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# INDEX

# TRUFFLES IN ANCIENT GREECE AND ROME

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In the 1470s Bartholomeo Sacchi, better known as Platina, published his dietetic treatise De obsoniis ac de honesta voluptate ac valetudine. The information he gives of truffles (*tubera*; 9,348) goes, for the most part, back to Pliny's Natural History. There are a couple of new details: for instance, the practice of using pigs (*scrophae*, specified as *Nursinae* 'of Norcia') to locate these hypogeal fungi is mentioned. Another interesting addition is the description of truffles as aphrodisiacs: *Alit hic cibus ..... ac venerem ciet. Hinc est quod crebro utantur venereae delicatorum ac lautorum mensae, quo in venerem promptiores sint.* The same information is given by Andrea Cesalpino the botanist (1583) in De plantis (16,38): *vim veneris adaugent.*[1] In the 19th century, when craving for truffles was at its height, Anthelme Brillant-Savarin gave this question serious thought in his Physiologie du gout (1847) and concluded that, although not aphrodisiacs as such, these "diamants de la cuisine" could indeed help to create an erotically receptive atmosphere.[2]

Apart from the etymology suggested by W. Winter for ὕδνον ("food for swine"),[3] I have found no reference either to pigs or to the alleged aphrodisiac properties of truffles in any ancient source. The information in general is minimal. We know hardly anything about truffles

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[1] Cesalpino (called by Linné "primus verus systematicus") also mentions Norcia as the producer of the best truffles (*optima habentur ex Nursinis montibus*), without, however, any reference to pigs.

[2] "La truffe n'est point un aphrodisiaque positif; mais elle peut, en certain occasions, rendre les femmes plus tendres et les hommes plus aimables" (6,44).

[3] "Two Greek names for the truffle", AJPh 72 (1951) 66 sqq. He also explains γεράνειον, perhaps another name for the truffle (Theophr. fr. 167 = Athen. 2,62a; see below) as 'plant of the pig'; cf. χοιρόψωμα ('pig-food'), name of the truffle in Crete (T. von Heldreich, Die Nutzpflanzen Griechenlands [1862], 2). R. Strömberg (Griechische Pflanzennamen [1940] 79) explains ὕδνον as 'something produced by rain' (from ὕω 'rain').

in the ancient world before they reached the culinary circles of imperial Rome and won a place among luxury foodstuffs.[4] Some evidence of their use in the earlier centuries has been preserved in Athenaeus' Deipnosophistae. We learn that Diocles, a physician from Carystus (4th cent. BC), included truffles and mushrooms in his list of edible wild plants (Athen. 2,61c), and in the next century another physician, Diphilus from Siphnus, commented on their alimentary value (Athen. 2,62c); Lynceus, Theophrastus' pupil, mentioned them as products of the earth. Theophrastus himself had more to say about truffles than about mushrooms, especially in a long passage quoted by Athenaeus, which does not appear in the transmitted text of his Enquiry into plants (frg. 167 Wimmer = Athen. 2,62b).[5] Athenaeus also quotes a passage from Matro the satirist (4th cent. BC), who called oysters "truffles of the Nereid Thetis" (frg. 1 Brandt = Athen. 2,62c).

In the 1st century AD truffles were discussed by Pliny the Elder (nat. 19,33-37), Dioscurides the physician, and Plutarch. Pliny was apparently more interested in the nature and origin of truffles than in their alimentary or any other value. Dioscurides said briefly that they were edible both raw and boiled (mat. med. 2,145 ἐδώδιμος δέ ἐστιν ὠμή τε καὶ ἑφθὴ ἐσθιομένη). In the following century the physician Galen, who disapproved of mushroom-eating,[6] found truffles harmless, though ἄποια, i.e. without any quality of their own. Probably he expected them, like mushrooms, to be well boiled in water, although he does not expressly say so. This could explain his opinion that truffles were watery to the taste (ὑδατώδη κατὰ τὴν γεῦσιν, suitable, among other tasteless foodstuffs, to be served with seasonings (πρὸς ὑποδοχὴν ἀρτυμάτων; alim. fac. 2,66).

According to the Hippocratic pathological doctrine based on humours (χυμοί), into which theories based on the four primary opposites (hot, cold, dry and wet) and on the four Empedoclean elements (earth, water, air and fire) were merged, all human diseases were caused by bile

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4 On truffles in the ancient world, cf. A. Steier, "Pilze", RE XX.2 (1950), 1381-1383; J. André, L'alimentation et la cuisine à Rome (1961) 45-46, 49; G. Maggiulli, Nomenclatura micologica latina (1977) 131-140. They are mentioned briefly in A. Dalby's Siren feasts: a history of food and gastronomy in Greece (1996).

5 Cf. R.W. Sharples & D.W. Minter, "Theophrastus on fungi: inaccurate citations in Athenaeus", JHS 103 (1983) 154 sqq.; O. Regenbogen, "Theophrastos", RE Suppl. VII [1940] 1443.

6 Cf. A. Helttula, "Mushrooms in ancient Greece and Rome", OpuscIRF 4 (1989), 26 sq.

(χολή) and phlegm (φλέγμα; aff. 1, p. 208 Littré 6). Apart from the obvious risk caused by the poisonous species, mushrooms in general were considered unwholesome because they were believed to increase the amount of phlegm in the body. In the early 1st century AD Celsus, who remarked of foodstuffs that *aliae res boni suci sunt, aliae mali, quas εὐχύλους vel κακοχύλους Graeci vocant* (2,19), did not mention mushrooms or truffles. By Pliny's and Dioscurides' time certain mushrooms, *boleti* and *suilli*, had won their place at fashionable Roman dinner parties and probably also in dietetic discussions.[7] Later, Galen presented mushrooms as the worst kind of nourishment (ἔδεσμα χείριστον; puer. epil. 368) since they, being φλεγματώδεις, cold and wet, were κακόχυμοι when eaten in abundance (alim. fac. 2,67,1).[8]

It seems that truffles were considered less harmful than mushrooms, especially if they grew in dry and sandy soil and therefore did not share the injurious effects of the mushrooms, as Galen says (vict. att. 74); the truffle was παχύχυμον, but not κακόχυμον[9] (bon. suc. 4,16). Diphilus, the physician from Siphnus (3rd cent. BC), had said expressly that truffles were εὔχυλα (i.e. *boni suci*), παραλεαντικά (lenitive) and διαχωρητικά (laxative), though not easy to digest (δύσπεπτα), and yet some of them could cause suffocation in the same way that mushrooms did (Athen. 2,62c).[10]

Similar views were expressed in the 6th century AD by Anthimus, King Theoderic's dietitian (ch. 38): *Omne genus boleti*[11] *graves sunt et indigesti, mussiriones*[12] *vero et tuferas*[13] *meliores ab aliis boletis sunt.*

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[7] See Helttula, 20 sqq. The *boletus verus*, the most appreciated mushroom in the ancient world, was *Amanita caesarea*, Caesar's agaric; the (*fungi*) *suilli* were ceps, Italian 'porcini' (cf. Maggiulli, 45 sqq. and 73; J. André, Les noms de plantes dans la Rome antique [1985], 37 and 252; Helttula, 32 and 37).

[8] Galen's negative opinions of mushrooms are also expressed in simpl. med. 7,12,25; bon. suc. 4,15; vict. att. 72.

[9] I.e. *grossi suci*, but not *mali suci*; a question of degree?

[10] On fungal poisonings, see Helttula, 24.

[11] In later Latin *boletus* became the generic term for 'mushroom', as proved by Anthimus, glosses (e.g. Gloss. III 563,60 *fungus i. omnis boletus*) and, ultimately, by Romance languages (Old French *bolei*, Catalan *bolet*, Rumanian *burete*).

[12] From *mussirio* derives the French *mousseron*, which has given the English *mushroom.*

[13] Anthimus' word for truffles is a new plural formed on the collective *tufera* (from the dialectal *tufer*); cf. Gloss. II 462, 3 ὕδνα *tubera, singularia non habet. Tufera* is found in Glosses (e.g. III 566). Cf. C. Battisti & G. Alessio, Dizionario etimologico italiano, 3725

Gourmands seldom pay attention to dietitians' opinions. In imperial Rome, both mushrooms and truffles appear as luxury food among exotic delicacies, oysters, rare fruits, birds and fishes. Truffles are not yet mentioned by Seneca, who had a decidedly negative opinion of the *boleti* — he invented a special word, *boletatio*, to describe the habit of devouring them (epist. 77,18). In Martial's poems, too, truffles have a minor rôle compared with mushrooms; in 13,50 they are given a secondary place after the *boleti*: *Rumpimus altricem tenero quae vertice terram tubera, boletis poma secunda sumus*. Juvenal mentions truffles together with *boleti* among the dishes prepared by a pair of gourmands, father and son (14,6): *Nec melius de se cuiquam sperare propinquo concedet iuvenis, qui radere tubera terrae, boletum condire et eodem iure natantis mergere ficedulas didicit nebulone parente et cana monstrante gula.* Truffles from Africa were the favourite dish of a certain Alledius, who was ready to renounce even African corn to have them (Iuv. 5,118): *Tibi habe frumentum, Alledius inquit, o Libye, disiunge boves, dum tubera mittas.*

In Greece, at a dinner party which took place in Elis, giant truffles (ὕδνα παμμεγέθη) were served and duly admired by the guests (Plutarch, quaest. conv. 4,2,1, 664b).

It is interesting to notice that truffles, together with mushrooms, kept their place as appreciated presents and also remained symbols of luxury. In a letter from the year 380,[14] Ambrosius thanks Bishop Felix for a *suave munus* he had received from him: exceptionally large truffles (*tubera ... mirae magnitudinis*) in such quantities that he could in turn give some of them to his friends. Augustinus, criticizing the motives of the Manichaeans for abstaining from eating meat and drinking wine, paints a picture of the vegetarian and teetotal meal of a wealthy Manichaean, in which both *boleti* and *tubera* were included, in sharp contrast to a poor man's frugal daily diet of simple vegetables, lard and unmixed wine (mor. Manich. 2,30).[15]

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s.v. *tartufo* and 3920 s.v. *truffa*.

14 Epist. 43,1 (ed. M. Zelzer [1990], CSEL 82). Ambrosius then plays with the different connotations of the word *tuber*: *Et cave posthac, ne maiora invenias doloris tubera ...*

15 A little later (2,51), he returns to the subject of *piperata tubera*. We cannot exclude a literary reminiscence: it is quite possible that Augustinus' selecting mushrooms and truffles in particular to emphasize his moral resentment was influenced by his readings in earlier Latin literature.

The Emperor Diocletian included truffles (*territubera*)[16] among the foodstuffs of which the price was controlled (edict. Diocl. 6,94). It is worth noticing that their price was nothing comparable to what we have to pay now: 16 *denarii* per pound, the same as the best quality of liver (4,6 *ficati optimi*), salt pork (4,7 *laridi optimi*) or Lucanian-type sausages (4,15 *Lucanicarum*), and twice as much as beef (4,2 *carnis bubulae*). This explains the liberal use of truffles as a separate dish, not in minute quantities to flavour other dishes, as they are generally used today.[17]

Truffles were naturally known to Apicius, who gives six recipes for them (7,16). I presume that the truffles are always meant to be boiled, although this is expressly stated only in Nos. 1, 2 and 5.[18] They are served with a sauce based on oil, *liquamen* and wine, sometimes *caroenum* or vinegar, flavoured with pepper, honey, and — in four of the recipes — with herbs (lovage, coriander, rue, mint, cumin, *silphium*, celery). In No. 5 they are boiled together with leeks. The sauce in Nos. 1 and 2 (made without herbs) is brought to boil, then thickened with flour.

The first two recipes are the most complete and give instructions for the preliminary preparation of the truffles: the skin was scraped off (this is expressly mentioned only in recipe No. 1), then the truffles were boiled and sprinkled with salt, fastened on a skewer and roasted lightly (No. 1: *Tubera radis, elixas, sale aspergis et surculo infiges. Subassas* ...). Then a sauce was mixed of oil, *liquamen*, *caroenum*, wine, pepper and honey, brought to the boil and thickened (*mittes in caccabum oleum, liquamen, caroenum, vinum, piper et mel. Cum ferbuerit, amulo obligas*).

The recipe No. 2 is basicly similar, except that before pouring the sauce on the truffles holes are pricked in them to make them better absorb

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16 *Territuberum* (from *terrae tuberum*) is the conjecture of W. Heraeus (Kleine Schriften [1937] 5); the existing fragments, both from Caria, read *terracuberum* (frg. IV, Mylasa) and *terriberum* (Stratonikeia). Cf. Petron. 58,4 *terrae tuber* (contemptuously of a human being), Iuv. 14,7 *tubera terrae*, and Gloss. II 202,47 *tubera terrae* ὕδνα; III 315,20 ὕδνα *terrae tubera*).

17 Cf. the remarks made by L. Friedländer (Sittengeschichte Roms III [1910$^2$], 67) on the enormous growth in the popularity of these "black diamonds" in Europe in the 19th century.

18 In whichever way the truffles were served, the skin had first to be removed. The young gourmand criticized by Juvenal is learning to do this (14,7 *radere tubera terrae*). On the necessity of boiling the mushrooms, cf. Helttula, 22 and 27. Galen wanted even the βωλῖται, which he considered the safest kind, to be well boiled in water — and then condemned them as tasteless food (alim. fac. 2,67,1).

the liquid (*cum ferbuerit, amulo obligas et tubera compunges ut combibant illud*). As an alternative, the truffles (probably after being boiled) could be wrapped in omentum of pork and then roasted (*Si volueris, eadem tubera omento porcino involves et assabis et sic inferes*).

In recipe No. 3, a *condimentum* based on wine and *liquamen* (=*garum*) is prepared. The other ingredients are pepper, lovage, coriander, rue, honey, and oil; the sauce is served hot. In No. 4, mint is substituted for lovage and coriander. In No. 5, the truffles are first boiled with leeks, then seasoned with salt, pepper, coriander, *merum*, and oil. In No. 6, the herbs used for the sauce are cumin, *silphium*, mint, celery and rue.[19]

Although Platina's information on truffles is mostly gathered from Pliny, his serving suggestion is obviously from his own time. According to his recipe, the truffles were washed in wine, cooked in hot ashes, sprinkled with salt and pepper, and eaten hot:*Vino lota sub cinere calido coquuntur. Cocta et munda saleque item ac pipere aspersa calida adhuc convivis post esum carnium apponi debent* (9,348). We see that the truffles had found their particular place in the menu: they were served after the meat course.

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Aristotle and Theophrastus, who were the first to treat animals and plants as entities, used functional criteria to define the relations between the parts of which these entities were formed. Theophrastus said (hist. plant. 1,6,9) that it is not right to call all that is underground 'root': δυνάμει γὰρ δεῖ φυσικῇ διαιρεῖν καὶ οὐ τόπῳ; one has to judge by natural function, not by position.[20]

According to Theophrastus, the classification of plants should be attempted through considering "their parts, their qualities, the ways in which their life originates, and the course which it follows in each case" (κατά τε τὰ μέρη καὶ τὰ πάθη καὶ τὰς γενέσεις καὶ τοὺς βίους; hist. plant.

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19 Truffles could also be preserved — *diu*, says Apicius (1,27) — with alternate levels of dry sawdust, in a jar closed tightly and stored in a cool place. J. André (ed. 1974, comm. p. 140) expresses his doubts about this method.

20 According to Aristotle the root of a plant was analogous to the mouth of an animal, for both take in food (de anima 2,1, 412a): αἱ δὲ ῥίζαι τῷ στόματι ἀνάλογον, ἄμφω γὰρ ἕλκει τὴν τροφήν. Cf. also 2,4, 415b28 (the root compared to the head of an animal).

1,1,1).[21] The most difficult and complex problem for him is to determine what a part (μέρος) of a plant really is, while "the differences in the way in which their life originates, in their qualities and in their life history are comparatively easy to observe and simpler".

In trying to determine what the essential parts are, Theophrastus observes that some, e.g. leaves and fruit, do not appear in all plants (hist. plant. 1,1,6). He defines root, stem, branch and twig (ῥίζα, καυλὸς, ἀκρεμὼν, κλάδος) as "the primary and more important parts, which are also common to most" (1,1,9). He has to admit, however, that they are not common to all (1,1,11): "For not all plants have root, stem, branch, twig, leaf, flower or fruit, or again bark, core, fibres or veins; for instance, fungi and truffles (μύκης, ὕδνον)." According to Theophrastus, therefore, mushrooms and truffles are in fact plants, but of a peculiar kind, in which some typical characteristics of the plants are absent. The absence of root (ῥίζα) in mushrooms and truffles and the like is referred to again in hist. plant. 1,6,5.[22]

Athenaeus also quotes the botanist Phaenias, Theophrastus' contemporary, who speaks of plants that do not produce flowers or seeds (τὰ δὲ οὐδὲ φύει τὴν ἀνθήλην οὐδὲ τῆς σπερματικῆς ἴχνος κορυνήσεως οὐδὲ σπερματώσεως) and mentions mushrooms and truffles among them (frg. 25 Müller = p. 19 frg. 37 Wehrli = Athen. 2,61f).[23] In the short treatise on plants by Nicolaus Damascenus, based on Aristoteles and Theophrastus and known only from later translations, mushrooms and truffles are mentioned as plants which have neither branches nor leaves (*et plantae non habentes ramos nec folia sunt, ut fungi et tuberes*; 1,4,83)).[24]

It seems clear, therefore, that the Greek botanists considered mushrooms and truffles plants, although of a peculiar kind.

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21 Translation by A. Hort (1916; Loeb CL).

22 Athen. 2,61f seems to refer to hist. plant. 1,6,5, although the quotation is not exact: Λειόφλοια ("smooth-skinned") ..... καθάπερ ὕδνον, μύκης, πέζις, γεράνειον. Cf. Sharples & Minter, 154 sqq.

23 ... οἷον μύκης, ὕδνον, πτέρις, ἕλιξ, "mushroom, truffle, fern, and helix-ivy" (tr. by C.B. Gulick, 1927; Loeb CL).

24 The translation is that of Alfred of Sareshel (ca. AD 1200), from which the existing Greek version was made in ca. AD 1300 (καὶ πάλιν εἰσὶ φυτὰ μὴ ἔχοντα κλάδους μηδὲ φύλλα, ὡς οἱ μύκητες καὶ τὰ ὅμοια). The work of Nicolaus, as well as the supposed de plantis of Aristotle, is lost. Cf. Nicolaus Damascenus de plantis: five translations, ed. H.J. Drossaart Lulofs & E.L.J. Poortman (1989), 1 sqq. and passim.

Pliny, who was not a theorist, discusses mushrooms among usable plants, without entering into the theoretical problems of morphology or taxonomy; he does not, for instance, even mention the absence of roots in mushrooms.[25] Apparently he found the truffles, which seemed to be part of the earth in which they grew, much more puzzling. He discusses them among *miracula rerum* (nat. 19,33), finding it the greatest of miracles that something could spring up and live without any root (*sine ulla radice*). On the other hand, he seems to doubt whether truffles were living organisms at all (nat. 19,34 *crescant anne vitium id terrae ... ea protinus globetur magnitudine qua futurum est, et vivant necne, non facile arbitror intellegi posse*).

The nature of truffles was certainly more difficult to understand than that of mushrooms, because not only were they rootless, but completely enveloped by the earth, without anything even vaguely comparable to a stem or any other part of normal plants arising above the ground. It is not surprising, therefore, that truffles should be compared to roots of plants rather than to plants as such.

We find, in fact, two different opinions regarding this question. The botanists — Theophrastus and Phaenias, followed by Pliny — agree in considering truffles plants without roots. The truffle is not a root just because it is underground: the criterion for definition should be the natural function, not the position, as Theophrastus said.

On the other hand, such considerations of botanical theory were not relevant in medicine and pharmacology. The physicians Dioscurides and Galen classify truffles as roots (Diosc. mat. med. 2,145: ὕδνον ῥίζα ἐστὶ περιφερής, ἄφυλλος, ἄκαυλος; Gal. alim. fac. 2,66: ἐν ῥίζαις ἢ βολβοῖς ἀριθμεῖν ἀναγκαῖόν ἐστι καὶ ταύτα).[26]

The question of the origin of mushrooms and truffles presented no real difficulty to ancient botanists. According to Theophrastus (hist. plant. 2,1,1-2), plants in general could originate in various ways, either spontaneously (αὐτόμαται), from seed, or from roots, branches, trunks, or small pieces of wood. Spontaneous growth is considered the first and the most natural. He concludes that all plants originate in one or other of

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25 On Pliny's opinions of mushrooms, see Helttula, 30 sqq.

26 Galen remarks, though, that truffles have no clearly definable nature of their own (μηδεμίαν ἔχοντα σαφῆ ποιότητα). Cf. also Plut. quaest. conv. 4,2,2, 664f: οὐ γὰρ ἔοικε φυτῷ τὸ ὕδνον, the truffle resembles no plant.

these ways, and most of them in more than one way.

Mushrooms were believed to be born spontaneously either out of the soil, or of the fluid exuding from trees.[27] The origin of truffles was more difficult to explain. Their connection with trees is less obvious, and it is never suggested in the sources. The only reference to a connection between a truffle and another plant is the obscure passage quoted by Athenaeus (2,62d) from the lexicon of Pamphilus (1st cent. AD), in which ὑδνόφυλλον is explained as the grass that grows over truffles (τὴν φυομένην τῶν ὕδνων ὕπερθε πόαν) and helps in detecting them. This may be a reference to a plant with which a truffle lived in symbiosis.[28] Athenaeus' own view was that truffles grew in the ground spontaneously (αὐτόματα; 2,62a).

What puzzled Pliny was the relationship of truffles with the surrounding earth, to which they were not fastened by any kind of fibres or filaments (nat. 19,33 *undique terra circumdata nullisque fibris nixa aut saltem capillamentis*) and in which they grew without causing any protuberance or cracks visible on the ground (*nec utique extuberante loco in quo gignuntur aut rimas sentiente*). Yet they did not stick to the earth, but were enclosed in a skin, so that one could not say absolutely that they consisted of earth (*ut plane nec terram esse possimus dicere neque aliud quam terrae callum*). This seems, however, to be what Pliny actually suspects: he calls the truffles *vitium terrae* (19,34) and lumps of earthy substance balled together: *manifestum erit terrae naturam in se globari* (19,35). To prove this he tells the story about Larcius Licinius who hurt his teeth biting into a denarius grown inside a truffle.[29] Pliny concludes that truffles belong to those things which spring up spontaneously and cannot be grown from seed (*quae nascantur et seri non possint*).

The direct connection between rain and the appearance of mushrooms had been noticed (*Imbribus proveniunt omnia haec*; Plin. nat.

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[27] *Origo prima causaque* [i.e. of the *boleti*] *e limo et acescente suco madentis terrae aut radicis fere glandiferae* (Plin. nat. 22,94); *Fungorum lentior natura et numerosa genera, sed origo non nisi ex pituita arborum* (nat. 22,96). Cf. Helttula, 30 sqq. and 34.

[28] E.g. a species of the *Cistus* family, symbiotic with *Terfezia leonis* Tulasne (see below). On the other hand, it might also be a reference to the thinning of vegetation caused by truffles.

[29] Pliny had perhaps heard this story in Spain from Larcius Licinius (PIR$^2$ V 95) himself, *legatus pro praetore ad ius dicendum* while Pliny was there. We know from Pliny the Younger that Larcius Licinius had wanted to buy his uncle's note-books (epist. 3,5,17).

22,100), and thunderstorms were considered the best in this respect. The necessity of rain was especially emphasized in the case of truffles which were known to grow in dry places (nat. 19,34 *siccis haec fere et sabulosis locis frutectosisque nascuntur*). They belonged to the vernal delicacies appearing after thunderstorms, as testified by Juvenal (5,116 *Post hunc tradentur tubera, si ver tunc erit et facient optata tonitrua cenas maiores*). In nat. 19,37 Pliny, following closely the text attributed by Athenaeus (2,62b) to Theophrastus (frg. 167 Wimmer), says that truffles spring up after autumnal rains and thunderstorms (*imbres autumnales ac tonitrua crebra*; ὕδατα μετοπωρινὰ καὶ βρονταὶ ... σκληραί), especially after thunderstorms, and are at their best in spring (*tenerrima autem verno esse*; τὴν δὲ χρείαν καὶ τὴν ἀκμὴν ἔχει τοῦ ἦρος).[30]

According to a popular belief, it seems, truffles were actually created by thunder.[31] This idea was ridiculed by a guest at the dinner party described by Plutarch where giant truffles (ὕδνα παμμεγέθη) were served (quaest. conv. 4,2,1,664b). Several other guests, however, held that thunderstorms do in fact bring the truffles to light: the ground splits open when struck by lightning, and the gatherers are then guided by the cracks (ἦσαν οὖν οἱ φάσκοντες ὑπὸ βροντῆς τὴν γῆν διίστασθαι καθάρεν ἥλῳ τῷ ἀέρι χρωμένης, εἶτα ταῖς ῥωγμαῖς τεκμαίρεσθαι τοὺς τὰ ὕδνα μετιόντας). This fact would explain the origin of the popular belief, they argued, but not justify it: analogously, rain did bring out snails, but certainly did not create them.[32]

But Agemachus, the host, reminded his guests of other miraculous effects of thunder, and of the farmers' belief that showers accompanied by lightning enrich the soil (τὰ δ' ἀστραπαῖα τῶν ὑδάτων εὐαλδῆ καλοῦσιν οἱ γεωργοὶ καὶ νομίζουσιν; 4,2,1, 664d). The truffle resembled no plant, and yet it did not come into being without water. It appeared without roots or sprouts and unattached because it developed in a way peculiar to itself in soil that was somehow modified and transformed (τῷ καθ' ἑαυτὸ τὴν σύστασιν ἐκ τῆς γῆς ἔχειν παθούσης τι καὶ μεταβαλούσης; 664f).

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30 Cf. also Diosc. mat. med. 2,145: ἔαρος ὀρυττομένη.

31 F. Wimmer suggested κεραύνιον (from κεραυνός 'thunderbolt') for the MSS reading κράνιον in hist. plant. 1,6,5, where rootless plants are enumerated. The conjecture was rejected by W. Winter (see n. 3 above). Cf. also Sharples & Minter, 155.

32 Perhaps a popular belief too, not only an analogy suited for the occasion; cf. schol. ad Iuv. 5,116 p. 73,14 Wessner: *quia tubera tonitruis dicuntur nasci ut cocleae.*

Frg. 167 of Theophrastus also mentions the theory of the seminal origin of truffles (Οὐ μὴν ἀλλ' ἔνιοί γε ὡς σπερματικῆς οὔσης τῆς ἀρχῆς ὑπολαμβάνουσιν), justified by the observation that on the shore of Mytilene truffles grew after heavy rains had, apparently, brought down their seeds from the mountains: οὔ ... πρότερον εἶναι πρὶν ἢ γενομένης ἐπομβρίας τὸ σπέρμα κατενεχθῆ (Plin. nat. 19,37: *nisi exundatione fluminum invecto semine*). This theory is based on an accurate observation of a phenomenon (i.e. rains flooding rivers) with its results (appearance of truffles), to which a wrong explanation is given. On the other hand, Phaenias (Athen. 2,61f) says explicitly that mushrooms and truffles do not produce seeds, and in another passage (nat. 19,35) Pliny agrees (*quod certum est, ex his erunt quae nascantur et seri non possint*).

We have a fair amount of information on the provenance of the best truffles — on the Périgords and Norcias of the ancient world.

Frg. 167 of Theophrastus begins with a reference to τὸ ὕδνον καὶ ὃ καλοῦσι τινες γεράνειον καὶ εἴ τι ἄλλο ὑπόγειον.[33] After which, some underground plants growing in different countries and known by different names are mentioned: Ἡ τῶν ἐγγεοτόκων τούτων γένεσις οἷον τοῦ τε ὕδνου καὶ τοῦ φυομένου περὶ Κυρήνην ὃ καλοῦσι μίσυ. ... Καὶ τὸ ἐν τῇ Θράκῃ δὲ γενόμενον ἴτον.[34] These three names (γεράνειον, μίσυ, ἴτον) are also given in connection with the truffle by Pliny in nat. 19,36: *Simile* (sc. *tuberis*) *est et quod in Cyrenaica provincia vocant misy, praecipuum suavitate odoris ac saporis ... et quod in Threcia iton et quod in Graecia geranion*.[35] It seems that different kinds of truffles are meant — or, perhaps, names used for the truffle in different parts of the world. In nat. 19,34 Pliny had already mentioned the African truffles as the best (*laudatissima Africae*).

In Greece, the places for truffles were Mytilene and the district of Elis (Plut. quaest. conv. 4,2,1, 664b), in Thrace the town of Alopeconnesos in Chersonnesos, and in Asia Minor the region around Lampsacus in Abarnis on the Hellespont (Theophr. frg. 167 = Athen. 2,62b-c; Plin. nat.

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33 Cf. Theophr. hist. plant. 1,6,9 τὸ ὕδνον δὲ καὶ ὃ καλοῦσι τινες ἀσχίον καὶ τὸ οὔιγγον καὶ εἴ τι ἄλλο ὑπόγειον ἐστιν. Here Theophrastus enumerates underground plants, or parts of plants, which are not to be considered roots. Cf. Sharples & Minter, 154 sq.

34 ἴτον CB, ἴστον E, οἰτόν Kaibel. Cf. Sharples & Minter, 155.

35 *geranion* Q, *ceranion* dT; other MSS have more corrupt forms. The list of contents in Book 1 also has *geranion*.

19,37).[36]

Theophrastus says (frg. 167) that truffles grow mostly on riverbanks, and in general where the soil is sandy (γίνεται δὲ ἔν τε τοῖς αἰγιαλοῖς μάλιστα καὶ ὅπου χώρα ὕπαμμος); Athenaeus agrees (2,62a): μάλιστα περὶ τοὺς ἀμμώδεις τόπους. Pliny's information is basically the same. He mentions dry, sandy places covered with shrubs: *siccis ... et sabulosis locis frutectosisque nascuntur* (nat. 19,34). Galen gives the dryness of soil as a criterion for distinguishing the best kind of truffles (vict. atten. 74).

The information on the habitat given by Theophrastus and Pliny fits truffles in general and does not help to suggest any particular species.[37] All the varieties of truffles favour loose, pebbly or sandy soil which allows them enough humidity without, however, being continuously wet. Therefore they grow on slopes rather than level land, often along riverbanks, in areas which are seasonally flooded. Since they need the sun to warm the soil, they grow on the fringes of woods, in clearings and copses — Pliny's *frutectosis* [*locis*] — rather than in the shadow of the woods themselves.

About the season of truffles we learn that they spring up after autumn rains and are ready for use and at their best in spring. This succinct statement probably contains reference to different species which mature at different times of the year. To autumnal and winter truffles belong the two species which are nowadays the most highly appreciated ones, the "white truffle" (*Tuber magnatum* Pico), which has its best season in Italy from October to November, and the "black truffle" (*T. melanosporum* Vittadini), whose season extends from the middle of November till March; also the less valued *T. brumale* Vittadini and *T. mesentericum* Vittadini. The vernal *T. albidum* Pico can also be found in autumn. The season of the *T. aestivum* Vittadini begins in May.

The most important of the vernal species in the ancient world was probably the truffle of the desert, *Terfezia leonis* Tulasne, the African *misy* praised by Pliny (nat. 19,34-36) and Iuvenal (5,116-119), imported

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36 On the other hand, Hegesander from Delphi says (frg. 35 Müller = Athen. 2,62d) that on the Hellespont no truffles are found.

37 On the species, cf. Steier, 1382; André, commentary on Pliny's Book 19 (1964), p. 109 sq.; Maggiulli, 138 sqq.

to Italy from Libya.[38]

The few references to the colour are helpful, though not conclusive, in the identification of the species known and used. The yellowish or lightish brown colour (ὑπόξανθος; Diosc. mat. med. 2,145) fits the *Tuber magnatum*. The colour of its skin varies from yellow to hazel, that of the flesh from hazel to dark brown. The adjective also fits the *Terfezia leonis* (light brown with whitish flesh).

In nat. 19,34 (*distinguntur et colore, rufo nigroque et intus candido*) Pliny may have in mind three different kinds of truffles, two distinguishable by the colour of their skin, the third by that of its flesh — this seems to be the general interpretation — or only two, the white flesh being another characteristic of the aforementioned one (or ones). Since *rufus* covers a wide range of shades of red or tawny, the first kind could include the *Tuber magnatum* (ὑπόξανθος in Dioscurides' description) and *T. rufum* Pico suggested by André. *Niger* could refer to *T. melanosporum* (black-skinned with brown or black-violaceous flesh) or *T. brumale* (brown-skinned with flesh that is greyish-black; thus André and Maggiulli).

The reference to the white flesh (*intus candidum*) is difficult to explain. In contrast to *albus*, which denotes a dull, natural colour, *candidus* is a pure, brilliant white.[39] This does not fit any of the truffles, not even *T. magnatum*, the species traditionally called "the white truffle".[40] It is quite possible that Pliny meant the characteristic white veins clearly visible in the darker flesh of many truffles, as Maggiulli suggested (139 n. 60). In this case the white element in the flesh would be a characteristic shared by many different, both light- and dark-skinned species.

It is most probable that *T. magnatum* was one of the species known

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38 *Terfezia* derives from *tĕrfās* (plural), the Berber word for 'truffle' (Arabic *kam'a*); cf. G.S. Colin, "Étymologies Maġribines", Hespéris 6 (1926) 62.

39 Cf. Serv. ad Verg. georg. 3,82 *aliud est candidum esse, id est quantum nitenti luce perfusum, aliud album, quod pallori constat esse vicinum.* On the colour, cf. also Maggiulli, 67 sq. Cf. André, Étude sur les termes de couleur dans la langue latine (1949), 25 sqq. (on *albus* and *candidus*). Pliny uses the adjective *candidus* to describe one of the edible mushrooms he knew, but not by name (*candidi, velut apice flaminis insignibus pediculis*; nat. 22,96), identified by me as *Coprinus comatus* (1989, 37), and the *agaricum*, the famous polyporus imported for its medicinal value (*nascitur arboribus circa Bosporum colore candido*; nat. 16,33).

40 *Tuber magnatum* is, however, the species suggested by André 1964, 109 and Maggiulli 1977, 138 sq.

in ancient Greece and Rome. Along with the *Terfezia leonis*, it may have been the species described by Theophrastus as ὑπόξανθος and by Pliny as *rufus* in colour. Its normal size extends from that of a small walnut to a big orange, but in exceptional cases it may reach the weight of 600-700 grams; cf. Plin. nat. 19,34 *excedunt saepe magnitudinem mali cotonei, etiam librali pondere*, Plut. quaest. conv. 4,2,1 ὕδνα παμμεγέθη and Ambros. epist. 43,1 *tubera ... mirae magnitudinis.*

Pliny probably did not have much first-hand knowledge of the various kinds of truffles. In two cases I suspect that he has misunderstood the description given by his source.

In nat. 19,34 Pliny distinguishes two kinds of truffle: in one of them something is described as *harenosa dentibus inimica*, while in the other it is *sincera*. If this something really was harmful to teeth, the adjective *harenosa* cannot refer to a sandlike structure, as Maggiulli thinks (139), but to real sand or other hard particles which could injure the teeth. Perhaps Pliny found in his source the adjective 'sand-like' referring to the rough, verrucous skin of certain kinds of truffles (*T. melanosporum* and other dark-skinned species, different from the smooth-skinned *T. magnatum* and *T. albidum*) and, influenced by stories like that of Larcius Licinius, thought that hard, sand-like particles were meant. *Dentibus inimica* would in this case be his own addition. The origin of the mistake could also have been a reference to the sandy soil favoured by truffles.[41]

With reference to the truffle in general and to the μίσυ of Cyrene in particular, Theophrastus says that it has a pleasant taste (ἡδὺ σφόδρα) and a smell resembling that of meat (τὴν ὀσμὴν ... κρεώδη; frg. 167 = Athen. 2,62a). Pliny (nat. 19,36) repeats the same information, but he has misunderstood the reference to meat: according Pliny, the *misy* is *praecipuum suavitate odoris ac saporis, sed carnosius.*[42]

Pliny the Elder was an authority who continued to be read, copied and believed for centuries. His mistakes, too, were copied and believed. Platina informs his readers that the truffles of Cyrenaica were considered *carnosiora*, while the Thracian ones were *suaviora*, and some truffles were

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41 Cf. the descriptions of mediaeval scientists: Avicenna Lat. 2,696 (*meliora eorum sunt arenosa, alba*) and Albertus Magnus veg. 6,455 (*meliores autem sunt arenosi albi*).

42 Cf. also André (ed. 1964), comm. ad. loc. p. 110. *Carnosus* must refer to the consistency, not to the smell. It is so used by Pliny to describe fruit (nat. 15,96), olives (15,15), leaves (16,19), etc.

*harenosa dentibus inimica.* It is interesting to notice that Galen's opinion of the truffles' lack of flavour has also had a long history. The remark is found in Avicenna (the truffles were *privata sapore*; 2,696)[43] and passed from him to Albertus Magnus (*sunt privati sapore omnes tuberes*; veg. 6,255). In this, says Albertus Magnus, truffles differ from mushrooms.

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43 The Latin version of Avicenna's (980-1037) Canon medicinae was made by Gerardus Cremonensis (1114-1187).