

sites are enclosure units (basically hut and livestock enclosures), terraces used for agricultural purposes, and stone-walled tracks between the terraces from the outside of the settlement to the enclosure units. Sites are all on sloping ground on the sides of valleys. While a number of these sites were visited, particular attention was paid to a settlement on the farm Badfontein. This is a large village site covering ca. 3 sq. mi. on the banks of the Crocodile River, approximately 17 mi. south of Lydenburg. Two enclosure units, 44/71 and 45/71, were excavated, and both provided information about household arrangements, material culture, and probable cultural affinities.

Pottery resembles both the material recovered by Laidler and modern Pedi pottery. The principal type is a short-necked pot with a row of punctation marks just below the rim, a large chevron or arcade motif on the shoulder, and differential colour burnishing, usually graphite and red ochre. Shoulder decoration and burnishing do not always occur. A number of pots have strong affinities with some from the Eastern Transvaal lowveld.

Evidence for agriculture is seen in the terracing and in the finding of a hoe, much worn down by sharpening.

Many of the stones among the terraces have evidence for use as sharpening stones for metal tools. Pastoralism is shown by bones of cattle and sheep/goats, as well as the tracks and cattle kraals.

Associated with some settlements are refuge sites, usually caves (as at Sudwala and Ngodwana) but in two cases isolated cliff-bound heights (Mapochstad [Mason 1962] and Marapan's Rock). Refuge sites and the presence of trade beads of recent type suggest a date in the late 18th and 19th centuries, when Ndebele and Swazi invaded the area, shortly followed by the first European settlers. Refuge sites were used as late as the 1870s by Pedi people during the Sekhukhune wars (Aylward 1881).

Evidence for metal working is lacking at Badfontein, though slag has been found at a site in the Lydenburg Municipal grounds, scheduled for excavation in the near future.

The sites show strong cultural affinities with modern Pedi settlements. One of the sites excavated at Badfontein has been compared with the layout of a modern Pedi *kgoro* (Mönnig 1967), and the resemblance is striking. That, with the strong resemblances in settlement layout and pottery and the fact that in the late 18th and 19th centuries

the Pedi are known to have had an extensive empire that included the Lydenburg region (Hunt 1931), suggests conclusively that late Iron Age settlement in the escarpment area of the Eastern Transvaal can be attributed to Pedi people.

A study of the Iron Age of Inyanga, Rhodesia, shows the only point of comparison between Inyanga and the Eastern Transvaal to be the layout of settlements with terraces, tracks, and enclosure units. Details of the enclosure units and other features of the material culture are very different in the two areas.

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Russian Use of *Amanita muscaria*: A Footnote to Wasson's *Soma*¹

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In *Soma*, a book which has attracted worldwide attention, Wasson (1968) documents his conviction that *Soma*, the god and the plant celebrated in the Vedic hymns, was a mushroom, *Amanita muscaria*, or fly agaric. Furthermore, he shows that this red-capped, white-spotted mushroom had and continues to have an important place in the folklore and folk life of a number of peoples, from the small peoples of the Soviet North to the Slavs. In March 1971, Wasson wrote to me, asking what I knew of the present use of *A. muscaria* among the small peoples of the Soviet North. My husband and I have done considerable research on culture change among the small peoples, and, in addition, we translated Okladnikov's *Yakutia* (1970). Our only reference to *A. mu-*

scaria at that time was a statement (Gurvich and Kuzakov 1960:171, translation mine) that "some Koryaks—representatives of the older generation—collect *Amanita muscaria* mushrooms, dry them, and then use them as narcotics." I agreed to do some research on the topic for Wasson, because I wanted very much to know whether the Russians ever used *A. muscaria* ritually. Siberia has been settled by Russians since the mid-17th century. Russian religious dissidents made up a significant percentage of these settlers. According to the Russian literature, these sectarians indulged in a number of practices designed to facilitate the descent of the Holy Spirit. Such descriptions as I have read (and in the great majority they have been written by hostile observers) seem to be describing a basically shamanistic activity. Would such people, in the normal course of events, have employed *A. muscaria*?

Although every conceivable charge has been levelled against Russian sectarians, the use of *A. muscaria* has never

been one of them. On the other hand, Russian and Soviet sources admit that Russians in Siberia do make use of native shamans and that there have been Russian shamans (Borgoraz 1899:120; Manzhigeev 1962; Vorob'ev 1926). Furthermore, the Soviet commentary on Wasson's work (Elizarenkova and Toporov 1970; Dikov 1971:24-26) clearly indicates that the ritual use of *A. muscaria* by any given people is viewed as an indication of the antiquity, nature, and extent of shamanism over a wide area. The exchange of letters between Wasson and myself for more than a year suggests that he has a lively interest in certain aspects of folklore (snakes, one-legged and one-eyed beings or gods, and world trees) which will eventually broaden and deepen the work sketched in *Soma* and in *Mushrooms, Russia and History* (Wasson and Wasson 1957).²

²I have discovered that the Nivkhi (Gil-yaks) once wore a charm to prevent or cure illness which was armless and legless, essentially a head with a long smooth body. This charm, when worn on the breast, was called *panghh* (Shrenk 1903:110; pl. LIII, LIV show somewhat similar idols among the Goldy [Nanai]). Wasson connects this

¹This report is an expanded version of a paper presented to the Kroeber Anthropological Society, Berkeley, Calif., on May 21, 1972.

It very quickly became apparent that among the Russians, the use of *A. muscaria* was twofold: as a medicinal ingredient, and as a substitute for alcohol. Since comparatively little has appeared in English on this topic, I will describe these uses in some detail, taking the substitute for alcohol first.

The use of *A. muscaria* in the village of Markovo, in the Anadyr region of the Chukot Peninsula, was described by Baron Gerhard von Maydell (cited in Wasson 1968:254–55) in the 1860s. A more detailed description is contained in a manuscript by D'iachkov (1893:114–18), a resident of Markovo, who was perhaps at a disadvantage because he was simply an observer and not a participant. Nevertheless, the report is of some interest: The local inhabitants, when looking for *A. muscaria*, believed that if they ate the first one they found they would inexorably be led toward others. If a person took the *A. muscaria* alone, his visions were more terrible than if he consumed it in company. The smallest dose was three; more could be added to intoxication, but not everyone was affected in the same degree. The mushrooms were generally eaten whole, but were sometimes mixed with other food, or boiled in water, which was then drunk. The practice was to sit in a circle eating three or more mushrooms, after which all the participants returned to their houses. However, in some manner, they remained in communication with each other, to the extent that they knew who was intoxicated and who wasn't. Apparently the purpose of getting to-

gether at all was to have one person masticate the mushroom and then pass it on to the next, with whispered suggestions about what the person would see. D'iachkov said that a person who knew nothing about shamanism would begin to act like a shaman as soon as he ate the *A. muscaria* and that shamans who were asked to heal the sick or "divine some secret matter" often asked for *A. muscaria* beforehand. It is perhaps significant that D'iachkov did not mention religious motivation, although he reported that the intoxicated person said that he had seen heaven and hell, or paradise. We should remember that the 19th-century Russian peasant was far from secularized, and that heaven, paradise, and hell were very much part of his intellectual frame of reference.

When D'iachkov's manuscript was published, his first name and history were unknown, but he was said to have been a Russified Chuvanets. The question arises, therefore, whether D'iachkov's observations relate to Russians at all. It seems that inadvertently I stumbled on a very important problem of Russian and Soviet nationality policy—namely, at what point can a small ethnic troupe be considered Russian if some element of it at one time was non-Russian? Scattered references in *Peoples of Siberia* (Levin and Potapov 1964) alternately list the Chuvantsy as one of the small peoples of the North and place them in a description of Russians in Siberia (p. 113, where they are described as one of the Yukagir tribes, and also pp. 491, 506, 788, 790,

800, 801; but on p. 820 we read that the settled Chuvantsy may now be considered Russians, whereas the reindeer Chuvantsy have merged with the Chukchi; on p. 830, Chuvantsy are coupled with "local Russians"). A sketch in *Izvestiia* (June 15, 1972) by the journalist A. Pushkar' adds a few details to D'iachkov's rather hazy description. D'iachkov was a psalm-reader and the first teacher in Markovo; his first name was Afanasii. Markovo was a trading center in the late 18th century, and the inhabitants were Russified Chuvantsy who had taken the surnames, language, customs, and songs of the Cossacks who had originally come into the area with Semen Dezhnev. D'iachkov himself knew only a few words of the Chuvan language, having picked them up from his grandmother, who was by no means fluent. On a number of counts, therefore, we can say that the inhabitants of Markovo are Russian now and were when D'iachkov wrote. S. A. Tokarev (personal communication, June 25, 1972) confirms this supposition, writing "this is a small isolated group of Russian old settlers surrounded on all sides by Chukchi and subjected to strong Chukchi influence." Significantly, Tokarev adds that no other use by the Russians of *A. muscaria* is known to him.

Apart from the D'iachkov reference, I found only one other. In a paper by Toren (1970:511) dealing with the use of wild plants in folk medicine, A. F. Gammerman, a specialist in the field, is quoted as having collected data

pangkh to the *A. muscaria*, since linguistically *pangkh* is close to native Siberian words for mushroom. Armless or legless dolls or idols are quite widespread. Among Russians in Vologda guberniia, an armless doll was made at Christmastime to frighten girls and was kept in the front corner of the hut until summer (Ivanitskii 1898:65, fig. 71). An ethnographer working among the Turkic-speaking population of Tomsk guberniia noted the presence of "holy dolls" without arms, legs, or hair which were hung in the corner of the barn; if someone fell ill, the dolls were brought into the house and all Christian objects were turned to the wall (Malov 1909:41). Furthermore, a very important personage in Russian folktales, Baba-Yaga, has only one leg. Laushkin (1970:181–86) points out that the word Yaga probably comes from the Sanskrit word *ahi*, "snake." Originally Baba-Yaga was the Slavic goddess of death, and in many cultural traditions the snake has been the guardian of the underworld—a land peopled by beings both qualitatively and quantitatively different from ourselves (sometimes halfings). The *A. muscaria* too is part of the underworld, although its cap reaches toward heaven. Elizarenkova and Toporov (1970) link the *A. muscaria* with the shaman's world tree, in the sense that both connect the shaman with heaven. It is very tempting to place the *A. muscaria*

within the context of a religious system which contains the following elements: underworld (death), life (fertility), triumph over death (immortality). Whether it is the supreme element in this system (a god) or only one of its components I leave to Wasson to settle. However, A. P. Okladnikov has specifically directed my attention (personal communication, July 3, 1971) to cliff drawings on the Angara and Lena which he has described on several occasions. These armless, one-legged figures, dating from the Glazkov (Bronze Age) period, are similar to figures found in Karelia, the Baltic area, and the Russian North, although the Siberian drawings are noticeably snakelike and the ones from the European areas of the U.S.S.R. are obviously fertility symbols (Okladnikov 1957:45, fig. 12). Some of the figures on the Lena cliffs, however, have both snakelike torsos and crowns like feathers or artichokes (Okladnikov and Zaporozhskaiia 1959:95, fig. 34, pl. XXVII, figs. 633, 636, and pl. XXXIX, fig. 792). Dikov (1971:120, Stone X, fig. 81) found a petroglyph in Chukotka which combines *Amanita*-men and the heads of beings very much like those described by Okladnikov. Dikov makes no guess as to the nature of these artichoke-headed creatures, except to say that they are obviously mythological, but he does assume that the *Amanita* men and women pictured on the Pegtymel' River

cliffs are at least in part fertility symbols, masters and mistresses of the reindeer hunted. Archeological data, then, suggest that *A. muscaria* is part of a religious complex. This being so, it is not as important to ask whether a given people used *A. muscaria* or ate mushrooms as it is to ask whether hallucinogens were ritually employed and, if so, to what end. Russian ethnographers have often noted that the Yakuts do not eat mushrooms. The Yakut shaman is not known to have used *A. muscaria*, but he did use tobacco, with almost the same result. (For evidence that tobacco can be hallucinogenic, see Wilbert 1972.) Furthermore, if one is searching the literature for signs of *A. muscaria*, it is of more than passing interest that one description of the Yakut shaman's coat reproduces pictures of it which appear to combine armless (snakelike) good spirits and numerous metallic objects, round in shape, with raised bumps. In the given instance, the ethnographers had no idea what the metallic objects represented (Pekarskii and Vasil'ev 1910:93–116, pl. VI and figs. 2, 11). Later Soviet research, I believe, said that these metallic objects are the sun, stylized by Chinese artistic influence. According to Wasson (1972:201–13) the sun is an important element in the descriptive imagery of Soma.

to the effect that "hunters in the Ural Mountains take pieces of fly mushroom to get drunk and throw themselves into hallucinations."³ I wrote to Gammerman asking for further information about the Urals, and in March 1972 I received this reply:

Information on the use of *Amanita muscaria* in the Urals was given to me by an archeologist who was walking in the woods of the Urals with a local guide of the Zyryan or Komi nationality. In the evenings by the fire, the guide proposed removing fatigue with, instead of vodka, the chewing of small pieces of *Amanita muscaria*. The archeologist said that a real intoxication was achieved, everything seemed colossal—trees were several times thicker, the fire was up to the sky itself, and all the participants behaved better than from vodka. There were no harmful after-effects.

With Gammerman's letter was another, written by a former colleague who had worked for several years in the Far North and Transpolar region of the U.S.S.R. (Inta, Pechora, Vorkuta, Mul'ba, and the settlement of Promyshlennyi, Komi A.S.S.R., as well as various settlements of the republic). In the course of his work, which was to collect medicinal plants, he had been given by the Komi a mushroom powder, with the suggestion that he chew it; this he did, ingesting about a tablespoonful over the course of an hour, washed down with birch-fungus tea (*Guonotus obliquus* [Pers.] *Br. f. sterilis*). After about 10 or 15 minutes he experienced a pleasant euphoria that lasted until the end of his day. He experienced a similar euphoria after taking *A. muscaria* on several other occasions in the city of Nar'ian-Mar (Nen National Okrug, Arkhangel'sk oblast) and in settlements along the course of the Pechora River, as well as in the Komi-Permiak okrug of Perm oblast and in the city of Salekhard (on the Ob River). He had known about *A. muscaria* before this time (1946–65) from having seen it in eastern Latvia and western Belorussia and Russia, as well as in Estonia and Lithuania; in these places infusions of *A. muscaria* are used for rheumatic pain.

The medicinal use of *A. muscaria* was interesting, because it was more or less current. In my search for similar information, I found rather frequent references to *chaga*, or birch fungus. There is even a reference on p. 238 of *Soma*, though Wasson's sources call it *zhagra*, and through a mistranslation Wasson overlooks the fact that it was

used as a cure for rheumatic pain.⁴ Since I know from Wasson that birch fungus and *A. muscaria* are frequently found together, I tried (unsuccessfully) to establish a connection between them. I discovered that 19th-century physicians considered the caps of *A. muscaria* the most toxic part and therefore recommended using only the stems in treating a wide variety of diseases: convulsions, paralysis and other nervous disorders, epilepsy, goiter, tuberculosis, congested coughs, scabies and scald-head, rheumatism, intestinal and uro-genital diseases, and various neuroses including, apparently, impotence (Buyal'skii 1859–60:

⁴ Pallas (1967:50–51) reports that the Ostyaks rub the affected parts of the body with birch fungus (*chaga*): "They take a glowing coal and hold it in the vicinity of the pain at various points on the skin, until they find a place where the patient does not feel the burning; then they apply the true burning remedy, which must work and be borne courageously by the patient until the skin is burned through and bursts open." *Chaga* was also used as snuff, rammed into the nose with bast fiber, which plugged the nostrils. The Ostyaks seldom suffered facial frostbite. Krasheninnikov (1949:443, translation mine, with original Russian appended) describes essentially the same method of treatment among the Kamchadals on Kamchatka, though he calls the medicinal element *zhagra*: "For rheumatic pain they put a birch fungus on the injured places. When this fungus burns to the body it bursts out fiercely and the body decays and there is a great ulcer, on which some people pour fungus ash and some do not treat. And this medicine is known throughout Siberia. (Ot lomu staviat iadna iz berezovogo trudu na bol'nykh mestakh. Kogda onoi trud dogoraet do tela, to otskalkivaet s velikim stremliem, a telo ot togo razgnivaetsia, i byvaet velikaia iazva, k kotoroi inie prisypaiut trudovoi pepel, a inie nichem ne lechat. I sie lekarstvo izvestno po vsei Sibiri)." Wasson, to whom I have shown this paper in manuscript, has consistently maintained that *zhagra* is *Fomes fomentarius* (personal communications, May 31, 1971 and May 26, 1972), a judgment supported neither by Dal' (1956, vol. 1:524 [*zhagra*]; vol. 4:438 [*tru*"]); nor indeed by Wasson's source as quoted on p. 238 of *Soma*. Wasson is of course a mycologist of some standing, and he may have access to dictionaries and information unavailable and incomprehensible to me. He defends his translation (personal communication, June 5, 1972) identifying *zhagra* as a pain-killer rather than as a cure for rheumatic pain on the grounds that the word *lomota* is used for every sort of joint pain. The commentary to Krasheninnikov (1949:236 n. 1) says that birch fungus is used "v kachestve sredstva ot lomoty." Chester Chard (personal communication, July 13, 1972) points out (as does Pallas, but in the edition I used the word was misspelled) that "burning the birch fungus . . . is a form of *moxa* cautery which was practiced (with various substances) from Lappland to China and Japan. Still is." My dictionary defines *moxa* as a counterirritant, but this is not *chaga's* sole function, as Min'ko (1969) indicates. As Chard also points out, *chaga*

487–92).⁵ It was recommended that the *A. muscaria* be dried in the oven and preserved in a stoppered jar in a dry place. *A. muscaria* was a folk remedy in Novgorod guberniia for rheumatism, swellings, and periostitis (the cause of which was thought to be a cold) (Gerasimov 1898:126, translation mine):

They collect mature specimens of the mushroom, breaking them into pieces, putting them in a bottle filled to the top; they stop it up and leave it in a warm place for three days. Under the influence of the heat, one receives a semi-liquid mass, and they rub with the crust. In one case, known to me, with frequent and severe rubbing of the leg (a very severe *Ischias*) [*sic*], a poisoning occurred, expressed in vomiting and pain in the stomach, but the pain in the leg decreased.

A somewhat similar remedy was recorded as in use among the Lithuanians, except that *A. muscaria* was only one of several remedies used (Petkevich 1911:209). In her letter to me, Gammerman cites a handbook of medicinal plants published in Minsk in 1965. It lists as components of *A. muscaria muscarin*, muscaridin, and a red antibiotic substance called muscarufin. It is this substance which is thought to act on tumors. The same source notes the use in Belorussian folk medicine of the *A. muscaria* liquid for rheumatism, but, Gammerman writes,

has a prominent place in the folklore of the patients in Alexander Solzhenitsyn's *Cancer Ward*. On p. 278 of *Soma*, quoting Bogoraz (1899), there is a Chukchi riddle: "I have a headache. I am bleeding from my nose. Stop my nose bleeding! . . . What is it?" Answer: "Fly agaric." Bogoraz seems to think that this is because eating *A. muscaria* causes a violent headache. Other sources do not appear to support this conclusion. Vinogradov (1915:410) says that *chaga* was used by the East Siberian Russians as a cure for headache. He also notes that the birch fungus *Polyporus* sp. was used in a manner which his informant did not wish to discuss. Another remedy (Vinogradov 1915:403, item 36) is a fungus (*gryb*) which seems to grow in basements. Its use is the same as that described for *A. muscaria* for rheumatic pain and swelling of various sorts, except that it is mixed with butter. Wasson (personal communication, June 5, 1972) insists that *chaga* and *A. muscaria* are not used for the same purposes, although he also admits that "both are bathed in what anthropologists call *mana*. . . ." I do not think that the connection between the two substances can be disregarded, nor should the possibility be excluded that Bogoraz did not know everything there was to know about the use of *A. muscaria* among the Chukchi. The point at issue here and elsewhere is whether a given people will use a certain substance (either ritually or medically) if another (more common, more easily available, more reliable) is known to them and used for the same purpose.

⁵ Buyal'skii seems more concerned with the fact that sheep pastured in meadows with *A. muscaria* do not suffer from worms.

³ Torén also says that the *A. muscaria* is used against stomach ache and other illnesses: "The people drink its sap, which, used in large quantities, acts as a soporific."

there is no internal use. However, it is worth noting the following passage from a book on Belorussian folk medicine (Min'ko 1969:82-83, translation mine):⁶

For the treatment of gastritis, ulcers, and stomach cancer, they use the *chaga*, a black birch fungus, *Fungus betulinus*. Infusions and decoctions are used in folk medicine today in Minsk, Vitebsk, and Brest oblasts. The following mixture is used for cancer of the stomach: the birch fungus, the flower of bitter aloe and wine. All this is boiled and used in one tablespoonful several times a day.

At present the *chaga* is used for the treatment of gastritis, ulcers, and malignant tumors. According to experimental data, it has no destructive action on the cancer cells but improves the patient's sense of well-being, and in the beginning stages can inhibit the growth of the tumor. It is characteristic that for cancer the Belorussians use every kind of fungus, starting with the *chaga* and the white *borovik* [*Boletus edulis*] to the growths on apples.

Wasson, to whom I have reported this, dismisses it as nonsense, as he does references to the chemical composition of *A. muscaria* in textbooks, saying that the handbooks are hopelessly out of date. In fact, Gammerman could report to me no current research on *A. muscaria*. Interest of a sort may still be high, if we can judge by the fact that a Soviet public-health journal with an edition (for that number at least) of 262,769 copies carried an article on symptoms and treatments for mushroom poisoning: four paragraphs are devoted to *A. muscaria* (Lokai and Bogachik 1971:21). From the layman's point of view, it is interesting that the patient's reaction is said to vary, depending on whether muscarin (described as a depressant) or muscaridin (described as a stimulant) predominates. Whatever the merits of

the article, it does give a clue to the reason little research is being published on *A. muscaria* in the Soviet Union today: as a drug, it is quite unreliable.

Nevertheless, I think further research into the use of *A. muscaria* in folk medicine would be of some value. Wasson believes that not enough muscarin can be isolated in the *A. muscaria* mushroom to account for its hallucinogenic properties (personal communication, September 3, 1971),⁷ and both the literature and individual testimony emphasize the fact that reactions vary considerably. If D'iachkov believed that three *A. muscaria* could intoxicate, more experienced users have been known to ingest as many as 21, though this is the outer limit (Patkanov 1891:89).⁸ Under the circumstances, there may be some justification for assuming that it is not the *A. muscaria* itself but the context of its use that intoxicates.⁹ *A. muscaria* was and perhaps continues to be widely used in folk medicine. Folk healers frequently accompanied prescribed cures with a spell or incantation. These incantations are magical in intent, but the poetic imagery is frequently religious, with Christian and pagan symbols mixed (see Kapustin 1971:55 n. 5; also Min'ko 1971).¹⁰ Although *A. muscaria* is an effective remedy in some cases, its effect is far from consistent. Can it be that it is employed out of some feeling that it is a sacred substance, as, within a Christian context, water and oil are sacred?¹¹ Clearly,

⁷ An encyclopedic source quoted to me by Gammerman indicates that although there are only about 0.018 g of muscarin in 100 g of fresh *A. muscaria*, only 0.005 g are necessary to produce signs of poisoning; these symptoms can be accompanied by hallucinations (*Entsiklopedicheskii slovar' lekarstvennykh, efirno-maslichnykh i iadovitykh rastenii*, Moscow, 1951, pp. 244, 315).

⁸ It is worth noting that 21 is a multiple of 7, a magical number, and that 3 is also a magical number. In this instance, the *A. muscaria* was used to improve the singer's memory and his endurance. Under the *A. muscaria*'s influence, he could sing long-forgotten *byliny* for an entire night.

⁹ Furst (1972:xiv-xv) seems to apply this hypothesis to a wide variety of hallucinogens.

¹⁰ Min'ko somewhat overstates his case against homeopaths (and contradicts his earlier book) by claiming that the word (the incantation) is considered more powerful than the remedy itself. He does not specifically mention *A. muscaria*.

¹¹ All the medicinal uses of *A. muscaria* I have been able to find appear to rely on its ability to "draw out" pain. Shamans frequently took *A. muscaria* before attempting to heal a patient because, apparently, their principal function was to extract the pain-causing element. Zelenin (1936:344) says that idols were fashioned to assume the patient's particular illness. Remnants of this belief can be found, he says, among

more research along these lines would tell us something about the nature of religion and the religious experience. I can only agree with Wasson that the reason so little is known about the *A. muscaria* is that cultural anthropologists have neglected to ask the right questions.

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European peoples, for example the habit of leaving articles of clothing in church after a prayer service or burning or bathing an image of the affected part.

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