CHAPTER TWO

LIGHTNINGBOLT AND MUSHROOM*

by R. Gordon Wasson

The inquirer who turns to Littré to learn about truffles, on reading the entry under *truffe*, comes upon a nugget of curious information that certainly fails to catch his attention. It seems in certain regions of France (presumably there where truffles abound) the country folk in thundery weather are wont to say, *Voilá un bon temps pour les truffes*, 'What fine weather it is for truffles!' Why in thundery weather? Not when it rains, mind you, but when it thunders. Nothing in Littré alerts the reader to the mystery that here lies hidden. The saying of these French rustics seems to be one of the surviving traces in Europe of a belief that reaches back in time deep into prehistory and in space wherever Eurasians or their descendants have lived. It is the end of Ariadne's thread that we propose to follow far and to a far-reaching end.

Pliny the Elder declared that truffles were disposed to grow in the time of autumnal rains, and above all (in the full-bodied Elizabethan translation of Philemon Holland) 'if the aire be troubled and disquieted with many thunders: during that season there will be good store of such Mushromes, &c, especially (I say) if it thunder much':

> *De tuberibus haec traduntur peculiariter: Cum fuerint imbres autumnales, ac tonitrua crebra, tunc nasci, & maxime e tonitribus.* [*Hist. Nat.*, Bk 19:37]

When Philemon Holland around 1600 rendered *tuberibus*, 'truffles', by 'mushromes', the word 'truffle' and the plant it represents were as yet unknown to the English-speaking world.

Juvenal wrote of the longed-for thunder in springtime [*sic*] that replenishes the table with truffles:

> *Post hunc tradentur tubera, si ver tunc erit et facient optata tonitrua cenas maiores.* [*Satire* V: 116-118]

* In 1956 I published 'Lightningbolt and Mushrooms: An Essay in Early Cultural Exploration' in a Festschrift: *For Roman Jakobson* (Mouton, The Hague) on his 60th birthday. It was my first paper on ethnomycology, a discipline that I founded. Here is that same paper, revised, reworked and shortened.

From *Persephone's Quest, Entheogens and the Origins of Religion* (New Haven, 1986).

Strange: Juvenal speaks of tables laden with truffles in springtime, associated in men's minds as this season is with frequent thunderstorms. But in Italy truffles come in the fall and early winter until February. What was Juvenal thinking of? Was he conforming to a popular belief at the cost of doing violence to nature? Pliny had spoken of autumnal thunder-showers, adhering to the right season.

The *tuber* was an underground fungus, apparently embracing all species of both truffles and the genus *Terfezia*. The many species of *Terfezia* are often confused by travelers in the Mediterranean and Near East with truffles, but *Terfezia* and truffles, though both of course fungi, belong to different families, not merely distinct species. *Terfezia* flourish in the arid areas around the Mediterranean and eastward, and when classic writers refer to the Libyan truffles as especially good, they are speaking of *Terfezia*. In Greek the *tuber* was the *hydnon*, and Plutarch, in an essay now virtually forgotten, asked why people said thunder made the *hydnon* to grow. He asked why, not whether, the thunder made them grow, apparently accepting the fact, and he found no sure answer.[1] There was an underground fungus that the ancient Greeks called the 'lightningbolt' – *keraunion* – was it an alternative name for the *hydnon*? In Thrace *keraunion* was called the *oiton*: this word is a dialectal variant of *hydnon* and the mushroom presumably the same. Athenæus, writing in the third century after Christ, quotes Theophrastus five centuries earlier on these Thracian fungi:

> Concerning these a singular fact is related, *viz*, that they grow when autumn rains come with severe thunderstorms; the more thundering there is, the more they grow, the presumption being that this is the more important cause. [*Deipnosophists*, Loeb translation, Bk II:62]

(Theophrastus did not make Juvenal's mistake: he adhered to *autumnal* thunderstorms.) In ancient Greece and Rome we have to do with a notion that everyone accepted, a cliché, perhaps a tiresome conversational tag. 'It's not the rain, it's the thunder that makes them grow,' people would say, just as today in summer the New Yorker insists, 'It's not the heat, it's the humidity.' Did the Greeks and Romans arrive at this belief, which for them pertained to underground fungi only, by observing nature? The answer to this question had best be deferred until we have completed our pilgrimage throughout Eurasia and the lands to which in prehistory the Eurasian tribesmen emigrated, to wit, Polynesia and the New World.

This essay on its first appearance in 1956 prompted our friend Georges

1. Plutarch's *Moralia*, *Table-talk* IV, Question 2. Loeb Classical Translations, Vol VIII, p 316ff.

Becker, gifted *savant* and humanist of the countryside of eastern France, to recall an ancient belief surviving in and around his native village of Lougres: the people there hold that *Boletus satanas* and *Boletus luridus*, as well as those other species of mushrooms that turn blue on breaking, grow where lightning has struck, around isolated trees in meadows. Furthermore, he had a friend, an aged countryman, who often gave utterance, in the patois of Lougres, to an old saw:

> *Lou mâ temps, c'â lou bon temps des craipâs et pe des tchampégnôs. (L'orage, c'est le bon temps pour les crapauds et les champignons.)* (Thunderstorms are good weather for toads and mushrooms.)

The saying hides a pun: in the local dialect *mâ temps* means both 'bad weather' and 'thunderstorm' and therefore what is 'bad weather' for human beings is 'good weather' for toads and mushrooms.

The Piedmont in Italy is preeminent in that country for mycophilia, and immense quantities of fungi are marketed there and consumed. The towns of Alba and Cuneo are especially noted for their 'white truffles' (*tartufi bianchi*), *Tuber magnatum*. The reader will recall the classic tradition that links thunder with truffles. But in the Piedmont, strange to say, the 'thunder-mushroom', *trun*, (in Piemontese, 'thunder') is not the *tartufo bianco*. It is any market *Lactarius*, the common species being *L. sanguifluus* and *L. deliciosus*.

Among the English I have not yet found any trace of the ancient belief in a tie between mushrooms and thunder, but there is one quotation on the subject that should be carefully read. On 22 February 1774 Sir Alexander Dick, a retired physician, wrote to James Boswell a letter from which I will extract one sentence:[1]

> While I was at London, I alwise found plenty of Mushrooms at Covent Garden, good & reasonable during the Summer Season – this was the year 1760 and made Dr. Armstrong, quite of my opinion, who partook frequently of my Mushroom breakfasts – and *as Mushrooms often arise from Lightning, when they came well dressed to table we used to stile them Ambrosia* . . .

I have italicized the ending. I feel fairly confident that this reference to mushrooms and lightning goes back to ancient Greece and Rome, rather than the Anglo-Saxons or ancient Britons. Dick was the educated 18th century Englishman, thoroughly grounded in the classics. Mushrooms in his mind were linked

1. By courtesy of the Editorial Committee of the Yale Editions of the Private Papers of James Boswell, New Haven, Conn.

to lightning and ambrosia was also; whence the playful association of mushrooms and ambrosia.

From our citations we see that the linking of thunder with mushrooms is not with *all* mushrooms but only with this kind or that, and the kind changes according to the region. In the temperate zone thunder is associated primarily with spring and early summer, but truffles are a product of the fall and early winter. Of course thunder *in spring* might produce truffles *in fall*, but no where in the classic sources is such a sophisticated idea hinted at. (Later we shall see that this very belief is actually entertained by the Bedouin of the Arabian desert.) While thunderstorms of course occur at all seasons, even in mid-winter, is it not odd that in classical times people sometimes linked springtime thunder and truffles? This bad fit in the popular belief must have been what led Juvenal and a few late writers to assert that the best truffles, contrary to fact, come in the spring. For example, Franciscus Marius Grapaldus in his *De Partibus Aedium*, *c* 1492:

> . . . But truffles (= *tubera*) the pigs root out of the earth with their snouts. Truffles are surrounded on all sides by earth, without roots, neither thickly growing in [one] place nor cracking out among the dry and sandy thickets. [They] are to be called certainly nothing other than flesh of the earth. *Best at spring and more often during thunder, they are said to arouse dying love.* [Book II Chap. 3, italics mine.]

Grapaldus was forcing nature into the Procrustean bed of Juvenal's text and the popular belief.

The Germanic world yields us one pleasant citation associating mushrooms with thunderstorms. The Rev. Robert B. Reeves, Jr., Chaplain of the Presbyterian Hospital in New York, wrote me 9 March 1960 these words:

> In Harrisburg, Pa., where I lived from 1915 to 1923, my mother employed a Mrs. Tetzer, who was 'Pennsylvania Dutch', to bake Christmas cookies and help with the fall and spring housecleaning. She was full of country lore and would hold us children in fascination around the kitchen table or the stove, talking as she worked. One of the things she told us was that the time to gather mushrooms was after thunderstorms; that we should watch for the lightning, notice carefully where it struck, for wherever the lightning entered the ground mushrooms would spring up. These were the only kind that were fit to eat. The others, that grew without benefit of lightning, were toadstools and poisonous.

The Pennsylvania Dutch are descended largely from pioneers who hailed from the Palatinate. I have had no opportunity to take soundings there.

Many Polish and Czech friends of the recent emigration speak of a folk belief in their countries tying the growth of mushrooms to thunderstorms, but I have yet to find an informant who can pin down these beliefs in specific fashion. Similarly Ivan Sechanov, the Bulgarian mycologist specializing in the higher fungi, writes me that the Bulgarians link mushrooms with lightning, 'especially *Morchella* spp. and some others.' Probably field work in the west Slavic countries and in Bulgaria would yield more evidence than I present here.

The Great Russians, who know by cultural inheritance incomparably more about mushrooms than the classical writers did, call a particular kind of rain *gribnoj dozhd'*, 'mushroom rain'. Mushrooms, they say, come after a warm and steady and gentle rain, emphatically not the quick, violent, driving rain that we associate with thunderstorms. This 'mushroom rain' of the Russians leads to the growth of all kinds of mushrooms proper to the season, and mycologists agree with the Russians. For the Russians *gribnoj dozhd'* is a term used often to describe a particular kind of rain, even when mushrooms are not under discussion.

Roman Jakobson has drawn my attention to an obscure book by S. V. Maximov entitled *Lesnaya Glush'*, 'The Backwoods', published in St. Petersburg in 1909, in which the author dwells lovingly on the customs and beliefs that survived in the remote and impoverished village of Parfentief, some 300 miles northeast of Moscow. The villagers there were much given to mushroom-gathering and every year with the spring thaw an ancient of the village, Ivan Mikheich, would celebrate the event with a feast of morels. At that banquet without fail the host would explain, as a prelude, that the morel was good to eat only before the first thunder of spring. Thereafter, according to him, a snake would inject venom into the mushroom and cause it to rot and disappear. Only three times in his life had he heard thunder before trying out the fresh morels. . . . In the story of Ivan Mikheich the two essential elements are present, the thunder and a kind of mushroom. But here in the East Slavic world, far distant in time and space, our episode takes on a reverse twist. The morel is of course a springtime mushroom and thereby Ivan Mikheich avoided the uncomfortable discrepancy of Juvenal and Grapaldus. But with him the role of the thunder, while it is still vital, is unfavorable to the fungi. It casts an evil spell on them, and works hand in glove with the serpent, who now enters the scene for the first time.

The late Professor Georg Morgenstierne of Oslo has pointed out to me how widespread even now is the belief in our myth on the other side of our Indo-European world. He quotes an informant in Persepolis as saying that the *dum-*

balān are thought to grow in the desert after lightning;[1] *dumbalān*, literally 'sheep's fries', is apparently the name given to an underground species of *Terfezia*.

In Tadzhikistan, around Match and in the Yaghnob Valley southeast of Samarkand, Iranian dialects are spoken that come down from the ancient Sogdian language. In those two regions the belief persists that the thunder comes when the sky-borne divinity known as *Mama*, 'Grandmother', shakes out her bloomers, and then from her bloomers lice tumble down to earth, and from the lice springs up a crop of mushrooms.[2] (A similar belief about the genesis of mushrooms from the shaking of old furs is reported from the neighboring Turkic peoples.) At the thunderclap the children around Match cry out: *Puri, puri, xorč, puri* being the name of a plant, an annual, whose identity we do not know, and *xorč* being the word for the mushroom. There is reason to think *xorč* is the specific name of *Pleurotus fossulatus*; if so, *puri* must be a dead umbellifer, its saprophytic host. In the Yaghnob Valley the children's cry is different: *Katta xarčak man, pullja xarčak tau*, which is to say, 'The big mushroom is mine, the little one yours.' How enigmatic and tantalizing are these odd bits of our popular belief discovered in the heart of Asia! Perhaps they will fall into place as our pattern takes shape.

In the east of the Pashto-speaking area of Afghanistan the *ʒməkəy gošə*, 'earth meat,' grows 'with the first roar of thunder accompanied by rain.' This mushroom is certainly a morel, called by the Uzbeks in their Turkic language *qoza-qarni*, 'baby lamb's belly,' and they too link its appearance with spring thunder and rain. In Farah, in the southwest, Pashto speakers associate thunder with a mushroom called *gobalakə*, whose identity I do not know but by the description given me think it is *Phellorina* sp. At Bargramatal, a town in the northeast of Afghanistan, in the Hindu Kush where they speak the ancient Katei language, an informant told us of a mushroom, *gokluk*, that he said was produced in spring by thunder. He drew it and his drawing strongly suggested *Coprinus comatus*.[3]

1. *BSOAS*, 1957, xx, p. 453. I take this opportunity to express my gratitude to Professor Morgenstierne for his help and counsel throughout my inquiries. His specific help mentioned in divers places in this paper does not begin to repay my indebtedness to this great scholar.

2. The Tadzhik and Yaghnob references appear in M. S. Andreev's 'Po Etnografii Tadzhikov,' a contribution in *Tadzhikistan, sbornik statej*, a volume edited by N. L. Korzhenevskij and published in Tashkent (1925), pp 172-3, which we consulted. Heinrich F. J. Junker uses the material in *Arische Forschungen: Yaghnobi-Studien*, I, p. 106 (= *Abhandlungen d. philol.-hist. Klasse d. sächsischen Akademie d. Wissenschaften*, Band xli, No. 2, Leipzig, 1930.)

3. For the Afghan fungal vocabulary I am indebted to M. Ch. M. Kieffer, the Alsatian specialist in the Afghan languages, for an invaluable 26 page memorandum prepared on my instigation in March 1965.

In Kashmir certain edible gilled mushrooms known in Kashmiri as *hĕḍur* and *hĕnḍa* are supposed to emerge after thunder, but this belief attaches above all to the morel, called locally *kana-g^{ü}ch*, 'ear-mushroom'. The Kashmiri do not go out looking for morels until there has been thunder. They are clear about this, and also that the morels are powerful aphrodisiacs, to be eaten at weddings, if you can afford them. I gathered this information from Kashmiri informants when I was in Śrinagar in April 1965. Even more interesting are the verses in the Sanskrit lyric *Meghadūta*, 'The Cloud-Messenger', composed *c* AD 400 by *Kālidāsa*. In verse 11 the exiled *yaksha* or demigod addresses the raincloud drifting northward over India: 'When they eagerly hear thy sweet-sounding, fertilizing thunder, which can cover the earth with mushrooms . . . !' The *thunder* covers the earth with *mushrooms*! In the heart of this mycophobic Hindu people we find an outstanding poet giving voice to the same notion that we find elsewhere. But he does not suggest that the *mushrooms* replenish the tables: for upper caste Hindus, mushrooms are tabu. Here 'mushroom' is *śilīndhra*, a puzzling word of odd aspect that Professor Morgenstierne thinks was probably borrowed from some pre-Sanskrit language of India. From a variant of the poem it is clear that a mushroom with pileus was meant, and one lexicographer says that this mushroom was linked with cow-dung: these hints may point toward *Stropharia cubensis*. The ending *-dhra* could mean 'carrying' and *śilī-*, a rare and doubtful word, might mean a worm or a female toad. Such clues, having little weight by themselves, may become clothed with meaning in the context of other evidence. We recall that in India Hindus of the three upper castes are forbidden by their religion to eat mushrooms of any kind.

Now let us look beyond the confines of the Indo-European world.

In a personal letter to me dated 27 May 1950, Colonel H. R. P. Dickson, author of *The Arab of the Desert* and an outstanding authority on the life of the Bedouin, confirmed that the Bedouin are great lovers of *Terfezia*. He said that in the season of the *wasm* (October to early November) they look for heavy rains accompanied by *thunder and lightning*, and if the weather is propitious then, they know that some months later, in February and March, *Terfezia* will abound, and when the days are fulfilled, then the black-tent folk strike their tents and make their way across the desert to the places where grows the rugrug bush, known to botanists as *Helianthemum Lippi*, for the *Terfezia* thrive close by this plant. Then at dawn and dusk, by the horizontal rays of the sun, the women and children and shepherds detect the shadows cast by the slight monticules caused by the swelling underground fungi, and gather them, and every-

one feasts on them. . . . There is a metaphorical expression for a fungus found in a dictionary of classical Arabic,

BANĀT^{u}'R-RA'D', 'the Daughters of Thunder', but we are left in the dark as to the species so designated. It might be a name for the *Terfezia* that Dickson speaks of.

In India around Mysore, in Dravidian country, the thunder is said to be linked to the appearance of species of the genus *Phallus*. In the Northeast of India the Santal, an aboriginal tribe living on the western fringes of West Bengal, in eastern Bihar and in northern Orissa, call certain mushrooms *putka*, and the mushrooms so named grow always after thunder: so the Santal tell us. The mushrooms called *putka* are a *Scleroderma*, and also a false *putka* that is a puffball.

In Tibet by far the most popular mushroom is the *ser sha*, 'yellow flesh'; it is reputed to grow after thunderstorms. Despite our strenuous efforts we have failed to obtain a specimen of this mushroom and it remains unidentified. A painting of this mushroom in the Kew mycological collection was repudiated emphatically by my Tibetan friends in India.

Now let us turn to the Chinese. There came into my possession in 1951 a copy of a handwritten work in eight volumes on ethnomycology entitled in Japanese *The History of Mushrooms*, dated 1811 and composed by Karashi Masujima, who wrote under the pen names of Ranen, 'orchid garden', and Gushá, 'the fool.' (In choosing his field of research he preceded the Wassons by a century and a half!) He was a Japanese scholar teaching in Yedo at the school for samurai called Shoheiko. In this book are discussions of three kinds of Chinese mushrooms linked with thunder by the people of Suzhou and the Province of Juangzhou:

雷驚蕈	雷聲菌	雷菌
leijing xun	*leisheng jun*	*lei jun*
Thunder-aroused Mushroom	Thunderbolt Mushroom	Thunder Mushroom

The description of these mushrooms is insufficient for identification, but they all grow above ground. The three names may be variants for a single species. There is no reason to suppose that the thunder myth was confined to Suzhou

and Juangzhou Province. When I was in Taiwan and Hong Kong in 1964-1966 the thunder association was commonly attributed to species of *Termitomyces*, a delectable table mushroom. The late Professor Roger Heim, the famous French mycologist and a gastronome, ranked them first among the edible mushrooms of the world. In the Philippines the mycologist José Miguel Mendoza reports in his *Philippine Mushrooms*[1] the common native belief throughout the islands that thunder and lightning cause the generation of mushrooms, and in the spring of the year, when people hear the thunder roll, they rush into the fields to gather the edible kinds. In the Pampango tongue, spoken in central Luzon, *Termitomyces albuminosus* (Berk.) Heim (formerly *Collybia albuminosa*) is called *payungpayungan kulog*, where the first element means 'parasol-like' and *kulog* is the word for thunder in both Tagalog and Pampango. This undoubtedly reflects the native belief to which Mendoza refers. I am told that the same association with thunder exists in Kyushu and the Ryu Kyu islands. The termites build their nests there and the farmers rate the termite-mushrooms highly. These offshore manifestations might easily mark the spread of a Chinese concept.

The thunder association of particular species of mushrooms runs all through the mycological writings of the Chinese. It seems to be more prevalent there than anywhere else. The sclerotia of *Omphalia lapidescens* Berk., which grow in Southern China as pellets of little balls on the roots of bamboo trees, are called 'thunder-balls' 雷丸, *lei wan* in Chinese or *raigan* in Japanese, and they were esteemed in Chinese medicine. The knowing-ones must have believed them to be aphrodisiacs. These balls were so highly regarded that the Japanese emperor Shōmu in the middle of the 8th century, when he and later his widow Kōmyō created the Shōsōin Temple in Nara, depositing in it all the treasures that he most prized, included in the collection some of these sclerotia.[2] At that time the Japanese Court was under strong Chinese influence and the 'thunder-balls' had probably been imported from Southern China. In China the famous *ling zhi* 靈芝, 'divine mushroom of immortality', has occasionally been called the *lei zhi* 雷芝, 'thunder zhi'.[3] In that idyllic text, *The Mushrooms of Wu*,

1. Published in *The Philippine Journal of Science*, LXV, Jan.-April 1938.

2. At the end of the second World War in the wake of the Japanese defeat these treasures were opened for inspection, and a few of the 'thunder-balls' were shown to a leading Japanese mycologist, Yoshio Kobayashi, on the staff of the Ueno National Science Museum. He confirmed their identity, twelve centuries after they had been deposited.

3. The Chinese *ling zhi* has been identified as *Ganoderma lucidum* by two Japanese mycologists, Iwao Hino in 1937 and Rokuya Imazeki in 1939. See *Transactions* of the Asiatic Soc. of

吳蕈譜 *Wuxun pu* written by Wu Lin 吳林 shortly after 1662 and published in 1703, in which the author dilates with love on the rich mushroom life of the countryside around his native village of Wu, the beneficial effect of thunder on certain mushrooms figures conspicuously. Let it be noted that in China, as well as elsewhere, the role of thunder always applies to particular species, never to the fungal world as a whole.

Now we shall shift the scene to Madagascar, where the indigenous cultures are dominantly Malayo-Indonesian, Professor Heim has reported an extraordinary practice of the Tanala people there.[1] They dry and convert to powder the giant sclerotium (known to mycologists as *Pachyma cocos*) of the mushroom *Lentinus tuber regium* Fries, on which the Tanala people bestow the name *olatafa*. Then when a thunderstorm of fearful violence breaks, the natives quickly put some of the powder moistened with water into their mouths, and as the lightningbolt streaks by, they spit forth the fungal paste into the teeth of the storm crying *Fotaka*! or else *Fotaka malemy*!, which is to say, 'Earth!' or 'Soft Earth!' The word *olatafa* appears to be related to *tafa*, meaning 'unbalanced' – a startling association of ideas, as we shall soon see. Professor Heim goes on to say that neighbors of the Tanala people in Madagascar – the Betsimisarakas, the Antimoros, and the Tsimihety – also make use of the *Lentinus tuber regium* to protect themselves against the fury of lightning, but they merely spread around them, on the ground, the dried powder of the sclerotium at the moment when the thunderstorm develops a frightening intensity. These three peoples like the Tanala speak languages of the Malayo-Indonesian family. Recent linguistic studies have indicated that they broke away from their kin in Southeast Asia before the Hindu influence made itself fully felt there, certainly before the 4th century AD,[2] perhaps much earlier.

The Maoris of New Zealand, pure Polynesians, possess the thunder link with mushrooms. In the Maori language *whatitiri* means 'thunder'. *Whatitiri* is a female ancestor of the Maori race. Her son (or grandson) Tawhiki was linked with lightning, which flashed from his armpits. In 1963, when I was in New Zealand, Kiri Maniapoto, a Maori woman of Rotorua, told me (and I paraphrase

Japan, 3rd series Vol. 11, 'Mushrooms and Japanese Culture', by R. G. Wasson, p 10; 'Japanese Mushroom Names', by Rokuya Imazeki, p. 40.

1. 'L'Olatafa', by Roger Heim, published in the *Archives du Muséum National d'Histoire Naturelle*, Volume du Tricentenaire, 6e Serie, Tome XII, 1935.

2. S. Thierry: 'A propos des emprunts sanskrits en malgache', *Journal Asiatique*, Paris, 1959, pp 311-348; Louis Molet: 'L'Origine des Malgaches', *Civilisation Malgache*, Tananarive, 1964, Série Sciences Humaines No. 1, Faculté des Lettres et Sciences Humaines, Université de Madagascar.

what she said) that when it thunders, the Spirits are defecating, and the turd falling to earth is the *tutae whatitiri*, the fungus ball that quickly expands into the strange, the astonishing, net- or basket-fungus common in New Zealand and called by mycologists the *Clathrus cibarius* (Tul.) Fischer. *Tutae* means 'faeces'.

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In the course of my inquiries I have found only one chlorophyll-bearing plant linked to thunder or lightning: the mistletoe, – like the mushrooms, linked with religion.

My survey of the evidence is certainly not exhaustive. It comprises the documentation gathered intermittently by one man over a few decades. There must be many variants that I have missed. I have dealt only with the peoples of Eurasia and their offspring, the Polynesians. In black Africa I have taken soundings among the Baganda of Uganda, the Ibo and Hausa, and Fulani (= Peul) peoples. The results were wholly negative. If this prove true of all the peoples of black Africa, it would localize the origin of the myth in Eurasia. The Kumá people in the Wahgi Valley in the center of New Guinea know nothing of a fungus-thunder tie, though their empirical knowledge of the higher fungi is impressive.

An intelligent observer in Eurasia familiar only with the folk beliefs of his own area might naturally conclude that the local notion linking thunder with a particular species of mushroom derived from a subtle observation of nature on the part of his countrymen. But faced with the diversity of beliefs in various parts of the Eurasian world, he would have to pause and admit that the natural causes must be remote and involved. He would observe that except in two or three places such as Madagascar and the Maoris of New Zealand, the survivals are mere verbal fossils: nothing is left of them save a phrase repeated out of habit, thoughtlessly.

Our survey of the fossilized myth shows that in different regions it is linked with species of some fifteen genera:

Boletus
Clathrus
Coprinus
Lactarius
Lentinus
Morchella
Omphalia
Phallus
Phellorina
Pleurotus
Terfezia
Termitomyces
Tuber (This includes the black truffle of Périgord and the truffle esteemed by the Romans, perhaps the *tartufo bianco* of contemporary Italy.)
Scleroderma, *Lycoperdon* } thunder-engendered mushrooms called *putka* among the Santal of India

and the genus represented by the unidentified Tibetan *ser sha*. The species include inedible (*eg, Phallus, Clathrus*) as well as edible kinds, and the myths show a wide variety in the details of the folk beliefs, the most elaborate of the myths being found among the Tadzhiks, the Tanala of Madagascar, and the Maori of New Zealand.

In every instance there is one common denominator: the link between a designated species of mushroom and the thunderbolt.

Of a belief associating mushrooms generally, regardless of species, to thunderstorms, we have found evidence in only two regions, both in Europe. In France, apart from the specific associations that I have already noted, belief in the favorable influence of thunder showers on the growth of mushrooms is widespread, as it seems also to be in Poland and Bohemia. Further inquiry on the ground would probably bring out added details corresponding to those we have found elsewhere. In the temperate zone thunder and lightning come mostly in spring and early summer though not exclusively, and mushrooms in late August and September, and the mythic belief makes no effort to reconcile this contradiction.

As for the mycologists, when confronted with the many faces of this belief, they offer no help in explaining them.