jaunisson*. Nearby, in the canton of Cavignac, where the *langue d'oil* is spoken, our tricho-loma equestre is known as the *bourseau*, from a local word meaning to swell or distend. Thus here in an area of France that could be covered by a pocket handkerchief, so to speak, a single species of mushroom, well known to everyone, bears five distinct names.

Wherever the latent metaphor in a popular name for a mushroom can be deciphered, it is invariably accurate in observation and true in feeling. In the course of these pages we have uncovered many of these inner meanings, but there has been no occasion to refer to some of the best. Take the curious case of the cantharellus cibarius. No one has discovered the name for it in ancient times, but since it carries today more names by far than any other wild mushroom of Europe, we must suppose that it was known to our remote ancestors also. In most of the Slavic countries its name is keyed to the fox, e. g., the Russian *lisichki*, 'little foxes', and the Hungarians translated this to arrive at their *roka-gomba*. The Lithuanian *lapelaizis* means the 'fox-licked one': foxes like squirrels are great mycophages. In Old Czech of the 14th century we find the term *lisa huba*, 'fox's mushroom'. The Bulgarians use an expression that is wholly their own, *pachi kraka*, the 'duck's foot', a happy figure of speech, as will be perceived by any mycophile who recalls the color and shape of the webbed foot of a duck, idly suspended in air or water.

The German *Pfifferling* or 'peppery one' is an inappropriate changeling. This name rightly belonged to the lactarius piperatus, as we can prove by the description of it given in the *Adnotationes* of Valerius Cordus in the 1530's:

Sunt enim quidam Piperis sapore et lacteo liquore manant. Hos Germani *Pffferlinge* vocant.

For there are some with the taste of pepper, and they flow with a milky fluid. These the Germans call *Pfifferlinge*.

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Two centuries earlier Konrad von Megenberg in his *Das Buch der Natur* also speaks of the *Pfifferling*, which he says is of questionable edibility. It seems that when the Germans began to take to mycophagy, they appropriated an existing name of another mushroom to apply to the *cantharellus cibarius*, a small mushroom that all true mycophiles hold in modest esteem; wherefore in time the German name acquired a secondary meaning, to designate anything trivial, and in this sense the German word turns up in French in a single expression: cela ne vaut pas un fifrelin.¹ In Austria our little chanterelle is the *Eierschwamm*, suggestive of the scrambled eggs that these mushrooms resemble and with which in Austria they are often prepared.

Of the many names for the *cantharellus cibarius* in France, the *girolle* and the *chanterelle* are the most widely known. The French philologists Oscar Bloch and Albert Dauzat both assert that *chanterelle* entered the French language in the middle of the 18th century, and that it was taken from the scientific name bestowed on the mushroom by Linnaeus - 'cantharellus' - which in turn (according to the French philologists) he devised from a Latin word *cantharella*, a little cup. This etymology is *prima facie* suspect, for popular names bestowed on mushrooms by French peasants are not normally derived from learned terms of Linnaean inspiration. In fact, the philologists are mistaken. Jean Bauhin in his great *Historia Plantarum Universalis*, published in 1650-1 and written a half century earlier, reported that *chanterelle* was in his time the popular name of the mushroom around Montbeliard, in the east of France. Clearly the mycologists Latinized the word as they found it. *Chanterelle* is a name of popular inspiration descended from the Latin diminutive *cantharulus*, formed from *canthams*, which in turn was borrowed from the Greek κάνηθος, drinking cup. Possibly there is collateral evidence of this origin in a word that survives in the archaic Spanish spoken in Jocotan, Guatemala - *canturula*, the name of an ear-shaped fungus that grows on old trees.² Words that circulate chiefly on the tongues of humble people undergo subtle pressures and transformations, being re-shaped to conform to punning suggestions and metaphorical associations. Perhaps there is evidence of this in *chanterelle*. This little mushroom in Italian is the *gallinaccio*, 'turkey-cock'. In Dutch it is the *hanekarn*, 'cock's comb', though Dutchmen, being mostly mycophobes, often know not the word in this sense. The Dutch and Italian words suggest the masculinity of the cock. In Catalan the chanterelle is the *rossinyol*:

1. The mushroom seems to have been widely used as a symbol of worthlessness. We have seen that the English 'trifle' was a truffle, the word having been borrowed long before the truffle rose to its present heights in social esteem and market value. Juan Corominas in his note on the Spanish *seta* points out that it has carried the same metaphoric meaning.

2. See Lisandro Sandoval's *Semántica Guatemalense o Diccionario de Guatemaltequismos*, Guatemala, April 1941.

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this is said to be derived from *ros, rossa*, an adjective that describes to a nicety the red-gold color of the lovely mushroom. But *rossinyol* also means 'nightingale', and it happens that, just as the dove or *paloma* is the symbol of the beloved in French and Spanish popular tradition, the nightingale is the symbol of the lover.¹ In Bulgaria, as we have seen, the chanterelle is linked with the drake. These ornithological ties, always masculine, are curious. Does not *chanterelle* itself suggest singing and *chantecler*? Are we not in the presence of an eruption, subtle and unconscious, of the old erotic theme, by way of the cock's comb, the gobbler's wattles, the crowing chanticleer, the virile *rossinyol*? If our surmise be right, confirmation must be sought, not in the sophisticated ratiocinations of scholars, but rather in the emotional associations of the untutored folk when they use their homely words for the little yellow mushroom. If our surmise be right, the deep-seated eroticism of the fungal consciousness of Europe is erupting again, before our eyes, in the words born of popular fancy or reshaped by popular pressure to designate the *cantharellus cibarius*. Like murder, the shameless *μύκης* will out. Our straws of evidence permit us to discern the erotic theme as through a glass, darkly. How pleasing it is for us, then, our surmise having been formulated, to discover corroboration for it in eastern Europe. In the Latvian language the name of the *cantharellus cibarius* *isgailene*, derived immediately from *gailis*, 'cock', a word that is kin to the Latin *gallus*.

The alternative word in French for the chanterelle *isgirolle*. French philologists seem satisfied that this word shares the same root as 'gyrate', but there is no evidence for this. *Girolle* is a borrowing from Provençal, where the name is current in many variations extending over the langue d'oc area of France and throughout Catalonia and the Balearic Islands. *Jirgola* in Majorca corresponds to *girbola* in Catalan, and in Frederic Mistral's Provençal dictionary we find the word in myriad forms. No other mushroom anywhere seems to possess so many names, of which here are the ones we have collected:

biroudele	escrabilho	girbouleto	jargouleto
bouchinguello	gerilho	girello	jirboulelo
caramillo	ghidorelo	girgouleto	jotrel
craihlho	ghiolou	girgoulo	ziraoudela
escarabiho	giraudello	iredela	zitello

Here we leave an enigma for ethno-mycologists to apply themselves to - in an area unsurpassed for mycophagy, an important mushroom parades an unrivalled

i. See Wm. J. Entwistle's comments on *El Conde Olinos* in *Romance Philology*, vol. vii, No. I, Aug. 1953, p. 13.

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diversity of interrelated popular names, all of unknown meaning and all reduced in French to the lovely but deceptively simple *girolle*.

So much for the chanterelles. In Swiss German the clavaria or coral mushroom is known as the *Ziegenbart*, or goat's beard, which is a good metaphor, but it is topped, we think, by the happiest name in all of Europe's mushroom vocabulary, the Catalan word for the same fungus, which is *pens de rata*, or rat's paws. The soft, marvelously fine articulation of the paws of a rat are the perfect analogy for the corresponding extremities of the coral mushroom, and in this mushroomic name we possess a supreme example of the perception of peasants.

Sometimes the mycologists have paid obeisance to popular terminology. For example, the name of the puffball, lycoperdon, is a learned back-formation to a non-existent Greek term that would mean 'wolf's flatus'. How much better it would have been to use the genuine Greek name for the same fungus, $\pi\acute{\epsilon}\zeta\iota\varsigma$, which harbors the same indelicate idea!

It might be thought that the mycologists of the world, being a relatively small group, could agree together to wipe the slate clean and begin anew, giving no hostages to vested interests, and devise a system of solidly grounded mushroomic names. But such reforms seem beyond the capacity of men, even scientists, and perhaps this is just as well. A nomenclature that is encumbered with barbarisms, pedantic fallacies, and infelicities is a perpetual and humbling reminder that scientists themselves are ordinary clay, even when they are cultivating their own garden.

Now our excursion among the mushrooms has ended. Free of professional inhibitions, we as amateurs have traveled far and wide, brazenly suggesting novel etymologies and theories of our own. Some of these, when put to further test, are sure to crumble. But our argument is a frontal one, and does not depend on single links. Beginning with an addiction to wild mushrooms and keeping our eye always on them, we have compared the words used for fungi by the various Indo-European peoples, concentrating on the metaphors that are latent in them. We have found a series of semantic themes recurring throughout these fungal vocabularies, and these themes have suggested origins for many words that have heretofore baffled the philologists. If this approach through semantic themes should prove to have been successful, it could be applied to other specialized vocabularies for elementary things and activities that our remotest ancestors must have talked about.

We began by asking what lay behind the English word 'toadstool'. In the course of our inquiry we discovered several attributes common to wild fungi and toads. The peoples of the North Sea basin think of both tribes - fungi and amphibia - as venomous. Over a broader area and running back deeper into the past, the peoples of northern Europe think of fungi and toads as organisms that swell up, and also as dunglike vermin. We find that both toads and fungi inspire revulsion and fear, and naturally our ancestors considered them instinct with evil spirits. Both are slimy and mucoid. Fungi are tumor-like, clodlike; and toads are misshapen growths, foul and ugly. Fungi are aphrodisiacs, and toads are lecherous. Both suggest the idea of procreation, in a variety of ways. On a larger stage, we have found that in the cultures of Europe, where deadly serpents are few, the toad is the indigenous equivalent of the serpent of the East. Eve's serpent, exercising its horrid and fearsome spell, was a creature of the East. In the eastern Mediterranean the two creatures competed for dominion over men's souls, but in the West the toad was supreme. The 'toadstool' of the West emerges as the mycological and cultural equivalent of the *ahi-chattra(ka)* or 'snake's parasol' of the Sanskrit writings. A common fund of words for all these ideas is drawn upon, in the various Indo-European languages, to refer to the fungi, and also to toads, and when in a given language the same or similar words are drawn down from the common fund for the two orders of creatures, the peoples speaking that language associate toads and fungi together, and by reason of the words that overlap, and the common attributes,

PLATE LXXX

Jean-Henri Fabre. *Cantharellus cibarius* Fr.

French: *chanterelle, girole*;

Russian: *lisichka*.



their feelings toward them take on the same tone. Similar metaphorical transfers appear to be indigenous also in human societies far removed from the Indo-European world.

But behind the interweaving of these innumerable words and ideas, there lies the Mystery of the divine mushrooms. We have now learned that many species of these strange growths possess a power such as early man could only have regarded as miraculous. Indeed they may have given to him the very idea of the miraculous, and inspired many of the themes that come down to us in our heritage of folklore. Mushrooms were doubly associated with fire. They were used as primary tinder in that miracle of divine copulation, the generation of fire by the fire-drill, and the divine mushrooms were the offspring of the union of the Lightning Bolt with the Mother Earth. We have suggested that the divine mushrooms played a vital part in shaking loose early man's imagination, in arousing his capacity for self-perception, for awe, wonder, and reverence. They certainly made it easier for him to entertain the idea of God. In Europe the secret of the mushrooms was lost long ago, but it lingers on, fossilized and misunderstood, in our vocabulary, as when the Greeks spoke of mushrooms as the 'gods' food', the Flemings of 'devils' bread', the demonic *crapaudin* of France, the demonic 'toad's stool' of the English, yes and the 'fly' of the German *Fliegenchwamm*. Our legacy of mycophobia, what is it but a simple tabu, the aftermath of the emotional hold of those mushrooms on our own ancestors? There were other hallucinogens in the vegetable world, but we think the mushrooms were primary.

Men ordinarily think of words as combinations of sounds that can be visualized with the aid of letters, and listed alphabetically in dictionaries, and there neatly defined and ticketed with their histories. But the words in dictionaries correspond only to 'stills' in photography: the dictionaries catch them in a given posture, at a particular moment in time and space. This is true even of the largest dictionaries, which try to cover meanings over centuries and which cite a few outcroppings of the same word in other languages; for the center of gravity even in these big dictionaries is still in a single language, and therefore their angle of vision is self-centered and Ptolemaic. Moreover, no dictionary can hope to deal with all of the subtle semantic associations, and all the gradations of feeling, that the sound (which is the word made manifest) evokes. But these associations and feelings are the life and soul of the word, of which current usage in a single community may be only a passing phase. A word is a thin thread of sound coming down to us from earliest human times, a sound passed on from mouth to mouth, slowly changing, assuming different contours in the mouths of different

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communities, each of these variants remaining a strand of the original thread, these different strands plaited in and out among themselves, tangling with other threads of similar sounds but different meanings; impalpable, visible (through writing) only in recent millennia and until yesterday only to a few; thin as air; but solidly joined in the alembic of the human mind to particular perceptions of the senses and keyed to particular feelings; this link between sound on the one hand, and meaning and feeling on the other, displaying a tough continuity down the river of time and across vast stretches of diverse cultural expression, a continuity that stands in amazing contrast with the airy nothing of the words themselves. Words are a secretion peculiar to the human organism, and though uttered through a localized vocal mechanism, a secretion attuned to the whole organism.

A.E. Housman in his famous Leslie Stephen lecture on the nature of poetry startled his public by asserting that for him great poetry was measurable by physiological reflexes. The shiver down his spine, his beard that bristled at the thought of great lines while he was shaving, the catch in his throat, sudden activity in his lachrymal ducts - these were his poetical touchstones. Could he not have carried his idea further? Was he not fixing his attention only on those rare conjunctures of grosser reflexes that are the fruit of the greatest utterances? In less degree does not every word possess its visceral counterpart, emanating from the pit of the stomach but registering itself in localized manifestations - in the stimulation or inhibition of glandular activity or incipient muscular twitches, in sights or sounds perceived only by the mind's eye or mind's ear, in imaginary tactile or olfactory or gustatory sensations? Teeth are set on edge by sour grapes, and also by hearing sour grapes mentioned, and even by the silent passage of those two words through the attuned mind. Perhaps in the long run the stability that is the astonishing property of words is traceable to the solar plexus, to this conditioned reflex, which is the obverse side of the audible entity. The great speaker or writer - the composer or conductor - is the master who manipulates these responses with supreme artistry, playing on the human instruments that are his audience, the instruments knowing they are in ecstasy but blissfully unaware of the infinitely subtle physiological wherefore. Here is a sense in which the kingdom of heaven is within us; and the music of the spheres turns out to be a physiological symphony. Let not this reflection disturb the believer in a Supreme Architect, for the ultimate enigma always remains close by, and man's most searching inquiries are always confined within the bounds of the flexible but impenetrable envelope of the unknown, of that dark, distensible womb that is our prison and our Eden.

By assaying the words used among various peoples for the/fungi, we have perhaps suggested reasons for the mycophobia that afflicts most of the Western peoples. The semantic associations of these words, their emotional coloring, are rooted in the fears and beliefs of our ancestors in the earliest ages, perhaps when they were what we call Palaeolithic men. We study them objectively by digging up their artifacts and applying the highest order of intelligent curiosity to these old stones. But within ourselves, in our emotional responses, in our words that come down from long ago, we bear within us as part of us the evidence for a subjective understanding of those our forebears. Our elementary words with their emotional evocation are oral artifacts descended from those remote times, and like palimpsests occasionally permit themselves to be read layer beneath layer. Our words are a repertory of wood-notes wild, if only we attune ourselves to the faint descant that rises from them. How amusing it has been to discover in mycophobia the willing, nay determined, subservience of many Europeans to a simple tabu such as we like to associate with primitive peoples, a subservience to emotional responses that seem to stem back to the day when our ancestors found themselves face to face with the miraculous powers of the sacred mushroom! The secret lost, the tabu survives. Like the tribes that our anthropologists study, we cling to our own tabus and seek to justify them by rationalizing them. Few men want freedom, however they may talk. But then again perhaps man is free in his choice when he chooses to abide within the confines of his unreason.

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THE amateur of wild mushrooms is interested in everything written on the subject. Few scientific papers are too refined for his palate. The strange blunders often cropping out in popular writings delight him for their piquancy. In cut-and-dried mushroom manuals he always knows that at any moment he may come across wayward remarks of the compilers that show how even they are moved by the beauty or strangeness of the creatures they describe. An extraordinary example of this eruption of the poetic muse in the course of a pedestrian text about mushrooms is to be found in a certain Swiss manual published more than sixty years ago: it is so unusual that we offer it in full to our readers in Appendix III.

In general the mushroom amateur, when it comes to his library, must be content with fare served for others - texts written for beginners or treatises for scientists. The writings about mushrooms aimed at the informed amateur are few. As he embarks on the assembling of a collection, he will do well to begin by acquiring a complete set of the publications since 1936 of the *Laboratoire de Cryptogamie*, at the *Museum National d'Histoire Naturelle* in Paris. This is the period of Professor Roger Heim's editorship of the *Revue de Mycologie*. Professor Heim is a leading mycologist. What is more rare, he is a scientist steeped in the humanities who writes with style. He has the magnetism of the great teachers, and has drawn into the circle of subscribers to his *Revue* a group of enthusiasts who contribute delightful and sophisticated articles to various *Supplements* of the review, which are expressly directed to initiated amateurs. Two outstanding members of this select fraternity are Georges Becker and Camille Fauvel, whose essays on wild mushrooms, poles apart in style and mood, are destined to be regarded as classics by the devotees of our avocation. The *Revue de Mycologie* offers its readers a *Chronique de l'amateur*, *La Chronique anecdotique*, a practical course in mycology for amateurs, excellent color plates of mushrooms, scientific supplements shedding light on the fascinating jungle of tropical mushroom life, and finally occasional treatises on special topics. Who will ever match that Savoyard, the prodigious Dr. Paul Ramin, for example, who in his *Essai de Mycogastronomie* sets forth with delicate discrimination the merits (or shortcomings) for gastronomes of each of 245 species of edible mushrooms, all from his personal experience! He sets forth the astonishing facts about what we might call the 'vintage years' for mushrooms: it is clear that mushrooms taste better in some years than others, and in some regions than others. No mushroom fancier should rest content so long as he is unfamiliar with the breathtaking perfor-

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mance of Dr. Romain.¹ The presiding genius in this circle of mycophiles is of course the Maitre, Professor Heim, whose own contributions are always notable events. Especially among English readers, nature writing enjoys high status as a genre of belles lettres. Roger Heim is to be ranked with the aristocrats of this goodly company. His paper delivered in February 1946 on 'Les Rapports entre les Insectes et les Champignons' displayed a dual excellence, scientific and literary, of the highest order, all the more moving for the informed few who know that this essay, for all its air of serene detachment, was read in the wake of a terrible ordeal. Two years later Professor Heim published a book, *Les Champignons*, original in conception, of rare quality, which is a treasure for connoisseurs of nature writing and for all lovers of mushrooms.

Outside of the Heim circle there are other mushroomic publications for amateurs, but few in number and uneven in quality. One of the good books, in its way, is Jules Amann's *Mes Chasses aux Champignons*, published in Lausanne in 1925. In English there is *The Romance of the Fungus World*, by R. T. and F. W. Rolfe, published in London in 1925, written without literary distinction but containing an immense amount of information never theretofore assembled. We gladly acknowledge our debt to the Rolfes for various data and historical references; as we do also to John Ramsbottom, best known of contemporary English mycologists, for the wealth of information in his *Mushrooms & Toadstools*, London, 1953, which reached us just in time for us to make some use of it.

In America the amateur of mushrooms is hobbled by the lack of a first-class field manual, comparable in the mycological field to Roger Tory Peterson's manual for the birds. America's library of nature books is rich in quality and quantity, but a good mushroom manual is a prime desideratum. This deficiency is itself evidence of the wide-spread mycophobia in America, and serves to perpetuate it. There are excellent works by American mycologists that cover various parts of the vast terrain, but no all-embracing pocket guide in a class with *Les Champignons de France*, by A. Maublanc, or *A Handbook of the Larger British Fungi*, by John Ramsbottom, in England. In the absence of a manual for America, these two European works, which are complementary rather than overlapping, are in our opinion the most serviceable for the United States and Canada, in spite of the differences in the fungal population of the two continents.

The compilation of our book has proved an easier and pleasanter task than

I. In the spring of 1954 there appeared Paul Romain's *Mycogastronomie*, published in Paris in a limited edition by Les Bibliophiles Gastronomes. Here we find scores of princely recipes for different species of mushrooms, including even two desserts: Salades d'Oranges a l'Orange and Pezizes Orangees Ali-Bab.

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the reader might suppose. Our secret lay in formulating the right questions, and then submitting them to the right specialists, in whom knowledge and graciousness were equally blended. Such learning as we may have appeared to possess in Chapters IV and V is thus no more than a synthesis of other people's; but the responsibility for the synthesis, for better or for worse, must rest with us. In our preface and in the course of our pages we have already recognized our obligations to many. We now give ourselves the pleasure of acknowledging our debts to some of the others.

We are grateful to Professor Georg Morgenstierne of Oslo not only for the rich budget of data concerning the Iranian and Indie peoples that he sent us over the course of many months, but even more for the constant interest that he displayed in our researches. We are grateful to Dr. Hans Mardersteig for his patience in handling our printing problems. We are especially grateful to Mr. Ronald H. Boothroyd of Verona, who not only nursed our proofs into final shape but by his perspicacious reading of our manuscript saved us from pitfalls and suggested to us new avenues of inquiry.

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was the first to bring to our attention the tapestries at Reims depicting Clovis in his pagan days going forth to war under the standard of the toads or *hots*. In the realm of medieval science, Professor Lynn Thorndike put his great erudition at our service. Mrs. Michael Majolier ran down certain elusive facts for us in London, and Mr. and Mrs. Hugh Kelleher in Italy. Mr. Roger Tory Peterson has identified for us certain birds in the Old Masters. Mr. David McCurrach and Mr. Ronald G. Cant, both of St. Andrews, Fife, have done their best to trace for us the Scottish origins of the Hamilton dynasty of painters. Mr. & Mrs. Warren Delano Robbins kindly pursued certain inquiries for us in Paris.

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APPENDICES I-IV

APPENDIX I

Mushrooms in Tolstoy's 'Anna Karenina'

THRICE in *Anna Karenina* Leo Tolstoy brings mushroom-gathering into his story, and on each occasion with a naturalness, a tenderness, that any perceptive reader will find memorable. We have summarized one of these citations in our text. Here are the other two.

In Chapter 8 of Part II we discover Darya Alexandrovna in the country with her brood of small children and the English Governess, Miss Hull. It is the month of May. The children have returned from Church, where, according to the Orthodox custom, they have taken Holy Communion. At first, under the influence of that solemn occasion, they were models of behavior. But at dinner Grisha whistled, and besides he was rude to Miss Hull. As a punishment, she deprived him of his tart. There were tears, and cries of injustice, and Grisha left the table, seeking the consolation of solitude by the window in the drawing room. His elder sister Tanya, under the pretext that she wished to share her tart with her dolls, also departed. Darya Alexandrovna felt that Miss Hull had been too severe, but of course supported her authority. Afterwards she was on her way to ask the governess to relent and forgive the culprit, when she discovered Tanya sharing her tart with Grisha in the drawing room, both of the children sobbing from shared emotion. She was overcome by the touching spectacle. On the spot she forgave Grisha, and then dispersed the clouds by laughing at the way their faces were smeared with tart and tears, and making them laugh too, and then, to cap it all, she gave orders for everyone to put on old clothes and go mushroom-gathering. At once the nursery was filled with shrieks of ecstasy. Soon they were all in the woods. They filled a basket with mushrooms. Even little Lily found a birch-mushroom. In the past Miss Hull had always found mushrooms for Lily to pick, but this time Lily really found a big one all by herself, and everyone screamed with delight: "Lily has found a mushroom!"

The second episode, in Chapter 5 of Part VI, is an exquisite vignette of distinctive Russian behavior. Sergej Ivanovich, a landowner, is in love with the governess Varvara Andreevna and wishes to propose to her, and with this intention goes out to find her in the woods where she is gathering mushrooms with the children. She senses his purpose and is receptive. As he starts out looking for her, he talks to himself, rehearsing the little speech that he wishes to make. And now we shall translate Tolstoy's words.

"Varvara Andreevna, when I was still young, I conceived the ideal woman whom I should love and be happy to call my wife. I have lived a long time and now at last in you I discover what I have always sought. I love you and offer you my hand."

This is what Sergej Ivanovich was saying to himself as he approached Varen'ka, who was shielding a mushroom from Grisha and calling to little Masha: "Look! Look! Lots of little mushrooms!" her voice warm and throaty.

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When she saw Sergey Ivanovich coming up to her, she did not rise, nor even change her position, yet something told her she knew he was there and was glad.

"Have you found any?" she asked, turning up to him her beautiful, soft, smiling face, rimmed with a white kerchief.

"Not one," said he. "And you;"

She did not answer but busied herself with the children. "There is another, near the branch," and she pointed out to Masha a small *syroezhka*, whose stalwart pink cap had been bisected by a blade of grass. Varen'ka rose when Masha picked up the *syroezhka*, breaking it in two. "This brings back childhood days," she added, and walked away from the children by the side of Sergey Ivanovich.

They took a few steps in silence. Varen'ka saw that he wished to talk, and guessed about what. She was breathless with excitement, joy, and fear. They had gone far enough so that no one could hear them, yet he did not speak. It would have been best if Varen'ka had kept still. After a spell of silence, it would have been easier for them to say all they had to say. But against her will, as if by accident, Varen'ka spoke.

"So you found nothing? Of course, they are always scarcest in the middle of the woods."

Sergej Ivanovich sighed and said nothing. He was vexed: why had she brought back the subject of mushrooms? He would have liked her to return to what she had said about childhood. But then he also, after a pause, and as though against his will, went on where she left off:

"I had thought that only the cep was confined to the fringes of the woods, but then I can't recognize a cep."

More minutes passed. They were far from the children and quite alone. Varen'ka felt her heart beating. She felt that she was turning red, then white, and then red again.

To be the wife of a man like Koznyshev, after her situation in the household of Mrs. Stahl, seemed to her like the peak of happiness. Besides, she was almost sure that she was in love with him. And now all this was to be decided. She felt frightened, frightened at what he might or might not say.

His declaration had to be made now or never: so Sergey Ivanovich said to himself. Everything in her looks - her blush, her lowered eyelids - showed Varen'ka's painful expectation. Sergey Ivanovich noticed it and pitied her. He also realized that if he said nothing, his silence would hurt her. Again he repeated to himself all the reasons in favor of proposing, he repeated to himself the little speech that was to express his intentions. But instead, under some strange impulse,

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he finally asked, "And what is then the difference between the cep and the birch-mushroom;"

Varen'ka's lips trembled as she replied: "There is almost no difference in the cap. The difference is in the stem."

And the instant she uttered those words, she knew and he knew that everything was over, and that what ought to have been said would never be said. Their tension, having reached its peak, began to subside.

"The birch-mushroom-its stem reminds one of a two-days' beard on a swarthy man," said Sergej Ivanovich, quite calmly.

"You are quite right!" said Varen'ka, and she smiled. Without thinking they turned their steps back to the children. Varen'ka felt hurt and ashamed, and at the same time a sense of relief came over her.

Translated by VPW and EGW

APPENDIX II

Aksakov's 'Remarks and Observations of a Mushroom Hunter'

THE following essay, by Sergej Timofeevich Aksakov, appeared in 1856 in the *Vestnik Estestvennykh Nauk*, the publication of a group of nature students who constituted the Moscow Imperial Society. Aksakov was a Russian country squire whose *Memoirs* are classics of Russian literature, valued alike for their honest and detailed picture of daily life in a by-gone world and for the lovable self-portrait that their author unconsciously paints. His forgotten paper on mushrooms possesses in rich measure the virtues that made his major works famous, and in translating it we have tried our best to preserve the flavor of the original. On its first appearance nearly a century ago, the editor, K. F. Rouille, drew attention to what would be called today its ecological implications, which he referred to as nature's 'law of interrelations'. Specifically, Aksakov, though only an amateur, seems to have been precocious in insisting on a biological tie between certain fungi and the roots of some kinds of trees. The peasants in the Slavic lands from time immemorial and recently the mycologists of the West had observed that some mushroom species are always found close to certain kinds of trees, but not until 1885 did A. B. Frank publish in *Berichte der Deutschen Botanischen Gesellschaft* the notable paper on truffles that securely established the symbiotic kinship between trees and fungi - a relationship that came to be known as mycorrhiza. Apparently Aksakov's further observations concerning a difference in the growth of mushrooms on various sides of a given tree, according to the compass points, are unknown to mycologists. Was the behavior that he remarked peculiar to the trees in his grove, or was he calling attention to a significant phenomenon that others have overlooked to this day; . . . Here is Aksakov's essay.

Among the sorts of hunting in which men engage, place must be made for the peaceful quest of mushrooms, or 'mushroom-taking'. This cannot compare with other kinds of hunting that are more lively because they involve the animal world, but it can hold its own among many so-called secondary hunts, each of which offers its own interest. I give preference to mushroom-hunting because you must look for mushrooms and it follows that you may not find them. There is needed in addition a certain skill - knowledge about where mushrooms grow, familiarity with the terrain - and luck! No wonder that the proverb says, "With luck even mushroom-hunting is good." In mushroom-hunting there are elements of the unknown, the unexpected; there is success and there is failure. These are the things that incite a man to the pursuit and give to it a special interest. The gathering of berries or nuts, also a hunt of the second class, at first glance might resemble mushroom-hunting, but on closer inspection we shall see that the latter possesses great advantages. Mushroom hunters will surely share my view, and with

i. I have heard this proverb in an inverted form: "Without luck it's no use to go mushroom-hunting". S. T. A.

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them I wish to have a chat and tell them of my observations over many years.

Mushrooms are the most nourishing, tasty, and wholesome food, if they are not eaten to excess nor smothered in too much fat, but perfectly fried or boiled or thoroughly pickled in brine. Pickling in brine is employed with those mushrooms that are conserved in the raw state, such as those of the *lactarius* and *russula* families and others. For city folk mushrooms are a delicacy; to the country people they are food and in some regions a source of income. The mushroom is a child of the forest.¹ The steppe has no mushrooms except the common field mushrooms and the *lugoviki* [*marasmius oreades*], and even these are born only in the fertilized soil of cattle-pens, pastures, and roads, and always close to the dwellings of men and cattle. It is known to all that if you raise trees in a bare field, either from seed or by transplanting, mushrooms will surely start growing there, the kind depending on the kind of trees. But, contrary to the opinion of many, the mysterious power of trees to bring forth mushrooms around themselves does not lie merely in the shade that is produced by the branches. Shade is the first requisite, it is true, but only the first. Shade protects the earth from the scorching rays of the sun, produces humidity and even wetness in the soil, and this is essential for both the woods and the mushrooms. But their real source, it seems to me, lies in the roots of the trees, which humidifying in their turn the surrounding earth, impart to it the arboreal sap; and it is in the roots that in my opinion lies the key to the mystery of the birth of mushrooms. This is most convincingly shown by the fact that around stumps of trees where a certain species formerly grew in the life-giving shade, the same kind will continue to grow for as long as ten years or more. Roots die slowly. Finally they rot and dry, and the mushrooms cease. Many a time I have observed tree stumps standing quite far apart in meadows where the influence of neighboring trees could not be suspected. As proof of the fact that shade and moisture are not sufficient for the growth of mushrooms, one could point to certain species of trees such as the alder, black poplar, poplar, and bird-cherry [*padus avium*], under and near which no genuine mushrooms spring up. The complete dependence of mushrooms on the particular sap of a tree firmly establishes the fact that certain trees produce only their own kind of mushroom. If only moisture, shade, and coolness were needed, all kinds of mushrooms would grow under all kinds of trees.

The country-folk recognize well the influence of trees over mushrooms and therefore have given to some of them names associated with trees, such as the birch-mushroom, the aspen-mushroom, the hazel-mushroom, the oak-mushroom.

Mushrooms are divided between the edible and the inedible. The latter are

I. In Japanese the generic word for mushrooms is *kino-ko*, 'forest's child'. V. P. W.

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generally called *poganki*, which includes poisonous mushrooms such as the *dubovik* ['oak-mushroom', *boletus luridus*], the *mukhomor* ['fly-killer', *amanita muscaria*], and others. Among the *poganki* are mushrooms that in some parts of Russia are considered poisonous, and elsewhere are considered good for food; for example, the *svinukhi* or 'cow's ears' [both names are Aksakov's; a *paxillus* sp.]; *valui* [*russula foetens*]; *mochjonki* ['the sopping ones']; *chernukhi* [*russula adusta*]; etc. In order to be eaten without harm, these must be first parboiled or soaked and then salted. I even knew one man who, apart from the *mukhomor* and *dubovik*, considered all mushrooms edible, and as living evidence to support his faith in their innocence, he had himself and his family to show. He even asserted that the so-called *poganki* were as tasty as other mushrooms. This is hard to believe, because most *poganki* not only have an unpleasant color and appearance, but also smell bad.

It is worthy of note that many edible or so-called 'good' mushrooms have their counterpart in the *poganki*, somewhat resembling them in shape and color. Even more remarkable is the fact that when *poganki* make their appearance among good mushrooms, the latter begin to disappear. Finally the wave of good mushrooms passes, and the *poganki* complete the conquest of the site. This is especially true of mushrooms that grow up in large clusters, such as *masleniki* [various viscid *boleti*], *ryzhiki* [various *lactarii*], and *beljanki* [*lactarius pubescens*].

All hunters know that mushrooms have their 'favorite spots', where each year they grow in varying quantity. No doubt there must be natural causes for this, but to an uninformed mind this phenomenon is striking and inexplicable. In a thick forest where the branches and the roots of the trees meet, it is hard to determine the places favored by mushrooms even if such places exist, but in open forests or clearings they are obvious and beyond doubt. I have a wood with two thousand oaks, old and young. The old ones numbering about 200 stand far apart in a large hay-field. Under certain of them, few in number, there have grown from time immemorial an immense quantity of caps of a somewhat distinctive form and size, unusually firm and strong, with caps of rare bronze and steel-like color, and sometimes multi-colored and shiny like marble. Their size and vigor are probably traceable to the nature of the root sap, and their color to the effects of sunlight, because oaks set far apart give little shade. Around the other oaks in the same clearing there are very few mushrooms, and around some, none at all. I have in my garden and park more than 300 spruces, and only under four of them do *ryzhiki* spring up. The location, the soil, the species of trees - all these are the same, and nevertheless for twelve years now I observe and yearly confirm my observation that my mushrooms are born exclusively in the same favorite spots under the same oaks and spruces.

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Different species of mushrooms coming up under different trees exhibit a remarkable trait in preferring to appear on the north side of the tree, much less often on the east and west sides, and on the south side, especially during a dry summer, they are almost totally absent. This influence of the four compass points and the position of the sun is best observed with the *ryzhiki*. The red *ryzhiki* [*lactarius deliciosus*;) around a given spruce always appear on the north side and halfway around to the east and west, whereupon, as if by a drawn line on approaching the south, their caps become greenish blue with a somewhat roughened surface, as though dried out; although the stem and the inside of the broken cap remain equally red and juicy. From this we see that the circumference of the tree is divided into equal sectors, the red *ryzhiki* being on the north side, the greenish on the south, while east and west are equally divided between both kinds, with the fewest specimens on the south side.

There is no doubt that, as people believe, in rainy, soggy years mushrooms spring up in greater numbers, especially if bad weather is accompanied by warmth. But here too there are exceptions, not understood by the ordinary observer and only to be explained by science. I have often noticed that in spite of very warm air, rains may be harmful to mushrooms. At times this harmful effect works slowly and imperceptibly, but at times it acts with amazing rapidity, before your very eyes, especially with young mushrooms just emerging from the earth. Four times during the last twelve years I have seen devastation wrought by rain that fell apparently in conditions of propitious warmth. Twice the rain was accompanied by a sort of dry fog with a nasty burning smell; and twice the rains were downpours which thoroughly soaked the earth, with sunshine following immediately afterwards. Visiting every day about noon all the mushroom-bearing spots of my garden and park, there where on the eve I had left a host of young ceps, I was struck by the sudden change in their appearance. More or less all the young baby-mushrooms had become wrinkled and dried out, and the smallest ones, the size of a pea, and even those the size of a hazel-nut, had disappeared, and only a half-rotted dust, which was hard to identify, lay where the mushroom buds had been. Some of the more adult mushrooms revived and reached their usual size, but in a somewhat deformed shape. Others rotted away and collapsed. Such harmful effects were observed and recorded by me each time. A similar influence but noticeably slower is at times brought about by an excessive dew at night, which produces yellowish spots on the grass. Furthermore, let it here be set down that the current popular belief according to which a mushroom duly noted and marked by man will not grow up but will shrivel up, is, according to my observations, wholly unjust. I have

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always marked a goodly number of mushrooms, especially ceps, in order to gather them at the age which I consider most desirable, or else I leave them to reach their full development and beauty. I will not conceitedly assert that the gaze of man may not produce a magnetic influence in the vegetable world. All I can say is that my innumerable experiments led me to conclude that at least *my* glance never did any harm to mushrooms.¹ I have even tried to touch the mushrooms lightly and free them from the leaves and grass which at times hamper their growth. I have gone so far as to break off bits of their caps, and they continued to grow as before. One thing is true: if you shake the stem of the mushroom, it wilts and perishes.

In bad weather and toward fall the mushrooms give wider berth to the trees and more willingly grow along the edges of woods and on naked hills - they 'leap away', as the people express it; but in the dry and hot weather the mushrooms cling to the shade and even take shelter under the branches of the trees, especially the spruces that spread their branches like paws along the earth. That is why peasants call such branches *lapniki* [paws], and chop them off for various needs without mercy and without harm to the tree. They even assert that the spruce reaches its full size for lumber if you groom it by chopping down the lower branches.

Apart from harmful rains and dew, mushrooms are damaged in clearings by the hot rays of the midday sun. Such rays scorch their caps, and although the coolness of the night, the dew, and an occasional rain freshen them up, the daily sun-burn makes them shrivel before they reach their full maturity. Lengthy and frequent rains in their turn damage the growth of mushrooms, especially in the shade, in thick grass and overgrown spots. The mushrooms rot, grow mouldy, and perish. They are also spoiled and destroyed by living enemies. Slugs and snails firmly attach themselves to mushrooms, eating and boring through the caps and stems. In years of poor mushroom harvests, it is rare to find one not harboring two or three slugs. Squirrels are also mushroom hunters, going out especially for ceps, and often you will find marks of sharp teeth on their chewed caps. But the worst pest of mushrooms is a small white worm. Some years there are so many that the stem of every cep, strong and healthy on the outside, is inevitably undermined inside, and falls to pieces if picked up carelessly or firmly. Fortunately the caps are the last to be attacked by worms, and often remain healthy and intact with the stem completely eaten away. It is surprising how mushrooms in such a condition continue to receive nourishment.

i. The Swiss mycologist F. Leuba, in discussing the morel, refers to the same popular belief, which he must have encountered in his native country. See *Les Champignons Comestibles et les Especes Veneneuses*, Neuchatel, 1890, footnote p. 87. V. P. W.

PLATE LXXXI

Jean-Henri Fabre. *Boletus scaber* Fr. ex Bull. (= *B. leucophseus* Pers.)

Russian: *berjozovik*.



PLATE LXXXII

Jean-Henri Fabre. *Coprinus atramentarius* Fr. ex Bull.

French: *pisse-chien*; Russian: *opjonok*.



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The current notion that, especially after a rain, mushrooms spring up overnight, is not true. Nevertheless, it is true that at times one finds young mushrooms where none were seen the night before. They were there, however, but remained unnoticed, because they were hardly above the ground, and covered with leaves and grass. Those quickest to mature or rather to grow up, such as the *berjozoviki* [*boletus scaber*] and *syroezhki* [various russulæ], reach full development in three days, but the ceps take a week or more. The slowest to grow is the *dubovik*, a worthless mushroom and even poisonous, as I said before.

In good harvest years mushrooms may be seen in clusters and families. They even grow as twins or triplets or more. I speak of those mushrooms that usually grow single, such as the ceps, the birch-mushrooms, the aspen-mushrooms, etc. I once made a sketch of an aspen-mushroom that showed six stems covered by one cap. A superabundance of mycelium and of the earth's sap at times produces freakish and ugly forms. Once I found a russula with another russula growing out of its cap. I made a drawing of this curious monstrosity. More than once I have found in the earth large lumps of the mycelium of the cep, a mass much resembling a root and the size of a man's head.

This is the order of the appearance of mushrooms. As soon as it begins to thaw in the spring, the morels appear in the meadows and the open woods. At first *theglukhie* ['deaf ones', an *helvella*], then the *strojki* [*morchella esculentaj*]. They grow even under a crust of snow with water rushing beneath. After the morels a month elapses, or more if there is drought, during which there are no mushrooms whatever. Then come the *masljaniki*, *berjozoviki*, *syroezhki*, *osinoviki* [*boletus versipellis*], then the first wave of *gruzdi*, *podgruzdky* [various kinds of *lactarii*], and ceps; then follow the *lisichki* [*chanterelles*], and field mushrooms; finally come the autumn mushrooms, viz., *volzhanki* [*lactarius torminosus*], *beljanki*, *ryzhiki*, and *opjonki*. This whole order is upset at times, and it always depends on the weather and the atmospheric influences. I must add that each species appears in two or three waves during summer and fall, and until frequent and strong frosts, especially during droughts, finally kill off the mushroom growth. Speaking of each species of mushroom separately, I shall tell in more detail of the occasional mutations in their growth.

Translated by VPW and KGW

Aksakov's essay ends here. Apparently he never returned to the subject, and his observations on growth 'mutations' are lost to us. He died in 1859, three years after the publication of the paper. VPW.

APPENDIX III

Leuba's 'Hymn to the Morel'

IN the realm of belles lettres the writings about mushrooms are few. Only in French and only in recent decades do we find this theme chosen for deliberate literary effort; among the handful of writers on mushrooms are Georges Becker, Camille Fauvel, and J. Amann. To this group we should add Roger Heim, who, though primarily a professional mycologist of supreme attainments, possesses the humanist point of view and the literary graces to qualify him for highest honors in the genre we are discussing. Beyond the output of this small circle, the mushroomic bibliophile must content himself with incidental references down through the centuries, in verse and prose, by writers whose thoughts were primarily directed elsewhere.

There is, however, much enjoyment to be gleaned also from the older books about mushrooms, composed in times when the austerity of the utilitarian and scientific approach had not yet forbidden the writers to indulge in occasional digressions. Such incidental passages are all the more enjoyable for the way they sometimes interrupt and enliven a dreary and pedestrian text. Perhaps the supreme example of this intruding Muse is to be found in the work entitled *Les Champignons Comestibles et les Especes Veneneuses*, written by F. Leuba, a Swiss pharmacist, and published in Neuchatel in 1890. The author of this large work proceeds methodically to describe all kinds of wild fungi, faithfully organizing his labors according to the conventional break-down of family, genus, and species. He comes in due course to the various morels, and then, all of a sudden, he is off, as though kidnapped by Pegasus, in a flight of eloquence that has surely never been equalled on the theme of mushrooms. He apostrophizes the morel, and then subtly characterizes the various types of morel-hunters - the amateur, the professional, the *gastronome*, and finally the simple lover of nature who discovers in morel-hunting an excuse for indulging his passion. After his excursion into Parnassian realms, our staid Swiss pharmacist slowly recovers his native poise, subsiding into the humdrum pace of one who with minute accuracy and crushing drudgery describes the fruiting bodies of the fungal world - their respective habitats, and the distinctive features of stipe and pileus and spores.

We think that Leuba's prose *Hymn to the Morel* deserves to be rescued from the tomb in which it has been gathering dust these sixty years and more, and we offer it now to our readers. We are not undertaking to do it into English, for in that rarefied world of mycophiles to whom we offer our book, are we not safe in supposing that many read French? They would resent the impertinence of any translation. The additional readers to be gained by our supplying a text in English will surely concede with good grace that their loss is outweighed by the pain that a translation, no matter how skillful, would impose on the larger number. Here, then, is the discourse of F. Leuba, Swiss *pharmaden*, on morels and morel-hunters.

Voici la morille! En est-il un seul d'entre nous chez lequel ce nom n'evoque des souvenirs delicieux de cueillettes heureuses, de courses enchantees, d'odeurs

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de sapins, de nuages roses d'aurore, de gentianes printanieres, d'appels de coucous, et de tout le cortege enivrant du printemps; Quel est celui dont le coeur ne tressaille d'aise au souvenir de la vue d'une de ces belles morilles que nous avons contempsee un instant avant d'oser y porter une main sacrilege? Quel est celui d'entre vous qui ne l'ait attendue avec impatience dans ce dedale de classification froide que nous avons parcouru jusqu'ici? Qui ne connait la morille et qui la connait sans *Y aimer* > En effet, de tous les champignons, aucun ne passionne davantage l'amateur, aucun n'est recherche avec autant de plaisir et d'acharnement, aucun n'interesse des categories de gens aussi diverses. Depuis le negociant affaire au rentier inactif, de l'artiste amateur a l'ouvrier sedentaire, tous aiment a la trouver. Je connais des individus qui, a la saison des morilles, se livrent dix a quinze jours consecutifs a leur chasse favorite, parcourant le Jura d'un bout a l'autre et ne laissant pas quelquefois de faire des journees tres remuneratrices.

Le vrai morilleur est un type qui se recrute generalement parmi les horlogers montagnards; il se livre sans arriere-pensee a cette chasse tout le temps de la saison, fouillant les bois et les taillis et ne laissant aucune chance au hasard. Sa longue experience et son ceil scrutateur et infailible en font un concurrent redoute des amateurs ordinaires qui ont bien des chances de rentrer bredouille s'ils ont eu le malheur de le rencontrer dans leur course. Quoique morilleur de quelque merite, j'ai toujours en vie le coup d'ceil de ce chasseur, et la rapidite avec laquelle il fait l'inventaire de la place m'a toujours confondu.

En general, arrive devant une *tache* ou un *coin*, le morilleur s'arrete un moment et commence ses recherches; il decouvre une morille, puis plusieurs. . . Quand il s'est assure qu'il n'y en a pas d'autres, il les prend lentement et continue sa route comme un promeneur ordinaire. Habituellement, le morilleur cueille la morille en la prenant par dessus, de maniere a ce qu'une fois detachee de sa racine, il la tienne dans sa main; c'est le moment psychique, celui ou l'attouchement de l'extremite de la morille dans le creux de la main de celui qui la cueille, communique au corps Fetincelle qui fait battre son coeur et transmet a Tame l'etat de jouissance qui fait le charme de cette trouvaille.

La passion que peut inspirer la chasse aux morilles est extraordinaire et se manifeste differemment selon le caractere des individus qui s'y adonnent. Outre le grand nombre de personnes qui vont aux morilles par delassement¹, on distingue le morilleur de profession, c'est-a-dire celui qui va aux morilles tantot pour en faire le commerce dont il vit tout le temps que dure cette vegetation, tantot

i. Dans les hautes vallees et les hameaux dissemines du Jura, tout le monde est un peu morilleur; c'est une jouissance que j'ai vu partager aussi bien par des enfants et des jeunes filles que par des personnes plus agees.

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pour le plaisir pur et simple de les trouver, car il est rare que cet amateur-la aime a les manger.

Le moment le plus favorable de la journee pour trouver la morille, c'est le matin, alors que la lumiere n'inonde pas encore la foret; si l'imagination du morilleur lui represente souvent le sol jonche de morilles, a cette saison de Fannee ou le ton gris domine encore, il faut un certain temps pour familiariser l'oeil avec le terrain et les jeux de la lumiere et Ton eprouve toujours quelque difficulte a decouvrir la premiere morille. C'est la que l'on reconnait le vrai morilleur. Sur de son appreciation, sur de son terrain, il est la, concentrant sa vue sur chaque point du terrain, suivant chaque fissure de rocher, ne laissant echapper aucun brin d'herbe naissante a ses investigations; bien peu de morilles echappent a cet oeil-la. Aussi le morilleur se leve-t-il de bonne heure afin d'arriver avec l'aurore a l'endroit qu'il a l'intention d'exploiter plus particulierement ce jour-la et ou il trouve souvent deja nombre d'autres amateurs. C'est alors que commencent cette chasse effrenee, ces marches et contremarches, ces explorations minutieuses de tous les coins et recoins, de toutes les pierres, de tous les plis de terrain, en un mot, cette guerre d'extermination a ces pauvrettes qui n'ont commis d'autre crime que celui d'etre excellentes et de se laisser accommoder a toutes sauces.

Apres le morilleur de profession vient le morilleur gastronome. Bien que d'une certaine habilete, il n'est pas a redouter comme le precedent, et Ton a encore des chances de faire une cueillette raisonnable apres son passage. Celui-ci n'a pas manque, avant son depart, de se munir d'une *bonne bouteille* et de garnir son sac de diverses conserves alimentaires; il en est meme qui ont, dans la foret, des etapes regulieres approvisionnees de vins et de liqueurs. Constamment preoccupe de la maniere dont il appretera sa cueillette le soir, en rentrant au logis, il assiste deja a un festin imaginaire; ses oreilles entendent le crepitement du beurre frais dans la poele fumante, ses narines se dilatent au parfum de persil qui s'en exhale; les efnuves musquees de la morille qui fait des soubresauts sur ce lit d'herbettes l'enivrent; les papilles de sa langue tressaillent et se rejouissent de percevoir cette sensation si douce, deja transmise au cerveau avant meme d'etre congue; le phenomene physiologique est accompli: le miserable l'a mangee avant de l'avoir trouvee.

Outre ces differentes classes de morilleurs, il existe encore celle des amis de la belle nature pour lesquels les morilles ne sont pas tant un sujet de recherche qu'un pretexte pour se vouer a leur culte favori et passer un instant dans le recueillement en communion intime avec leur Createur en admirant ses ceuvres. Le grand charme de la morille, c'est qu'elle vient au printemps et qu'elle croit dans les bois; or, si les bois ne sont plus le sejour des dieux, ils sont encore et

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seront toujours le refuge ou l'homme, fatigue du train de ce monde, blesse dans les luttes de la vie sociale, est heureux de trouver la solitude et le silence, la possession de soi-meme, l'intimite avec une nature inoffensive, discrete et charmante qui soulage son ame et enchante ses yeux. Les arbres ne sont pas seulement le decor necessaire de la foret; ce sont eux qui en font une retraite, un asile; il semble que, sans eux, les ames ne pourraient se promettre d'y rencontrer leur Dieu et dejouer d'elles-memes; ils sont la condition indispensable du recueillement et de la paix. Aussi, quand le soleil du printemps commence a fondre la neige sur le sommet de nos montagnes, quand la nature se reveille de son long sommeil et qu'une main magique seme dans les vallons la verdure et les fleurs, le morilleur amateur se leve de bon matin et prend doucement le chemin des paturages. C'est le moment ou les nuages roses de l'Orient annoncent l'approche du soleil... C'est la que le bonheur de vivre inspire au cceur de l'homme de ces elans passionnes de reconnaissance et d'amour et, qu'oubliant les miseres du monde, le morilleur, pousse par une force mysterieuse et puissante, joint sa voix a ce concert universel, a cet hymne eternal au Createur. Pour lui, le bien supreme en ce moment, c'est la jouissance sans arriere-pensee de cette poesie saine et reconfortante qui decoule de toutes les beautes de cette nature, et si, dans sa course, il s'est attarde a regarder une abeille brossant du pollen, a examiner une corolle de primevere qui s'epanouissait au soleil, si parfois meme, il lui est arrive de prendre de loin, pour une morille, un crapaud se rechauffant au soleil,¹ les bras croises sur sa poitrine; en un mot, si la recolte a ete presque nulle, il n'en rentre pas moins heureux a la maison: il a pris une lecon de plaisir, de sagesse et d'amour.

Independamment des qualites qui sont le privilege de la morille, ce qui fait son prestige, c'est la saison ou elle croit. Dans les hautes vallees du Jura, elle est pour ainsi dire considered comme la messagere des beaux jours. Il n'est pas rare de voir le morilleur se mettre en route apres quelques jours de chaud soleil de mars et visiter les gros sapins isoles et les lisieres des bois exposees au soleil; ces recherches sont generalement couronnees de succes. C'est alors un triomphe que la feuille locale annonce a ses lecteurs qui saluent avec plaisir cette promesse du prochain retour du printemps; mais helas! toutes n'arrivent pas al'honneur; a cette saison de l'annee ou les nuits sont encore si froides, le plus grand nombre perissent, victimes de leur empressement a saluer ce soleil printanier si souvent trahi par ses forces, et quand plus tard, les beaux jours arrivent, plus d'une fois le morilleur, sensible au malheur de ces infortunees, soupire tristement en retrouvant leurs cadavres etendus sur le sol.

I. Let the reader note this observation, apposite for our theme: the *morilleur* mistakes a toad, sunning itself with arms crossed, for a morel. V. P. W.

APPENDIX IV

riere follow in the original tongues the various texts relating to the use of inebriating mushrooms by Indians in Mexico in the 16th and ijth centuries. Each passage is keyed to the corresponding translation on pp. 218-28. For the translations from the Spanish and French the authors are solely responsible.

[i]

. . . los estrangeros les dieron a coiner hongos montesinos que se embriagan con ello, y con esto entraron a la danca. [Folio 1251, H. P. Kraus ms.]

[2]

Acabado el sacrificio, y quedando las gradas del templo y patio banadas de sangre humana, de alii iban todos a comer hongos crudos, con la cual comida salian todos de juicio y quedaban peores que si hubieran bebido mucho vino; tan embriagados y fuera de sentido que muchos dellos se mataban con propria mano, y con la fuerza de aquellos hongos, vian visiones y tenian revelaciones de lo por venir, hablandolos el demonio en aquella embriaguez.

[3]

Tenian otra manera de embriaguez que los hacia mas crueles: era con unos hongos 6 setas pequenas, que en esta tierra los hay como en Castilla; mas los de esta tierra son de tal calidad, que comidos crudos y por ser amargos, beben tras ellos 6 comen con ellos un poco de miel de abejas; y de alii a poco rato veian mil visiones y en especial culebras; y como salian fuera de todo sentido, pareciales que las piernas y el cuerpo tenian llenos de gusanos que los comian vivos, y asi medio rabiando se salian fuera de casa, deseando que alguno los matase; y con esta bestial embriaguez y trabajo que sentfan, acontecia alguna vez ahorcarse, y tambien eran contra los otros mas crueles. A estos hongos llamanles en su lengua *teunamacatlh*,¹ que quiere decir carne de Dios, o del DERNONIO que ellos adoraban y de la dicha manera con aquel amargo manjar su cruel Dios los comulgaba.

[4]

. . . y sabe e vio que habra 14 anos que en una fiesta vio beodos a los dichos Don Francisco e Don Juan e habian tornado *nanacates* para invocar al demonio como lo hacian los antepasados, e que es publico y notorio que siempre cuando no llueve o cuando se cogen los maices Hainan al diablo e que cuando cogen los maices hacen sus borracheras. . . [p. 38]

I. This reading of the name is found in the Rich ms. in the New York Public Library, which is a transcript of an early ms. in the Escorial. The scribe who penned the Rich ms. evidently had trouble in deciphering the original; he was certainly striving to arrive at the word that appears, as we shall see, in Sahagun as *teonandcatl*. See p. 24 of Rich ms.

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[5]

... Tributauanle [al Senor de Mexico] cada ues que se lo pedian dos o tres cargas de mantas de *nequen*, que se haze de un arbol que se llama maguei, y dauan ongos con que senborrachan y *ocote* . . .

[7]

. . . alii, qui mortem ingesti non inferant, sed amentiam aliquandiu permanentem, incondito quodam risu testatam, inducant, quos *Teyhuinti* vocare mos est, fulvi, acres, et non ingrati cujusdam viroris. Sunt et alii, qui citra risum nihil non versari sub oculos cogant, velut bella, et dsemonum simulacra, atque alii non minus a viris hisce principibus per sua prxcipue festa, et convivias exoptati, et pretio maximo, et pervigili cura conquisiti, quam immanes, atque horrendi: quod genus fuscum est, et quadam acrimonia prasditum.

[8A]

La primera cosa, que se comja en el combite: eran vnos hungujllos negros que ellos llaman nanacatl, emborrrachan: y hazen ver visiones, y aun provocan a luxuria: esto comjan ante de amanecer y tambien beujan cacao, ante de amanecer: aquellos hungujllos comjan con mjel, y quando ya se comen9avan a escalentar con ellos, comecavan a baylar: y algunos cantauan, y algunos llorauan: porque ya estauan borrachos, con los hungujllos: y algunos no querian cantar, sino sentauanse, en sus aposentos: estauan alii como pensatiuos, y algunos vian en vision que se murian, y lloraron: otros vian en vision, que los comja alguna bestia fiera: otros vian en vision, que captiuavan en la guerra: otros vian en vision que avian de ser ricos: otros vian en vision que avian de tener muchos esclavos: otros vian en vision que a via de adulteral [adulterar]: y les avian de hazer tortilla la cabe^a por este caso: otros vian en vision, que avian de hurtal [hurtar] algo: por lo qual, lo aujan de hazer tortilla la cabeza: otros vian en vision, que avian de matar a alguno y por el caso, aujan de ser muertos: otros vian en vision, que se ahogauan en agua: otros vian en vision, que vivirian, y murieran en paz: otros vian en vision que cayan de alto, y murieran de la cayda: todos los acontecimjentos desastrados, que suelen auer los vian en vision: otros vian que se sumjan en el agua, en algun remolino. Desque auja passado la borrachera de los hungujllos hablauan los vnos, con los otros, cerca de las visiones que avian visto. [BOOK ix, Flor. Codex, fol. 3ir-3iv; Chap, xm]

[8a]

Vel iacattiiui in tequaltiloia nanacatl in qujquaia, icoac in quitoaia tlatlapitzalizpan ai amo tie tlaqualli qujquaia, can oc iio in cacahoatl conia ioaltica. Auh in nanacatl necuio in quiquaia: in icoac ie intech qui9a nanacatl, in oncan mitotia, oncan choca: Auh in cequintin in oc iniollo quimati, in oncan inieian motlalia caltech aocmo mitotia, ca oncan oaltotimotlatia. In aca conmottilia ie miquiz oncan chocatica: in aca conmottilia iaumi-quiz: in aca conmottilia tequanqualoz: in aca conmottilia tlamaz iauc: in aca conmottilia iehoatl in mocuilltonoz in motlacamatiz in aca conmotilia tecohoaz tlacooa iez, in aca conmottilia tetlaximaz, tetzotzonaloz tetepacholoz: in aca conmottilia ihichtequiz no tete- pacholoz : in aca conmottilia tequatepachoz quitzacutiaz in aca conmottilia atlan miquiz: in aca conmottilia iehoatl in iuian iocosca monemitiz ipan miquiz: in aca conmottilia

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tlapanco oaluetziz mictiuetziz. J 9390 quesquich tepan mochioaz: mochi oncan conittaia, in anoco ilaquiloz. Auh in oquincauh nanacatl: mononotza quimolhuia in tlein oconmottilique.

[9A]

Tabien tenjan gran conoscimjento de yeruas, y rayzes, y conoscián sus calidades, y virtudes; ellos mesmos describrieron, y vsaron primero la rayz que llaman peyotl: y los que la comjan, y tomauan: La tomauan en lugar de vino. Y lo mjsmo hazian de los que llaman nanacatl: que son los hongos malos, que emborracha, tambien como el vino: y se iuntaua en vn llano despues de lo auer comjdo, donde baylauan, y cantauan de noche, y de dia a su plazer: y esto el primero dia, y luego el dia siguiente llorauan todos mucho, y dezian: que se limpiauan, y lauauan los ojos, y caras con sus lagrimas. [BOOK x, Flor. Codex, fol. 122 v]

[IDA]

Ay otra yerva, como turmas de tierra, que se llama peyotl: es blanca, hazese hazia la parte del norte: los que la comen o beben ven visiones espantosas, o de rrisas, dura este emborrachamjento dos o tres dias, y despues se qujta . . . [Boos xi, Flor. Codex, fol. I29v-i30r]

[9B]

Ioan qujximati in xiujtl, in tlanelhoatl in quenamj, in quen ihiiio, iehoantin in tlaiximach in mjtoa peiotl, vctli ipan in qujpoa, in anoco nanacatl, mocentlalia cana ixtlaoacan, monechicoa : vncan mjtota, cujca ceioal, cemjlhujtl : auh in jmuztlaioc, oc ceppa mocentlalia choca, cenca choca, qujl mjxpaca, ic qujchipaoa in jmjxtelolo.

[IOB]

Peiotl: inin peiotl iztac: auh \$an yio vmpa in mochioa in tlacochealcopa, in teutlalpa in mjtoa mjctlanpa. In aqujn qujqua in, in anoco quj; itech qujca, iuhqujn nanacatl: no mjec tlamantli qujtta in temamauhti, anoco tevetzqujti: aco cemjlhujtl, anoco omjlhujtl in jtech qujca, . . .

[HA]

Ay vnos hongujllos en esta tierra que se llama, teonanacatl : crianse debaxo del heno en los campos o paramos son redondos, y tiene el pie altillo y delgado, y redondo comjdos, son de mal sabor dana la garganta, y emborracha son medicinales contra las calenturas y la gota anse de comer, dos o tres no mas : los que los comen veen visiones, y sienten vascas del coracon, y veen visiones a las vezes espantables y a las vezes de rrisa, a los que come muchos dellos provocan a luxuria y aunque scan pocos. Y a los mocos locos o traviesos, dizenles que an comjdo nanacatl. [BooK xi, Flor. Codex, fol. I30v-i31r.]

[IIB]

Nanacatl: mjtoa teunanacatl, ixtlaoacan, 9acatzontitlan in mochioa, quamalacachton, xopiazton, chichicacococ, tozcacococ: teivinti teiollo malacacho, tetlapololti : atonaviztli. coaciviztli ipaio, can ontetl, etetl in qualonj, teiolpatzmjcti, tetequjpacho, teama, techo-lolti, temamauhti, tetlatiti. In oqujn mjec qujqua mjec tlamatli qujtta temamauhti, ano9O

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tevetzqujti: choloa, momecanja motepexivia, tzatzi, momauhtia. Injc qujqua necutli ipan: njnanacaqua, njnonanacavia. In mopoanj, in atlamatinj cuecuenotl: ipan mjtoa monanacavia.

[12]

Y el caso fue que a el habia venido un indio natural del pueblo de *Tenango*, gran maestro de supersticiones, y se llamaba Juan *Chichiton*, que quiere decir *perrillo*, el cual habia traído los hongos colorados que se cogen en el monte, y con ellos habia hecho una gran idolatria, y antes de decirla, quiero explicar la calidad de los dichos hongos, que se llaman en la lengua mejicana *Quautlannamacatl*, y habiendo consultado al licenciado don Pedro Ponce de Leon, el gran Ministro y maestro de los maestros, que dije en el capitulo II, me dijo que estos hongos eran pequenos y dorados, y que para cogerlos iban al monte los sacerdotes y viejos deputados Ministros para estos embustes, y estaban casi toda la noche en oracion y deprecaciones supersticiosas, y al amanecer, cuando comenzaba cierto vientecillo que ellos conocen, entonces los cogian, atribuyendoles deidad, y teniendo el mismo efecto que el *ololiuqui* 6 el *peyote*, porque comidos 6 bebidos, los embriaga y priva de sentido, y les hacen creer mil disparates. Este, pues, Juan *Chichiton*, habiendo cogido los hongos una noche, en la casa donde se juntaron con ocasion de la fiesta de un santo, el santo estaba en el altar, y los hongos con el pulque y con el fuego debajo del altar, anduvo toda la noche el *teponastli* y el canto, y habiendo pasado la mayor parte de ella el dicho Juan *Chichiton*, que era el sacerdote de aquella solemnidad, les dio a todos los circunstantes que se habian juntado a la fiesta a comer de los hongos como a modo de comunión, y a beber del pulque, y rematar la fiesta con abundante cantidad de pulque; que los hongos por su parte, y el pulque por la suya, los saco de juicio que fue lastima.

[13]

. . . Ce diet seigneur de Tezcuq . . . Il pourtoyt gran reverence aux dieux et avoyt grand soing des temples et ceremonies; il ordona aussi que les jeunes hommes et filles dancessent aux temples . . . leur sement le temple de roses et de fleurs et dan^ant tousiours davant eux tant ceux de la vile que les prochains voisins, les quels le diable abeusoyt leur faisant manger quelque herbe quils noment *nauacatl* la quelle les faisoyt hors de sens et voyr beaucoup de visions.

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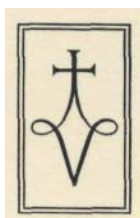
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"MUSHROOM STONES"
OF MIDDLE AMERICA

*Arranged by Stephan F. de Borhegyi
geographically and chronologically
by types*

TYOLOGY

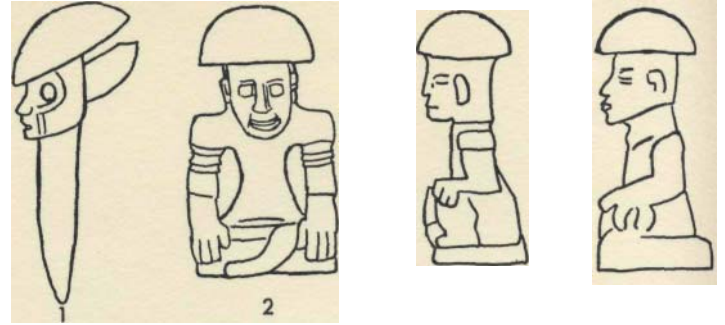
TYPE A.

Anthropomorphic stone sculptures with plain (Nos. 1 to 5 and 7) or circularly grooved (No. 6) mushroom hats.

Plain (Nos. 10, 11) and circularly grooved (Nos. 8, 9) stone mushroom tops.

TENTATIVE CHRONOLOGY

Chronological
position
uncertain.



TYPE B.

Early mushroom-stones with circularly grooved top and square (Nos. 12 to 14) or tripod (Nos. 15 to 16) base.

Early and Late
Pre-Classic
(1000 B.C. - 200 A.D.)



TYPE C.

Early (Nos. 17 to 31) or plain (Nos. 32 to 37) mushroom-stones with square or rounded base and without circularly grooved top.

Late Pre-Classic
(500 B.C. - 200 A.D.)
and
probably
Early Classic
(200 - 500 A.D.)

Square bases: Nos. 17, 18, 20, 21, 22, 23, 25, 26, 28, 31 and 35.

Rounded bases: Nos. 19, 24, 32, 33, 34, 36 and 37-

TYPE D.

Tripod mushroom-stones with plain (Nos. 39, 40) or carved stem (No. 38) and with clubby (No. 40) or sharp angled feet (Nos. 38, 39).

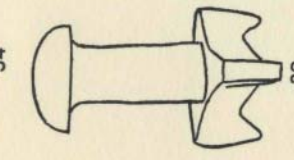
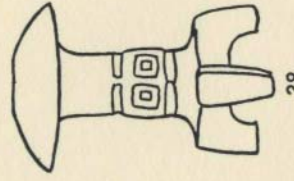
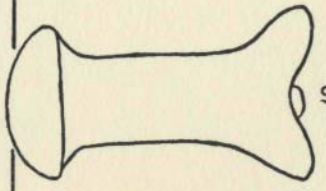
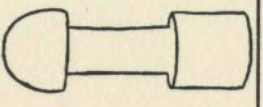
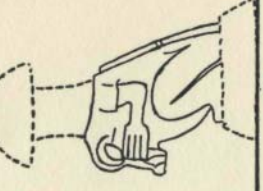
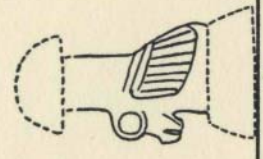
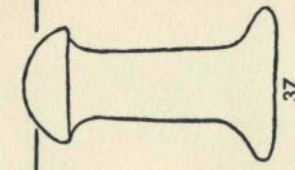
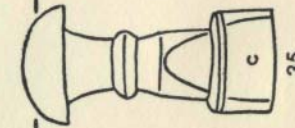
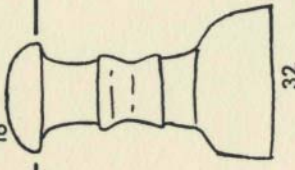
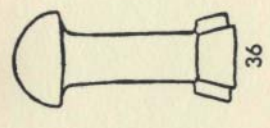
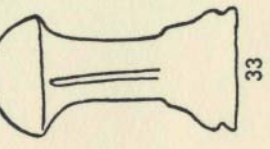
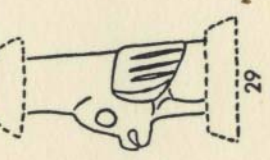
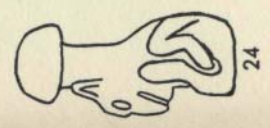
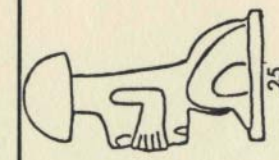
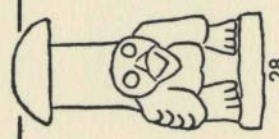
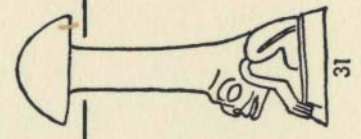
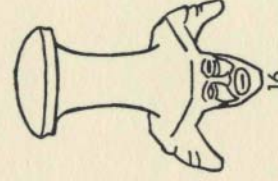
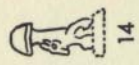
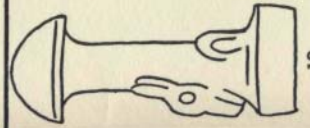
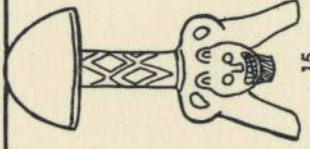
Late Classic
(500 - 900 A.D.)

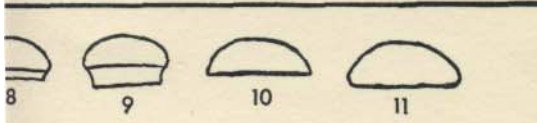


7

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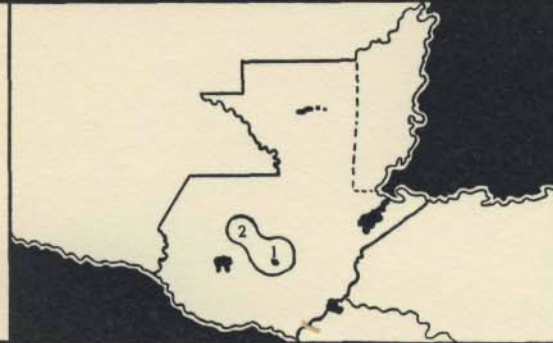
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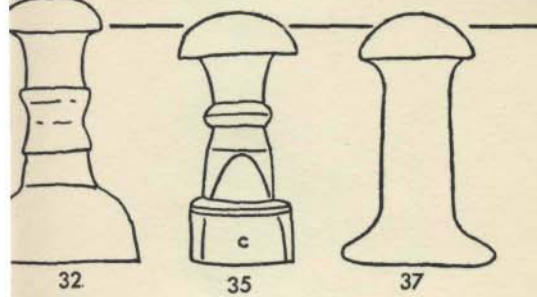


DISTRIBUTION

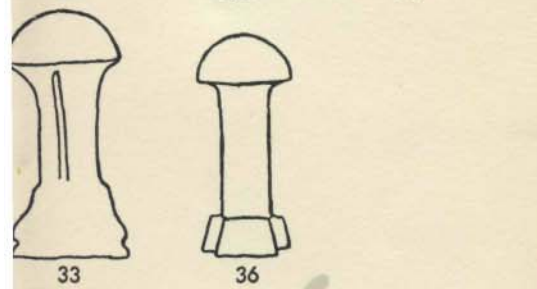
- a) *Central Guatemalan Highlands:*
1. Kaminaljuyu (Nos. 2, 3, 4, 8, 10)
 2. Salcaja (No. 6)
 3. Chukumuk (No. 9)
 4. Xikomuk (No. n)
 - Uncertain locality (Nos. i, 5, 7)



- a) *Central Guatemalan Highlands:*
1. Kaminaljuyu (Nos. 12, 13, 15)
 2. Quiche (No. 16)
 - Uncertain locality (No. 14)



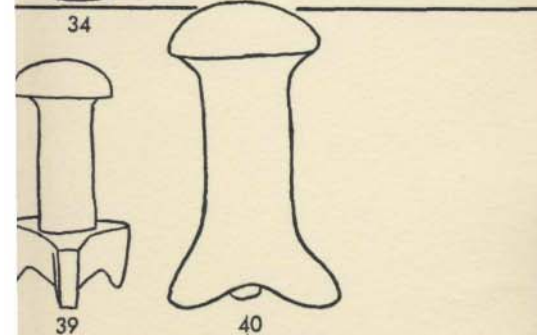
- a) *Central Guatemalan Highlands:*
1. Kaminaljuyu (Nos. 17, 18, 19, 20, 27, 28, 29)
 2. Cerro Alux, Mixco (No. 31)
 - Salcaja (No. 25)
 4. Tecpan-Iximche (not ill., cf. No. 36)
 - Uncertain locality (Nos. 21, 22, 23, 24, 26, 30)



- b) *Pacific Coastal Plains, Guatemala:*
5. Lago Ixpaco (No. 36)
 6. El Salto (not ill., cf. No. 21.)
 7. Guazacapan (not ill., cf. No. 31.)
 8. Retalhuleu (not ill., cf. No. 28)



- c) *Mexico:*
9. Ocosingo, Chiapas (No. 32)
 - Oaxaca (not ill., cf. Nos. 32, 33, 36, 37)



- d) *Western El Salvador:*
10. Tazumal (No. 33)
 11. Las Victorias (No. 35)
 - Uncertain locality (No. 37) (probably Chalchuapa area)

- e) *Bolivia, South America:*
- Inca-Uyu, Chucuito (No. 34)



- a) *Central Guatemalan Highlands:*
1. Kaminaljuyu (Nos. 38, 39, 40)
 - Eucaliptus (not ill., cf. No. 39)
 3. Agua Caliente (not ill., cf. No. 39)
 4. Pompeya (not ill., cf. No. 39)
 5. Antigua (not ill., cf. Nos. 38, 39, 40)
 6. San Martin Jilotepeque (not ill., cf. No. 39)
 7. Tecpan-Iximche (not ill., cf. No. 39)
 8. Zacualpa (not ill., cf. Nos. 39, 40)
- b) *Pacific Coastal Plains, Guatemala:*
9. El Baul (not ill., cf. No. 39)
 10. Los Diamantes (not ill., cf. No. 39)
 11. El Carmen (not ill., cf. No. 39)



