THEOPHRASTUS of Eresus in Lesbos, born about 370 BC, is the author of the most important botanical works that have survived from classical antiquity. He was in turn the student, collaborator, and successor of Aristotle. Like his predecessor he was interested in all aspects of human knowledge and experience, especially natural science. His writings on plants form a counterpart to Aristotle's zoological works.

In the Enquiry into Plants Theophrastus classifies and describes varieties—covering trees, plants of particular regions, shrubs, herbaceous plants, and cereals; in the last of the nine books he focuses on plant juices and medicinal properties of herbs. The Loeb edition is in two volumes; the second contains two additional treatises: On Odors and Weather Signs.

In De Causis Plantarum Theophrastus turns to plant physiology. Books One and Two are concerned with generation, sprouting, flowering and fruiting, and the effects of climate. In Books Three and Four Theophrastus studies cultivation and agricultural methods. In Books Five and Six he discusses plant breeding; diseases and other causes of death; and distinctive flavors and odors.

Theophrastus' celebrated Characters, of a quite different nature, is the earliest known character-writing and a striking reflection of contemporary life.
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PREFACE

This is, I believe, the first attempt at an English translation of the 'Enquiry into Plants.' That it should be found entirely satisfactory is not to be expected, since the translator is not, as he should be, a botanist; moreover, in the present state at least of the text, the Greek of Theophrastus is sometimes singularly elusive. I should never have undertaken such a responsibility without the encouragement of that veteran student of plant-lore the Rev. Canon Ellacombe, who first suggested that I should make the attempt and introduced me to the book. It is a great grief that he did not live to see the completion of the work which he set me. If I had thought it essential that a translator of Theophrastus should himself grapple with the difficulties of identifying the plants which he mentions, I must have declined a task which has otherwise proved quite onerous enough. However the kindness and the expert knowledge of Sir William Thiselton-Dyer came to my rescue; to him I not only owe gratitude for constant help throughout; the identifications in the Index of Plants are entirely his work, compared with which the compilation of the Index itself was
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but mechanical labour. And he has greatly increased my debt and the reader’s by reading the proofs of my translation and of the Index. This is perhaps the place to add a note on the translation of the plant-names in the text:—where possible, I have given an English equivalent, though I am conscious that such names as ‘Christ’s thorn,’ ‘Michaelmas daisy’ must read oddly in a translation of a work written 300 years before Christ; to print Linnean binary names would have been at least equally incongruous. Where an English name was not obvious, although the plant is British or known in British gardens, I have usually consulted Britten and Holland’s Dictionary of Plant-names. Where no English equivalent could be found, i.e. chiefly where the plant is not either British or familiar in this country, I have either transliterated the Greek name (as arakhidna) or given a literal rendering of it in inverted commas (as ‘foxbrush’ for ἀλωπέκουρος); but the derivation of Greek plant-names being often obscure, I have not used this device unless the meaning seemed to be beyond question. In some cases it has been necessary to preserve the Greek name and to give the English name after it in brackets. This seemed desirable wherever the author has apparently used more than one name for the same plant, the explanation doubtless being that he was drawing on different local authorities; thus κέρασος and λακύρη both probably represent ‘bird-cherry,’ the latter being the Macedonian name for the tree.
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Apart from this reason, in a few places (as 3.8.2; 3.10.3.) it seemed necessary to give both the Greek and the English name in order to bring out some particular point. On the other hand one Greek name often covers several plants, e.g. λωτός; in such cases I hope that a reference to the Index will make all clear. Inverted commas indicate that the rendering is a literal translation of the Greek word; the identification of the plant will be found in the Index. Thus φέλλωδρος is rendered 'cork-oak,' though 'holm-oak' would be the correct rendering,—cork-oak (quercus Suber) being what Theophrastus calls φελλός, which is accordingly rendered cork-oak without commas. As to the spelling of proper names, consistency without pedantry seems unattainable. One cannot write names such as Arcadia or Alexander otherwise than as they are commonly written; but I cannot bring myself to Latinise a Greek name if it can be helped, wherefore I have simply transliterated the less familiar names; the line drawn must of course be arbitrary.

The text printed is in the main that of Wimmer's second edition (see Introd. p. xiv). The textual notes are not intended as a complete apparatus criticus; to provide a satisfactory apparatus it would probably be necessary to collate the manuscripts afresh. I have had to be content with giving Wimmer's statements as to MS. authority; this I have done wherever any question of interpretation depended on the reading; but I have not thought it necessary to record mere
variations of spelling. Where the textual notes go beyond bare citation of the readings of the MSS., Ald., Gaza, and Pliny, it is usually because I have there departed from Wimmer's text. The references to Pliny will, I hope, be found fairly complete. I am indebted for most of them to Schneider, but I have verified these and all other references.

I venture to hope that this translation, with its references and Index of Plants, may assist some competent scholar-botanist to produce an edition worthy of the author.

Besides those already mentioned I have to thank also my friends Professor D'Arcy Thompson, C.B., Litt.D. of Dundee, Mr. A. W. Hill of Kew, Mr. E. A. Bowles for help of various kinds, and the Rev. F. W. Galpin for his learned exposition of a passage which otherwise would have been dark indeed to me—the description of the manufacture of the reed mouth-pieces of wood-wind instruments in Book IV. Sir John Sandys, Public Orator of Cambridge University, was good enough to give me valuable help in matters of bibliography.
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I.—Bibliography and Abbreviations used

A. Textual Authorities

Wimmer divides the authorities on which the text of the περὶ φυτῶν ἱστορία is based into three classes:—

First Class:


P2. Codex Parisiensis: at Paris. Contains considerable excerpts; evidently founded on a good MS.; considered by Wimmer second only in authority to U.

(Of other collections of excerpts may be mentioned one at Munich, called after Pletho.)

Second Class:

M (M1, M2). Codices Medicei: at Florence. Agree so closely that they may be regarded as a single MS.; considered by Wimmer much inferior to U, but of higher authority than Ald.

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mP. Margin of the above. A note in the MS. states that the marginal notes are not scholia, but variae lectiones aut emendationes.

V. Codex Vindobonensis: at Vienna. Contains the first five books and two chapters of the sixth; closely resembles M in style and readings.

Third Class:

Ald. Editio Aldina: the editio princeps, printed at Venice 1495–8. Believed by Wimmer to be founded on a single MS., and that an inferior one to those enumerated above, and also to that used by Gaza. Its readings seem often to show signs of a deliberate attempt to produce a smooth text: hence the value of this edition as witness to an independent MS. authority is much impaired.

(Bas. Editio Basiliensis: printed at Bâle, 1541. A careful copy of Ald., in which a number of printer’s errors are corrected and a few new ones introduced (Wimmer).

Cam. Editio Camotiana (or Aldina minor, altera): printed at Venice, 1552. Also copied from Ald., but less carefully corrected than Bas.; the editor Camotius, in a few passages,
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altered the text to accord with Gaza's version.)

G. The Latin version of Theodore Gaza,\(^1\) the Greek refugee: first printed at Treviso (Tarvisium) in 1483. A wonderful work for the time at which it appeared. Its present value is due to the fact that the translation was made from a different MS. to any now known. Unfortunately however this does not seem to have been a better text than that on which the Aldine edition was based. Moreover Gaza did not stick to his authority, but adopted freely Pliny's versions of Theophrastus, emending where he could not follow Pliny. There are several editions of Gaza's work: thus

G.Par.G.Bas. indicate respectively editions published at Paris in 1529 and at Bâle in 1534 and 1550. Wimmer has no doubt that the Tarvisian is the earliest edition, and he gives its readings, whereas Schneider often took those of G.Bas.

Vin.Vo.Cod.Cas. indicate readings which Schneider believed to have MS. authority, but which are really anonymous emendations from the margins of MSS. used by his predecessors, and all, in Wimmer's opinion

\(^1\) See Sandys, *History of Classical Scholarship*, ii. p. 62, etc.
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traceable to Gaza’s version. Schneider’s so-called Codex Casauboni he knew, according to Wimmer, only from Hofmann’s edition.

B. Editions

H. Editio Heinsii, printed at Leyden, 1613: founded on Cam. and very carelessly printed, repeating the misprints of that edition and adding many others. In the preface Daniel Heins \(^1\) pretends to have had access to a critical edition and to a Heidelberg MS.; this claim appears to be entirely fictitious. The book indeed contains what Wimmer calls a *farrago emendationum*; he remarks that ‘all the good things in it Heinsius owed to the wit of others, while all its faults and follies we owe to Heinsius.’ Schneider calls it *editio omnium pessima*.

Bod. Editio Bodaei (viz. of Joannes Bodaeus à Stapel), printed at Amsterdam, 1644. The text of Heinsius is closely followed; the margin contains a number of emendations taken from the margin of Bas. and from Scaliger, Robertus Constantinus, and Salmasius, with a few due to the editor himself. The commentary, according to Sir William Thiselton-Dyer, is ‘botanically monumental and fundamental.’

\(^1\) See Sandys, *op. cit.* p. 313 etc.
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St. Stackhouse, Oxford, 1813: a prettily printed edition with some illustrations: text founded on Ald. The editor seems to have been a fair botanist, but an indifferent scholar, though occasionally he hits on a certain emendation. The notes are short and generally of slight value. The book is however of interest, as being apparently the only work on the 'Enquiry' hitherto published in England.

Sch. J. G. Schneider (and Linck), Leipzig: vols. i.–iv. published in 1818, vol. v. in 1821; contains also the περὶ αἰτίων and the fragments, and a reprint of Gaza's version (corrected). The fifth, or supplementary, volume, written during the author's last illness, takes account of the Codex Urbinas, which, unfortunately for Schneider, did not become known till his edition was finished. It is remarkable in how many places he anticipated by acute emendation the readings of U. The fifth volume also gives an account of criticisms of the earlier volumes by the eminent Greek Adamantios Koraës¹ and Kurt Sprengel. This is a monumental edition, despite the verbosity of the notes, somewhat careless references and reproduction of the MSS. readings, and an imperfect comprehension of the compressed style of Theophrastus, which leads to a good deal of wild emendation or rewriting of the text. For the first time we find an attempt at

¹ See Sandys, op. cit. iii. pp. 361 foll.
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providing a critical text, founded not on the Aldine edition, but on comparison of the manuscripts then known; the Medicean and Viennese had been collated a few years before by J. Th. Schneider. We find also full use made of the ancient authors, Athenaeus, Plutarch, Pliny, Dioscorides, Nicander, Galen, etc., who quoted or adapted passages of Theophrastus, and copious references, often illuminating, to those who illustrate him, as Varro, Columella, Palladius, Aelian, the *Geoponica*.

Spr. Kurt Sprengel, Halle, 1822. This is not an edition of the text, but a copious commentary with German translation. Sprengel was a better botanist than scholar; Wimmer speaks disparagingly of his knowledge of Greek and of the translation. (See note prefixed to the Index of Plants.)

W Fr. Wimmer: (1) An edition with introduction, analysis, critical notes, and Sprengel's identifications of the plant-names; Breslau, 1842.

(2) A further revised text with new Latin translation, apparatus criticus, and full indices; the Index Plantarum gives the identifications of Sprengel and Fraas; Didot Library, Paris, n.d.

(3) A reprint of this text in Teubner's series, 1854.

These three books are an indispensable supplement to Schneider's great work. The notes in the edition of
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1842 are in the main critical, but the editor's remarks on the interpretation of thorny passages are often extremely acute, and always worth attention. The mass of material collected by Schneider is put into an accessible form. Wimmer is far more conservative in textual criticism than Schneider, and has a better appreciation of Theophrastus' elliptical and somewhat peculiar idiom, though some of his emendations appear to rest on little basis. A collation of the Paris MSS. (P and P₂) was made for Wimmer; for the readings of U and M he relied on Schneider, who, in his fifth volume, had compared U with Bodaeus' edition. A fresh collation of the rather exiguous manuscript authorities is perhaps required before anything like a definitive text can be provided. Wimmer's Latin translation is not very helpful, since it slurs the difficulties: the Didot edition, in which it appears, is disfigured with numerous misprints.

(Sandys' History of Classical Scholarship (ii. p. 380) mentions translations into Latin and Italian by Bandini; of this work I know nothing.)

C. Other Commentators

Scal. J. C. Scaliger: Commentarii et animadversiones on the περὶ φυτῶν ἱστορία posthumously published by his son Sylvius at Leyden, 1584. (He also wrote a commentary on the περὶ αἰτίῶν, which was edited by Robertus Constantinus and pub-
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lished at Geneva in 1566.) The most accurate and brilliant scholar who has contributed to the elucidation of Theophrastus.

R(Const. Robertus Constantinus (see above). Added notes of his own, many of them valuable, which are given with Scaliger's in Bodaeus' edition.

Salm. Salmasius (Claude de Saumaise). Made many happy corrections of Theophrastus' text in his Exercitationes Plinianae.

Palm. Jacobus Palmerius (Jacques de Paulmier). His Exercitationes in optimos auctores Graecos (Leyden, 1668) contain a certain number of acute emendations; Wimmer considers that he had a good understanding of Theophrastus' style.

Meurs. Johannes Meursius (Jan de Meurs). Author of some critical notes on Theophrastus published at Leyden in 1640; also of a book on Crete.


Mold. J. J. P. Moldenhauer. Author of Tentamen in Historiam plantarum Theophrasti, Hamburg, 1791. This book, which I have not been able to see and know only from Wimmer's citations, contains, according to him, very valuable notes on the extremely difficult Introduction to the 'Historia' (Book I. chaps. i.–ii.).
II.—Theophrastus' Life and Works

Such information as we possess concerning the life of Theophrastus comes mainly from Diogenes Laertius' *Lives of the Philosophers*, compiled at least four hundred years after Theophrastus' death; it is given therefore here for what it may be worth; there is no intrinsic improbability in most of what Diogenes records.

He was born in 370 B.C. at Eresos in Lesbos; at an early age he went to Athens and there became a pupil of Plato. It may be surmised that it was from him that he first learnt the importance of that principle of classification which runs through all his extant works, including even the brochure known as the 'Characters' (if it is rightly ascribed to him), and which is ordinarily considered as characteristic of the teaching of his second master Aristotle. But in Plato's own later speculations classification had a very important place, since it was by grouping things in their 'natural kinds' that, according to his later metaphysic, men were to arrive at an adumbration of the 'ideal forms' of which these kinds are the phenomenal counterpart, and which constitute the world of reality. Whether Theophrastus gathered the principle of classification from Plato or from his fellow-pupil Aristotle, it appears in his hands to have been for the first time systematically applied to the vegetable world. Throughout his botanical
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works the constant implied question is 'What is its difference?', 'What is its essential nature?', viz. 'What are the characteristic features in virtue of which a plant may be distinguished from other plants, and which make up its own 'nature' or essential character?'

Theophrastus appears to have been only Aristotle's junior by fifteen years. On Plato's death he became Aristotle's pupil, but, the difference in age not being very great, he and his second master appear to have been on practically equal terms. We are assured that Aristotle was deeply attached to his friend; while as earnest of an equally deep attachment on the other side Theophrastus took Aristotle's son under his particular care after his father's death. Aristotle died at the age of sixty-three, leaving to his favourite pupil his books, including the autographs of his own works, and his garden in the grounds of the Lyceum. The first of these bequests, if the information is correct, is of great historical importance; it may well be that we owe to Theophrastus the publication of some at least of his master's voluminous works. And as to the garden it is evident that it was here that the first systematic botanist made many of the observations which are recorded in his botanical works. Diogenes has preserved his will, and there is nothing in the terms of this interesting document to suggest that it is not authentic. Of special interest is the provision made for the maintenance of the garden; xxii
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it is bequeathed to certain specified friends and to those who will spend their time with them in learning and philosophy; the testator is to be buried in it without extravagant expense, a custodian is appointed, and provision is made for the emancipation of various gardeners, so soon as they have earned their freedom by long enough service.

According to Diogenes Theophrastus died at the age of eighty-five. He is made indeed to say in the probably spurious Preface to the 'Characters' that he is writing in his ninety-ninth year; while St. Jerome's Chronicle asserts that he lived to the age of 107. Accepting Diogenes' date, we may take it that he died about 285 B.C.; it is said that he complained that "we die just when we are beginning to live." His life must indeed have been a remarkably full and interesting one, when we consider that he enjoyed the personal friendship of two such men as Plato and Aristotle, and that he had witnessed the whole of the careers of Philip and Alexander of Macedon. To Alexander indeed he was directly indebted; the great conqueror had not been for nothing the pupil of the encyclopaedic Aristotle. He took with him to the East scientifically trained observers, the results of whose observations were at Theophrastus' disposal. Hence it is that his descriptions of plants are not limited to the flora of Greece and the Levant; to the reports of Alexander's followers he owed his accounts of such plants as the cotton-plant, banyan, pepper, cinnamon, myrrh and
INTRODUCTION

frankincense. It has been a subject of some controversy whence he derived his accounts of plants whose habitat was nearer home. Kirchner, in an able tract, combats the contention of Sprengel that his observations even of the Greek flora were not made at first hand. Now at this period the Peripatetic School must have been a very important educational institution; Diogenes says that under Theophrastus it numbered two thousand pupils. Moreover we may fairly assume that Alexander, from his connexion with Aristotle, was interested in it, while we are told that at a later time Demetrius Phalereus assisted it financially. May we not hazard a guess that a number of the students were appropriately employed in the collection of facts and observations? The assumption that a number of 'travelling students' were so employed would at all events explain certain references in Theophrastus' botanical works. He says constantly 'The Macedonians say,' 'The men of Mount Ida say' and so forth. Now it seems hardly probable that he is quoting from written treatises by Macedonian or Idaean writers. It is at least a plausible suggestion that in such references he is referring to reports of the districts in question contributed by students of the school. In that case 'The Macedonians say' would mean 'This is what our representative was told in Macedonia.' It is further noticeable that the tense used is sometimes past, e.g. 'The men of Mount Ida said'; an obvious explanation of this is
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supplied by the above conjecture. It is even possible that in one place (3. 12. 4.) the name of one of these students has been preserved.

Theophrastus, like his master, was a very voluminous writer; Diogenes gives a list of 227 treatises from his pen, covering most topics of human interest, as Religion, Politics, Ethics, Education, Rhetoric, Mathematics, Astronomy, Logic, Meteorology and other natural sciences. His oratorical works enjoyed a high reputation in antiquity. Diogenes attributes to him ten works on Rhetoric, of which one On Style was known to Cicero, who adopted from it the classification of styles into the 'grand,' the 'plain,' and the 'intermediate.' Of one or two other lost works we have some knowledge. Thus the substance of an essay on Piety is preserved in Porphyry de Abstinentia. The principal works still extant are the nine books of the Enquiry into Plants, and the six books on the Causes of Plants; these seem to be complete. We have also considerable fragments of treatises entitled:—of Sense-perception and objects of Sense, of Stones, of Fire, of Odours, of Winds, of Weather-Signs, of Weariness, of Dizziness, of Sweat, Metaphysics, besides a number of unassigned excerpts. The style of these works, as of the botanical books, suggests that, as in the case of Aristotle, what we possess consists of notes for lectures or notes taken of lectures. There is no literary charm; the sen-

1 Sandys, i. p. 99.
2 Bernays, Theophrastus, 1866.
tences are mostly compressed and highly elliptical, to the point sometimes of obscurity. It follows that translation, as with Aristotle, must be to some extent paraphrase. The thirty sketches of 'Characters' ascribed to Theophrastus, which have found many imitators, and which are well known in this country through Sir R. Jebb's brilliant translation, stand on a quite different footing; the object of this curious and amusing work is discussed in Sir R. Jebb's Introduction and in the more recent edition of Edmonds and Austen. Well may Aristotle, as we are assured, have commended his pupil's diligence. It is said that, when he retired from the headship of the school, he handed it over to Theophrastus. We are further told that the latter was once prosecuted for impiety, but the attack failed; also that he was once banished from Athens for a year, it does not appear under what circumstances. He was considered an attractive and lively lecturer. Diogenes' sketch ends with the quotation of some sayings attributed to him, of which the most noteworthy are 'Nothing costs us so dear as the waste of time;' 'One had better trust an unbridled horse than an undigested harangue.' He was followed to his grave, which we may hope was, in accordance with his own wish, in some peaceful corner of the Lyceum garden, by a great assemblage of his fellow townsmen.
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The principal references in the notes are to the following ancient authors:—

Apollon. Apollonius, Historia Miraculorum.
Athen. Athenaeus. Dindorf, Leipzig, 1827.
Col. Columella, de re rustica. Schneider, Leipzig, 1794.
Diod. Diodorus.
Pall. Palladius, de re rustica. Schneider, Leipzig, 1795.
ΤΟ ΘΕΟΦΡΑΣΤΟΥ
ΠΕΡΙ ΦΥΣΩΝ ΙΣΤΟΡΙΑΣ

Α

I. Τών φυτῶν τὰς διαφορὰς καὶ τὴν ἄλλην φύσιν ληπτέον κατὰ τε τὰ μέρη καὶ τὰ πάθη καὶ τὰς γενέσεις καὶ τοὺς βίους. ἦθη γὰρ καὶ πράξεις οὐκ ἔχουσιν ὡσπερ τὰ ξώα. εἰσὶ δ' αἱ μὲν κατὰ τὴν γένεσιν καὶ τὰ πάθη καὶ τοὺς βίους εὐθεωρητότεραι καὶ ῥάονους, αἱ δὲ κατὰ τὰ μέρη πλέον ἔχουσι ποικιλίας. αὐτὸ γὰρ τούτῳ πρῶτον οὐχ ἰκανῶς ἄφορίσταται τὰ ποιὰ δεῖ μέρη καὶ μὴ μέρη καλεῖν, ἀλλ' ἔχει τινὰ ἀπορίαν.

2. Τὸ μὲν οὖν μέρος ἄτε ἐκ τῆς ἰδίας φύσεως ὅν ἀεὶ δοκεῖ διαμένειν ἥ ἀπλῶς ἥ ὅταν γένηται, καθάπερ ἐν τοῖς ξώοις τὰ ύστερον γενησόμενα, πλὴν εἰ τι

1 τὰ ins. Sch., om. Ald. H.
2 πάθη, a more general word than δυνάμεις, 'virtues': cf. 1. 5. 4; 8. 4. 2; it seems to mean here something like 'behaviour,' in relation to environment. Instances of πάθη are given 4. 2. 11; 4. 14. 6.
3 ἔχουσι conj. H.; ἔχουσαι W. with Ald.
THEOPHRASTUS
ENQUIRY INTO PLANTS

BOOK I

OF THE PARTS OF PLANTS AND THEIR COMPOSITION.
OF CLASSIFICATION.

Introductory: How plants are to be classified; difficulty of defining what are the essential ‘parts’ of a plant, especially if plants are assumed to correspond to animals.

I. In considering the distinctive characters of plants and their nature generally one must take into account their parts, their qualities, the ways in which their life originates, and the course which it follows in each case: (conduct and activities we do not find in them, as we do in animals). Now the differences in the way in which their life originates, in their qualities and in their life-history are comparatively easy to observe and are simpler, while those shewn in their ‘parts’ present more complexity. Indeed it has not even been satisfactorily determined what ought and what ought not to be called ‘parts,’ and some difficulty is involved in making the distinction.

Now it appears that by a ‘part,’ seeing that it is something which belongs to the plant’s characteristic nature, we mean something which is permanent either absolutely or when once it has appeared (like those parts of animals which remain for a time undeveloped)
THEOPHRASTUS

dia voson h γῆρας h πήρωσιν ἀποβάλλεται. tων
d' en tois phytiois enia toiaut' estin ὅστ' επετειον
exein tēn oustian, oion anbhos brōn phyllon
karpos, áploos ὃsa prō tōn karpos h āma
ghnetai tois karpois: eti de autōs ē blastōs.
aiei yap epipsoni lambánei tà dēndra kai'
eunauton ὁμοιως en te tois ānω kai en tois peri
tas rίζas: ὅste, eī mēn tis taúta thēsei mére, tō
te plēthos ἀοριστον ēstai kai oudeπote tō autō
tōn morioun eī d' āu mh mére, sīmbhēsetai, di' ēn
teleia ghnetai kai faīnetai, taúta mh eīnai mére.
blastánontα γάρ kai thálλontα kai karpoν
ēchonta pánta kallīw kai tēleiōtera kai dōkei
kai ēstiv. aı mēn ouv ēporiain schēdon eīsiv
autai.

3 Tāxh de ouc̣ṣ oμoιωs āpantα ξητητέon oute
en tois aλλοis ouθ' ὃsa prōs tēn γένεσιν,
autā te tā γεννομενα μέρη θετέon oion tois
karpois. oude γάρ tā ēmβrνa tōn ζων. eī
dē en tē ορα ὅψει touto ē kāllīstouν,

1 i.e. the male inflorescence of some trees; the term is
of course wider than 'catkin.'
2 i.e. flower, catkin, leaf, fruit, shoot.

4
ENQUIRY INTO PLANTS, I. i. 2—3

—permanent, that is, unless it be lost by disease, age or mutilation. However some of the parts of plants are such that their existence is limited to a year, for instance, flower, 'catkin,' leaf, fruit, in fact all those parts which are antecedent to the fruit or else appear along with it. Also the new shoot itself must be included with these; for trees always make fresh growth every year alike in the parts above ground and in those which pertain to the roots. So that if one sets these down as 'parts,' the number of parts will be indeterminate and constantly changing; if on the other hand these are not to be called 'parts,' the result will be that things which are essential if the plant is to reach its perfection, and which are its conspicuous features, are nevertheless not 'parts'; for any plant always appears to be, as indeed it is, more comely and more perfect when it makes new growth, blooms, and bears fruit. Such, we may say, are the difficulties involved in defining a 'part.'

But perhaps we should not expect to find in plants a complete correspondence with animals in regard to those things which concern reproduction any more than in other respects; and so we should reckon as 'parts' even those things to which the plant gives birth, for instance their fruits, although we do not so reckon the unborn young of animals. (However, if such a product seems fairest to the eye, because the plant is then in its prime, we can draw no inference from this in

3 οὐδὲ γὰρ: οὐδὲ seems to mean no more than οὐ (cf. neque enim = non enim); γὰρ refers back to the beginning of the §.

4 ἐν τῇ ἀρα ὕπει τοῦτό γε Ι conj.; τῇ ἀρα ὕπει τό γε vulg. W.; τοῦτο, i.e. flower or fruit.
ούδεν σημείον, ἐπεὶ καὶ τῶν ἄνων εὐθενεῖ τὰ κύουτα.

Πολλὰ δὲ καὶ τὰ μέρη κατ’ ἐνιαυτὸν ἀποβάλλει, καθάπερ οὐ τε ἐλαφοὶ τὰ κέρατα καὶ τὰ φωλεύοντα τὰ πτερὰ καὶ τρίχας τετράποδα· ὡστ’ ούδεν ἀτοπον ἄλλως τε καὶ ὅμοιον ὃν τῷ φυλλοβολεῖν τὸ πάθος.

'Ωσαύτως δ’ οὐδὲ τὰ πρὸς τὴν γένεσιν’ ἐπεὶ καὶ ἐν τοῖς ζώοις τὰ μὲν συνεκτίκτεται τὰ δ’ ἀποκαθαίρεται καθάπερ ἄλλοτρια τῆς φύσεως. ἐσικε δὲ παραπλησίως καὶ τὰ περὶ τὴν βλάστησιν ἔχειν. ἣ γὰρ τοις βλάστησις γενέσεως χάριν ἔστι τῆς τελείας.

'Ολως δὲ καθάπερ εἴπομεν οὐδὲ πάντα ὅμοιώς καὶ ἐπὶ τῶν ζώων ληπτεόν. δι’ ὃ καὶ ὁ ἀριθμὸς ἄριστος· πανταχῇ γάρ βλαστητικὸν ἀτε καὶ πανταχῇ ζώον. ὥστε ταῦτα μὲν οὕτως ὑποληπτέον οὐ μόνον εἰς τὰ νῦν ἄλλα καὶ τῶν μελλόντων χάριν· ὡσα γὰρ μή οἶον τε ἀφομοίουν περίεργον τὸ γλίχεσθαι πάντως, ἵνα μὴ καὶ τὴν οἰκείαν ἀποβάλλωμεν θεωρίαν. ἢ δὲ ἱστορία τῶν φυτῶν ἐστιν ὡς ἀπλῶς εἴπειν ἣ κατὰ

1 εὑθενεῖ conj. Sch., εὐθετεῖ UMV Ald. i.e. we do not argue from the fact that animals are at their handsomest in the breeding season that the young is therefore ‘part’ of the animal.

2 Lit. ‘which are in holes,’ in allusion to the well-known belief that animals (especially birds) which are out of sight in the winter are hiding in holes; the text is supported by [Arist.] de plantis 1. 3, the author of which had evidently read this passage; but possibly some such words as τὰς τὲ φολίδας καὶ have dropped out after φωλεύοντα.
support of our argument, since even among animals those that are with young are at their best.\textsuperscript{1)}

Again many plants shed their parts every year, even as stags shed their horns, birds which hibernate\textsuperscript{2} their feathers, four-footed beasts their hair; so that it is not strange that the parts of plants should not be permanent, especially as what thus occurs in animals and the shedding of leaves in plants are analogous processes.

In like manner the parts concerned with reproduction are not permanent in plants; for even in animals there are things which are separated from the parent when the young is born, and there are other things\textsuperscript{3} which are cleansed away, as though neither of these belonged to the animal's essential nature. And so too it appears to be with the growth of plants; for of course growth leads up to reproduction as the completion of the process.\textsuperscript{4}

And in general, as we have said, we must not assume that in all respects there is complete correspondence between plants and animals. And that is why the number also of parts is indeterminate; for a plant has the power of growth in all its parts, inasmuch as it has life in all its parts. Wherefore we should assume the truth to be as I have said, not only in regard to the matters now before us, but in view also of those which will come before us presently; for it is waste of time to take great pains to make comparisons where that is impossible, and in so doing we may lose sight also of our proper subject of enquiry. The enquiry into plants, to put it generally, may

\textsuperscript{3} i.e. the embryo is not the only thing derived from the parent animal which is not a 'part' of it; there is also the food-supply produced with the young, and the after-birth.

\textsuperscript{4} cf. C.P. 1. 11. 8.
ta 'eixw mòria kai tìn olhn mòrfhìn ë kathà ta èntos, ësper ëpí tòw zwon ta èk tòw anatomwv.

6. Æptetèon d' ën au'tois poia te páswi ëpárxhei taútà kai poia ëidia kath' èkastón géwos, ëti ë dè tòw au'twv poia ómòia: lègw d' òion fíllon rèza fliwòs. òu ëde dè ou'dè toùto launthànein ëi òi kath' analowían òwphiètèon, ësper ëpí tòw zwon, tìn anaforàv poiwumènous ðèlòn òti pròs ta èm-
ferèstata kai telexòtata. kai àplòs ëde òsa tòw ën futois àfomoiwteov tò ën tois zwos, òs ën tìs tòf ò analògou àfomoioi. taútà ìèn ou'n diòrísow tòw tróppon toùton.

8. Ài ëde tòw meròwn diaphorài skhèdon òs tìpw ladosèin eiswv ën trisiw, ò tò ëh ën ìèn èxein
tà dè mìh, kathàper fíllà kai karptòw, ò tò
mìh ómòia mìde ìsa, ò trítòw tò ëh ómòiow.
tòtwv ëde ò hìèn ànomoiòtw òrìzetai skhìmati
chròmati píknòtêtì muñòtêtì traxútèttì leiótêtì
kai tois àllois páthesin, ëti ëde òsaì diaphorài
tòw xulòw. ò ëde ànissòtw òperosì kai èllleísxei
catat plíðhos òh mégethos. òs d' èipeiw tìpw

1 A very obscure sentence; so W. renders the MSS. text.
2 i.e. 'inequality' might include 'unlikeness.'
either take account of the external parts and the form of the plant generally, or else of their internal parts: the latter method corresponds to the study of animals by dissection.

Further we must consider which parts belong to all plants alike, which are peculiar to some one kind, and which of those which belong to all alike are themselves alike in all cases; for instance, leaves roots bark. And again, if in some cases analogy ought to be considered (for instance, an analogy presented by animals), we must keep this also in view; and in that case we must of course make the closest resemblances and the most perfectly developed examples our standard; and, finally, the ways in which the parts of plants are affected must be compared to the corresponding effects in the case of animals, so far as one can in any given case find an analogy for comparison. So let these definitions stand.

The essential parts of plants, and the materials of which they are made.

Now the differences in regard to parts, to take a general view, are of three kinds: either one plant may possess them and another not (for instance, leaves and fruit), or in one plant they may be unlike in appearance or size to those of another, or, thirdly, they may be differently arranged. Now the unlikelihood between them is seen in form, colour, closeness of arrangement or its opposite, roughness or its opposite, and the other qualities; and again there are the various differences of flavour. The inequality is seen in excess or defect as to number or size, or, to speak generally, all the above-mentioned differences too
κάκεινα πάντα καθ' ὑπεροχήν καὶ ἐλλειψιν' τὸ
γὰρ μᾶλλον καὶ ἵπτον ὑπεροχὴ καὶ ἐλλειψις τὸ
dὲ μὴ ὁμοίως τῇ θέσει διαφέρει. λέγω δ' οἶδον τὸ
tοὺς καρποὺς τὰ μὲν ἐπάνω τὰ δ' ὑποκάτω τῶν
φύλλων ἔχειν καὶ αὐτοῦ τοῦ δένδρου τὰ μὲν ἐξ
άκρου τὰ δὲ ἐκ τῶν πλαγίων, ἐνια δὲ καὶ ἐκ τοῦ
στελέχους, οἴον ἡ Αἰγυπτία συκάμινος, καὶ ὅσα δὴ
cαι ὑπὸ γῆς φέρει καρπὸν, οἶον ἡ ἀραχίδα καὶ
tὸ ἐν Αἰγύπτῳ καλοῦμενον οὐγγον, καὶ εἰ τὰ μὲν
ἔχει μίσχον τὰ δὲ μῆ. καὶ ἐπὶ τῶν ἀνθέων ὁμοίως:
tὰ μὲν γὰρ περὶ αὐτοῦ τὸν καρπὸν τὰ δὲ ἄλλως.
οἶνος δὲ τὸ τῆς θέσεως ἐν τοῦτοις καὶ τοῖς φύλλοις
καὶ ἐν τοῖς βλαστοῖς ληπτέοι.

8 Διαφέρει δὲ ἐνια καὶ τῇ τάξει· τὰ μὲν ὡς
ἐτυχε, τῆς δ' ἐλάτης οἱ κλώνες κατ' ἄλληλους
ἐκατέρωθεν· τῶν δὲ καὶ οἱ ὤζοι δ' ἵπσον τε καὶ
κατ' ἀριθμὸν ἵπσοι, καθάπερ τῶν τριόξων.
"Ὡστε τάς μὲν διαφορὰς ἐκ τούτων ληπτέον ἐξ
ὁν καὶ ἡ ὀλη μορφή συνιδηλοῦται καθ' ἐκαστὸν.

9 Αὐτὰ δὲ τὰ μέρη διαρθημησαμένους πειρατέον
περὶ ἐκάστου λέγειν. ἐστὶ δὲ πρῶτα μὲν καὶ
μέγιστα καὶ κοινὰ τῶν πλείστων τάδε, ρίζα
καυλὸς ἀκρεμῶν κλάδος, εἰς ὧν διέλοιτ' ἂν τῆς

1 cf. C.P. 5. 1. 9.
2 cf. 1. 6. 11. T. extends the term καρπὸς so as to
include any succulent edible part of a plant.
3 T. does not consider that καρπὸς was necessarily antec-
eded by a flower.
are included under excess and defect: for the ‘more’ and the ‘less’ are the same thing as excess and defect, whereas ‘differently arranged’ implies a difference of position; for instance, the fruit may be above or below the leaves,\(^1\) and, as to position on the tree itself, the fruit may grow on the apex of it or on the side branches, and in some cases even on the trunk, as in the sycamore; while some plants again even bear their fruit underground, for instance *arakhidna*\(^2\) and the plant called in Egypt *uningon*; again in some plants the fruit has a stalk, in some it has none. There is a like difference in the floral organs: in some cases they actually surround the fruit, in others they are differently placed\(^3\): in fact it is in regard to the fruit, the leaves, and the shoots that the question of position has to be considered.

Or again there are differences as to symmetry\(^4\): in some cases the arrangement is irregular, while the branches of the silver-fir are arranged opposite one another; and in some cases the branches are at equal distances apart, and correspond in number, as where they are in three rows.\(^5\)

Wherefore the differences between plants must be observed in these particulars, since taken together they shew forth the general character of each plant.

But, before we attempt to speak about each, we must make a list of the parts themselves. Now the primary and most important parts, which are also common to most, are these—root, stem, branch, twig; these are the parts into which we might divide the plant, regarding them as members,\(^6\) corresponding to

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\(^1\) Plin. 16. 1:22.  
\(^2\) *i.e.* ternate.  
\(^3\) *i.e.* if we wished to make an anatomical division.  
\(^4\) *μελη* conj. Sch. cf. 1. 2. 7; *μέρη* Ald.
"Εστι δὲ ρίζα μὲν δι’ οὖ τὴν τροφὴν ἐπάγεται, καυλὸς δὲ εἰς ὁ φέρεται. καυλὸν δὲ λέγω τὸ ὑπὲρ γῆς πεφυκός ἐφ’ ἐν τοῦτο γὰρ κοινότατον ὁμοίως ἐπετείοις καὶ χρονίοις, ὃ ἐπὶ τῶν δένδρων καλεῖται στέλεχος: ἀκρεμόνας δὲ τοὺς ἀπὸ τοῦτο σχιζομένους, οὕς ἐνοί καλοῦσιν ὦς. κλάδον δὲ τὸ βλάστημα τὸ ἐκ τοῦτων ἐφ’ ἐν, οἷον μάλιστα τὸ ἐπέτειον.

Καὶ ταῦτα μὲν οἰκείοτερα τῶν δένδρων.

10 ὁ δὲ καυλὸς, ὥσπερ εἴρηται, κοινότερος· ἐχεῖ δὲ οὐ πάντα οὐδὲ τοῦτον, οἷον ἐνία τῶν ποιω-δών. τὰ δ’ ἐχεῖ μὲν οὐκ ἑαὶ δὲ ἀλλ’ ἐπέτειον, καὶ ὁ σα χρονιώτερα ταῖς ρίζαις. ὅλως δὲ πολύχουν τὸ φυτὸν καὶ ποικίλου καὶ χαλεπὸν εἰπεῖν καθόλου· σημείον δὲ τὸ μηδὲν εἶναι κοινοῦ λαβεῖν ὁ πᾶσιν ὑπάρχει, καθάπερ τοῖς ζώοις στόμα καὶ κοιλία. τὰ δὲ ἀναλογία ταῦτα τὰ δ’ ἀλλον τρόπον. οὕτε γὰρ ρίζαν πάντ’ ἐχεῖ οὕτε καυλὸν οὕτε ἀκρεμόνα οὕτε κλάδον οὕτε φύλλον οὕτε ἀνθός οὕτε καρπὸν οὐτ’ αὐθ φλοιὸν ἐμήτρυν ἐν ἕνας ἐφ' ἐν τούτωι καὶ ἐν τοῖς τοιούτοις· ἀλλὰ μάλιστα ταῦτα

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1 i.e. before it begins to divide. 2 Or ‘knots.’
3 ἐφ’ conj. W.; ψφ’ P₂P₃ Ald.
4 χρονιώτερα conj. Sch.; χρονιώτερον Ald.H
5 ἀναλογία conj. Sch.; ἀναλογία U Ald.H.
the members of animals: for each of these is distinct in character from the rest, and together they make up the whole.

The root is that by which the plant draws its nourishment, the stem that to which it is conducted. And by the 'stem' I mean that part which grows above ground and is single; for that is the part which occurs most generally both in annuals and in long-lived plants; and in the case of trees it is called the 'trunk.' By 'branches' I mean the parts which split off from the stem and are called by some 'boughs.' By 'twig' I mean the growth which springs from the branch regarded as a single whole, and especially such an annual growth.

Now these parts belong more particularly to trees. The stem however, as has been said, is more general, though not all plants possess even this, for instance, some herbaceous plants are stemless; others again have it, not permanently, but as an annual growth, including some whose roots live beyond the year. In fact your plant is a thing various and manifold, and so it is difficult to describe in general terms: in proof whereof we have the fact that we cannot here seize on any universal character which is common to all, as a mouth and a stomach are common to all animals; whereas in plants some characters are the same in all, merely in the sense that all have analogous characters, while others correspond otherwise. 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; and yet these and such like characters belong to a plant's essential nature. However, as has been said, these
υπάρχει, καθάπερ εἰρηται, τοῖς δένδροις κάκεινων οἰκείοτερος ὁ μερισμός. πρὸς ἄ καὶ τῇν ἀναφοράν τῶν ἄλλων ποιεῖσθαι δίκαιον.

12 Σχεδὸν δὲ καὶ τὰς ἄλλας μορφὰς ἐκάστων ταῦτα διασημαίνει. διαφέρουσι γὰρ πλῆθει τῷ τοῦτω καὶ ὀλγότητι καὶ πυκνότητι καὶ μανότητι καὶ τῷ ἑφ' ἐν ἣ ἐις πλεῖόν σχῆσεσθαι καὶ τοῖς ἄλλοις τοῖς ὁμοίοις. ἔστι δὲ ἐκαστοῦ τῶν εἰρημένων οὐχ ὁμοιομερές· λέγω δὲ οὐχ ὁμοιομερές ὥστι ἐκ τῶν αὐτῶν μὲν ὁτιοῦν μέρος σύγκειτα τῆς ρίζης καὶ τοῦ στελέχους, ἀλλ' οὐ λέγεται στελέχος τὸ ληφθὲν ἄλλα μόριον, ὡς ἐν τοῖς τῶν ἑων μέλεσιν ἔστων. ἐκ τῶν αὐτῶν μὲν γὰρ ὁτιοῦν τῆς κυήμης ἢ τοῦ ἄγκωνος, οὐχ ὁμοώνυμον δὲ καθάπερ σάρξ καὶ ὀστοῦν, ἄλλ' ἁνώνυμον· οὔδε δὴ τῶν ἄλλων οὐδενὸς ὁσα μοροειδῆ τῶν ὅργανικῶν· ἀπάντου γὰρ τῶν τοιούτων ἁνώνυμα τὰ μέρη. τῶν δὲ πολυειδῶν ὅνωμασμένα καθάπερ ποδὸς χείρος κεφαλῆς, οἶον δάκτυλος ρίζ ὀφθαλμός. καὶ τὰ μὲν μέγιστα μέρη σχεδὸν ταῦτά ἔστων.

Π. "Ἄλλα δὲ ἐξ ὧν ταῦτα φλοιὸς ξύλον μῆτρα, ὡσά ἐχει μῆτραν. πάντα δ' ὁμοιομερή. καὶ τὰ τοῦτον δὲ ἐτὶ πρότερα καὶ ἐξ ὧν ταῦτα, ὑγρὸν ἢ

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1 There is no exact English equivalent for ὁμοιομερές, which denotes a whole composed of parts, each of which is, as it were, a miniature of the whole. cf. Arist. H.A. 1. 1.
2 i.e. any part taken of flesh or bone may be called 'flesh' or 'bone.'
3 e.g. bark; cf. 1. 2. 1.
4 e.g. fruit.
characters belong especially to trees, and our classification of characters belongs more particularly to these; and it is right to make these the standard in treating of the others.

Trees moreover shew forth fairly well the other features also which distinguish plants; for they exhibit differences in the number or fewness of these which they possess, as to the closeness or openness of their growth, as to their being single or divided, and in other like respects. Moreover each of the characters mentioned is not 'composed of like parts'; by which I mean that though any given part of the root or trunk is composed of the same elements as the whole, yet the part so taken is not itself called 'trunk,' but 'a portion of a trunk.' The case is the same with the members of an animal’s body; to wit, any part of the leg or arm is composed of the same elements as the whole, yet it does not bear the same name (as it does in the case of flesh or bone); it has no special name. Nor again have subdivisions of any of those other organic parts which are uniform special names, subdivisions of all such being nameless. But the subdivisions of those parts which are compound have names, as have those of the foot, hand, and head, for instance, toe, finger, nose or eye. Such then are the largest parts of the plant.

II. Again there are the things of which such parts are composed, namely bark, wood, and core (in the case of those plants which have it), and these are all 'composed of like parts.' Further there are the things which are even prior to these, from which

\[ i.e. \] the 'compound' parts.
\[ \xi\upsilon \upsilon \mu\Upsilon \tau\rho\alpha \ \text{conjunction, W.} \ \text{from G.} \ \mu\Upsilon \tau\rho\alpha \ \xi\upsilon \upsilon \upsilon \ \text{MSS.} \ \xi\upsilon \upsilon \upsilon , \delta\sigma\alpha \ \text{conjunction, W.} ; \ \xi\upsilon \alpha , \ \delta\sigma\alpha \ \text{Ald.H.} \]
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φλέγ σάρξ· ἀρχαὶ γὰρ αὐταῖ· πλὴν εἰ τις λέγω τὰς τῶν στοιχείων δυνάμεις, αὐταὶ δὲ κοιναὶ πάντων. ἡ μὲν οὖν οὐσία καὶ ἡ ὀλη φύσις ἐν τούτοις.

"Αλλα δ' ἐστίν ὁσπερ επέτεια μέρη τὰ πρὸς τὴν καρποτοκίαν, οἷον φύλλου ἀνθός μῖσχος· τούτο δ' ἐστίν έ συνήρτηται πρὸς τὸ φυτὸν τὸ φύλλον καὶ ὁ καρπός· ἐτι δὲ [ἐλιξ] βρύνων, οἷς ὑπάρχει, καὶ ἐπὶ πᾶσι σπέρμα τὸ τοῦ καρποῦ· καρπὸς δ' ἐστὶ τὸ συγκείμενον σπέρμα μετὰ τοῦ περικαρπίου. παρὰ δὲ ταύτα ἐνιῶν ἴδια ἀττα, καθάπερ ἡ κηκίς δρῦς καὶ ἡ ἐλιξ ἀμπέλου.

2 Καὶ τοὺς μὲν δενδρεσιν ἐστίν ὡς ὑπός διαλαβεῖν. τοὺς δ' ἐπετείοις δῆλον ὡς ἀπαντὰ ἐπετεία· μέχρι γὰρ τῶν καρπῶν ἡ φύσις. ὡσα δη ἐπετειό· καρπα καὶ ὡσα διετίζει, καθάπερ σέλυνον καὶ ἀλλ' ἀττα, καὶ ὡσα δὲ πλέιω χρόνων ἔχει, τούτοις ἀπασὶ καὶ ὁ καυλὸς ἀκολουθήσει κατὰ λόγον· ὅταν γὰρ σπερμοφορεῖν μέλλωσι, τότε ἐκκαυλοῦσιν, ὡς ἑνεκα τοῦ σπέρματος ὅντων τῶν καυλῶν.

Ταύτα μὲν οὖν ταύτη διηρήθω. τῶν δὲ ἀρτι εἰρημένων μερῶν πειρατεύον ἤκαστον εἰπεῖν τι ἐστιν ὡς ἐν τύπῳ λέγοντας.

3 Τὸ μὲν οὖν ύγρὸν φανερὸν· δ' ἡ καλούσι τινες ἀπλῶς ἐν ἀπασίν ὁπόν, ὁσπερ καὶ Μενέστωρ, οἱ

1 οὐσία conj. Sch. (but he retracted it); συνουσία MSS. (?)
2 This definition is quoted by Hesych. s.v. μῖσχος.
3 ? om. ἐλιξ, which is mentioned below.
4 τὸ συγκείμενον σπέρμα, lit. 'the compound seed,' i.e. as many seeds as are contained in one περικαρπίων.
they are derived—sap, fibre, veins, flesh: for these are elementary substances—unless one should prefer to call them the active principles of the elements; and they are common to all the parts of the plant. Thus the essence\(^1\) and entire material of plants consist in these.

Again there are other as it were annual parts, which help towards the production of the fruit, as leaf, flower, stalk (that is, the part by which the leaf and the fruit are attached to the plant),\(^2\) and again tendril,\(^3\) 'catkin' (in those plants that have them). And in all cases there is the seed which belongs to the fruit: by 'fruit' is meant the seed or seeds,\(^4\) together with the seed-vessel. Besides these there are in some cases peculiar parts, such as the gall in the oak, or the tendril in the vine.

In the case of trees we may thus distinguish the annual parts, while it is plain that in annual plants all the parts are annual: for the end of their being is attained when the fruit is produced. And with those plants which bear fruit annually, those which take two years (such as celery and certain others\(^5\)) and those which have fruit on them for a longer time—with all these the stem will correspond to the plant's length of life: for plants develop a stem at whatever time they are about to bear seed, seeing that the stem exists for the sake of the seed.

Let this suffice for the definition of these parts: and now we must endeavour to say what each of the parts just mentioned is, giving a general and typical description.

The sap is obvious: some call it simply in all cases 'juice,' as does Menestor\(^6\) among others: others, in

\(^1\) cf. 7.1.2 and 3. \(^6\) A Pythagorean philosopher of Sybaris.
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δ' εκ μὲν τοῖς ἄλλοις ἀνωνύμως εν δε τισιν ὅποιν και ἐν ἄλλοις διάκρινον. ἤνες δε και φλέβες καθ' αὐτὰ μὲν ἀνώνυμα τῇ δε ὀμοιότητι μεταλαμβάνουσι τῶν ἐν τοῖς ζῶοις μορίων. ἔχει δὲ ίσως καὶ ἄλλας διαφορὰς καὶ ταύτα καὶ ὅλως τὸ τῶν φυτῶν γένος' πολύχουν γὰρ ὅπερ εἰρήκαμεν. ἄλλ' ἐπεὶ διὰ τῶν γνωριμωτέρων μεταδιώκειν δεῖ τὰ ἀγνώριστα, γνωριμώτερα δὲ τὰ μείζω καὶ ἐμ-βαινὴ τῇ αἰσθήσει, δήλον ὅτι καθάπερ υφίγγηται περὶ τούτων λεκτέον' ἐπαναφορὰν γὰρ ἔξομεν τῶν ἄλλων πρὸς ταύτα μέχρι πόσου καὶ πῶς ἐκαστὰ μετέχει τῆς ὀμοιότητος. εἰλημμένων δὲ τῶν μερῶν μετὰ ταύτα ληπτέον τὰς τούτων διαφοράς· οὕτως γὰρ ἅμα καὶ ἡ οὐσία φανερὰ καὶ ἡ ὅλη τῶν γενῶν πρὸς ἄλληλα διάστασις.

Ἡ μὲν οὖν τῶν μεγίστων σχεδὸν εἰρήται· λέγω δ' οἷον βίζης καυλοῦ τῶν ἄλλων· αἱ γὰρ δυνάμεις καὶ ὃν χάριν ἐκαστὸν ύπότεν ρηθήσονται. ἐξ ὧν γὰρ καὶ ταύτα καὶ τὰ ἄλλα σύγκειται πειρατέον εἰπεῖν ἀρξαμένους ἀπὸ τῶν πρῶτων.

Πρῶτα δὲ ἐστὶ τὸ υγρὸν καὶ θερμὸν· ἄπαν γὰρ φυτὸν ἔχει τινὰ ύγρότητα καὶ θερμότητα σύμφυτον ύστερον καὶ ἢδον, ὃν ὑπολειπόντων γίνεται γῆρας καὶ φθίσις, τελείως δὲ ὑπολιπόντων θάνατος καὶ αἰώνιοι. ἐν μὲν οὖν τοῖς πλείστοις ἀνώ-

1 Lit. 'muscles and veins.'
2 i.e. the analogy with animals is probably imperfect, but is useful so far as it goes.
3 1. 1. 10.
4 e.g. the root, as such.
5 e.g. the different forms which roots assume.
the case of some plants give it no special name, while in some they call it 'juice,' and in others 'gum.' Fibre and 'veins' have no special names in relation to plants, but, because of the resemblance, borrow the names of the corresponding parts of animals. It may be however that, not only these things, but the world of plants generally, exhibits also other differences as compared with animals: for, as we have said, the world of plants is manifold. However, since it is by the help of the better known that we must pursue the unknown, and better known are the things which are larger and plainer to our senses, it is clear that it is right to speak of these things in the way indicated: for then in dealing with the less known things we shall be making these better known things our standard, and shall ask how far and in what manner comparison is possible in each case. And when we have taken the parts, we must next take the differences which they exhibit, for thus will their essential nature become plain, and at the same time the general differences between one kind of plant and another.

Now the nature of the most important parts has been indicated already, that is, such parts as the root, the stem, and the rest: their functions and the reasons for which each of them exists will be set forth presently. For we must endeavour to state of what these, as well as the rest, are composed, starting from their elementary constituents.

First come moisture and warmth: for every plant, like every animal, has a certain amount of moisture and warmth which essentially belong to it; and, if these fall short, age and decay, while, if they fail altogether, death and withering ensue. Now in
νυμος ἡ υγρότης, ἐν ἐνίοις δὲ ωνομασμένη καθάπερ εὑρηται. τὸ αὐτὸ δὲ καὶ ἐπὶ τῶν ζῶων ὑπάρχει μόνη γὰρ ἡ τῶν ἐναίμων υγρότης ὁ ωνόμασται, διὸ καὶ διήρηται πρὸς τοῦτο στερήσει· τὰ μὲν γὰρ ἀναίμα τὰ δὲ ἐναίμα λέγεται. ἐν τι μὲν οὖν τούτῳ τὸ μέρος καὶ τὸ τούτῳ συνηρτημένον θερμὸν.

"Αλλὰ δ’ ἦδη ἔτερα τῶν ἐντός, ἃ καθ’ ἐαυτὰ μὲν ἐστὶν ἀνώνυμα, διὰ δὲ τὴν ὀμοιότητα ἀπεικάζεται τοῖς τῶν ζῶων μορίοις. ἔχουσι γὰρ ὀσπερ ἰνας· οἱ ἐστὶ συνεχὲς καὶ σχιστὸν καὶ ἐπιμηκες, ἀπαράβλαστον δὲ καὶ ἀβλαστον. ἐτὶ δὲ φλέβας. αὐταὶ δὲ τὰ μὲν ἀλλα εἰσὶν ὄμοιαι τῇ ἠν, μείζοις δὲ καὶ παχύτεραι καὶ παραβλάστας ἔχουσαι καὶ υγρότητα. ἐτίς ἕυλον καὶ σάρξ. τὰ μὲν γὰρ ἔχει σάρκα τὰ δὲ ἕυλον. ἐστὶ δὲ τὸ μὲν ἕυλον σχιστὸν, ἢ δὲ σάρξ πάντη διαιρεῖται ὀσπερ γῆ καὶ ὁσα γῆς: μεταξὺ δὲ γίνεται ἰνὸς καὶ φλεβὸς· φανερὰ δὲ ἡ φύσις αὐτής ἐν ἅλλοις τε καὶ ἐν τοῖς τῶν περικαρπίων δέρμασι. φλοίος δὲ καὶ μήτρα κυρίως μὲν λέγεται, δεῖ δὲ αὐτὰ καὶ τῷ λόγῳ διορίσαι. φλοίος μὲν οὖν ἐστὶ τὸ ἐσχατον καὶ χωριστὸν τοῦ ὑποκειμένου σώματος. μήτρα δὲ τὸ μεταξὺ τοῦ ἕυλον, τρίτον ἀπὸ τοῦ φλοιοῦ οἶνον ἐν τοῖς ὀστοῖς μυελός. καλοῦσι δὲ τῖνες τούτοι
most plants the moisture has no special name, but in some it has such a name, as has been said: and this also holds good of animals: for it is only the moisture of those which have blood which has received a name; wherefore we distinguish animals by the presence or absence of blood, calling some 'animals with blood,' others 'bloodless.' Moisture then is one essential 'part,' and so is warmth, which is closely connected with it.

There are also other internal characters, which in themselves have no special name, but, because of their resemblance, have names analogous to those of the parts of animals. Thus plants have what corresponds to muscle; and this quasi-muscle is continuous, fissile, long: moreover no other growth starts from it either branching from the side or in continuation of it. Again plants have veins: these in other respects resemble the 'muscle,' but they are longer and thicker, and have side-growths and contain moisture. Then there are wood and flesh: for some plants have flesh, some wood. Wood is fissile, while flesh can be broken up in any direction, like earth and things made of earth: it is intermediate between fibre and veins, its nature being clearly seen especially in the outer covering of seed-vessels. Bark and core are properly so called, yet they too must be defined. Bark then is the outside, and is separable from the substance which it covers. Core is that which forms the middle of the wood, being third in order from the bark, and corresponding to the marrow in bones. Some call this part the 'heart,' others call it 'heart-wood': some

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8 i.e., not by analogy with animals, like 'muscle,' 'veins,' 'flesh.' 9 Reckoning inclusively.
καρδίαν, οἱ δ' ἐντεριώνης ἐνιοὶ δὲ τὸ ἐντὸς τῆς μῆτρας αὐτῆς καρδίαν, οἱ δὲ μυελῶν.

Τὰ μὲν οὖν μόρια σχεδόν ἐστὶ τοσαύτα. σύγκειται δὲ τὰ ύστερον ἐκ τῶν προτέρων ἔγειρον μὲν ἐξ ἴνος καὶ ύγροῦ, καὶ ἔνια σαρκός· ξυλοῦται γὰρ σκληρυνομένη, οἶον ἐν τοῖς φοίνιξι καὶ νάρθηξι καὶ εἴ τι ἄλλο ἐκξυλοῦται, ὡσπέρ αἱ τῶν ῥαφανίδων πίξαι· μῆτρα δὲ ἐξ ὑγροῦ καὶ σαρκός· φλοίος δὲ ὁ μὲν τις ἐκ πάντων τῶν τριῶν, οἶον ὁ τῆς δρυὸς καὶ αὐγείρου καὶ ἄπιου· ὁ δὲ τῆς ἀμπέλου ἐξ ὑγροῦ καὶ ἴνος· ὁ δὲ τοῦ φελλοῦ ἐκ σαρκὸς καὶ ύγροῦ. πάλιν δὲ ἐκ τούτων σύνθετα τὰ μέγιστα καὶ πρῶτα ρηθέντα καθαπερανεὶ μέλη, πλῆν οὐκ ἐκ τῶν αὐτῶν πάντα οὐδὲ ὁσαύτως ἄλλα διαφόρως.

Εἰλημμένων δὲ πάντων τῶν μορίων ὡς εἰπεῖν τὰς τούτων διαφορὰς πειρατέον ἀποδίδοναι καὶ τὰς ὅλων τῶν δένδρων καὶ φυτῶν οὐσίας.

ΠΙ. Ἐπεὶ δὲ συμβαίνει σαφεστέραν εἶναι τὴν μάθησιν διαρομμένων κατὰ εἴδη, καλὼς ἔχει τούτο ποιεῖν ἐφ' ὧν ἐνδέχεται. πρῶτα δὲ ἐστὶ καὶ μέγιστα καὶ σχεδὸν ύφ' ὧν πάντ' ἣ τὰ πλείστα περιέχεται τάδε, δένδρου θάμνος φυγανὸν πόα.

Δένδρου μὲν οὖν ἐστὶ τὸ ἀπὸ πίξης μονοστέλεχος

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1 φελλοῦ conj. H.; φύλλον UVP2P3Ald.; φυλλοῦ M.
2 i.e. root, stem, branch, twig: cf. 1. 1. 9.
3 σαφεστέραν conj. W.; σαφέστερον Ald.
4 εἴδη here = γένη; cf. 6. 1. 2. n.
5 πάντ' ἣ conj. Sch. after G; πάντη UMV Ald.
again call only the inner part of the core itself the 'heart,' while others distinguish this as the 'marrow.'

Here then we have a fairly complete list of the 'parts,' and those last named are composed of the first 'parts'; wood is made of fibre and sap, and in some cases of flesh also; for the flesh hardens and turns to wood, for instance in palms ferula and in other plants in which a turning to wood takes place, as in the roots of radishes. Core is made of moisture and flesh: bark in some cases of all three constituents, as in the oak black poplar and pear; while the bark of the vine is made of sap and fibre, and that of the cork-oak\(^1\) of flesh and sap. Moreover out of these constituents are made the most important parts,\(^2\) those which I mentioned first, and which may be called 'members': however not all of them are made of the same constituents, nor in the same proportion, but the constituents are combined in various ways.

Having now, we may say, taken all the parts, we must endeavour to give the differences between them and the essential characters of trees and plants taken as wholes.

Definitions of the various classes into which plants may be divided.

III. Now since our study becomes more illuminating\(^3\) if we distinguish different kinds,\(^4\) it is well to follow this plan where it is possible. The first and most important classes, those which comprise all or nearly all\(^5\) plants, are tree, shrub, under-shrub, herb.

A tree is a thing which springs from the root with
πολύκλαδον οὖν εὐαπόλυτον, οἷον ἑλάα συκῆ ἀμπελος: θάμνος δὲ τὸ ἀπὸ ρίζης πολύκλαδον, οἷον βάτος παλίουρος. φρύγανον δὲ τὸ ἀπὸ ρίζης πολυστέλεχες καὶ πολύκλαδον οἷον καὶ θύμβρα καὶ πήγανον. τὸ δὲ τὸ ἀπὸ ρίζης φυλλοφόρον προῖδον ἀστέλεχες, οὔ ὁ καυλὸς σπερμοφόρος, οἷον ὁ σῖτος καὶ τὰ λάχανα.

2 Δεῖ δὲ τοὺς ὅρους οὕτως ἀποδέχεσθαι καὶ λαμβάνειν ὡς τύπῳ καὶ ἐπὶ τὸ πᾶν λεγομένους: ἔνια γὰρ ἱσως ἐπαλλάττειν δόξειε, τά δὲ καὶ παρὰ τὴν ἀγωγὴν ἀλλοιοτέρα γίνεσθαι καὶ ἐκβάινει τῆς φύσεως, οἷον μαλάχη τε εἰς ύψος ἀναγομένη καὶ ἀποδενδρουμένη συμβαίνει γὰρ τούτῳ καὶ οὖν εὐ πολλῷ χρόνῳ ἀλλ’ ἐν εἰς ἡ ἐπτὰ μησίν, ὡστε μῆκος καὶ πάχος δορατιαῖον γίνεσθαι, δι’ ὅ καὶ βακτηρίαις αὐταῖς χρώνται, πλεῖονος δὲ χρόνου γινομένου κατὰ λόγον ἡ ἀπόδοσις: ἐμοὶς δὲ καὶ ἐπὶ τῶν τεῦτλων καὶ γὰρ ταῦτα λαμβάνει μέγεθος: ἐτὶ δὲ μᾶλλον ἀγνοι καὶ ὁ παλίουρος καὶ ὁ κιττός, ὡςθ’ ὀμολογουμένως ταῦτα γίνεται 

3 δένδρα καὶ τοῦ θαμνώδη γε ἐστίν. ὁ δὲ μύρρινος μὴ ἀνακαθαιρόμενος ἐκθαμβοῦται καὶ ἡ ἡρακλεωτικὴ καρύα. δοκεῖ δὲ αὐτῇ γε καὶ τὸν καρπὸν βελτίω καὶ πλεῖον φέρειν ἐάν ράβδους τις ἔα

1 θάμνος ... πήγανον. W.'s text transposes, without alteration, the definitions of θάμνος and φρύγανον as given in U. φρύγανον δὲ τὸ ἀπὸ ρίζης καὶ πολυστέλεχες καὶ πολύκλαδον οἶον βάτος παλίουρος, Ald. So also M, but with a lacuna marked before φρύγανον and a note that the definition of θάμνος is wanting. φρύγανον δὲ τὸ ἀπὸ ρίζης καὶ πολυστέλεχες καὶ πολύκλαδον οἶον καὶ γάμβρη καὶ πήγανον. θάμνος δὲ ἀπὸ ρίζης πολύκλαδον οἶον βάτος παλίουρος U. So also very nearly P1P2G gives to θάμνος (frutex) the definition assigned in U to φρύγανον (suffrutex) and the other definition is wanting.
a single stem, having knots and several branches, and it cannot easily be uprooted; for instance, olive fig vine. 1 A shrub is a thing which rises from the root with many branches; for instance, bramble Christ's thorn. An under-shrub is a thing which rises from the root with many stems as well as many branches; for instance, savory 2 rue. A herb is a thing which comes up from the root with its leaves and has no main stem, and the seed is borne on the stem; for instance, corn and pot-herbs.

These definitions however must be taken and accepted as applying generally and on the whole. For in the case of some plants it might seem that our definitions overlap; and some under cultivation appear to become different and depart from their essential nature, for instance, mallow 3 when it grows tall and becomes tree-like. For this comes to pass in no long time, not more than six or seven months, so that in length and thickness the plant becomes as great as a spear, and men accordingly use it as a walking-stick, and after a longer period the result of cultivation is proportionately greater. So too is it with the beets; they also increase in stature under cultivation, and so still more do chaste-tree Christ's thorn ivy, so that, as is generally admitted, these become trees, and yet they belong to the class of shrubs. On the other hand the myrtle, unless it is pruned, turns into a shrub, and so does filbert 4: indeed this last appears to bear better and more abundant fruit, if one leaves

Note that W.'s transposition gives kal . . . kal the proper force; § 4 shews that the typical φρύγανον in T.'s view was πολυστέλεχες.

2 θύμβρα conj. W.; γάμβρη MSS. But the first kal being meaningless, W. also suggests σιούμβριον for kal γάμβρη.

3 cf. Plin. 19. 62. 4 cf. 3. 15. 1.
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πλείους ὡς τῆς φύσεως θαμμώδους οὐσης. οὐ μονοστέλεχες δ' ἂν δοξείειν οὐδ' ἡ μηλέα οὐδ' ἡ ροία οὐδ' ἡ ἀπίος εἶναι, οὐδ' ὠλος ὁσα παραβλα-στητικὰ ἀπὸ τῶν ρίζῶν ἀλλὰ τῇ ἁγωγῇ τοιαῦτα παραιρομένων τῶν ἄλλων. ἐνια δὲ καὶ ἐώσι πολυστελέχη διὰ λεπτότητα, καθάπερ ῥόαν μηλέαν: ἐώσι δὲ καὶ τὰς ἐλάσας κοπάδας καὶ τὰς συκᾶς.

4 Τάχα δ' ἂν τις φαίη καὶ ὄλως μεγέθει καὶ μι-κρότητι διαιρετέον εἶναι, τὰ δὲ ἱσχύν καὶ ἀσθενεία καὶ πολυχρυσότητι καὶ ὁλυγοχροιότητι. τῶν τε γὰρ φυγανωδῶν καὶ λαχανωδῶν ἔνια μονο-στελέχη καὶ οἷον δένδρου φυσιν ἔχοντα γίνεται, καθάπερ ῥάφανος πήγανον, οὗν καὶ καλοῦσι τινες τὰ τοιαῦτα δευντολάχανα, τὰ τε λαχανώδη πάντα ἢ τὰ πλείστα ὅταν ἑγκαταμείνη λαμβάνει τινὰς ὑστερ ἄκρεμόνας καὶ γίνεται τὸ ὅλον ἐν σχήματι δευντόωδεῖ πλήν ὁλυγοχροιώτερα.

5 Διὰ δὴ ταῦτα ὑστερ λέγομεν οὐκ ἄκριβολογιγ-τέον τῷ ὅρῳ ἀλλὰ τῷ τύπῳ ληπτέον τοὺς ἀφορισμοὺς ἐπεὶ καὶ τὰς διαιρέσεις ὀμοίως, οἷον ὡμέρων ἄγριων, καρποφόρων ἀκάρπων, ἀνθοφόρων ἀνανθῶν, ἀειφύλλων φυλλοβόλων. τὰ μὲν γὰρ ἄγρια καὶ ὡμέρα παρὰ τὴν ἁγωγὴν εἶναι δοκεῖ: πάν γὰρ καὶ ἄγριοι καὶ ὡμεροὶ φησίν Ἰτπὼν γίνεσθαι τυγχάνον ἢ μὴ τυγχάνον θεραπείας.

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1 i.e. so that the tree comes to look like a shrub from the growth of fresh shoots after cutting. cf. 2. 6. 12; 2. 7. 2.
2 ῥάφανος conj. Bod. from G; ῥαφάνις Ald.
3 cf. 3. 2. 2. The Ionian philosopher. See Zeller, Pre-Socratic Philosophy (Eng. trans.), I. 281 f.
4 καὶ add. W.; so G.
5 ἡ conj. Sch.; καὶ U Ald. Cam. Bas. H.
a good many of its branches untouched, since it is by nature like a shrub. Again neither the apple nor the pomegranate nor the pear would seem to be a tree of a single stem, nor indeed any of the trees which have side stems from the roots, but they acquire the character of a tree when the other stems are removed. However some trees men even leave with their numerous stems because of their slenderness, for instance, the pomegranate and the apple, and they leave the stems of the olive and the fig cut short.¹

*Exact classification impracticable: other possible bases of classification.*

Indeed it might be suggested that we should classify in some cases simply by size, and in some cases by comparative robustness or length of life. For of under-shrubs and those of the pot-herb class some have only one stem and come as it were to have the character of a tree, such as cabbage² and rue: wherefore some call these ‘tree-herbs’; and in fact all or most of the pot-herb class, when they have been long in the ground, acquire a sort of branches, and the whole plant comes to have a tree-like shape, though it is shorter lived than a tree.

For these reasons then, as we are saying, one must not make a too precise definition; we should make our definitions typical. For we must make our distinctions too on the same principle, as those between wild and cultivated plants, fruit-bearing and fruitless, flowering and flowerless, evergreen and deciduous. Thus the distinction between wild and cultivated seems to be due simply to cultivation, since, as Hippon³ remarks, any plant may be either⁴ wild or cultivated according as it receives or⁵ does not receive attention.
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ἀκαρπα δὲ καὶ καρπίμα καὶ ἀνθοφόρα καὶ ἀνανθή παρὰ τοὺς τόπους καὶ τῶν ἀέρα τῶν περιέχοντα
tὸν αὐτὸν δὲ τρόπον καὶ φυλλοβόλα καὶ ἀεί-
φυλλα. περὶ γὰρ Ἃλεφαντίνην οὐδὲ τὰς ἀμπέλους
οὐδὲ τὰς συκᾶς φασι φυλλοβολέιν.

6. 'Αλλ' ὁμοὶ τοιαύτα διαιρετέον' ἔχει γὰρ τι τῆς
φύσεως κοινῶν ὁμοίως ἐν δένδροις καὶ θάμνοις καὶ
tois φυγανικοῖς καὶ ποιώδεσιν· ὑπὲρ ὧν καὶ τὰς
αἰτίας ὅταν τις λέγῃ περὶ πάντων κοινῇ δῆλον ὅτι
λεκτέων ὤν ὀρίζοντα καθ' ἐκαστὸν εὐλογον δὲ
καὶ ταύτας κοινὰς εἶναι πάντων. ᾠμα δὲ καὶ
φαίνεται τινά ἔχειν φυσικὴν διαφορὰν εὐθὺς ἐπὶ
tῶν ἄγριων καὶ τῶν ἡμέρων, εἴπερ ἕνα μὴ δύνα-
tαι τῇ ὥσπερ τὰ γεωργούμενα μηδὲ ὀλοὺς δέχεται
θεραπείαν ἀλλὰ χείρῳ γίνεται, καθάπερ ἔλατη
πεύκη κηλαστρον καὶ ἀπλῶς ὅσα ψυχροὺς τόπους
φιλεῖ καὶ χιονώδεις, ὥστατος δὲ καὶ τῶν φυγανι-
kων καὶ ποιώδων, οἷον κάππαρις καὶ θέρμοις.
ἡμερον δὲ καὶ ἄγριον δίκαιον καλείν ἀναφέροντα
πρὸς τε ταύτα καὶ ὀλοὺς πρὸς τὸ ἡμερώτατον: [ὁ
δὲ ἀνθρωπὸς ἢ μόνον ἢ μάλιστα ἡμερον.]

IV. Φανεραὶ δὲ καὶ κατ' αὐτὰς τὰς μορφὰς αἱ
diaphorai τῶν ὀλοὺν τε καὶ μορίων, οἷον λέγω

1 ἀνθοφόρα καὶ ἀνανθή conj. Sch. from G; καρπόφορα ἄνθη
P2 Ald.
2 cf. 1. 9. 5; Plin. 16. 81.
3 τοιαύτα conj. W.; διαιρετέον conj. Sch.; τοῖς αὐτοῖς
αἱρετέον Ald. The sense seems to be: Though these
'secondary' distinctions are not entirely satisfactory, yet
(if we look to the causes of different characters), they are
indispensable, since they are due to causes which affect all
the four classes of our 'primary' distinction.
4 i.e. we must take the extreme cases.
5 i.e. plants which entirely refuse cultivation.

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ENQUIRY INTO PLANTS, I. iii. 5–iv. i

Again the distinctions between fruitless and fruit-bearing,\(^1\) flowering and flowerless, seem to be due to position and the climate of the district. And so too with the distinction between deciduous and evergreen. \(^2\) Thus they say that in the district of Elephantine neither vines nor figs lose their leaves. Nevertheless we are bound to use such distinctions.\(^3\) For there is a certain common character alike in trees, shrubs, under-shrubs, and herbs. Wherefore, when one mentions the causes also, one must take account of all alike, not giving separate definitions for each class, it being reasonable to suppose that the causes too are common to all. And in fact there seems to be some natural difference from the first in the case of wild and cultivated, seeing that some plants cannot live under the conditions of those grown in cultivated ground, and do not submit to cultivation at all, but deteriorate under it; for instance, silver-fir fir holly, and in general those which affect cold snowy country; and the same is also true of some of the under-shrubs and herbs, such as caper and lupin. Now in using the terms ‘cultivated’ and ‘wild’ we must make these\(^5\) on the one hand our standard, and on the other that which is in the truest sense\(^6\) ‘cultivated.’ Now Man, if he is not the only thing to which this name is strictly appropriate, is at least that to which it most applies.

Differences as to appearance and habitat.

IV. Again the differences, both between the plants as wholes and between their parts, may be seen in

\(^1\) ὑόλως πρὸς τὸ. \(^2\) πρὸς τὸ ὑόλως conj. St. \(^3\) ὅλως πρὸς τὸ. \(^4\) ὅλως πρὸς τὸ ὑόλως conj. St. \(^5\) ὅλως πρὸς τὸ ὑόλως conj. St. \(^6\) ὅλως πρὸς τὸ ὑόλως conj. St.
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μέγεθος καὶ μικρότης, σκληρότης μαλακότης, λείότης τραχύτης, φλοιοῦ φύλλων τῶν ἄλλων, ἀπλῶς εὐμορφία καὶ δυσμορφία τις, ἔτι δὲ καὶ καλλικαρπία καὶ κακοκαρπία. πλεῖον μὲν γὰρ δοκεῖ τὰ ἄγρια φέρειν, ὦσπερ ἀρχαῖς κότινος, καλ-λίω δὲ τὰ ἥμερα καὶ τοὺς χυλοὺς δὲ αὐτοὺς γλυκυτέρους καὶ ἥδιους καὶ τὸ ὀλον ὡς εἰπεῖν εὐκράτους μᾶλλον.

2 Ἀνταί τε δὴ φυσικαί τινες ὦσπερ εἰρηται δια-φοραί, καὶ ἔτι δὴ μᾶλλον τῶν ἀκάρπων καὶ καρπο-φόρων καὶ φυλλοβολῶν καὶ ἀειφύλλων καὶ ὅσα ἄλλα τοιαῦτα. πάντων δὲ λῃπτέον ἄει καὶ τὰς κατὰ τοὺς τόπους· οὐ γὰρ οὐδὲ οἶνον τε ἱσως ἄλλως. αἱ δὲ τοιαῦται δόξαιεν ἄν γενικὸν τινα ποιεῖν χωρισμὸν, οἴνον ἐνύδρων καὶ χερσαίων, ὦσπερ ἐπὶ τῶν ξώων. ἔστι γὰρ ἐναὶ τῶν φυτῶν ἄν ὑπάρκας καὶ ἀλλο γένος τῶν ὑγρῶν, ἠστε τὰ μὲν ἐν τέλμασι τὰ δὲ ἐν λίμναις τὰ δὲ ἐν ποταμοῖς τὰ δὲ καὶ ἐν αὐτῇ τῇ ἥλιατη φύεσθαι, τὰ μὲν ἐλάττω καὶ ἐν τῇ παρ' ἱμῖν τὰ δὲ μείζω περὶ τὴν ἐρυθράν. ἔνα δὲ ὦσπερ εἰ κάθυγρα καὶ ἑλεια, καθάπερ ἰτέα καὶ πλάτανος, τὰ δὲ οὐκ ἐν ὑδατὶ δυνάμενα ξὴν οὐδ' ὀλος ἄλλα διώκοντα τοὺς ξηροὺς τόπους· τῶν δ' ἐλαττόνων ἐστιν ἃ καὶ τοὺς αἰγιαλούς.

1 κατ' αὐτὰς τὰς conj. Sch.; καὶ τὰ τ' αὐτὰς τὰς U; κατὸ ταὐτὰς τὰς MV Ald.
2 πάντων . . . τόπους, text perhaps defective.
3 i.e. as to locality.
4 cf. 4. 7. 1.

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the appearance itself\(^1\) of the plant. I mean differences such as those in size, hardness, smoothness or their opposites, as seen in bark, leaves, and the other parts; also, in general, differences as to comeliness or its opposite and as to the production of good or of inferior fruit. For the wild kinds appear to bear more fruit, for instance, the wild pear and wild olive, but the cultivated plants better fruit, having even flavours which are sweeter and pleasanter and in general better blended, if one may so say.

These then as has been said, are differences of natural character, as it were, and still more so are those between fruitless and fruitful, deciduous and evergreen plants, and the like. But with all the differences in all these cases we must take into account the locality,\(^2\) and indeed it is hardly possible to do otherwise. Such \(^3\) differences would seem to give us a kind of division into classes, for instance, between that of aquatic plants and that of plants of the dry land, corresponding to the division which we make in the case of animals. For there are some plants which cannot live except in wet; and again these are distinguished from one another by their fondness for different kinds of wetness; so that some grow in marshes, others in lakes, others in rivers, others even in the sea, smaller ones in our own sea, larger ones in the Red Sea.\(^4\) Some again, one may say, are lovers of very wet places,\(^5\) or plants of the marshes, such as the willow and the plane. Others again cannot live at all\(^6\) in water, but seek out dry places; and of the smaller sorts there are some that prefer the shore.

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\(^1\) i.e. though not actually living in water.
\(^2\) \textit{oud' o\ellws} conj. W.; \textit{ev t\delta\upsilon\omicron\omicron\omicron} Ald.H. \textit{Minime G.}
Où μὴν ἄλλα καὶ τούτων εἰ τις ἄκριβολογείσθαι θέλοι, τὰ μὲν ἀν εὕροι κοινὰ καὶ ὁσπερ ἀμφίβια, καθάπερ μυρίκην ἱτεάν κλῆθραν, τὰ δὲ καὶ τῶν ὀμολογουμένων χερσαίων πεφυκότα ποτὲ ἐν τῇ θαλάσσῃ βιοῦν, φοίνικα σκίλλαν ἀνθέρικον. ἄλλα τὰ τοιαῦτα καὶ ὅλως τὸ ὦτῳ σκοπεῖν οὐκ οἰκείως ἐστὶ σκοπεῖν· οὔδε γὰρ οὔδ' ἡ φύσις ὦτως ὦτ' ἐν τοῖς τοιούτοις ἔχει τὸ ἀναγκαῖον. τὰς μὲν οὖν διαίρεσεις καὶ ὅλως τὴν ἱστορίαν τῶν φυτῶν ὦτῳ ληπτέον. [ἀπαντα δ' οὖν καὶ ταύτα καὶ τὰ ἄλλα δίοισει καθάπερ εὑρηταί ταῖς τε τῶν ὀλων μορφαῖς καὶ ταῖς τῶν μορίων διαφοραῖς, ἡ τῷ ἔχειν τὰ δὲ μὴ ἔχειν, ἡ τῷ πλείω τὰ δ' ἐλάττω, ἡ τῷ ἀνομοίως ἢ ὅσοι τρόποι διηρηνταὶ πρότερον. οἰκείων δὲ ἔσως καὶ τοὺς τόπους συμπαραλαμβάνειν ἐν οἷς ἔκαστα πέφυκεν ἢ μὴ πέφυκε γίνεσθαι. μεγάλη γὰρ καὶ αὐτὴ διαφορὰ καὶ οὕχ ἡκιστα οἰκεία τῶν φυτῶν διὰ τὸ συνηρτήσθαι τῇ γῇ καὶ μὴ ἀπολελύσθαι καθάπερ τὰ ζῶα.]

V. Πειρατέον δ' εἰπεῖν τὰς κατὰ μέρος διαφορᾶς ὡς ἀν καθόλου λέγοντας πρῶτον καὶ κοινῶς.

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1 θέλοι conj. Sch.; θέλει Ald.H.
2 εὑροι conj. Sch.; εὑρη Ald.; εὑρη H.
3 Presumably as being sometimes found on the shore below high-water mark.
4 ἀπαντα ... ζῶα. This passage seems not to belong here (W.).
5 τρόποι conj. Sch.; τόποι UMV Ald.

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ENQUIRY INTO PLANTS, l. iv. 3–v. 1

However, if one should wish 1 to be precise, one would find 2 that even of these some are impartial and as it were amphibious, such as tamarisk willow alder, and that others even of those which are admitted to be plants of the dry land sometimes live in the sea, 3 as palm squill asphodel. But to consider all these exceptions and, in general, to consider in such a manner is not the right way to proceed. For in such matters too nature certainly does not thus go by any hard and fast law. Our distinctions therefore and the study of plants in general must be understood accordingly. 4 To return—these plants as well as all others will be found to differ, as has been said, both in the shape of the whole and in the differences between the parts, either as to having or not having certain parts, or as to having a greater or less number of parts, or as to having them differently arranged, or because of other differences 5 such as we have already mentioned. And it is perhaps also proper to take into account the situation in which each plant naturally grows or does not grow. For this is an important distinction, and specially characteristic of plants, because they are united to the ground and not free from it like animals.

Characteristic differences in the parts of plants, whether general, special, or seen in qualities and properties.

V. Next we must try to give the differences as to particular parts, in the first instance speaking broadly of those of a general character, 6 and then

6 i.e. those which divide plants into large classes (e.g. evergreen and deciduous).
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eíta kath' ékaatou, ústeron épi pleión òspere
ánabheoróntas.

"Εστι δὲ τὰ μὲν ὀρθοφυὴ καὶ μακροστελέχη
καθάπερ ἐλάτη πεύκη κυπάριττος, τὰ δὲ σκο-
lιώτερα καὶ βραχυστελέχη οἶνον ἱτέα συκῆ ῥοϊά,
kai kàta páchos δὲ kai léptótheta ὁμοίως.
kai pálin tā μὲν μονοστελέχη τὰ δὲ πολυ-
στελέχη τοῦτο δὲ ταὐτὸ τρόπον τινὰ καὶ τῷ
παραβλαστητικῆ ἢ ἀπαράβλαστα εἶναι καὶ
polukladhē kai oligokладa katháper ó phoīnix,
kai ἐν αὐτοῖς τούτοις ἐτί katā íschnὴ ἢ páchos ἢ
τὰς τοιαύτας διαφοράς. πάλιν τὰ μὲν λεπτό-
φλοια, καθάπερ δάφνη φίλυρα, τὰ δὲ παχύφλοια,
katháper drūs. ἔτι τὰ μὲν λειώφλοια, καθάπερ
μηλέα συκῆ, τὰ δὲ τραχύφλοια, καθάπερ ἀγρία
drūs fellois phoīnix. πάντα δὲ νέα μὲν ὁντα
λειώφλοιότερα, ἀπογνηράσκοντα δὲ τραχύφλοιό-
tera, εἶνα δὲ καὶ ῥηξίφλοια, καθάπερ ἀμπελος, τὰ
dὲ καὶ ὡς περιπτέπειν, οἶνον ἀνδράχλη μηλέα
κόμρας. ἐστὶ δὲ καὶ τῶν μὲν σαρκώδης ὁ φλοῖος,
oiōn felloū drūos aīgeírou τῶν δὲ ἱνώδης καὶ
ἀσαρκὸς ὁμοίως δεύδρον καὶ θάμνων καὶ ἐπετείων,
oiōn ἀμπέλου καλάμου πυροῦ. καὶ τῶν μὲν
πολύλοπος, οἶνον φιλύρας ἐλάτης ἀμπέλου λινο-
σπάρτου κρομύων, τῶν δὲ μονόλοπος, οἶον συκῆς

1 i.e. taking account of differences in qualities, etc. See
§ 4, but the order in which the three kinds of 'differences'
are discussed is not that which is here given; the second is
taken first and resumed at 6. 1, the third begins at 5. 4, the
first at 14. 4.

2 ταὐτὸ conj. Sch.; αὐτὸ UMVP Ald.

3 τραχύφλοιότερα conj. H. from G; παχυφ. UM Ald.
of special differences between individual kinds; and after that we must take a wider range, making as it were a fresh survey.¹

Some plants grow straight up and have tall stems, as silver-fir fir cypress; some are by comparison crooked and have short stems, as willow fig pomegranate; and there are like differences as to degree of thickness. Again some have a single stem, others many stems; and this difference corresponds² more or less to that between those which have side-growths and those which have none, or that between those which have many branches and those which have few, such as the date-palm. And in these very instances we have also differences in strength thickness and the like. Again some have thin bark, such as bay and lime; others have a thick bark, such as the oak. And again some have smooth bark, as apple and fig; others rough bark, as ‘wild oak’ (Valonia oak) cork-oak and date-palm. However all plants when young have smoother bark, which gets rougher³ as they get older; and some have cracked bark,⁴ as the vine; and in some cases it readily drops off, as in andrachne apple⁵ and arbutus. And again of some the bark is fleshy, as in cork-oak oak poplar; while in others it is fibrous and not fleshy; and this applies alike to trees shrubs and annual plants, for instance to vines reeds and wheat. Again in some the bark has more than one layer, as in lime silver-fir vine Spanish broom⁶ onions⁷; while in some it consists of only

¹ ῥηξίφοια conj. St.; ριξίφοια (?) U; ριξίφοια P.; ριξόφοια P₂ Ald. cf. 4. 15. 2, Plin. l.c.
³ G appears to have read λίνου, σπάρτου. ⁴ cf. 5. 1 6.
καλάμου αἴρασ. κατὰ μὲν δὴ τοὺς φλοιοὺς ἐν τούτοις αἱ διαφοραί.

3 Τῶν δὲ ξύλων αὐτῶν καὶ ὅλως τῶν καυλῶν οἱ μὲν εἰσὶ σαρκώδεις, οἴον δρυὸς συκῆς, καὶ τῶν ἐλαττόνων ῥάμνου τεύτλου κωνείου· οἱ δὲ ἀσαρκοί, καθάπερ κέδρον λωτοῦ κυπαρίσσου. καὶ οἱ μὲν ἴνωδεις· τὰ γὰρ τῆς ἐλάτης καὶ τοῦ φοινικὸς ξύλα τοιαύτα· τὰ δὲ άίνα, καθάπερ τῆς συκῆς. ὡςαύτως δὲ καὶ τὰ μὲν φλεβώδη τὰ δ' ἄφλεβα. περὶ δὲ τὰ φρυγανικὰ καὶ θαμνώδη καὶ ὅλως τὰ ὑλήματα καὶ ἄλλας τις ἀν λάβοι διαφορὰς· ὁ μὲν γὰρ κάλαμος γονατῶδες, ὁ δὲ βάτος καὶ ὁ παλίουρος ἀκανθώδη. ἢ δὲ τύφη καὶ ένια τῶν ἐλείων ἢ λιμναίων ὁμοίως ἀδιάφρακτα καὶ ὀμαλῆ, καθάπερ σχοῖνος. ὁ δὲ τοῦ κυπείρου καὶ βουτόμου καυλὸς ὀμαλότητα τινα ἔχει παρὰ τούτους· ἐτὶ δὲ μᾶλλον ἵσως ὁ τοῦ μύκητος.

4 Αὐταὶ μὲν δὴ δόξαιεν ἄν εξ ὅν ἡ σύνθεσις. αἱ δὲ κατὰ τὰ πάθη καὶ τὰς δυνάμεις οἴον σκηνρότης μαλακότης γλυσχρότης κραυρότης <πυκνότης> μανότης κοὐφότης βαρύτης καὶ ὅσα ἄλλα τοιαύτα· ἢ μὲν γὰρ ἵτεά καὶ χλώρον εὐθὺ κούφον, ὥσπερ ὁ φελλός, ἢ δὲ πῦξος καὶ ἡ ἐβενος οὐδὲ αὐανθέντα. καὶ τὰ μὲν σχίζεται, καθάπερ τὰ τῆς

1 ῥάμνου conj. W.; θάμνου Ρ2; βαλάνου Ald.H.
2 κωνείου conj. Sch.; κωνέου Ald.U (corrected to κωνείου).
3 cf. 7. 6. 4.
4 ὑλήματα conj. Sch. (a general term including shrubs, under-shrubs, etc. cf. 1. 6. 7; 1. 10. 6); κλήματα, Ald.
ENQUIRY INTO PLANTS, I. v. 2-4

one coat, as in fig reed darnel. Such are the respects in which bark differs.

Next of the woods themselves and of stems generally some are fleshy, as in oak and fig, and, among lesser plants, in buckthorn\(^1\) beet hemlock\(^2\); while some are not fleshy, for instance, prickly cedar nettle-tree cypress. Again some are fibrous, for of this character is the wood of the silver-fir and the date-palm; while some are not fibrous,\(^3\) as in the fig. In like manner some are full of 'veins,' others veinless. Further in shrubby plants and under-shrubs and in woody plants\(^4\) in general one might find other differences: thus the reed is jointed, while the bramble and Christ's thorn have thorns on the wood. Bulrush and some of the marsh or pond plants are in like manner\(^5\) without joints and smooth, like the rush; and the stem of galingale and sedge has a certain smoothness beyond those just mentioned; and still more perhaps has that of the mushroom.

Differences as to qualities and properties.

These then would seem to be the differences in the parts which make up the plant. Those which belong to the qualities\(^6\) and properties are such as hardness or softness, toughness or brittleness, closeness or openness of texture, lightness or heaviness, and the like. For willow-wood is light from the first, even when it is green, and so is that of the cork-oak; but box and ebony are not light even when dried. Some woods again can be split,\(^7\) such

\(^1\) \(\ddot{\varphi}\varepsilon\nu\nu\mu\nu\) \(\\text{conjugation uncertain}\)
\(^2\) \(\pi\alpha\theta\eta\) \(\text{cf. 1. 1. 1 n.}\)
\(^3\) \(\sigma\chi\iota\varepsilon\varepsilon\tau\iota\) \(\text{U.M.Vald.}; \sigma\chi\iota\sigma\tau\acute{\alpha} \text{ H.}; \varphi\iota\varsigma\iota\varsigm
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ελάτης, τὰ δὲ εὐθραυστὰ μᾶλλον, οἷον τὰ τῆς ελάτας. καὶ τὰ μὲν ἄοζα, οἷον τὰ τῆς ἀκτῆς, τὰ δὲ ὀξώδη, οἷον τὰ τῆς πεύκης καὶ ελάτης.

5  Δεῖ δὲ καὶ τὰς τοιαύτας ὑπολαμβάνειν τῆς φύσεως. εὐσχιστὸν μὲν γὰρ ἡ ἐλάτη τῷ εὐθυπορείν, εὐθραυστὸν δὲ ἡ ἐλάτα διὰ τὸ σκολιῶν καὶ σκληρῶν. εὐκαμπτὸν δὲ ἡ φίλυρα καὶ ὅσα ἄλλα διὰ τὸ γλύσχραν ἔχειν τὴν υγρότητα. βαρὺ δὲ ἡ μὲν πῦξι καὶ ἡ ἐβενος ὅτι πυκνὰ, ἡ δὲ δρῦς ὅτι γεώδες. ὡσαύτως δὲ καὶ τὰ ἄλλα πάντα πρὸς τὴν φύσιν πως ἀνάγεται.

VI. Διαφέρουσι δὲ καὶ τὰς μῆτρας: πρῶτον μὲν εἰ ἐνιὰ ἔχει ἡ μὴ ἔχει, καθάπερ τинές φασίν ἄλλα τε καὶ τὴν ἀκτῆν, ἐπειτα καὶ ἐν αὐτοῖς τοῖς ἔχουσι τῶν μὲν γὰρ ἐστι σαρκώδης τῶν δὲ ξυλώδης τῶν δὲ υμενώδης. καὶ σαρκώδης μὲν οἶον ἀμπέλου συκῆς μηλέας ροιᾶς ἀκτῆς νάρθηκος. ξυλώδης δὲ πίτυνος ελάτης πεύκης, καὶ μάλιστα αὐτὴ διὰ τὸ ἐνδάδος εἶναι. τούτων δ' ἐτι σκληρότεραι καὶ πυκνότεραι κρανείας πρίνου δρῦδος κυτίσου συκαμίνου ἐβένου λωτοῦ.

2  Διαφέρουσι δὲ αὐταὶ καὶ τοῖς χρώμασι: μέλαινα γὰρ τῆς ἐβένου καὶ τῆς δρῦδος, ἦν καλοῦσι μελάνδρυνον. ἀπασαι δὲ σκληρότεραι καὶ κραυρό-

1 i.e. break across the grain. εὐθραυστὰ MP; ἕθραυστα UPAld.; fragilis G. cf. 5. 5, Plin 16. 186.
2 ἄοζα conj. Palm. from G; λοξά UPAld.
3 i.e. across the grain. 4 cf. 5. 6. 2. 5 cf. 5. 1. 4.
6 T. appears not to agree as to elder: see below.

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as that of the silver-fir, while others are rather breakable,\(^1\) such as the wood of the olive. Again some are without knots,\(^2\) as the stems of elder, others have knots, as those of fir and silver-fir.

Now such differences also must be ascribed to the essential character of the plant: for the reason why the wood of silver-fir is easily split is that the grain is straight, while the reason why olive-wood is easily broken\(^3\) is that it is crooked and hard. Lime-wood and some other woods on the other hand are easily bent because their sap is viscid.\(^4\) Boxwood and ebony are heavy because the grain is close, and oak because it contains mineral matter.\(^5\) In like manner the other peculiarities too can in some way be referred to the essential character.

**Further 'special' differences.**

VI. Again there are differences in the 'core': in the first place according as plants have any or have none, as some say\(^6\) is the case with elder among other things; and in the second place there are differences between those which have it, since in different plants it is respectively fleshy, woody, or membranous; fleshy, as in vine fig apple pomegranate elder ferula; woody, as in Aleppo pine silver-fir fir; in the last-named\(^7\) especially so, because it is resinous. Harder again and closer than these is the core of dog-wood kermes-oak oak laburnum mulberry ebony nettle-tree.

The cores in themselves also differ in colour; for that of ebony and oak is black, and in fact in the oak it is called 'oak-black'; and in all these the core is harder and more brittle than the ordinary.

\(^1\) αὐτης conj. Sch.; αὐτη UAlld.; αὐτη MV; αὐτης P.\(^2\) αὐτης UAlld.; αὐτη MV; αὐτης P.\(^3\) αὐτης UAlld.; αὐτη MV; αὐτης P.
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terai τῶν ξύλων. δι' ὅ καὶ οὐχ ὑπομένουσι καμπῆν, μανότεραι δὲ αἰ μὲν αἰ ὃ' οὖ. ὑμενώ-
δεις δ' ἐν μὲν τοῖς δεύδροις οὐκ εἰσίν ἡ σπάνιοι, ἐν δὲ τοῖς θαμυώδεσι καὶ ὠλως τοῖς ὑλήμασιν
οίον καλάμῳ τε καὶ νάρθηκι καὶ τοῖς τουτοῦτοις εἰσίν. ἔχει δὲ τὴν μῆτραν τὰ μὲν μεγάλην καὶ
φανεράν, ὡς πρίνος δρῦς καὶ τἀλλα προειρη-
méνα, τὰ δ' ἀφανεστέραν, οἴον ἔλαμα πῦξος· οὐ
γὰρ ἔστιν ἀφωρισμένην οὔτω λαβεῖν, ἄλλα καὶ
φασί τινες οὐ κατὰ τὸ μέσον ἄλλα κατὰ τὸ πάν
ἔχειν· ὅτι μὴ εἶναι τόπον ὁρισμένον· δι' ὅ καὶ
ἔνια οὐδ' ἂν δόξειν ὠλως ἔχειν· ἐπεὶ καὶ τού
φοίνικος οὐδεμία φαίνεται διαφορὰ κατ' οὐδέν.

3 Διαφέρουσι δὲ καὶ ταῖς ρίζαις. τὰ μὲν γὰρ
πολύρριζα καὶ μακρόρριζα, καθάπερ συκῆ δρῦς
πλάτανος· ἕαν γὰρ ἔχωσι τόπον, ἐφ' ὄσονοιν
προέρχονται. τὰ δὲ ὀλιγόρριζα, καθάπερ ῥοιμά
μηλέα· τὰ δὲ μονόρριζα, καθάπερ ἐλάτη πεῦκη·
μονόρριζα δὲ οὕτως, οὕτως μινευλὴ τῆς εἰς
βάθος ἔχει μικρὰς δὲ ἀπὸ ταύτης πλείους. ἔχουσι
δὲ καὶ τῶν μὴ μονόρριζων ένια τῆς ἐκ τοῦ μέσου
μεγίστην καὶ κατὰ βάθους, ὡσπερ ἀμυγδαλῆ·
ἐλάα δὲ μικρὰν ταύτην τὰς δὲ ἄλλας μεῖζους καὶ
ὡς κεκαρκινωμένας. ἔτι δὲ τῶν μὲν παχεῖαι
μᾶλλον τῶν δὲ ἀνωμαλεῖς, καθάπερ δάφνης ἐλάας·
tῶν δὲ πᾶσαι λεπταί, καθάπερ ἀμπέλου. δια-
φέρουσι δὲ καὶ λειότητι καὶ τραχύτητι καὶ πυκνό-
τητι. πάντων γὰρ αἱ ρίζαι μανότεραι τῶν ἀνω,

1 μανότεραι . . . οὐ: text can hardly be sound, but sense is clear.
2 i.e. homogeneous.
3 Plin. 16. 127.
4 3. 6. 4 seems to give a different account.
5 cf. C. P. 3. 23. 5, and καρκινώδης C. P. 1. 12. 3; 3. 21. 5.
wood; and for this reason the core of these trees can not be bent. Again the core differs in closeness of texture.\(^1\) A membranous core is not common in trees, if indeed it is found at all; but it is found in shrubby plants and woody plants generally, as in reed ferula and the like. Again in some the core is large and conspicuous, as in kermes-oak oak and the other trees mentioned above; while in others it is less conspicuous, as in olive and box. For in these trees one cannot find it isolated, but, as some say, it is not found in the middle of the stem, being diffused throughout, so that it has no separate place; and for this reason some trees might be thought to have no core at all; in fact in the date-palm the wood is alike throughout.\(^2\)

*Differences in root.*

\(^3\) Again plants differ in their roots, some having many long roots, as fig oak plane; for the roots of these, if they have room, run to any length. Others again have few roots, as pomegranate and apple, others a single root, as silver-fir and fir; these have a single root in the sense that they have one long one\(^4\) which runs deep, and a number of small ones branching from this. Even in some of those which have more than a single root the middle root is the largest and goes deep, for instance, in the almond; in the olive this central root is small, while the others are larger and, as it were, spread out crab-wise.\(^5\) Again the roots of some are mostly stout, of some of various degrees of stoutness, as those of bay and olive; and of some they are all slender, as those of the vine. Roots also differ in degree of smoothness and in density. For the roots of all
πυκνότεραι δὲ ἀλλαὶ ἄλλων καὶ εὐλωδέστεραι· καὶ αἱ μὲν ἴνωδεῖς, ὡς αἱ τῆς ἐλάτης, αἱ δὲ σαρκώδεις μᾶλλον, ὡσπερ αἱ τῆς δρυόσ, αἱ δὲ οίνον ὀξώδεις καὶ θυσανώδεις, ὡσπερ αἱ τῆς ἐλάας· τούτο δὲ ὅτι τὰς λεπτὰς καὶ μικρὰς πολλὰς ἔχουσι καὶ ἄθροας· ἐπεὶ πᾶσαι γε καὶ ταῦτα ἀποφύσουσιν ἀπὸ τῶν μεγάλων ἀλλ’ οὐχ ὀμοίως ἄθροας καὶ πολλὰς.

"Εστι δὲ καὶ τὰ μὲν βαθύρριζα, καθάπερ δρῦς, τὰ δ’ ἐπιπολαιόρριζα, καθάπερ ἐλάα βοῖα ἡμέλεα κυπάριττος. ἐτί δὲ αἱ μὲν εὐθείαι καὶ ὀμαλεῖς, αἱ δὲ σκολιαὶ καὶ παραλλάττουσαι· τούτο γὰρ οὐ μόνον συμβαίνει διὰ τοὺς τόπους τῶν μὴ εὐοδεῖν ἄλλα καὶ τῆς φύσεως αὐτῆς ἐστιν, ὡσπερ ἐπὶ τῆς δάφνης καὶ τῆς ἐλάας· ἦ δὲ συκῆ καὶ τὰ τοιᾶτα σκολιοῦται διὰ τὸ μὴ εὐοδεῖν.

5 "Ἀπασί δ’ ἐμεμητροὶ καθάπερ καὶ τὰ στελέχη καὶ οἱ ἀκρεμώνες· καὶ εὐλογοῦν ἀπὸ τῆς ἀρχῆς. εἰσὶ δὲ καὶ αἱ μὲν παραβλαστητικαί εἰς τὸ ἀνώ, καθάπερ ἀμπέλου βοῖα, αἱ δὲ ἀπαράβλαστοι, καθάπερ εἰλάτης κυπαρίττου πεῦκης. αἱ αὐταὶ δὲ διαφοραὶ καὶ τῶν φρυγανικῶν καὶ τῶν ποιωδῶν καὶ τῶν ἄλλων· πλῆν εἰ ὀλοίς ἐνια μὴ ἔχει, καθάπερ ὑδων μύκης πέξις κεράνυιον. τὰ μὲν πολύρριζα καθάπερ πυρὸ ς τή ρ κριθῆ, πάν τὸ τοιοῦτο, καθάπερ εἰκαζούσαις· τὰ δ’ ὀλιγόρριζα

6 καθάπερ τὰ χεδροπά. σχεδὸν δὲ καὶ τῶν λαχανωδῶν τὰ πλεῖστα μονόρριζα, οἰον ράφανος

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1 πέξις κεραύνιον: πῦξος κράνιον UMVAld. ; πέξις conj. Sch. from Athen. 2. 59 ; κεραύνιον conj. W. cf. Plin. 3. 36 and 37, Juv. 5. 117. 2 εἰκαζούσαι: word corrupt; so UMVAld. 3 Plin. 19. 98.
plants are less dense than the parts above ground, but the density varies in different kinds, as also does the woodiness. Some are fibrous, as those of the silver-fir, some fleshier, as those of the oak, some are as it were branched and tassel-like, as those of the olive; and this is because they have a large number of fine small roots close together; for all in fact produce these from their large roots, but they are not so closely matted nor so numerous in some cases as in others.

Again some plants are deep-rooting, as the oak, and some have surface roots, as olive pomegranate apple cypress. Again some roots are straight and uniform, others crooked and crossing one another. For this comes to pass not merely on account of the situation because they cannot find a straight course; it may also belong to the natural character of the plant, as in the bay and the olive; while the fig and such like become crooked because they can not find a straight course.

All roots have core, just as the stems and branches do, which is to be expected, as all these parts are made of the same materials. Some roots again have side-growths shooting upwards, as those of the vine and pomegranate, while some have no side-growth, as those of silver-fir cypress and fir. The same differences are found in under-shrubs and herbaceous plants and the rest, except that some have no roots at all, as truffle mushroom bullfist¹ 'thunder-truffle.' Others have numerous roots, as wheat one-seeded wheat barley and all plants of like nature, for instance,² . . . . Some have few roots, as leguminous plants.³ And in general most of the pot-herbs have single roots, as cabbage beet celery
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tεύτλου σέλινον λάπαθος, πλήν ἕνια καὶ ἀπο-
φυάδας ἔχει μεγάλας, οἷον τὸ σέλινον καὶ τὸ
tεύτλου καὶ ὡς ἀν κατὰ λόγον ταῦτα βαθυρριζ-
ότερα τῶν δένδρων. εἰσὶ δὲ τῶν μὲν σαρκώδεις,
καθάπερ ῥαβανίδος γογγυλίδος ἄρον κρόκου-
tῶν δὲ ἦλοδεις, οἷον εὐξώμον ὠκίμον καὶ τῶν
ἀγρίων δὲ τῶν πλείστων, ὅσων μὴ εὐθὺς πλείους
καὶ σχιζόμεναι, καθάπερ πυρὸν κριθῆς καὶ τῆς
καλομεμένης πώς. αὐτή γὰρ ἐν τοῖς ἑπετείοις καὶ
ἐν τοῖς ποιώδεσιν ἡ διαφορὰ τῶν ρίζων ὡστε τὰς
μὲν εὐθὺς σχιζέσαι πλείους οὕσας καὶ ὠμαλεῖς,
tῶν δὲ ἅλλων μίαν ἡ δύο τὰς μεγίστας καὶ ἅλλας
ἀπὸ τούτων.

7 "Ολως δὲ πλείους αἱ διαφοραὶ τῶν ρίζων ἐν
τοῖς ὑλήμασι καὶ λαχανώδεσιν" εἰσὶ γὰρ αἱ μὲν
ἐνκλόδεις, ὡσπερ αἱ τοῦ ὠκίμου: αἱ δὲ σαρκώδεις,
ὡσπερ αἱ τοῦ τεύτλου καὶ ἐτὶ δὴ μᾶλλον τοῦ
ἀροῦ καὶ ἀσφοδέλου καὶ κρόκου: αἱ δὲ ὡσπερ
ἐν φλοιοῦ καὶ σαρκός, ὡσπερ αἱ τῶν ῥαβανίδων καὶ
γογγυλίδων: αἱ δὲ γονατώδεις, ὡσπερ αἱ τῶν καλά-
μων καὶ ἀγρώστεων καὶ εἰ τι καλαμώδες, καὶ μόναι
δὴ αὐταὶ ἡ μάλισθ' ὀμοίαι τοῖς ὑπέρ γῆς: ὡσπερ
γὰρ καλαμοὶ εἰσίν ἐρρίξωμένοι ταῖς λεπταῖς. αἱ
dὲ λεπτυρώδεις ἢ φλοιοῦδεις, οἷον αἱ τῆς σκίλλης
cαὶ τοῦ βολβοῦ καὶ ἐτὶ κρομῆν καὶ τῶν τούτων
ομοίων. αἰεὶ γὰρ ἔστι περιαίρειν αὐτῶν.

8 Πάντα δὲ τὰ τοιαῦτα δοκεῖ καθάπερ δύο γένη
ρίζων ἔχειν τοῖς δὲ καὶ ὅλως τὰ κεφαλοβαρῆ
cαὶ κατάρριξα πάντα: τὴν τε σαρκώδη ταύτην

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1 The same term being applied to 'herbaceous' plants in general.
2 Plin. 19. 98.
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monk's rhubarb; but some have large side-roots, as celery and beet, and in proportion to their size these root deeper than trees. Again of some the roots are fleshy, as in radish turnip cuckoo-pint crocus; of some they are woody, as in rocket and basil. And so with most wild plants, except those whose roots are to start with numerous and much divided, as those of wheat barley and the plant specially called 'grass.' For in annual and herbaceous plants this is the difference between the roots:—Some are more numerous and uniform and much divided to start with, but the others have one or two specially large roots and others springing from them.

To speak generally, the differences in roots are more numerous in shrubby plants and pot-herbs; for some are woody, as those of basil, some fleshy, as those of beet, and still more those of cuckoo-pint asphodel and crocus; some again are made, as it were, of bark and flesh, as those of radishes and turnips; some have joints, as those of reeds and dog's tooth grass and of anything of a reedy character; and these roots alone, or more than any others, resemble the parts above ground; they are in fact like reeds fastened in the ground by their fine roots. Some again have scales or a kind of bark, as those of squill and purse-tassels, and also of onion and things like these. In all these it is possible to strip off a coat.

Now all such plants, seem, as it were, to have two kinds of root; and so, in the opinion of some, this is true generally of all plants which have a solid 'head' and send out roots from it downwards. These have,

3 i.e. the main root is a sort of repetition of the part above ground. 4 i.e. bulb, corm, rhizome, etc.
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καὶ φλοιώδη, καθάπερ ἡ σκίλλα, καὶ τὰς ἀπὸ ταύτης ἀποπεφυκυίας· οὐ γὰρ λεπτότητι καὶ παχύ-
τητι διαφέρουσι μόνον, ὡσπερ αἱ τῶν δένδρων καὶ
tῶν λαχάνων, ἀλλὰ ἀλλοίων ἔχουσι τὸ γένος.

ἐκφανεστάτη δὲ ἦδη ἦ τε τοῦ ἄρου καὶ ἦ τοῦ κυ-


πείρου· ἡ μὲν γὰρ παχεία καὶ λεία καὶ σαρκώδης,

ἡ δὲ λεπτὴ καὶ Ἰνώδης. διόπερ ἀπορίσειν ἂν
tις εἰ ρίζας τὰς τοιαύτας θετέον· ἡ μὲν γὰρ κατὰ

γῆς δοξίας ἂν, ἢ δὲ ὑπεναιτίως ἔχουσι ταῖς

ἀλλαῖς οὐκ ἂν δοξίαις. ἡ μὲν γὰρ ρίζα λεπτο-

tέρα πρὸς τὸ πόρρω καὶ αἵ σύνοξις· ἢ δὲ τῶν

σκιλλῶν καὶ τῶν βολβῶν καὶ τῶν ἄρων ἀνά-

παλιν.

9 Ἔτι δὲ αἱ μὲν ἄλλαι κατὰ τὸ πλάγιον υφίασι

ρίζας, αἱ δὲ τῶν σκιλλῶν καὶ τῶν βολβῶν οὐκ

ὑφίασιν· οὐδὲ τῶν σκορὸδων καὶ τῶν κρομύων.

ὅλως δὲ γε ἐν ταύταις αἱ κατὰ μέσον ἐκ τῆς

κεφαλῆς ἠρτημέναι φαίνονται ρίζαι καὶ τρέφον-

tαι. τοῦτο δὲ ὡσπερ κύμα ἡ καρπός, ὅθεν καὶ οἱ

ἐγγενότοκα λέγοντες οὐ κακῶς· ἐπὶ δὲ τῶν ἄλλων

tοιούτω μὲν οὐδέν ἐστὶν· ἐπεὶ δὲ πλεῖον ἡ φύσις

ἡ κατὰ ρίζαν ταύτη ἀπορίαν ἔχει. τὸ γὰρ δὴ
pῶν λέγειν τὸ κατὰ γῆς ρίζαν οὐκ ὀρθῶν· καὶ γὰρ

ἀν ὁ καυλὸς τοῦ βολβοῦ καὶ ὁ τοῦ γηθύνου καὶ

1 τὰς conj. Sch.; τῆς Ald. H.; τὴν ... ἀποπεφυκυίαν P.
2 ἀλλ' ἀλλοίων ἔχουσι conj. St.; ἄλλα λείαν ἔχοντες PMV
Akl.; ἀλλοίων ἐx. mBas.mP from G; ἀλλ' ἀλλοίων ἔχουσαι
conj. Scal. 3 cf. 4. 10. 5.
6 cf. the definition of 'root,' 1. 1. 9.
7 ἐγγενότοκα λέγοντες conj. W.; cf. ἡ τῶν ἐν ἔστώκοιν
τοῦτων γένεσις in Athenaeus’ citation of this passage ‘2. 60);
that is to say, this fleshy or bark-like root, like squill, as well as the roots which grow from this. For these roots not only differ in degree of stoutness, like those of trees and pot-herbs; they are of quite distinct classes. This is at once quite evident in cuckoo-pint and galangale, the root being in the one case thick smooth and fleshy, in the other thin and fibrous. Wherefore we might question if such roots should be called 'roots'; inasmuch as they are under ground they would seem to be roots, but, inasmuch as they are of opposite character to other roots, they would not. For your root gets slenderer as it gets longer and tapers continuously to a point; but the so-called root of squill purse-tassels and cuckoo-pint does just the opposite. Again, while the others send out roots at the sides, this is not the case with squill and purse-tassels, nor yet with garlic and onion. In general in these plants the roots which are attached to the 'head' in the middle appear to be real roots and receive nourishment, and this 'head' is, as it were, an embryo or fruit; wherefore those who call such plants 'plants which reproduce themselves underground' give a fair account of them. In other kinds of plants there is nothing of this sort. But a difficult question is raised, since here the 'root' has a character which goes beyond what one associates with roots. For it is not right to call all that which is underground 'root,' since in that case the stalk of purse-tassels and that of long onion and in general any part which is under-
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όλως ὅσα κατὰ βάθους ἐστὶν εἶχαν ἄν ρίζαι, καὶ τὸ ύδων δὲ καὶ ὁ καλοῦσι τίνες ἀσχίον καὶ τὸ οὐγγον καὶ εἰτὶ ἄλλο ὑπόγειον ἐστὶν· ἂν οὐδὲν ἐστὶ ρίζα· δυνάμει γὰρ δεῖ φυσικὴ διαίρειν καὶ οὐ τόπῳ.

10 Τάχα δὲ τούτῳ μὲν ὄρθως λέγεται, ρίζα δὲ οὐδὲν ἤπτον ἐστὶν· ἄλλα διαφορὰ τὶς αὐτὴ τῶν ρίζων, ὡστε τὴν μὲν τινα τοιαύτην εἶναι τὴν δὲ τοιαύτην καὶ τρέφεσθαι τὴν ἐτέραν ὑπὸ τῆς ἐτέρας. καίτοι καὶ αὐταί αἱ σαρκώδεις ἐνίκασιν ἐλκεῖν. τὰς γονίων τῶν ἄρων πρὸ τοῦ βλαστάνειν στρέφουσι καὶ γίγνονται μεῖζον κωλυόμεναι διαβηναὶ πρὸς τὴν βλάστησιν. ἐπεὶ ὅτι γε πάντων τῶν τοιούτων ἡ φύσις ἐπὶ τὸ κάτω μᾶλλον ῥέπει φανερὸν· οἱ μὲν γὰρ καυλοὶ καὶ ὅλως τὰ ἄνω βραχέα καὶ ἀσθενῆ, τὰ δὲ κάτω μεγάλα καὶ πολλὰ καὶ ἱσχυρὰ οὐ μόνον ἐπὶ τῶν εἰρημένων ἄλλα καὶ ἐπὶ καλάμου καὶ ἀγρώστιδος καὶ ὅλως ὅσα καλαμώδη καὶ τούτοις ὁμοία. καὶ ὅσα δὴ ναρθηκώδη, καὶ τούτων ρίζας μεγάλαι καὶ σαρκώδεις.

11 Πολλὰ δὲ καὶ τῶν ποιωδῶν ἐχεῖ τοιαύτας ρίζας, οἷον σπάλαξ κρόκος καὶ τὸ περδίκιον καλούμενον· καὶ ἡ ρίζαν τοῦτο παχεῖας τε καὶ πλείους ἐχεῖ τὰς ρίζας ἡ φύλλα· καλεῖται δὲ περδίκιον διὰ τὸ τοὺς περδίκιας ἐγκυλισθάι καὶ ὀρύττειν. ὀμοίως δὲ

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1 βάθους conj. Sch.; βάθος Ald.
2 καὶ ὃ W. after U; καὶ om. Ald.; G omits also τὸ before οὐγγον, making the three plants synonymous. The passage is cited by Athen., l.c., with considerable variation.
3 τοιαύτην conj. St.; τοσαύτην MSS.
4 i.e. the fleshy root (tuber, etc.).
5 i.e. the fibrous root (root proper).
ground\(^1\) would be a root, and so would the truffle, the plant which\(^2\) some call puff-ball, the \(\textit{nuingon}\), and all other underground plants. Whereas none of these is a root; for we must base our definition on natural function and not on position.

However it may be that this is a true account and yet that such things are roots no less; but in that case we distinguish two different kinds of root, one being of this character\(^3\) and the other of the other, and the one\(^4\) getting its nourishment from the other\(^5\); though the fleshy roots too themselves seem to draw nourishment. At all events men invert\(^6\) the roots of cuckoo-pint before it shoots, and so they become larger by being prevented from pushing\(^7\) through to make a shoot. For it is evident that the nature of all such plants is to turn downwards for choice; for the stems and the upper parts generally are short and weak, while the underground parts are large numerous and strong, and that, not only in the instances given, but in reeds dog’s-tooth grass and in general in all plants of a reedy character and those like them. Those too which resemble \(\textit{ferula}\)\(^8\) have large fleshy roots.

\(^9\) Many herbaceous plants likewise have such roots, as \(\textit{colchicum}\)\(^10\) crocus and the plant called ‘\(\textit{partridge-plant}\)’; for this too has thick roots which are more numerous than its leaves.\(^11\) (It is called the ‘\(\textit{partridge-plant}\)’ because partridges roll in it and grub it up.) So too with the plant called in Egypt

\(^{\text{6}}\) \(\sigma\tau\rho\varepsilon\varphi\omicron\omicron\omicron\iota\) conj. Sch.; \(\tau\rho\varepsilon\varphi\omicron\omicron\omicron\) MALd.; cf. 7. 12. 2.

\(^{\text{7}}\) \(\delta\iota\alpha\beta\omicron\nu\alpha\iota\) conj. W.; \(\delta\iota\alpha\beta\omicron\nu\alpha\iota\) UMV.

\(^{\text{8}}\) \(\i.e.\) have a hollow stem (umbelliferous plants, more or less).

\(^{\text{9}}\) Plin. 19. 99.

\(^{\text{10}}\) \(\sigma\varphi\alpha\lambda\alpha\varsigma\) UMV; \(\acute{\alpha}\sigma\varphi\alpha\lambda\alpha\varsigma\) mBas.: perhaps corrupt.

\(^{\text{11}}\) Plin. 21. 102.
καὶ τὸ ἐν Δισύπτῳ καλούμενον οὐίγγον; τὰ μὲν γὰρ φύλλα μεγάλα καὶ ὁ βλαστῶς αὐτοῦ βραχὺς, ἣ δὲ ρίζα μακρὰ καὶ ἔστιν ὀσπέρ ὁ καρπός. διαφέρει τε καὶ ἐστίεται, καὶ συλλέγουσι δὲ ὅταν 12 ὁ ποταμὸς ἀποβῇ στρέφοντες τὰς βῶλος. φανερῶτα δὲ καὶ πλείστην ἔχουσα πρὸς τὰ ἄλλα διαφοράν τὸ σίλβιον καὶ ἡ καλούμενη μαγύδαρις ἀμφότερων γὰρ τούτων καὶ ἀπαντῶν τῶν τοιούτων ἐν ταῖς ρίζασι μᾶλλον ἡ φύσις. ταῦτα μὲν οὖν ταύτῃ ληπτέα.

"Ενιαὶ δὲ τῶν ρίζῶν πλείω δοξαίειν ἂν ἔχειν διαφορὰν παρὰ τὰς εἰρημένας· οἷον αἴ τε τῇς ἀρα- χίδνης καὶ τοῦ ὀμόλου τῷ ἀράκῳ. φέρουσι γὰρ ἀμφότεραι καρπὸν οὐκ ἔλαττω τοῦ ἄνω καὶ μάν. μὲν ρίζαν τὸ ἀρακώδες τούτο παχείαν ἔχει τὴν κατὰ βάθους, τὰς δὲ ἄλλας ἐφ᾽ ὅν ὁ καρπὸς λεπτοτέρας καὶ ἐπ᾽ ἀκρῶ [καὶ] σχιζομένας πολ- λαχῆ. φίλει δὲ μάλιστα χωρία τὰ υφάμματα. φύλ- λον δὲ οὐδέτερον ἔχει τούτων οὔδ᾽ ὀμοία τοῖς φύλλοις, ἀλλ᾽ ὀσπέρ ἀμφίκαρπα μᾶλλον ἔστιν. ὁ καὶ φαίνεται θανμάσιον. αἴ μὲν οὖν φύσεις καὶ δυνάμεις τοσάττας ἔχουσι διαφοράς.

VII. Αὐξάνεσθαι δὲ πάντων δοκοῦσιν αἴ ρίζαι πρότερον τῶν ἄνω καὶ γὰρ φύεται εἰς βάθος. οὐδεμιά δὲ καθήκει πλέον ἡ ὁσον ὁ ἡλίος ἐφικνεῖ- ται· τὸ γὰρ θερμὸν τὸ γεννῶν· οὐ μὴν ἄλλα

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1 οὐίγγον mBas.H.; οὐίτον MV; οὐίτον Ald.; cf. 1. 1. 7; P'lin. 21. 88 (oetum).
2 μεγάλα: text doubtful (W.).
3 διαφερεί: text doubtful (Sch.).
4 στρέφοντες τὰς βῶλος conj. Coraēβ.; στέφοντες βωμοὺς UMV Ald.
5 ἐν ins. Sch.
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unqon 1; for its leaves are large 2 and its shoots short, while the root is long and is, as it were, the fruit. It is an excellent thing 3 and is eaten; men gather it when the river goes down by turning the clods. 4 But the plants which afford the most conspicuous instances and shew the greatest difference as compared with others are silphium and the plant called magydaris; the character of both of these and of all such plants is especially shewn in 5 their roots. Such is the account to be given of these plants.

Again some roots would seem to shew a greater difference 6 than those mentioned, for instance, those of arakhidna, 7 and of a plant 8 which resembles arakos. For both of these bear a fruit underground which is as large as the fruit above ground, and this arakos-like 9 plant has one thick root, namely, the one which runs deep, while the others which bear the 'fruit' are slenderer and branch 10 in many directions at the tip. It is specially fond of sandy ground. Neither of these plants has a leaf nor anything resembling a leaf, but they bear, as it were, two kinds of fruit instead, which seems surprising. So many then are the differences shewn in the characters and functions of roots.

VII. The roots of all plants seem to grow earlier than the parts above ground (for growth does take place downwards 11). But no root goes down further than the sun reaches, since it is the heat which induces growth. Nevertheless the nature of the soil,

6 i.e. to be even more abnormal: διαφορὰν conj. Sch.; διαφοράλ Ald. 7 Plin. 21. 89. 8 tine-tare. See Index, App. (1). 9 ἄρακωδες conj. Sch.; σαρκώδες Ald.G. 10 καὶ before σχῖσθαι om. Sch. from G. 11 cf. O.P. 1. 12. 7. (cited by Varro, 1. 45. 3); 3. 3. 1.
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ταύτα μεγάλα συμβάλλεται πρὸς βαθυρρίζιαν καὶ ἐτι μᾶλλον πρὸς μακρορρίζιαν, ἡ τῆς χώρας φύσις ἑάν ἡ κούφη καὶ μανῆ καὶ εὐθύδος· ἐν γὰρ ταῖς τοιαύταις πορρωτέρῳ καὶ μεῖζοις αἱ αὐξήσεις. φανερὸν δὲ ἐπὶ τῶν ἡμερομάτων ἔχοντα γὰρ ὑδωρ ὀπονοῦν δίεισιν ὡς εἰπεῖν, ἐπειδὰν ὁ τόπος ἡ κενὸς καὶ μηδὲν τὸ ἀντιστατοῦν. ἦγουν ἐν τῷ Δυκείῳ ἡ πλάταιος ἡ κατὰ τὸν όχετὸν ἐτὶ νέα ὅσα ἐπὶ τρεῖς καὶ τριάκοντα πήχεις ἀφήκεν ἔχουσα τὸπον τὲ ἁμα καὶ τροφῆν.

2 Δόξειε δὲ ὡς εἰπεῖν ἡ συκῆ μακρορρίζότατον εἶναι καὶ ὅλος δὲ μᾶλλον τὰ μανὰ καὶ εὐθύρριζα. πάντα δὲ τὰ νεώτερα τῶν παλαιῶν, ἐὰν εἰς ἀκρὶν ἡκωσιν, ἡδὴ βαθυρρίζότερα καὶ μακρορρίζότερα. συμφθίνουσι γὰρ καὶ αἱ ρίζαι τῷ ἀλλῳ σώματι. πάντων δὲ ὡμοίως οἱ χυλοὶ τοῖς φυτοῖς δεινότεροι, τοῖς δὲ ὡς ἐπίπαν· δὴ καὶ ἐνίων πικραὶ ὃν οἱ καρποὶ γλυκεῖς· αἱ δὲ καὶ φαρμακώδεις· ἐναι δὲ εὖωδεῖς, ὡσπερ αἱ τῆς ἱρίδος.

3 Ἡδία δὲ ρίζης φύσις καὶ δύναμις ἡ τῆς Ἰνδικῆς συκῆς· ἀπὸ γὰρ τῶν βλαστῶν ἀφίησι, μέχρι οὐ ἀν συνάψῃ τῇ γῆ καὶ ρίζωθι, καὶ γίνεται περὶ τὸ δένδρον κύκλῳ συνεχεῖς τὸ τῶν ρίζῶν ὅχ ἀπτόμενον τοῦ στελέχους ἀλλ’ ἀφεστηκός.
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if it is light open and porous, contributes greatly\(^1\) to deep rooting, and still more to the formation of long roots; for in such soils growth goes further and is more vigorous. This is evident in cultivated plants.\(^2\) For, provided that they have water, they run on, one may say, wherever it may be,\(^3\) whenever\(^4\) the ground is unoccupied and there is no obstacle.\(^5\) For instance the plane-tree by the watercourse in the Lyceum when it was still young sent out its roots a distance of\(^6\) thirty-three cubits, having both room and nourishment.

The fig would seem, one may say, to have the longest roots, and in general plants which have wood of loose texture and straight roots would seem to have these longer. Also young plants, provided that they have reached their prime, root deeper and have longer roots than old ones; for the roots decay along with\(^7\) the rest of the plant's body. And in all cases alike the juices of plants\(^8\) are more powerful in the roots than in other parts, while in some cases they are extremely powerful; wherefore the roots are bitter in some plants whose fruits are sweet; some roots again are medicinal, and some are fragrant, as those of the iris.

The character and function of the roots of the 'Indian fig' (banyan) are peculiar, for this plant sends out roots from the shoots till it has a hold on the ground\(^9\) and roots again; and so there comes to be a continuous circle of roots round the tree, not connected with the main stem but at a distance from it.

\(^{1}\) tois φυτοῖς Ald.; taῖς δίκαιον conj. W. from G: text probably defective.

\(^{2}\) τῆς γῆς conj. Scal. from G; συκῆ U; τῆ συκῆ P,2 Ald.
Παραπλήσιον δὲ τούτῳ μᾶλλον δὲ τρόποιν τινὰ θαυμασιώτερον εἰ τι ἐκ τῶν φύλλων ἀφίησι ρίζαν, οἴον φασὶ περὶ Ὀποῦντα ποιώριον εἶναι, δὲ καὶ ἐσθλεσθαί ἐστιν ἤδυ. τὸ γὰρ αὖ τῶν θέρμων θαυμαστῶν ἢττον, ὅτι ἄν ἐν ὑλῇ βαθείᾳ σπάρῃ διεύρει τὴν ρίζαν πρὸς τὴν γῆν καὶ βλαστάνει διὰ τὴν ἵσχυν. ἀλλὰ δὴ τὰς μὲν τῶν ρίζων διαφοράς ἐκ τούτων θεωρητέον.

VIII. Τῶν δένδρων τὰς τοιαύτας ἄν τις λάβοι διαφορὰς. ἔστι γὰρ τὰ μὲν ὁξώδη τὰ δ᾽ ἄνοξα καὶ φύσει καὶ τόπῳ κατὰ τὸ μᾶλλον καὶ ἢττον. ἄνοξα δὲ λέγω οὐχ ὡστε μὴ ἔχειν ὀλωσ.—οὐδὲν γὰρ τοιοῦτο δένδρον, ἀλλ᾽ εἰπέρ, ἐπὶ τῶν ἀλλῶν οἶον σχοῖνοις τύφη κύπειρος ὀλωσ ἐπὶ τῶν λιμνῶδῶν—ἀλλὰ ὡστε ὀλύγους ἔχειν. φύσει μὲν οἶον ἀκτῇ δάφυη συκῇ ὀλωσ πάντα τὰ λειόφλοια καὶ ὀσα κοῖλα καὶ μανά. ὁξώδες δὲ ἐλάᾳ πεύκη κότινοις τούτων δὲ τὰ μὲν ἐν παλισκίοις καὶ νυνέμοις καὶ ἐφύδροις, τὰ δὲ ἐν εὐνήλοις καὶ χειμερίοις καὶ πνευματόδεσι καὶ λεπτοῖς καὶ ξηροῖς τὰ μὲν γὰρ ἄνοξότερα, τὰ δὲ ὁξωδέστερα τῶν

1 τὶ conj. W.; τὶs MSS. 2 Plin. 21. 104. 3 cf. 8. 11. 8; Plin. 18. 133 and 134. 4 διείρει conj. Sch.; διαρεῖ P9 Ald.; cf. C. P. 2. 17. 7. 5 ὁξός is the knot and the bough starting from it: cf. Arist. de inv. et sen. 3. 6 ὅτι τῶν conj. Coraës; ἢ τῶν UM; ἢττον (erased) P (ἐκ τῶν marg.) ἢττον Ald.
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Something similar to this, but even more surprising, occurs in those plants which emit roots from their leaves, as they say does a certain herb which grows about Opus, which is also sweet to taste. The peculiarity again of lupins is less surprising, namely that, if the seed is dropped where the ground is thickly overgrown, it pushes its root through to the earth and germinates because of its vigour. But we have said enough for study of the differences between roots.

Of trees (principally) and their characteristic special differences: as to knots.

VIII. One may take it that the following are the differences between trees:—Some have knots, more or less, others are more or less without them, whether from their natural character or because of their position. But, when I say ‘without knots,’ I do not mean that they have no knots at all (there is no tree like that, but, if it is true of any plants, it is only of other kinds, such as rush bulrush galingale and plants of the lake side generally) but that they have few knots. Now this is the natural character of elder bay fig and all smooth-barked trees, and in general of those whose wood is hollow or of a loose texture. Olive fir and wild olive have knots; and some of these grow in thickly shaded windless and wet places, some in sunny positions exposed to storms and winds, where the soil is light and dry; for the number of knots varies between trees of the

7 τῶφη conj. Bod.; τῶφη U Ald. H.; cf. l. 5. 3.
8 ἐπὶ τῶν conj. W.; ἐʼ τι ἐπὶ τῶν Ald.
9 πνευματώδεσι conj. Scal.; πνευματώδεσι U; πνυματώδεσι M Vald.
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όμογενῶν. ὅλως δὲ οξωδέστερα τὰ ὀρεινὰ τῶν πεδευνῶν καὶ τὰ ξηρὰ τῶν ἐλείων.

2 "Ετὶ δὲ κατὰ τὴν φυτείαν τὰ μὲν πυκνὰ ἀνοξέα καὶ ὀρθά, τὰ δὲ μανά οξωδέστερα καὶ σκολιώτερα· συμβαίνει γὰρ ὡστε τὰ μὲν ἐν παλισκίῳ εἶναι τὰ δὲ ἐν εὐηλίῳ. καὶ τὰ ἀρρενα δὲ τῶν θηλείων οξωδέστερα ἐν οἷς ἐστὶν ἀμφω, οἷον κυπάριττος ἐλάτη ὀστρυῖς κρανεία· καλούσι γὰρ γένος τι θηλυκρανείαν· καὶ τὰ ἁγρία δὲ τῶν ἡμέρων, καὶ ἀπλῶς καὶ τὰ ύπὸ ταυτὸ γένος, οἷον κότινος ἐλάσσι καὶ ἔρινεος συκής καὶ ἁχράς ἁπίου. πάντα γὰρ ταύτα οξωδέστερα· καὶ ὡς ἐπὶ τὸ πολὺ πάντα τὰ πυκνὰ τῶν μανῶν· καὶ γὰρ τὰ ἀρρενα πυκνότερα καὶ τὰ ἁγρία· πλὴν εἰ τι διὰ πυκνότητα παντελῶς ἀνοξὺν ἢ ὀλύγοξου, οἷον πῦξος λωτός.

3 Εἰσὶ δὲ τῶν μὲν ἀτακτοί καὶ ὡς έτυχεν οἱ ὦξοι, τῶν δὲ τεταγμένοι καὶ τῷ διαστήματι καὶ τῷ πλῆθει καθάπερ εἶρηται· δι᾽ ὅ καὶ ταξιόζωτα ταύτα καλούσιν. τῶν μὲν γὰρ οἶον δι᾽ ἰσον τῶν δὲ μείζον αἰεὶ τὸ πρὸς τῷ πάχει. καὶ τούτῳ κατὰ λόγον. ὀπερ μάλιστα ένδηλου καὶ ἐν τοῖς κοτίνους καὶ ἐν τοῖς καλάμοις· τὸ γὰρ γόνυ καθάπερ ὦξος. καὶ οί μὲν κατ᾽ ἀλλήλους, ὡσπερ οἱ τῶν

1 Plin. 16. 125. 2 l. 8. 1. 3 ταξιόζωτα conj. W.; ἀξιολογῶτα Ald.; cf. ταξίφυλλος, l. 10. 8. 4 Plin. 16. 122.
same kind. And in general mountain trees have more knots than those of the plain, and those that grow in dry spots than those that grow in marshes.

Again the way in which they are planted makes a difference in this respect; those trees that grow close together are knotless and erect, those that grow far apart have more knots and a more crooked growth; for it happens that the one class are in shade, the others in full sun. Again the 'male' trees have more knots than the 'female' in those trees in which both forms are found, as cypress silver-fir hop-hornbeam cornelian cherry—for there is a kind called 'female cornelian cherry' (cornel)—and wild trees have more knots than trees in cultivation: this is true both in general and when we compare those of the same kind, as the wild and cultivated forms of olive fig and pear. All these have more knots in the wild state; and in general those of closer growth have this character more than those of open growth; for in fact the 'male' plants are of closer growth, and so are the wild ones; except that in some cases, as in box and nettle-tree, owing to the closer growth there are no knots at all, or only a few.

Again the knots of some trees are irregular and set at haphazard, while those of others are regular, alike in their distance apart and in their number, as has been said; wherefore also they are called 'trees with regular knots.' For of some the knots are, as it were, at even distances, while in others the distance between them is greater at the thick end of the stem. And this proportion holds throughout. This is especially evident in the wild olive and in reeds—in which the joint corresponds to the knot in trees. Again some knots are opposite one another,
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κοτίνων, οί δ' ώς ἐτυχεν. ἐστὶ δὲ τὰ μὲν δίοξα, τὰ δὲ τρίοξα, τὰ δὲ πλείους ἔχοντα: ἕνα δὲ πεντάοξα ἐστι. καὶ τῆς μὲν ἐλάτης ὅρθοι καὶ οἱ ὦξοι καὶ οἱ

κλάδοι ὄσπερ ἐμπεπηγήσετε, τῶν δὲ ἄλλων οὐ. δι’ ὁ καὶ ἵσχυρον ἡ ἐλάτη. ἰδιώτατοι δὲ οἱ τῆς μηλέας ὁμοίου γὰρ θηρίων προσώποις, εἰς μὲν οἱ μέγιστοι ἄλλοι δὲ περὶ αὐτῶν μικροὶ πλείους. εἰσὶ δὲ τῶν ὦξων οἱ μὲν τυφλοὶ, οἱ δὲ γόνυμοι. λέγω δὲ τυφλοὺς ἄφ’ ὦν μηδεῖς βλαστός. οὕτωι δὲ καὶ φύσει καὶ πηρώσει γίνονται, ὅταν ἡ μὴ λυθῇ καὶ ἐκβιάζηται ἡ καὶ ἀποκοπῇ καὶ οἴον ἐπικαυθεῖς πηρῳδῆ. γίνονται δὲ μᾶλλον ἐν τοῖς παχέσι τῶν ἀκρεμών, ἐνίων δὲ καὶ ἐν τοῖς στελέχεσιν. ὅλως δὲ καὶ τοῦ στελέχους καὶ τοῦ κλάδου καθ’ ὁ ἂν ἐπικοψίη ἡ ἐπιτέμψη τις, οὕτως γίνεται καθαπερανεὶ διαίρων τὸ ἐν καὶ ποιῶν ἑτέραν ἀρχὴν, εἰτε διὰ τὴν πὴρωσιν εἰτε δι’ ἄλλην αἰτίαν οὐ γὰρ δὴ κατὰ φύσιν τὸ ὑπὸ τῆς πληγῆς.

5 Ἀλεὶ δὲ ἐν ἀπασιν οἱ κλάδοι φαίνονται πολυοξότεροι διὰ τὸ μῆπῳ ταῦτα μέσου προσηνεψάθαι, καθάπερ καὶ τῆς συκῆς οἱ νεόβλαστοι τραχύτατοι καὶ τῆς ἀμπέλου τὰ ἀκρὰ τῶν κλημάτων. ὥς γὰρ ὀξὸς ἐν τοῖς ἄλλοις οὕτω καὶ ὀφθαλμὸς

1 cf. 4. 4. 12. 2 Plin. 16. 122.
3 i.e. primary and secondary branches.
4 cf. 5. 2. 2. 5 Plin. 16. 124.
6 cf. Arist. de iuv. et sen. 3; Plin. 16. 125.
7 ὅταν . . . πηρῳδή conj. W. ; ἡ ὅταν ἡ μὴ λυθῇ καὶ ἐκβιάζηται καὶ ἡ ἀποκοπῇ καὶ U ; ὅταν ἡ μὴ λυθῇ καὶ ἐκβιάζηται ἡ ἀποκοπῇ P ; ἡ ὅταν λυθῇ καὶ ἐκβιάζηται ἡ ἀποκοπῇ καὶ οἱ οὕ P ; ὅταν ἡ μὴ λυθῇ καὶ ἐκβιάζηται καὶ ἡ ἀποκοπῇ καὶ Ald. H. ; G differs widely.

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as those of the wild olive, while others are set at random. Again some trees have double knots, some treble, some more at the same point; some have as many as five. In the silver-fir both the knots and the smaller branches are set at right angles, as if they were stuck in, but in other trees they are not so. And that is why the silver-fir is such a strong tree. Most peculiar are the knots of the apple, for they are like the faces of wild animals; there is one large knot, and a number of small ones round it. Again some knots are blind, others productive; by 'blind' I mean those from which there is no growth. These come to be so either by nature or by mutilation, according as either the knot is not free and so the shoot does not make its way out, or, a bough having been cut off, the place is mutilated, for example by burning. Such knots occur more commonly in the thicker boughs, and in some cases in the stem also. And in general, wherever one chops or cuts part of the stem or bough, a knot is formed, as though one thing were made thereby into two and a fresh growing point produced, the cause being the mutilation or some other such reason; for the effect of such a blow cannot of course be ascribed to nature.

Again in all trees the branches always seem to have more knots, because the intermediate parts have not yet developed, just as the newly formed branches of the fig are the roughest, and in the vine the highest shoots. (For to the knot in other

8 i.e. the internodes; till the branch is fully grown its knots are closer together, and so seem more numerous: \( \mu \eta \pi \omega \tau \alpha \nu \mu \varepsilon \sigma \nu \xi \gamma \theta \alpha \varepsilon \) conj. Sch.; \( \mu \eta \pi \omega \tau \alpha \nu \mu \varepsilon \sigma \nu \xi \gamma \theta \alpha \varepsilon \) U; \( \mu \eta \tau' \alpha \nu \mu \varepsilon \sigma \nu \xi \gamma \theta \alpha \varepsilon \) MAld.; \( \mu \eta \pi \sigma \tau' \alpha \nu \mu \varepsilon \sigma \nu \xi \gamma \theta \alpha \varepsilon \) P2. 9 i.e. have most knots. 10 i.e. youngest. 11 Plin. 16. 125.
The opening of the description of the diseases of trees seems to have been lost. 2 κράδαι; cf. C.P. 5. 1. 3.
3 πάντως ... γίνεται conj. W.; πάντως δὲ ὦ πρῶς τῇ γῇ καὶ οἶον τ. κ. στ. ἀπογνάσκων τῶν παχυτέρων γίνεται Ald.; so U except παχύτερον, and M except παχύτερος.
5 The word is otherwise unknown.
6 ἤττον ἢ δὲ ἐλάα conj. W.; ἤττον ἢ δὲ φοῖνιξ πάραβλαστητικόν ἢ δὲ ἐλάα U; so Ald. except παραβλαστητικόν. The
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trees correspond the 'eye' in the vine, the joint in the reed). . . . . In some trees again there occurs, as it were, a diseased formation of small shoots, as in elm oak and especially in the plane; and this is universal if they grow in rough waterless or windy spots. Apart from any such cause this affection occurs near the ground in what one may call the 'head' of the trunk, when the tree is getting old.

Some trees again have what are called by some 'excrecences' (or something corresponding), as the olive; for this name belongs most properly to that tree, and it seems most liable to the affection; and some call it 'stump,' some krotone, others have a different name for it. It does not occur, or only occurs to a less extent, in straight young trees, which have a single root and no side-growths. To the olive also, both wild and cultivated, are peculiar certain thickenings in the stem.

As to habit.

IX. Now those trees which grow chiefly or only in the direction of their height are such as silver-silver fir date-palm cypress, and in general those which have a single stem and not many roots or branches (the date-palm, it may be added, has no side-growths at all). And trees like these have also similar growth downwards. Some however divide from the first, note about the palm (φοινίκι δὲ παραβλαστητικόν) I have omitted as untrue as well as irrelevant; possibly with ἀπαραβα. for παραβα. it belongs to the next section.

1 οὐλόστητας conj. W.; κοιλόστητας MSS. (?) Ald.
2 Plin. 16. 125.
3 μάλιστ' ἤ μόνον conj. W.; μάλιστα μανᾶ Ald.H.
4 See 3. 8. 6. n.
5 ήμως αιρέτος Sch.; ήμως MSS. Sense hardly satisfactory.
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μηλέα: τὰ δὲ πολύκλαδα καὶ μεῖζον τὸν ὄγκον ἔχει τὸν ἀνω, καθάπερ ρόα: οὐ μὴν ἀλλ' οὖν μέγιστά γε συμβάλλεται πρὸς ἐκαστὸν ἡ ἀγωγῆ καὶ ὁ τόπος καὶ ἡ τροφή. σημείων δ' ὅτι ταῦτα πυκνὰ μὲν ὄντα μακρὰ καὶ λεπτὰ γίνεται, μανὰ δὲ παχύτερα καὶ βραχύτερα· καὶ εἶν μὲν εὐθὺς τις ἀφίη τοὺς ὀξύους βραχέα, εἀν δὲ ἀνακαθαίρῃ μακρά, καθάπερ ἡ ἀμπελος.

2 Ἰκανὸν δὲ κάκεινο πρὸς πίστιν ὅτι καὶ τῶν λαχάνων ἕνια λαμβάνει δένδρου σχήμα, καθάπερ εἴπομεν τὴν μαλάχην καὶ τὸ τεύτλον. ἀπαντά δ' εν τοῖς ὀικείοις τόποις εὐανεῖ. . . καὶ τὸ αὐτὸ κάλλιστον. ἐπεὶ καὶ τῶν ὀμογενῶν ἀνοξύτερα καὶ μεῖζον καὶ κάλλιω τὰ ἐν τοῖς ὀικείοις, οἶνον ἐλάτη ἡ Μακεδονική τῆς Παρνασίας καὶ τῶν ἀλλων. ἀπαντά δὲ ταῦτα καὶ ὅλως ἡ ἐλ. ἡ ἀγρία καλλίων καὶ πλείων τοῦ ὀρέων ἐν τοῖς προσβορείοις ἡ ἐν τοῖς πρὸς μεσημβριάν.

3 Ἐστὶ δὲ τὰ μὲν ἀείφυλλα τὰ δὲ φυλλοβόλα. τῶν μὲν ἡμέρων ἀείφυλλα ἐλάα φοινίξ δάφνη μύρρινος πεύκης τι γένος κυπάρισσος· τῶν δ' ἀγρίων ἐλάτη πεύκη ἀρκευθὸς μίλος θυία καὶ ἢν Ἀρκάδες καλοῦσι φελλόδρυν φιλυρέα κέδρος πίτυς ἀγρία μυρίκη πύξος πρίνος κηλαστρον φιλυρείς ὀξυκάνθου ἀφάρκη, ταῦτα δὲ φύσιται περὶ τὸν Ὀλυμπον, ἀνδράχλη κόμαρος τέρµινθος

1 οὖν marked as doubtful in U. 2 1. 3. 2. 3 καὶ τὸ αὐτὸ κάλλιστον. The first part of the sentence to which these words belong is apparently lost (W.). 4 i.e. the fir and other trees mentioned in the lost words. 5 Plin. 16. 80. 6 μίλος conj. Sch.; σμῖλαξ P2Ald.; cf. 3. 3. 3.
such as apple; some have many branches, and their greater mass of growth high up, as the pomegranate: however training position and cultivation chiefly contribute to all of these characters. In proof of which we have the fact that the same trees which, when growing close together, are tall and slender, when grown farther apart become stouter and shorter; and if we from the first let the branches grow freely, the tree becomes short, whereas, if we prune them, it becomes tall,—for instance, the vine.

This too is enough for proof that even some pot-herbs acquire the form of a tree, as we said of mallow and beet. Indeed all things grow well in congenial places. . . . For even among those of the same kind those which grow in congenial places have less knots, and are taller and more comely: thus the silver-fir in Macedon is superior to other silver-firs, such as that of Parnassus. Not only is this true of all these, but in general the wild woodland is more beautiful and vigorous on the north side of the mountain than on the south.

As to shedding of leaves.

Again some trees are evergreen, some deciduous. Of cultivated trees, olive date-palm bay myrtle a kind of fir and cypress are evergreen, and among wild trees silver-fir fir Phoenician cedar yew odoriferous cedar the tree which the Arcadians call ‘cork-oak’ (holm-oak) mock-privet prickly cedar ‘wild’ pine tamarisk box kermes-oak holly alaternus cotoneaster hybrid arbutus (all of which grow about Olympus)

7 άγρια after πίτυς conj. Sch.; after πριός UPAld.: cf. 3. 3. 3.
8 κόμαρος conj. Bod.; σίναρος UMV; οίναρος Ald.; σύναρος P2.
THEOPHRASTUS

ἀγρία δάφνη. δοκεῖ δ' ἡ ἀνδράχλη καὶ ὁ κόμαρος τὰ μὲν κάτω φυλλοβολεῖν τὰ δὲ ἔσχατα τῶν ἀκρεμόνων ἀείφυλλα ἔχειν, ἐπιφύειν δὲ ἀεὶ τοὺς ἀκρεμόνας.

4 Τῶν μὲν οὖν δενδρῶν ταῦτα. τῶν δὲ θαμνώ-δῶν κιττός βάτος ράμνος κάλαμος κεδρίς· ἐστὶ γάρ τι μικρὸν ὁ οὐ δενδροῦται. τῶν δὲ φρυγανικῶν καὶ ποιωδῶν πήγανον ράφανος ροδωνία ἵωνια ἀβρότοιο ἀμάρακον ἐρπυλλός ὀρίγανον σέλινον ἱπποσέλινον μῆκων καὶ τῶν ἀγρίων εἴδη πλείω. διαμένει δὲ καὶ τούτων ἐνιὰ τοῖς ἀκροίς τὰ δὲ ἀλλὰ ἀποβάλλει ὅποι ὀρίγανον σέλινον . . . ἐπεὶ καὶ τὸ πήγανον κακοῦται καὶ ἀλλάττεται.

5 Πάντα δὲ καὶ τῶν ἀλλῶν τὰ ἀείφυλλα στενο-φυλλότερα καὶ ἐχοῦτα τίνα λιπαρότητα καὶ εὐωδίαν. ἐνιὰ δ' οὖκ ὑπατα τῇ φύσῃ παρὰ τῶν τόπων ἐστὶν ἀείφυλλα, καθάπερ ἐλέχθη περὶ τῶν ἐν Ἐλεφαντίνῃ καὶ Μέμφει· κατωτέρω δ' ἐν τῷ Δέλτα μικρὸν πάνυ χρόνον διαλείπει τοῦ μῆ ἀεὶ βλαστάνειν. ἐν Κρήτῃ δὲ λέγεται πλάτανον τίνα εἰναι ἐν τῇ Γορτυναίᾳ πρὸς πηγή τινι ἦ οὐ φυλλοβολεῖ; μυθολογοῦσι δὲ ὡς ὑπὸ ταύτῃ ἐμίγη τῇ Εὐρώπῃ ὁ Ζεὺς· τᾶς δὲ πλησίας πάσας φυλλοβολεῖν. ἐν δὲ Συβάρει δρῦς ἐστὶν εὐ-σύνοπτος ἐκ τῆς πόλεως ἦ οὐ φυλλοβολεῖ· φασὶ

1 Plin. 16. 80.
2 Some words probably missing (W.) which would explain the next two clauses. 3 Plin. 16. 82. 4 L. 3. 5.
5 Plin. 12. 11; Varro, 1. 7.
ENQUIRY INTO PLANTS, I. ix. 3-5

Andrachne arbutus terebinth ‘wild bay’ (oleander). Andrachne and arbutus seem to cast their lower leaves, but to keep those at the end of the twigs perennially, and to be always adding leafy twigs. These are the trees which are evergreen.

1 Of shrubby plants these are evergreen:—ivy bramble buckthorn reed kedris (juniper)—for there is a small kind of kedros so called which does not grow into a tree. Among under-shrubs and herbae- ceous plants there are rue cabbage rose gilliflower southernwood sweet marjoram tufted thyme mar- joram celery alexanders poppy, and a good many more kinds of wild plants. However some of these too, while evergreen as to their top growths, shed their other leaves, as marjoram and celery . . . . 2 for rue too is injuriously affected and changes its character.

3 And all the evergreen plants in the other classes too have narrower leaves and a certain glossiness and fragrance. Some moreover which are not evergreen by nature become so because of their position, as was said 4 about the plants at Elephantine and Memphis, while lower down the Nile in the Delta there is but a very short period in which they are not making new leaves. It is said that in Crete 5 in the district of Gortyna there is a plane near a certain spring 6 which does not lose its leaves; (indeed the story is that it was under 7 this tree that Zeus lay with Europa), while all the other plants in the neighbourhood shed their leaves. 8 At Sybaris there is an oak within sight of the city which does not shed

6 πηγή conj. H. from G; σκηνή UMVAld.; κηνή P₂; κρηνή mBas.
7 ὑπό conj. Hemsterhuis; ἐπὶ Ald. 8 Plin. 16. 81.
8 Φυλλοβολεῖ δὲ πάντα τοῦ μετοπώρου καὶ μετὰ τὸ μετόπωρον, πλὴν τὸ μὲν θάττον τὸ δὲ βραδύτερον ὡστε καὶ τοῦ χειμώνος ἐπιλαμβάνειν. οὐκ ἀνάλογοι δὲ αἱ φυλλοβολίαι ταῖς βλαστήσεσιν, ὡστε τὰ πρότερον βλαστήσαντα πρότερον φυλλοβολεῖν, ἀλλ' ἐνια πρωίβλαστεῖ μὲν οὐδὲν δὲ προτερεῖ τῶν ἄλλων, ἀλλὰ τινων καὶ ύστερεῖ, καθάπερ ἡ ἀμυγδαλὴ.

7 Τὰ δὲ ὑψιβλαστεῖ μὲν οὐδὲν δὲ ὡς εἰπεῖν ύστερεῖ τῶν ἄλλων, ύστερε ἡ συκάμινος. δοκεῖ δὲ καὶ ἡ χώρα συμβάλλεσθαι καὶ ὃ τότος ὁ ἐνικμὸς πρὸς τὸ διαμένειν. τὰ γὰρ ἐν τοῖς ἕπτοις καὶ ὅλως λεπτογείοις πρότερα φυλλοβολεῖ καὶ τὰ πρεσβύτερα δὲ τῶν νέων. ἐνια δὲ καὶ πρὸ τοῦ πεπάναι τὸν καρπὸν ἀποβάλλει τὰ φύλλα, καθάπερ αἱ ὑψίεια συκαὶ καὶ ἀχράδες.

Τῶν δ' ἀειφύλλων ἡ ἀποβολή καὶ ἡ ἀνάνσις κατὰ μέρος: οὐ γὰρ δὴ ταύτα αἰεὶ διαμένει, ἀλλὰ τὰ μὲν ἐπιβλαστάνει τὰ δ' ἄφαναίνεται. τούτῳ δὲ περὶ τροπὰς μάλιστα γίνεται θερινὰς. εἰ δὲ τινων καὶ μετ' Ἀρκτόφυλον ἡ καὶ κατ' ἄλλην ὄραν ἐπισκεπτέον. καὶ τὰ μὲν περὶ τῆν φυλλοβολίαν οὕτως ἔχει.

1 Plin. 16. 82 and 83.
ENQUIRY INTO PLANTS, I. ix. 5-7

its leaves, and they say that it does not come into leaf along with the others, but only after the rising of the dog-star. It is said that in Cyprus too there is a plane which has the same peculiarity.

The fall of the leaves in all cases takes place in autumn or later, but it occurs later in some trees than in others, and even extends into the winter. However the fall of the leaf does not correspond to the growth of new leaves (in which case those that come into leaf earlier would lose their leaves earlier), but some (such as the almond) which are early in coming into leaf are not earlier than the rest in losing their leaves, but are even comparatively late.

Others again, such as the mulberry, come into leaf late, but are hardly at all later than the others in shedding their leaves. It appears also that position and a moist situation conduce to keeping the leaves late; for those which grow in dry places, and in general where the soil is light, shed their leaves earlier, and the older trees earlier than young ones. Some even cast their leaves before the fruit is ripe, as the late kinds of fig and pear.

In those which are evergreen the shedding and withering of leaves take place by degrees; for it is not the same leaves which always persist, but fresh ones are growing while the old ones wither away. This happens chiefly about the summer solstice. Whether in some cases it occurs even after the rising of Arcturus or at a quite different season is matter for enquiry. So much for the shedding of leaves.

\(^2\) ὑστερεῖ conj. H.; ὑστερον UMSVP Ald.
\(^3\) Plin. 16. 84.
\(^4\) ταύτα conj. Sch.; ταύτα Ald.
THEOPHRASTUS

X. Τὰ δὲ φύλλα τῶν μὲν ἄλλων δένδρων ὀμοίᾳ πάντων αὐτὰ ἑαυτοῖς, τῆς δὲ λεύκης καὶ τοῦ κιττοῦ καὶ τοῦ καλουμένου κρότωνος ἀνόμοια καὶ ἐτεροσχήμονα: τὰ μὲν γὰρ νέα περιφερή τὰ δὲ παλαιότερα γωνοειδῆ, καὶ εἰς τούτο ἡ μετάστασις πάντων. τοῦ δὲ κιττοῦ ἀνάπαλιν νέου μὲν ὄντος ἐγγυωμέτερα πρεσβυτέρου δὲ περιφερέστερα: μεταβάλλει γὰρ καὶ ὄντος. ἵδιον δὲ καὶ τὸ τῆς ἐλάσια καὶ τῆς φιλύρα καὶ τῆς πτελέα καὶ τῆς λεύκης συμβαίνον· στρέφειν γὰρ δοκούσιν τὰ ὑππια μετὰ τροπὰς θερινάς, καὶ τοῦτω γυνώριζουσιν ὅτι γεγένηται τροπαί. Πάντα δὲ τὰ φύλλα διαφέρει κατὰ τὰ ὑππια καὶ τὰ πρανή. καὶ τῶν μὲν ἄλλων τὰ ὑππια ποιώδεστερα καὶ λειότερα· τὰς γὰρ ἔνας καὶ τὰς φλέβας ἐν τοῖς πρανέσιν ἐχούσιν, ὥσπερ ἡ χειρ <τὰ ἄρθρα>. τῆς δὲ ἐλάσας λευκότερα καὶ ἠπτον λεία ἐνίοτε καὶ τὰ ὑππια. πάντα δὴ ἡ τὰ γε πλειόστα ἐκφάνη ἐχεῖ τὰ ὑππια καὶ ταῦτα γίνεται τῷ ἡλίῳ φανερά. καὶ στρέφεται τὰ πολλὰ πρὸς τὸν ἥλιον. δὲ δὲ καὶ οὐ ράδιον εἰπέων ὀπότερον πρὸς τῷ κλῶνι μᾶλλον ἐστίν· ἡ μὲν γὰρ ὑππτιότης μᾶλλον δοκεῖ ποιεῖν τὸ πρανές, ἡ δὲ φύσις οὐχ ἠπτον βούλεται τὸ ὑππιον, ἄλλως τε καὶ ἡ ἀνάκλασις διὰ τὸν ἥλιον. ἵδιοι δὲ

1 Plin. 16. 85.
3 i.e. not ‘entire.’ ‘Young leaves’ = leaves of the young tree.
4 This seems to contradict what has just been said.
Differences in leaves.

X. 1 Now, while the leaves of all other trees are all alike in each tree, those of the abele ivy 2 and of the plant called kroton (castor-oil plant) are unlike one another and of different forms. The young leaves in these are round, the old ones angular, 3 and eventually all the leaves assume that form. On the other hand 4 in the ivy, when it is young, the leaves are somewhat angular, but when it is older, they become rounder: for in this plant too a change of form takes place. There is a peculiarity special to the olive lime elm and abele: their leaves appear to invert the upper surface after the summer solstice, and by this men know that the solstice is past. Now all leaves differ as to their upper and under surfaces; and in most trees the upper surfaces are greener and smoother, as they have the fibres and veins in the under surfaces, even as the human hand has its 'lines,' 5 but even the upper surface of the leaf of the olive is sometimes whiter and less smooth. 6 So all or most leaves display their upper surfaces, and it is these surfaces which are exposed to the light. 7 Again most leaves turn towards the sun; wherefore also it is not easy to say which surface is next to the twig 8 ; for, while the way in which the upper surface is presented seems rather to make the under surface closer to it, yet nature desires equally that the upper surface should be the nearer, and this is specially seen in the turning back 9 of the leaf towards the sun. One

6 ἐνοτε καὶ τὰ ὑπτια conj. W.; λεῖα δὲ καὶ τὰ του κιττοῦ MSS. A makeshift correction of an obscure passage.
7 cf. Plin. l.c.
8 i.e. is the under one.
9 Whereby the under surface is exposed to it: see above.
THEOPHRASTUS

ἀν τις ὁσα πυκνα και κατ' ἀλληλα, καθάπερ τα των μυρρίνων.

3 Οίονται δε τινες και την τροφήν τω ὑπτώ δια του πραγμος εἰναι, δια το ἕνικμον ἄει τοῦτο και χρυσάκες εἰναι, οὔ καλῶς λέγοντες. ἀλλὰ τοῦτο μὲν ἵσως συμβαίνει χωρὶς τῆς ἰδίας φύσεως και διὰ τὸ μη ὁμοῖον ἠλοῦσθαι, ἢ δε τροφὴ διὰ τῶν φλεβῶν ἡ ἵνων ὁμοῖοις ἀμφότεροι· ἐκ θατέρου δ' εἰς θάτερον οὐκ εὐλογον μή ἔχουσι πόρους μηδὲ βάθος δι' οὐ· ἀλλὰ περὶ μὲν τροφῆς διὰ τῶν ἐτερος λόγος.

5 Διαφέρουσι δε καὶ τα φύλλα πλείοσι διαφοραίς· τα μὲν γάρ ἐστι πλατύφυλλα, καθάπερ ἀμπελος συκῆ πλάτανος, τα δὲ στενόφυλλα, καθάπερ ἑλάα ῥόα μύρρων· τα δ' ὅσπερ ἀκανθοφυλλα, καθάπερ πεύκη πίτυς κέδρος· τα δ' οἰνον σαρκόφυλλα· τοῦτο δ' ὅτι σαρκώδες ἔχουσι το φύλλον, οἰνον κυπάριττοσ μυρίκη μηλέα, τῶν δὲ φυγανικῶν κνέωρος στοιβῇ καὶ ποιωδῶν ἀείζων πόλιον· τοῦτο δὲ καὶ προς τους σήτας τους ἐν τοῖς ἰματίοις ἀγαθῶν· τα γάρ αὖ τῶν τευτλίων ἡ ραφάνων ἄλλων τρόπον σαρκώδη καὶ τα τῶν πηγανίων καλουμένων· ἐν πλάτει γὰρ καὶ οὐκ ἐν στρογγυλότητι τὸ σαρκώδες· καὶ τῶν θαμνώδων δὲ ἡ μυρίκη σαρκώδες τὸ φύλλον ἔχει. ἐνια δὲ

1 cf. 1. 8. 3; 1. 10. 8; Plin. 16. 92.
2 ἐκ θατέρου δ' εἰς conj. Sch. from G; δὲ ἐκ θατέρου εἰς with stop at ἵνων Ald. 3 δι' οὐ I conj.; δι' οὖ U.
4 ἀκανθοφυλλα conj. W.; σπανόφυλλα UMAld.; ἀνδρόφυλλα P2; cf. 3. 9. 5, whence Sch. conj. τριχόφυλλα: Plin. l.c. has capillata pino cedro.
5 μηλέα probably corrupt; omitted by Plin. l.c.

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may observe this in trees whose leaves are crowded and opposite, such as those of myrtle.

Some think that the nourishment too is conveyed to the upper surface through the under surface, because this surface always contains moisture and is downy, but they are mistaken. It may be that this is not due to the trees' special character, but to their not getting an equal amount of sunshine, though the nourishment conveyed through the veins or fibres is the same in both cases. That it should be conveyed from one side to the other is improbable, when there are no passages for it nor thickness for it to pass through. However it belongs to another part of the enquiry to discuss the means by which nourishment is conveyed.

Again there are various other differences between leaves; some trees are broad-leaved, as vine fig and plane, some narrow-leaved, as olive pomegranate myrtle. Some have, as it were, spinous leaves, as fir Aleppo pine prickly cedar; some, as it were, fleshy leaves; and this is because their leaves are of fleshy substance, as cypress tamarisk apple, among under-shrubs kneoros and stoibe, and among herbaceous plants house-leek and hulwort. This plant is good against moth in clothes. For the leaves of beet and cabbage are fleshy in another way, as are those of the various plants called rue; for their fleshy character is seen in the flat instead of in the round. Among shrubby plants the tamarisk has fleshy

6 Probably a gloss.
7 Or 'solid,' such leaves being regarded as having, so to speak, three, and not two dimensions. στρόγγυλος = 'thick-set' in Arist. H.A. 9. 44.
8 ημίγκη probably corrupt; μ. was mentioned just above, among trees; ἐπελκή conj. Dalec.
THEOPHRASTUS

καὶ καλαμόφυλλα, καθάπερ ὁ φοίνιξ καὶ ὁ κοῖς καὶ ὁ σα τοιαύτα· ταῦτα δὲ ὡς καθ' ὅλου εἶπειν γωνιόφυλλα· καὶ γὰρ ὁ κάλαμος καὶ ὁ κύπειρος καὶ ὁ βούτομος καὶ τάλλα δὲ τῶν λιμνοδῶν τοιαύτα· πάντα δὲ ὦσσερ ἐκ δυοῖν σύνθετα καὶ τὸ μέσον οἷον τρόπις, οὐ ἐν τοῖς ἄλλοις μέγας πόροις οἱ μέσος. διαφέρουσι δὲ καὶ τοῖς σχήμασι· τὰ μὲν γὰρ περιφερῆ, καθάπερ τὰ τῆς ἀπίου, τὰ δὲ προμηχέστερα, καθάπερ τὰ τῆς μηλέας· τὰ δὲ εἰς ὄξυ προϊκοῦντα καὶ παρακανθίζουντα, καθάπερ τὰ τοῦ μῖλακος. καὶ ταῦτα μὲν ἄσχιστα· <τὰ δὲ σχιστὰ> καὶ οἷον προινώδη, καθάπερ τὰ τῆς ἐλάτης καὶ τὰ τῆς πτερίδος· τρόπον δὲ τίνα σχιστὰ καὶ τὰ τῆς ἀμπέλου, καὶ τὰ τῆς συκῆς δὲ ὦσσερ ἀν εἶποι τις κορωνοποδώδη. ἔνια δὲ καὶ ἐντομᾶς ἔχουντα, καθάπερ τὰ τῆς πτελέας καὶ τὰ τῆς Ἥρακλεωτικῆς καὶ τὰ τῆς δρυός. τὰ δὲ καὶ παρακανθίζουντα καὶ ἐκ τοῦ ἄκρου καὶ ἐκ τῶν πλαγίων, οἷον τὰ τῆς πρίνου καὶ τὰ τῆς δρυός καὶ μῖλακος καὶ βάτου καὶ παλιοῦρου καὶ τὰ τῶν ἄλλων. ἁκανθῶδες δὲ ἐκ τῶν ἄκρων καὶ τὸ τῆς πεύκης καὶ πίτυν καὶ ἐλάτης ἐτὶ δὲ κέδρου καὶ κεδρίδος. φυλλάκανθον δὲ ὅλως ἐν μὲν τοῖς δένδροις οὐκ ἐστιν οὐδὲν ὃν ἥμεις ἴσμεν, εἰ δὲ τοῖς ἄλλοις ὑλήμασιν ἐστιν, οἷον ἢ τε ἄκρον καὶ ἡ δρυπίς καὶ ὁ ἁκανθὸς καὶ σχεδὸν ἀπαν τὸ τῶν ἁκανωδῶν γένος· ὦσσερ γὰρ φύλλων ἐστίν ἢ ἁκανθα πᾶσιν· εἰ δὲ μὴ φύλλα τις ταῦτα θῆσει,

1 Plin. l.c. and 13. 30. 2 οὐ ἐν conj. W.; οἶνον Ald. H. 3 παρακανθίζουντα conj. Sch.; παραγωνίζουντα UMVAld. 4 τὰ δὲ σχιστὰ add. W.
ENQUIRY INTO PLANTS, I. x. 5–6

leaves. Some again have reedy leaves, as date-palm doum-palm and such like. But, generally speaking, the leaves of these end in a point; for reeds galin-gale sedge and the leaves of other marsh plants are of this character. The leaves of all these are compounded of two parts, and the middle is like a keel, placed where in other leaves is a large passage dividing the two halves. Leaves differ also in their shapes; some are round, as those of pear, some rather oblong, as those of the apple; some come to a sharp point and have spinous projections at the side, as those of smilax. So far I have spoken of undivided leaves; but some are divided and like a saw, as those of silver-fir and of fern. To a certain extent those of the vine are also divided, while those of the fig one might compare to a crow’s foot.

Some leaves again have notches, as those of elm filbert and oak, others have spinous projections both at the tip and at the edges, as those of kermes-oak oak smilax bramble Christ’s thorn and others. The leaf of fir Aleppo pine silver-fir and also of prickly cedar and kedris (juniper) has a spinous point at the tip. Among other trees there is none that we know which has spines for leaves altogether, but it is so with other woody plants, as akorna drypis pine-thistle and almost all the plants which belong to that class. For in all these spines, as it were, take the place of leaves, and, if one is not to reckon these

5 κορωνοποδώδης conj. Gesner. The fig-leaf is compared to a crow’s foot, Plut. de defect. orac. 3; σκολοπώδης Ald., which word is applied to thorns by Dioscorides. 6 Plin. 16. 90.
7 κεδρίδος conj. Dalec.; κεδρίας MSS. cf. Plin. l.c., who seems to have read ἄγριας.
8 ἄκανθωδών conj. W., cf. 1. 13. 3; ἄκανθωδῶν MSS.; ἀκανθῶν P.
THEOPHRASTUS

συμβαίνοι ἂν ὁλως ἀφυλλα εἶναι, ἐνίοις δὲ ἄκανθαν μὲν εἶναι φύλλον δὲ ὁλως οὐκ ἔχειν, καθάπερ ὁ ἀσφάραγος.

7 Πάλιν δ' ὁτι τὰ μὲν ἀμισχα, καθάπερ τὰ τῆς σκίλλης καὶ τοῦ βολβοῦ, τὰ δ' ἔχοντα μύσχον, και τὰ μὲν μακρῶν, οἶον ἡ ἀμπελος καὶ ὁ κιττός, τὰ δὲ βραχὺν καὶ οἶον ἐμπεφυκότα, καθάπερ ἐλᾶν καὶ οὐχ ἄστερ ἐπὶ τῆς πλατάνου καὶ ἀμπέλου προσηρτημένου. διαφορὰ δὲ καὶ τὸ μή ἐκ τῶν αὐτῶν εἶναι τὴν πρόσφυσιν, ἀλλὰ τοῖς μὲν πλείστοις ἐκ τῶν κλάδων τοὺς δὲ καὶ ἐκ τῶν ἀκρεμόνων, τῆς δρυὸς δὲ καὶ ἐκ τοῦ στελέχους, τῶν δὲ λαχανωδῶν τοῖς πολλοῖς εὐθὺς ἐκ τῆς ῥίζης, οἶον κρομύον σκόρδου κικορίου, ἔτι δὲ ἄσφοδέλον σκίλλης βολβοῦ σισυριγχύον καὶ ὁλως τῶν βολβωδῶν· καὶ τούτων δὲ οὐχ ἡ πρώτη μόνον ἐκφυσιν ἀλλὰ καὶ ὁλος ὁ καυλὸς ἄφυλλον. ἐνών δ' ὅταν γένηται, φύλλα εἰκός, οἶον θριδακίνη ὁκίμου σελίνου καὶ τῶν σιτηρῶν ὁμοίως. ἔχει δ' ἐνια τούτων καὶ τὸν καυλὸν ἐτ' ἄκανθίζοντα, ὡς ἡ θριδακίνη καὶ τὰ φυλλάκανθα πάντα καὶ τῶν θαμνώδων δὲ καὶ ἑτὶ μᾶλλον, οἶον βάτος παλίνουρος.

8 Κοινῇ δὲ διαφορὰ πάντων ὁμοίως δένδρων καὶ τῶν ἄλλων ὅτι τὰ μὲν πολυφύλλα τὰ δ' ὀλιγόφυλλα. ὡς δ' ἐπὶ τὸ πάν τὰ πλατύφυλλα ταξιφύλλα, καθάπερ μύρρινος, τὰ δ' ἀτακτα καὶ ὡς ἑτυχε, καθάπερ σχεδὸν τὰ πλείστα τῶν ἄλλων

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1 Plin. 16. 91. 2 ἐπὶ conj. W.; ἦ Ald.H.
3 ἐνίοις... So Sch. explains: text probably defective.
as leaves, they would be entirely leafless, and some would have spines but no leaves at all, as asparagus.

1 Again there is the difference that some leaves have no leaf-stalk, as those of squill and purse-tassels, while others have a leaf-stalk. And some of the latter have a long leaf-stalk, as vine and ivy, some, as olive, a short one which grows, as it were, into the stem and is not simply attached to it, as it is in plane and vine. Another difference is that the leaves do not in all cases grow from the same part, but, whereas in most trees they grow from the branches, in some they grow also from the twigs, and in the oak from the stem as well; in most pot-herbs they grow directly from the root, as in onion garlic chicory, and also in asphodel squill purse-tassels Barbary-nut, and generally in plants of the same class as purse-tassels; and in these not merely the original growth but the whole stalk is leafless. In some, when the stalk is produced, the leaves may be expected to grow, as in lettuce basil celery, and in like manner in cereals. In some of these the stalk presently becomes spinous, as in lettuce and the whole class of plants with spinous leaves, and still more in shrubby plants, as bramble and Christ's thorn.

4 Another difference which is found in all trees alike and in other plants as well is that some have many, some few leaves. And in general those that have flat leaves have them in a regular series, as myrtle, while in other instances the leaves are in no particular order, but set at random, as in most other

4 Plin. 16. 92.

6 πλατύφυλλα UVP; πολύφυλλα conj. W.; but πλατύτης is one of the ‘differences’ given in the summary below.
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[ἡν]. ἤδιον δὲ ἐπὶ τῶν λαχανωδῶν, οἷον κρομμού γητείου, τὸ κοιλόφυλλον.

'Απλώς δ' αἱ διαφοραὶ τῶν φύλλων ἡ μεγέθει ἡ πλῆθει ἡ σχῆματι ἡ πλατύτητι ἡ στενότητι ἡ κοιλότητι ἡ τραχύτητι ἡ λειότητι καὶ τὸ παρ-ακανθίζειν ἡ μῆ. ἔτι δὲ κατὰ τὴν πρόσφυσιν ὁδεν ἣ δὴ οὖν, ἀπὸ βίζης ἡ κλάδου ἡ καυλοῦ ἡ ἀκρεμόνος τὸ δὲ δὴ οὖ, ἡ διὰ μύσχου ἡ δὴ αὐτοῦ καὶ εἰ δὴ πολλά ἐκ τοῦ αὐτοῦ. καὶ ἐνα καρποφόρα, μεταξὺ περιεληφότα τῶν καρπῶν, ὡςπερ ἡ 'Αλεξανδρεία δάφνη ἐπιφυλλόκαρπος.

Αἱ μὲν οὖν διαφοραὶ τῶν φύλλων κοινοτέρως πᾶσαι εἴρηνται καὶ σχεδὸν εἰσοῦν ἐν τούτοις.

(Σύγκειται δὲ τὰ μὲν ἐξ ἰὼς καὶ φλοιοῦ καὶ σαρκός, οἷον τὰ τῆς συκῆς καὶ τῆς ἄμπελου, τὰ δὲ ὡςπερ ἐξ ἰὼς μόνον, οἷον τὸ καλάμου καὶ σίτου. 9 τὸ δὲ ύγρὸν ἀπάντων κοινοῦ ἀπασὶ γὰρ ἐνν-πάρχει καὶ τούτως καὶ τοῖς ἄλλοις τοῖς ἐπετείοις [μύσχος ἀνθός καρπὸς εἰ τί ἄλλοι]· μᾶλλον δὲ καὶ τοῖς μὴ ἐπετείοις· οὐδὲν γὰρ ἄνευ τούτου. δοκεῖ δὲ καὶ τῶν μύσχων τὰ μὲν ἐξ ἰὼν μόνον συγκει-σθαι, καθάπερ τὰ τοῦ σίτου καὶ τοῦ καλάμου, τὰ δὲ ἐκ τῶν αὐτῶν, ὡςπερ οἱ καυλοὶ.

1 τῶν ἄλλων ἥν MSS.; τῶν ποιωδῶν conj. W. ἥν, at all events, cannot be right. 2 Plin. 19. 100. 3 ἡ στενότητι ἡ κοιλότητι: so G; ἡ κοιλότητι ἡ στενότητι MSS. 4 i.e. petiolate. 5 i.e. sessile. 6 i.e. compound: εἰ δὴ conj. W.; εἰδὴ UMVAld. 7 The passage from here to the end of the chapter is a digression.
ENQUIRY INTO PLANTS, I. x. 8–9

plants. It is peculiar to pot-herbs to have hollow leaves, as in onion and horn-onion.

To sum up, the differences between leaves are shewn in size, number, shape, hollowness, in breadth, roughness and their opposites, and in the presence or absence of spinous projections; also as to their attachment, according to the part from which they spring or the means by which they are attached; the part from which they spring being the root or a branch or the stalk or a twig, while the means by which they are attached may be a leaf-stalk, or they may be attached directly; and there may be several leaves attached by the same leaf-stalk. Further some leaves are fruit-bearing, enclosing the fruit between them, as the Alexandrian laurel, which has its fruit attached to the leaves.

These are all the differences in leaves stated somewhat generally, and this is a fairly complete list of examples.

Composition of the various parts of a plant.

(Leaves are composed some of fibre bark and flesh, as those of the fig and vine, some, as it were, of fibre alone, as those of reeds and corn. But moisture is common to all, for it is found both in leaves and in the other annual parts, leaf-stalk, flower, fruit and so forth but more especially in the parts which are not annual; in fact no part is without it. Again it appears that some leaf-stalks are composed only of fibre, as those of corn and reeds, some of the same materials as the stalks.

\footnote{\(\mu\lambda\sigma\chi\omicron\sigma\ldots \alpha\lambda\alpha\) has no construction; probably a (correct) gloss, taken from 1, 2, 1.}

\footnote{i.e. while these are young, W.}
Τών δ' ἄνθισαν τὰ μὲν ἐκ φλοιῶν καὶ φλεβῶν καὶ σαρκῶν, <τὰ δ' ἐκ σαρκῶν> μόνον, οἷον τὰ ἐν μέσῳ τῶν ἀρων.

"Ομοίως δὲ καὶ ἐπὶ τῶν καρπῶν: οἱ μὲν γὰρ ἐκ σαρκῶν καὶ ἰνῶς, οἱ δὲ ἐκ σαρκῶν μόνον, οἱ δὲ καὶ ἐκ δέρματος σύγκεινται: τὸ δὲ ύγρὸν ἀκολουθεῖ καὶ τούτοις. ἐκ σαρκῶν μὲν καὶ ἰνῶς ὁ τῶν κοκκυμίλων καὶ σικύων, ἐξ ἰνῶς δὲ καὶ δέρματος ὁ τῶν συκαμίνων καὶ τῆς ρόας. ἄλλοι δὲ καὶ ἄλλοι τρόπον μεμερισμένοι. πάντων δὲ ὡς εἰπεῖν τὸ μὲν ἐξὶ φλοιῶν τὸ δ' ἐντὸς σάρξ τῶν δὲ καὶ πυρῆν.

XI. "Εσχατον δ' ἐν ἀπασί τὸ σπέρμα. τοῦτο δὲ ἐξὸν ἐν ἐαυτῷ σύμφυτον ύγρὸν καὶ θερμόν, ὅν ἐκλιπότον ἄγονα, καθάπερ τὰ ὁμίαν καὶ τῶν μὲν εὐθὺ τὸ σπέρμα μετὰ τὸ περίχων, οἶον φοίνικας καρύου ἀμυγδάλης, πλεῖον δὲ τούτων τὰ ἐμπερι-έχοντα, ὡς τὰ τοῦ φοίνικος. τῶν δὲ μεταξὺ σάρξ καὶ πυρῆν, ὡς περ ἔλας καὶ κοκκυμίλεας καὶ ἐτέρων. ἔνια δὲ καὶ ἐν λοβῷ, τὰ δ' ἐν ὑμένι, τὰ δ' ἐν ἀγγείῳ, τὰ δὲ καὶ γυμνόσπερμα τελείως.

2 Ἐν λοβῷ μὲν οὐ μόνον τὰ ἐπέτεια, καθάπερ τὰ χεδροτὰ καὶ ἐτέρα πλεῖο τῶν ἁγρών, ἀλλὰ καὶ τῶν δένδρων ἔνια, καθάπερ ἢ τε κερωνία, ἢν τινες καλοῦσι συκῆν Λιγυπτίαν, καὶ ἤ κερκίς καὶ ἤ κολοιτία περὶ Διπάραν· ἐν ὑμένι δ' ἔνια τῶν

1 τὰ U ; τὸ Ald.
2 τὰ δ' ἐκ σαρκῶς preserved only in mBas.; om. UMVP.
3 ἅρων conj. W.; αἰρῶν MSS. 4 i.e. rind.
5 Plin. 18. 53. 6 οὐ conj. Sch.; οὖν Ald.H.

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Of flowers some\(^1\) are composed of bark veins and flesh, some of flesh only,\(^2\) as those in the middle of cuckoo-pint.\(^3\)

So too with fruits; some are made of flesh and fibre, some of flesh alone, and some of skin\(^4\) also. And moisture is necessarily found in these also. The fruit of plums and cucumbers is made of flesh and fibre, that of mulberries and pomegranates of fibre and skin. The materials are differently distributed in different fruits, but of nearly all the outside is bark, the inside flesh, and this in some cases includes a stone.)

*Differences in seeds.*

XI. Last in all plants comes the seed. This possesses in itself natural moisture and warmth, and, if these fail, the seeds are sterile, like eggs in the like case. In some plants the seed comes immediately inside the envelope, as in date filbert almond (however, as in the case of the date, there may be more than one covering). In some cases again there is flesh and a stone between the envelope and the seed, as in olive plum and other fruits. Some seeds again are enclosed in a pod, some in a husk, some in a vessel, and some are completely naked.

Enclosed in a pod are not\(^6\) only the seeds of annual plants, as leguminous plants, and of considerable numbers of wild plants, but also those of certain trees, as the carob-tree (which some\(^7\) call the 'Egyptian fig'), Judas-tree,\(^8\) and the *koloitia*\(^9\) of the Liparae islands. In a husk are enclosed the

\(^{7}\) ἡμεῖς conj. St. from G; ἡμια Ald.H.

\(^{8}\) Clearly not the *κερκίς* (aspen) described 3. 14. 2.

\(^{9}\) *κολοιτία* MSS.; *κολούτεα* conj. St., cf. 3. 17. 2 n.
ἐπετείων, ὥσπερ ὁ πυρὸς καὶ ὁ κέγχρος· ὡσαύτως δὲ καὶ ἐναγγειοσπέρματα καὶ γυμνοσπέρματα. ἐναγγείοσπέρματα μὲν οἶνον ἢ τε μῆκων καὶ ὀσα μηκωνικά· τὸ γὰρ σῆσαμον ἰδιωτέρως· γυμνο-
σπέρματα δὲ τῶν τε λαχάνων πολλά, καθάπερ ἀνηθον κοριαννυν ἀννηθον κύμινον μάραθον καὶ

3 ἄτερα πλείω. τῶν δὲ δένδρων οὐδὲν γυμνόσπερμον ἀλλ' ἢ σαρξὶ περιεχόμενον ἢ κελύφεσιν, τὰ μὲν
dermatikois, ὥσπερ ἡ βάλανος καὶ τὸ Εὐβοῖκον, τὰ δὲ ἐξελώσιν, ὥσπερ ἡ ἁμυγδάλη καὶ τὸ
cάρπων. οὐδὲν δὲ ἐναγγείοσπερμον, εἰ μὴ τις τὸν κὼνον ἀγγείον θήσει διὰ τὸ χωρίζεσθαι τῶν
cαρπῶν.

Αὐτὰ δὲ τὰ σπέρματα τῶν μὲν εὐθὺ σαρκώθη, καθάπερ ὀσα καρυνηρὰ καὶ βαλανηρά· τῶν δὲ ἐν
πυρήνι τὸ σαρκώδες ἐχεται, καθάπερ ἐλασ καὶ
dαφυίδος καὶ ἀλλων. τῶν δ' ἐμπύρηνα μόνον ἢ
πυρηνώδη γε καὶ ὥσπερ ξηρά, καθάπερ τὰ
kυνηκώδη καὶ κεγχραμιδώδη καὶ πολλά τῶν
λαχανηρῶν. ἐμφανέστατα δὲ τὰ τοῦ φοινικος·
oúde γὰρ κοιλότητα ἔχει τοῦτο οὐθεμίαν ἀλλ'
ολον ξηρόν· οὔ μὴν ἀλλ' υγρότης δὴ τις καὶ
θερμότης ὑπάρχει δήλον ὅτι καὶ τούτω, καθάπερ
eἰπομεν.
ENQUIRY INTO PLANTS, 1. xi. 2-3

seeds of some annuals, as wheat and millet; and in like manner some plants have their seeds in a vessel, some have them naked. In a vessel are those of the poppy and plants of the poppy kind;¹ (the case of sesame however is somewhat peculiar), while many pot-herbs have their seeds naked, as dill coriander² anise cummin fennel and many others. No tree has naked seeds, but either they are enclosed in flesh or in shells,³ which are sometimes of leathery nature, as the acorn and the sweet chestnut, sometimes woody, as almond and nut. Moreover no tree has its seeds in a vessel, unless one reckons a cone as a vessel, because it can be separated from the fruits.

The actual seeds are in some cases fleshy in themselves, as all those which resemble nuts or acorns; ⁴ in some cases the fleshy part is contained in a stone, as in olive bay and others. The seeds in some plants again merely consist of a stone,⁵ or at least are of stone-like character, and are, as it were,⁶ dry; for instance those of plants like safflower millet and many pot-herbs. Most obviously of this character are those of the date,⁷ for they contain no cavity, but are throughout dry ⁸;—not but what there must be even in them some moisture and warmth, as we have said.⁹

¹ εἰμπύρηπη μόνον ἡ πυρηνώδη conj. Sch.; ἐν πυρηνὶ μόνον ἡ πυρηνώδει Ald. (P has πυρηνώδη).
² i.e. no seed can really be without moisture; cf. 1. 11. 1.
³ cf. O. P. 5. 18. 4.
⁴ ξηπῆν Ι conj., as required by the next clause; ξορῖον PAld.; ξορρῶν W. from Sch. conj. The germ in the date-stone is so small as to be undiscoverable, whence the stone seems to be homogeneous throughout, with no cavity for the germ.
⁵ 1. 10. 9.
Διαφέρονσι δὲ καὶ τῷ τὰ μὲν ἀθρόα μετ᾽ ἄλληλων εἶναι, τὰ δὲ διεστῶτα καὶ στοιχήδων, ὡσπερ τὰ τῆς κολοκύντης καὶ σικύας καὶ τῶν δένδρων, ὡς Περσικής μηλέας. καὶ τῶν ἀθρόων τὰ μὲν ενὶ τινι περιέχεσθαι, καθάπερ τὰ τῆς ρόας καὶ τῆς ἀπίου καὶ μηλέας καὶ τῆς ἀμπέλου καὶ συκῆς τὰ δὲ μετ᾽ ἄλληλων μὲν εἶναι, μὴ περιέχεσθαι δὲ υφ᾽ ἑνός, ὡσπερ τὰ σταχυνρά τῶν ἐπετείων, εἰ μὴ τις θείη τῶν στάχυν ὡς περιέχουν οὕτω δ᾽ ἐσται καὶ ὁ βότρυς καὶ τάλλα τὰ βοτρυώδη καὶ ὅσα δὴ φέρει δὴ εὐβοσίαι καὶ χώρας ἀρετὴν ἀθρόους τοὺς καρποὺς, ὡσπερ ἐν Ἡπείρᾳ φασὶ καὶ ἄλλωθι τὰς ἑλάς.

Ἀλλὰ καὶ αὕτη δοκεῖ τις εἶναι διαφορὰ τὸ τὰ μὲν ἀφ᾽ ἑνός μύσχοι καὶ μᾶς προσφύσεως ἀθρόα γίνεσθαι, καθάπερ ἐπὶ τε τῶν βοτρυνρῶν καὶ σταχυνρῶν εἰρηται μὴ περιεχόμενα κοινῷ των γίνεσθαι τὰ δὲ μὴ γίνεσθαι. ἐπεὶ καθ᾽ ἐκαστὸν γε λαμβάνοντι τῶν σπερμάτων ἢ τῶν περιεχόντων ἰδίαν ἄρχην ἔχει τῆς προσφύσεως, οἷον ἢ τε ράξ καὶ ἡ ροὰ καὶ πάλιν ὁ πυρὸς καὶ ἡ κριθῆ. ἥκιστα δ᾽ ἄν δόξειν τὰ τῶν μηλῶν καὶ τὰ τῶν ἀπίων, ὅτι συμψάυει τε καὶ περιέλησαι καθάπερ ὑμένι τινι δερματικῷ περὶ δὲν τὸ περὶ κάρπουν ἀλλ' ὁμως καὶ τούτων ἐκαστὸν ἰδίαν ἄρχην ἔχει καὶ φύσιν φανερῶτατα δὲ τῷ

1 στοιχήδων conj. W.; σχεδον Ald.
2 ενὶ τινὶ conj. Sch.; ενὶ τινὶ Ald.
3 cf. Plin. 15. 15.
4 αὕτη conj. Sch.; αὕτη Ald.
5 τὸ conj. W.; τῷ Ald.
Further seeds differ in that in some cases they are massed together, in others they are separated and arranged in rows, as those of the gourd and bottle-gourd, and of some trees, such as the citron. Again of those that are massed together some differ in being contained in a single case, as those of pomegranate pear apple vine and fig; others in being closely associated together, yet not contained in a single case, as, among annuals, those which are in an ear—unless one regards the ear as a case. In that case the grape-cluster and other clustering fruits will come under the description, as well as all those plants which on account of good feeding or excellence of soil bear their fruits massed together, as they say the olive does in Syria and elsewhere.

But this too seems to be a point of difference, that some grow massed together from a single stalk and a single attachment, as has been said in the case of plants with clusters or ears whose seeds do not grow contained in one common case; while others grow otherwise. For in these instances, if one takes each seed or case separately, it has its own special point of attachment, for instance each grape or pomegranate, or again each grain of wheat or barley. This would seem to be least of all the case with the seeds of apples and pears, since these touch one another and are enclosed in a sort of skin-like membrane, outside which is the fruit-case. However each of these too has its own peculiar point of attachment and character; this is most

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6 ἥ τε... ἰδα.: text perhaps defective; ἥ τε ἰδα Βότρυας καὶ τῆς ἰδας ὁ πυρήν conj. Bod.
7 ὅτι conj. Sch.; ὅτι Ú; ὅποι PM Ald.
8 cf. 8. 5. 2.
9 i.e. pulp.
κεχωρίσθαι τὰ τῆς ρόας· ὁ γὰρ πυρήνῃ ἕκαστῷ προσπέφυκεν, οὓς ὦσπερ τῶν συκῶν ἀδηλα διὰ τὴν ύγρότητα. καὶ γὰρ τούτῳ ἔχουσι διαφορὰν καίπερ ἁμφότερα περιεχόμενα σαρκώδεις τινὶ καὶ τῶ τούτο περιειληφότι μετὰ τῶν ἄλλων· τὰ μὲν γὰρ περὶ ἕκαστον ἔχει πυρήνα τὸ σαρκώδες τοῦτο τὸ ύγρὸν, αἱ δὲ κεχραμίδες ὦσπερ κοινῶν τι πᾶσαι, καθάπερ καὶ τὸ γήγαρτον καὶ ὁσα τῶν αὐτῶν ἕχει τρόπον. ἀλλὰ τὰς μὲν τοιαύτας διαφορὰς τὰς γὰρ τὶς λάβοι πλείους· δὲν δεὶ τὰς κυριωτάτας καὶ μάλιστα τῆς φύσεως μὴ ἀγνοεῖν.

XII. Αἱ δὲ κατὰ τοὺς χυλοὺς καὶ τὰ σχῆματα καὶ τὰς ὀλας μορφὰς σχεδὸν φανερὰ πᾶσιν, ὦστε μὴ δεῖσθαι λόγον. πλὴν τοσοῦτὸν γὰρ ὁ σχῆμα οὐδὲν περικάρπιον εὐθύγραμμον οὐδὲ γωνίας ἔχει. τῶν δὲ χυλῶν οἱ μὲν εἰσιν οἰνώδεις, ὦσπερ ἀμπέλου συκαμίνου μῦρτου· οἱ δὲ ἐλαώδεις, ὦσπερ ἐλάσις δάφνης καρυάς ἀμυγδαλῆς πεύκης πίτυν ἐλάτης· οἱ δὲ μελιτώδεις, οίον σύκου φοίνικος διοσβαλάνον· οἱ δὲ δρυμεῖς, οίον ὄργανον θύμβρας καρδάμου νάπυν· οἱ δὲ πικρῶι, ὦσπερ ἀψινθίου κενταυρίου. διαφέρουσι δὲ καὶ ταῖς εὐωδίαις, οίον ἀνυξίου κεδρίδος· εὐών δὲ ύδαρεῖς ἄν δόξιεν, οίον οἱ τῶν κοκκυμηλέων· οἱ δὲ ὦξεῖς, ὦσπερ ροῶν

1 i.e. of the pulp. 2 τούτῳ conj. Sch.; τούτῳ Ald. 3 τὸν om. St.: i.e. the seeds are arranged in compartments of the pulp.
obvious in the separation of the pomegranate seeds, for the stone is attached to each, and the connexion is not, as in figs, obscured by the moisture. For here too there is a difference, although in both cases the seeds are enclosed in a sort of fleshy substance, as well as in the case which encloses this and the other parts of the fruit. For in the pomegranate the stones have this moist fleshy substance enclosing each separate stone; but in the case of fig-seeds, as well as in that of grape-stones and other plants which have the same arrangement, the same pulp is common to all. However one might find more such differences, and one should not ignore the most important of them, namely those which specially belong to the plant's natural character.

Differences in taste.

XII. The differences in taste, shape, and form as a whole are tolerably evident to all, so that they do not need explanation; except that it should be stated that the case containing the fruit is never right-lined in shape and never has angles. Of tastes some are like wine, as those of vine mulberry and myrtle; some are like olive-oil, as, besides olive itself, bay hazel almond fir Aleppo pine silver-fir; some like honey, as fig date chestnut; some are pungent, as marjoram savory cress mustard; some are bitter, as wormwood centaury. Some also are remarkably fragrant, as anise and juniper; of some the smell would seem to be insipid, as in plums; of others sharp, as in pomegranates and
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καὶ ἐνίων μῆλων. ἀπάντων δὲ οἰνώδεις καὶ τοὺς ἐν τούτῳ τῷ γένει θετέον· ἄλλοι δὲ ἐν ἄλλοις εἶδευν· ὑπὲρ δὲν ἀπάντων ἀκριβεστέρον ἐν τοῖς περὶ χυλῶν ῥητέων, αὐτῶς τε τὰς ἱδέας διαριθμομένους ὁπόσαι καὶ τὰς πρὸς ἄλληλοις διαφορὰς καὶ τὶς ἡ ἐκάστου φύσις καὶ δύναμις.

2 "Εξει δὲ καὶ ἡ τῶν δένδρων αὐτῶν ύγρότης, ὥσπερ ἐλέχθη, διάφορα εἶδη· ἢ μεν γὰρ ἐστὶν ὀπώδης, ὥσπερ ἡ τῆς συκῆς καὶ τῆς μῆκωνος· ἢ δὲ πιττώδης, οὗν ἐλάτης πεῦκης τῶν κωνοφόρων· ἄλλη δ' ὑδαρῆς, οὗν ἀμπέλου ἀπίου μηλέας, καὶ τῶν λαχανωδῶν δὲ, οὗν σικὺν κολοκύτης θριακίνης· αἱ δὲ [ἡδη] δριμύτητά τινα ἔχουσι, καθάπερ ἡ τοῦ θύμου καὶ θύμβρας· αἱ δὲ καὶ εὐωδίαν, ὥσπερ αἱ τοῦ σελίνου ἀνήθου μαράθου καὶ τῶν τοιούτων. ὡς δ' ἀπλῶς εἰπεῖν ἀπασαί κατὰ τὴν ἔδιαν φύσιν ἐκάστου δένδρου καὶ ὡς καθ' ὅλου εἰπεῖν φυτοῦ· πάν γὰρ ἔχει κράσιν τινα καὶ μίξιν ἔδιαν, ἤπερ οἰκεία δῆλον ὅτι τυγχάνει τοῖς ὑποκειμένοις καρποῖς· ὅν τοῖς πλείστοις συνεμφαίνεται τὶς ὁμοιότης οὐκ ἀκριβῆς οὖδὲ σαφῆς· ἄλλ' ἐν τοῖς περικαρπίοις· διὸ μᾶλλον κατεργασίαν λαμβάνει καὶ πέψιν καθαρὰν καὶ εἰλικρινῆ ἡ τοῦ

1 cf. C.P. 6. 6. 4.
2 T. is said to have written a treatise περὶ χυμῶν.
3 ὀπώδης. ὁπός is used specially of the juice of the fig itself.
4 μῆκωνος probably corrupt: it should be a tree.

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some kinds of apples. 1 But the smells even of those in this class must in all cases be called wine-like, though they differ in different kinds, on which matter we must speak more precisely, when we come to speak of flavours, 2 reckoning up the different kinds themselves, and stating what differences there are between them, and what is the natural character and property of each.

Now the sap of the trees themselves assumes different kinds of tastes as was said; sometimes it is milky, 3 as that of the fig and poppy, 4 sometimes like pitch, as in silver-fir and the conifers; sometimes it is insipid, as in vine pear and apple, as well as such pot-herbs as cucumber gourd lettuce; while others 5 again have a certain pungency, such as the juice of thyme and savory; others have a fragrance, such as the juices of celery dill fennel and the like. To speak generally, all saps correspond to the special character of the several trees, one might almost add, to that of each plant. For every plant has a certain temperament and composition of its own, which 6 plainly belongs in a special sense to the fruits of each. And in most of these is seen a sort of correspondence with the character of the plant as a whole, which is not however exact nor obvious; it is chiefly 7 in the fruit-cases 8 that it is seen, and that is why it is the character of the flavour which becomes more complete and matures into something separate and

5 I have bracketed ἡδῆ: ? a dittography of αἴ δὲ.
6 ἡπὲρ mBns. H; εἵπὲρ MALd.
7 ἄλλα ἐν . . . μάλλαν μ MSS. (?) Ald.H; γὰρ for διὸ conj. W., omitting stop before it.
8 i.e. the pulp: so G. cf. 1. 11. 6.
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χυλοῦ φύσις: δεὶ γὰρ ὤσπερ τὸ μὲν ὕλην ὑπο-
λαβεῖν τὸ δὲ εἰδὸς καὶ μορφήν.

3 'Εχει δὲ αὐτὰ τὰ σπέρματα καὶ οἱ χιτώνες οἱ
περὶ αὐτὰ διαφορὰν τῶν χυλῶν. ὡς δ’ ἀπλῶς
eἰπεῖν ἀπαντά τὰ μόρια τῶν δεύδρων καὶ φυτῶν,
οἶνον ρίζα καυλὸς ἀκρεμῶν φύλλον καρπός, ἔχει
τινὰ οἰκείοτητα πρὸς τὴν ὦλην φύσιν, εἰ καὶ
παραλλάττει κατὰ τε τὰς ὁσμὰς καὶ τοὺς χυλοὺς,
ὡς τὰ μὲν εὐσμα καὶ εὐώδη τὰ δ’ ἀοσμα καὶ
ἀχυλα παντελῶς εἶναι τῶν τοῦ αὐτοῦ μορίων.

4 'Ενίων γὰρ εὐσμα τὰ ἀνθῆ μᾶλλον ἡ τὰ
φύλλα, τῶν δὲ ἀνάπαλιν τὰ φύλλα μᾶλλον καὶ
οἱ κλώνες, ὦσπερ τῶν στεφανωματικῶν τῶν δὲ οἱ
καρποί· τῶν δ’ οὐδέτερον εὕνων δ’ αἱ ρίζαι τῶν
dὲ τὶ μέρος. ὃμοιώς δὲ καὶ κατὰ τοὺς χυλοὺς· τὰ
μὲν γὰρ βρωτὰ τὰ δ’ ἄβρωτα τυγχάνει καὶ εὖ
φύλλοις καὶ περικαρπίοις. ἰδιώτατον δὲ τὸ ἐπὶ
tῆς φίλυρας· ταύτης γὰρ τὰ μὲν φύλλα γλυκέα
καὶ πολλὰ τῶν ξώων ἐσθίει, ὁ δὲ καρπὸς οὐδὲν
βρωτὸς· ἐπεὶ τὸ γε ἀνάπαλιν οὐδὲν θαυμαστὸν,
ἂντε τὰ μὲν φύλλα μὴ ἐσθίεσθαι τοὺς δὲ καρποὺς
οὐ μόνον υφ' ἡμῶν ἀλλὰ καὶ ὑπὸ τῶν ἄλλων
ξώων. ἀλλὰ καὶ περὶ τούτων καὶ τῶν ἄλλων
tῶν τοιούτων ὑστερον πειρατεύν θεωρεῖν τὰς
αἰτίας.

XIII. Νῦν δὲ τοσοῦτον ἐστῶ δήλον, ὅτι κατὰ
πάντα τὰ μέρη πλείους εἰσὶ διαφορὰι πολλαχῶς:

1 i.e. the pulp. 2 i.e. the flavour.
3 Sense: Every tree has a characteristic juice of its own,
which is however specially recognisable in its fruit; in the
tree as a whole its character is not always apparent. Hence
the importance of the flavour (which is seen in the fruit-
pulp), since it is this which determines the specific character,
ENQUIRY INTO PLANTS, I. xii. 2—xiii. 1

distinct; in fact we must consider the one 1 as 'matter,' the other 2 as 'form' or specific character. 3

Again the seeds themselves and the coats containing them have different flavours. And, to speak generally, all parts of trees and plants, as root stem branch leaf fruit, have a certain relationship to the character of the whole, even if 4 there is variation in scents and tastes, so that of the parts of the same plant some are fragrant and sweet to the taste, while others are entirely scentless and tasteless.

For in some plants the flowers are more fragrant than the leaves, in others on the contrary it is rather the leaves and twigs which are fragrant, as in those used for garlands. In others again it is the fruits; in others it is neither 5 of these parts, but, in some few cases, the root or some part of it. And so too with the flavours. Some leaves and some fruit-pulps are, and some are not good for food. 6 Most peculiar is the case of the lime: the leaves of this are sweet, and many animals eat them, but the fruit no creature eats, (for, as to the contrary case, it would not be at all surprising that the leaves should not be eaten, while the fruits were eaten not only by us but by other animals). But concerning this and other such matters we must endeavour to consider the causes on some other occasion.

Differences in flowers.

XIII. For the present let so much be clear, that in all the parts of plants there are numerous differ-

the pulp of fruit in general being, in Aristotelian language, the 'matter,' while the flavour is 'form.'  cf. C. P. 6. 6. 6.

4  e i kal conj. Sch.; ἦ δὲ U; e i δὲ MVAld.

5 adviteitov seems inaccurately used, as four parts have been mentioned.  cf. 3. 10. 5; Plin 16. 65.
ἐπει καὶ τῶν ἄνθον τὰ μὲν ἐστὶ χυνώδη, καθάπερ τὸ τῆς ἀμπέλου καὶ συκαμινου καὶ τοῦ κιττοῦ τὰ δὲ φυλλώδη, καθάπερ ἀμυγδαλῆς μηλέας ἀπίου κοκκυμήλεας. καὶ τὰ μὲν μέγεθος ἔχει, τὸ δὲ τῆς ἐλάς φυλλώδες ὅν ἀμέγεθες. ὀρμοὶς δὲ καὶ ἐν τοῖς ἑπετειοῖς καὶ ποιῶδεσι τὰ μὲν φυλλώδη τὰ δὲ χυνώδη. πάντων δὲ τὰ μὲν δίχροα τὰ δὲ μονόχροα. τὰ μὲν τῶν δενδρῶν τὰ γε πολλὰ μονόχροα καὶ λευκανθῆ· μόνον γὰρ ὡς εἰπεῖν τὸ τῆς ῥόας φωνικοῦ καὶ ἀμυγδαλῶν τινων ὑπέρυθρων ἄλλου δὲ οὐδενός τῶν ἥμερων οὔτε ἄνθοδες οὔτε δίχρουν, ἀλλ' εἰ τινὸς τῶν ἀγρίων, οἴον τὸ τῆς ἐλάτῃς· κρόκινον γὰρ τὸ ταύτης ἄνθος· καὶ ὅσα δὴ φασιν ἐν τῇ ἔξω θαλ-ἀττη ρόδων ἔχειν τὴν χρώαν.

2 Ἐν δὲ τοῖς ἑπετειοῖς σχεδὸν τὰ γε πλεῖον τοιαύτα καὶ δίχροα καὶ διανθή. λέγω δὲ διανθῆς ὅτι ἐτερον ἄνθος ἐν τῷ ἄνθει ἔχει κατὰ μέσον, ὡσπερ τὸ ρόδον καὶ τὸ κρίνου καὶ τὸ οὐ τὸ μέλαν. ἔνια δὲ καὶ μονόφυλλα φύεται διαγραφὴν ἔχουτα μόνου τῶν πλειόνων, ὡσπερ τὸ τῆς ἱασιώνης· οὐ γὰρ κεχώρισται ταύτης ἐν τῷ ἄνθει τὸ φύλλων ἐκαστον' οὖδὲ δὴ τοῦ λειρίου τὸ κατω μέρος, ἀλλὰ ἐκ τῶν ἀκρων ἀποφύσεις γωνιώδεις. σχεδὸν δὲ καὶ τὸ τῆς ἐλάς τοιοῦτὸν ἐστιν.

3 Διαφέρει δὲ καὶ κατὰ τὴν ἐκφυσιν καὶ θέσιν· τὰ μὲν γὰρ ἔχει περὶ αὐτῶν τὸν καρπὸν, οἴον ἄμ-
ences shewn in a variety of ways. Thus of flowers some are downy, as that of the vine mulberry and ivy, some are 'leafy,'\(^1\) as in almond apple pear plum. Again some of these flowers are conspicuous, while that of the olive, though it is 'leafy,' is inconspicuous. Again it is in annual and herbaceous plants alike that we find some leafy, some downy. All plants again have flowers either of two colours or of one; most of the flowers of trees are of one colour and white, that of the pomegranate being almost the only one which is red, while that of some almonds is reddish. The flower of no other cultivated trees is gay nor of two colours, though it may be so with some uncultivated\(^2\) trees, as with the flower of silverfir, for its flower is of saffron colour; and so with the flowers of those trees by the ocean which have, they say, the colour of roses.

However, among annuals, most are of this character—their flowers are two-coloured and twofold.\(^3\) I mean by 'twofold' that the plant has another flower inside the flower, in the middle, as with rose lily violet. Some flowers again consist of a single 'leaf,'\(^4\) having merely an indication of more, as that of bindweed.\(^5\) For in the flower of this the separate 'leaves' are not distinct; nor is it so in the lower part of the narcissus,\(^6\) but there are angular projections\(^7\) from the edges. And the flower of the olive is nearly of the same character.

But there are also differences in the way of growth and the position of the flower; some plants have it

\(^{5}\) cf. C.P. 2. 18. 2 and 3; Plin. 21. 65.
\(^{6}\) λειψλον conj. Sch., i.e. narcissus, cf. 6. 6. 9; χεσπλον MSS.
\(^{7}\) i.e. something resembling separate 'leaves' (petals or sepals).
πελος ἐλάα; ἢς καὶ ἀποπίπτοντα διατετρημένα ψάνεται, καὶ τούτο σημείον λαμβάνουσιν εἰ καλῶς ἀπηνθήκειν ἐὰν γὰρ συγκαυθῆ ἡ βρεχθῇ. συναποβάλλει τὸν καρπὸν καὶ οὐ τετριμένον γύρεται: σχεδὸν δὲ καὶ τὰ πολλὰ τῶν <ἀνθῶν> ἐν μέσῳ τὸ περικάρπιον ἔχει, τάχα δὲ καὶ ἐπ’ αὐτοῦ τοῦ περικαρπίου, καθάπερ ἡμα μελέα ἀπιος κοκκυμήλεα μύρρινος, καὶ τῶν γε φρυγανικῶν ροδωνία καὶ τὰ πολλὰ τῶν στεφανοτικῶν: κάτω γὰρ ὑπὸ τὸ ἀνθος ἔχει τὰ σπέρματα: φανερώ- τατον δὲ ἐπὶ τοῦ ρόδου διὰ τὸν ὄγκον. ἐνα δὲ καὶ ἐπ’ αὐτῶν τῶν σπερμάτων, ὡσπερ ὁ ἄκανος καὶ ὁ κύκλος καὶ πάντα τὰ ἀκανώδη· καθ’ ἐκασ- τον γὰρ ἔχει τὸ ἀνθος. ὡμοίως δὲ καὶ τῶν ποιωδῶν ἐνα, καθάπερ τὸ ἀνθεμον· ἐν δὲ τοῖς λαχανηροῖς ὁ τε σίκυος καὶ ἡ κολοκύνθη καὶ ἡ σικύα· πάντα γὰρ ἐπὶ τῶν καρπῶν ἔχει καὶ προσανξανομένων ἐπιμένει τὰ ἀνθή πολύν χρόνον.

"Ἀλλὰ δὲ ἰδιωτέρως, οἰον ὁ κιττὸς καὶ ἡ συκάμινος· ἐν αὐτοῖς μὲν γὰρ ἔχει τοῖς ὅλοις περι- καρπίοις, οὐ μὴν οὔτε ἐπὶ ἄκρους οὔτε ἐπὶ περιειληφόσι καθ’ ἐκαστον, ἀλλ’ ἐν τοῖς ἀνὰ μέσον εἰ μὴ ἄρα οὐ σύνδελα διὰ τὸ χνοῦδες.

"Εστὶ δὲ καὶ ἄγονα τῶν ἀνθῶν ἐνα, καθάπερ ἐπὶ τῶν σικύων ὅ ἐν τῶν ἄκρων φύεται τοῦ κλῆ-

1 cf. 3. 16. 4. 2 Lacuna in text; ἀνθῶν I conj.
3 τάχα Ald.; τινα W. after Sch. conj.
4 ἄπιος conj. Bod.; ἄγνοις Ald.H.
5 i.e. composites.
6 σπερμάτων conj. Dalec. from G; στομάτων Ald.
7 ἄκανος conj. W.; ἄκαρος UV.
8 ἀκανώδη conj. W.; ἀνθῶδη Ald.H. cf. 1. 10. 6; 6. 4. 4.
ENQUIRY INTO PLANTS, I. xiii. 3–4

close above the fruit, as vine and olive; in the latter, when the flowers drop off, they are seen to have a hole through them,\(^1\) and this men take for a sign whether the tree has blossomed well; for if the flower is burnt up or sodden, it sheds the fruit along with itself, and so there is no hole through it. The majority of flowers\(^2\) have the fruit-case in the middle of them, or, it may be,\(^3\) the flower is on the top of the fruit-case, as in pomegranate apple pear\(^4\) plum and myrtle, and among under-shrubs, in the rose and in many of the coronary plants. For these have their seeds below, beneath the flower, and this is most obvious in the rose because of the size of the seed-vessel. In some cases\(^5\) again the flower is on top of the actual seeds,\(^6\) as in pine-thistle\(^7\) safflower and all thistle-like\(^8\) plants; for these have a flower attached to each seed. So too with some herbaceous plants, as *anthemon*, and among pot-herbs, with cucumber\(^9\) gourd and bottle-gourd; all these have their flowers attached on top of the fruits,\(^10\) and the flowers persist for a long time while the fruits are developing.

In *some* other plants the attachment is peculiar, as in ivy and mulberry; in these the flower is closely attached to the whole\(^11\) fruit-case; it is not however set above it, nor in a seed-vessel that envelops each\(^12\) separately, but it occurs in the middle part of the structure—except that in some cases it is not easily recognised because it is downy.

\(^{13}\) Again some flowers are sterile, as in cucumbers those which grow at the ends of the shoot, and that

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\(^1\) * τή * \\
\(^2\) * τών * \\
\(^3\) * δὲ * \\
\(^4\) * κέρκυρα * \\
\(^5\) * δὲ * \\
\(^6\) * τῶν * \\
\(^7\) * κέρκυραν * \\
\(^8\) * κέρκυραν * \\
\(^9\) * κέρκυραν * \\
\(^10\) * κέρκυραν * \\
\(^11\) * κέρκυραν * \\
\(^12\) * κέρκυραν * \\
\(^13\) * cf. Arist. Probl. 20. 3.*
"THEOPHRASTUS

ματος, δι' ο' καὶ ἀφαίροντι αὐτά· κωλύει γὰρ τὴν τοῦ σικύου βλάστησιν. φασὶ δὲ καὶ τῆς μηλέας τῆς Μηδικῆς ὁσα μὲν ἔχει τῶν ἄνθων ὥσπερ ἥλακάτην τινὰ πεφυκυνίαν ἐκ μέσου ταῦτ' εἶναι γόνιμα, ὁσα δὲ μὴ ἔχει ταῦτ' ἄγονα. εἰ δὲ καὶ ἔπ' ἄλλου τινὸς ταῦτα συμβαίνει τῶν ἄνθοφόρων ὡστε ἄγονον ἄνθος φύειν εὑτε κεχωρισμένον εὑτε μὴ, σκεπτέον. ἐπεὶ γένη γε ἐνια καὶ ἀμπέλου καὶ ῥόας ἀδυνατεῖ τελεοκαρπεῖν, ἄλλα μέχρι τού ἄνθους ἡ γένεσις.

5 (Γίνεται δὲ καὶ τὸ γε τῆς ῥόας ἄνθος πολὺ καὶ πυκνὸν καὶ ὄλως ὁ ὄγκος πλατὺς ὥσπερ ὁ τῶν ῥόδων· κάτωθεν δ' ἐτεροίος· ὦς διώτος μικρὸς ὥσπερ ἐκτετραμμένος ὁ κύτινος ἔχων τὰ χείλη μυχώδη.)

Φασὶ δὲ τινὲς καὶ τῶν ὁμογενῶν τὰ μὲν ἄνθεϊν τὰ δ' οὖ, καθάπερ τῶν φοινίκων τῶν μὲν ἀρρέναι ἄνθεῖν τῶν δὲ θῆλυν οὐκ ἄνθεῖν ἄλλ' εὗθ' προφαίνει τὸν καρπὸν.

Τὰ μὲν οὖν τῷ γένει ταῦτα τοιαύτην τὴν δια-

1 i.e. the pistil.
2 i.e. as seen from above: καὶ ὄλως . . . ῥόδων describes the corolla, κάτωθεν . . . μυχώδη the undeveloped ovary, including the adherent calyx.
3 ῥόδων conj. Bod.; ῥῶν Ald.
4 κάτωθεν . . . μυχώδη I conj.; δ' ἐτεροὶ δι' δὲ ὡς μικρόν ὥσπερ ἐκτετραμμένος κύτινος ἔχων τὰ χείλη μυχώδη UMV Ald. (except that Ald. has ἄνω for χείλη and ἐκτετραμμένον; so also P, but ἐκτετραμμένος). The sentence explains incidentally why the pomegranate flower was called κύτινος (cf. 2. 6. 12; C.P. 1. 14. 4; 2. 9. 3; 2. 9. 9; Diosc. 1. 110; Plin. 23. 110

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is why men pluck them off, for they hinder the growth of the cucumber. And they say that in the citron those flowers which have a kind of distaff growing in the middle are fruitful, but those that have it not are sterile. And we must consider whether it occurs also in any other flowering plants that they produce sterile flowers, whether apart from the fertile flowers or not. For some kinds of vine and pomegranate certainly are unable to mature their fruit, and do not produce anything beyond the flower.

(The flower of the pomegranate is produced abundantly and is solid: in general appearance it is a substantial structure with a flat top, like the flower of the rose; but, as seen from below, the inferior part of the flower is different-looking, being like a little two-eared jar turned on one side and having its rim indented.)

Some say that even of plants of the same kind some specimens flower while others do not; for instance that the 'male' date-palm flowers but the 'female' does not, but exhibits its fruit without any antecedent flower.

Such is the difference which we find between and 111), i.e. because it resembled a κύτος (see LS. s.v.). T. chooses the particular form of jar called δίωτος, because the indentations between the sepals suggest this: This is called διτετραμμένος, because the weight of the developing fruit causes it to take up at one stage a horizontal position, like a jar lying on its side; χείλη refers to the jar (for the plural cf. the use of ἀντυγες), μυχώδη to the indentations in the calyx (a jar having ordinarily an unindented rim).

5 όμογενόν conj. Sch.; όμοιογενόν Ald.
6 ταύτα τοιαύτην I conj. from G; τοιαύτα τήν UM; τοιαύτην P.
THEOPHRASTUS

φορὰν ἔχει, καθάπερ ὅλως ὡσα μὴ δύναται τελεοκαρπεῖν. ἡ δὲ τοῦ ἄνθους φύσις ὅτι πλείους ἔχει διαφορὰς φανερὸν ἐκ τῶν προειρημένων.

XIV. Διαφέρει δὲ τὰ δένδρα καὶ τοῖς τοιούτοις κατὰ τὴν καρποτοκίαν τὰ μὲν γάρ ἐκ τῶν νέων βλαστῶν φέρει τὰ δ’ ἐκ τῶν ἔνων τὰ δ’ ἐξ ἄμφοτέρων. ἐκ μὲν τῶν νέων συκῆ ἀμπελος ἐκ δὲ τῶν ἔνων ἐλάα ρόα μηλέα ἄμυγδαλή ἀπίος μύρρινος καὶ σχεδὸν τὰ τοιαύτα πάντα· ἐκ δὲ τῶν νέων ἐὰν ἀρα τι συμβῇ κυήσαι καὶ ἀνθήσαι (γίνεται γάρ καὶ ταῦτ’ ἐνίοισι, ὀσπερ καὶ τῷ μυρρίνῳ καὶ μάλισθ’ ὡς εἰπεῖν περὶ τὰς βλαστήσεις τὰς μετ’ Ἀρκτούρον) οὐ δύναται τελεοῦν ἄλλ’ ἡμιγενή φθείρεται· ἐξ ἄμφοτέρων δὲ καὶ τῶν ἔνων καὶ τῶν νέων εἰ τινὲς ἀρα μηλέαι τῶν διφόρων ἢ εἴ τι ἄλλο κάρπιμον· ἐτὶ δὲ ὁ ὅλυνθος ἐκπέπττων καὶ σύκα φέρων ἐκ τῶν νέων.

2 Ἰδιωτάτη δὲ ἡ ἐκ τοῦ στελέχους ἐκφύσις, ὀσπερ τῆς ἐν Αἰγύπτῳ συκαμίνου· ταύτην γάρ φασι φέρειν ἐκ τοῦ στελέχους· οἱ δὲ ταύτη τε καὶ ἐκ τῶν ἀκρεμόνων, ὀσπερ τῆς κερωνίαν· αὕτη γάρ καὶ ἐκ τούτων φέρει πλὴν οὐ πολὺν καλοῦσι δὲ κερωνίαν ἀφ’ ἦς τὰ σύκα τὰ Αἰγύπτια καλοῦμενα.

1 i.e. that, like the ‘female’ date-palm, they have no flower.
2 τοιαύτα πάντα· ἐκ δὲ τῶν νέων ἐὰν ἀρα τι conj. W.; τοιαύτα· πάντα γάρ ἐκ τῶν ἔνων· ἐὰν δὲ ἄρα τι MSS.
3 cf. 3. 5. 4.
4 διφόρων conj. Sch. from G; διαφόρων UAlid.
plants of the same kind; and the like may be said \(^1\) in general of those which cannot mature their fruit. And it is plain from what has been said that flowers shew many differences of character.

_Differences in fruits._

XIV. Again as to the production of fruit trees differ in the following respects. Some bear on their new shoots, some on last year's wood, some on both. Fig and vine bear on their new shoots; on last year's wood olive pomegranate apple almond pear myrtle and almost all such trees. And, if any of these does \(^2\) happen to conceive and to produce flowers on its new shoots, (for this does occur in some cases, as with myrtle, and especially, one may say, in the growth which is made after the rising of Arcturus) \(^3\) it can not bring them to perfection, but they perish half-formed. Some apples again of the twice-bearing \(^4\) kinds and certain other fruit-trees bear both on last year's wood and on the new shoots; and so does the olynthos, \(^5\) which ripens its fruit as well as bearing figs on the new shoots.

Most peculiar is the growth of fruit direct from the stem, as in the sycamore; for this, they say, bears fruit on the stem. Others say that it bears both in this way and \(^6\) also on the branches, like the carob; for the latter bears on the branches too, though not abundantly: (the name carob is given to the tree which produces what are called 'Egyptian

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\(^1\) oλυνθος is not elsewhere used for a kind of fig; ἕτι δὲ συμ’ τοὺς ὀλύνθους ἐκπέττουσα καὶ σῦκα φέρουσα conj. Sch. somewhat drastically.

\(^2\) ταύτη τε καὶ ἐκ conj. W.; ταύτης μὲν ἐκ UMVAld. cf. 4. 2. 4.
THEOPHRASTUS

ἐστὶ δὲ καὶ τὰ μὲν ἀκρόκαρπα τῶν δένδρων καὶ ὅλως τῶν φυτῶν τὰ δὲ πλαγίοκαρπα τὰ δ’ ἄμφοτερως. πλείω δ’ ἀκρόκαρπα τῶν ἄλλων ἦ τῶν δένδρων, οἷον τῶν τε σιτηρῶν τὰ σταχνώδη καὶ τῶν θαμνωδῶν ἐρέικη καὶ σπειραία καὶ ἄγνος καὶ ἅλλ’ ἄττα καὶ τῶν λαχανωδῶν τὰ κεφαλόρριζα. εξ ἄμφοτέρων δὲ καὶ τῶν δένδρων ἐνια καὶ τῶν λαχανωδῶν, οἷον βλίτον ἀδράφαξις ράφανος· ἐπει καὶ ἐλάα ποιεῖ πως τούτο, καὶ φασίν ὅταν ἄκρον ἐνέγκη σημείον εὐφορίας εἶναι. ἀκρόκαρπος δὲ πως καὶ ὁ φοῖνιξ· πλήν τούτο γε καὶ ἀκρόφυλλον καὶ ἀκρόβλαστον ὅλως γὰρ ἐν τῷ ἁνω πᾶν τὸ ζωτικόν. τὰς μὲν οὖν κατὰ <τὰ> μέρη διαφορὰς πειρατέον ἐκ τούτων θεωρεῖν.

 Ai δὲ τοιαύτα τῆς ὅλης οὐσίας φαινονται· δήλον ὅτι τὰ μὲν ἡμερὰ τὰ δ’ ἀγρία· καὶ τὰ μὲν κάρπιμα τὰ δ’ ἀκαρπα· καὶ ἀείφυλλα καὶ φυλλοβολα, καθάπερ ἐλέχθη, τὰ δ’ ὅλως ἀφυλλα· καὶ τὰ μὲν ἀνθητικά τὰ δ’ ἀνανθή· καὶ πρωίβλαστη δὲ καὶ πρωίκαρπα τὰ δὲ ὑπεβλαστή καὶ ὑπίκαρπα· ὁσαῦτως δὲ καὶ ὅσα παραπλησία τούτοις. καὶ πως τὰ γε τοιαύτα ἐν τοῖς μέρεσιν ἢ οὐκ ἄνευ τῶν μερῶν ἐστίν. ἅλλ’ ἐκείνη ἰδιωτάτη καὶ τροπὸν τινα μεγίστη διάστασις, ἢπερ καὶ ἐπὶ τῶν ζώων, ὅτι τὰ μὲν ἐνυδρα τὰ δὲ χερσαία· καὶ γὰρ τῶν φυτῶν

1 Plin. 16. 112.
2 τοῦτο conj. Sch.; τοῦτον UAld.; τοῦτον M.
ENQUIRY INTO PLANTS, I. xiv. 2–3

Again some trees, and some plants in general, produce fruit at the top, others at the sides, others in both ways. But bearing fruit at the top is less common in trees than in other plants, as among grains in those which have an ear, among shrubby plants in heath privet chaste tree and certain others, and among pot-herbs in those with a bulbous root. Among plants which bear both on the top and at the sides are certain trees and certain pot-herbs, as blite orach cabbage. I say trees, since the olive does this too in a way, and they say that, when it bears at the top, it is a sign of fruitfulness. The date-palm too bears at the top, in a sense, but this tree also has its leaves and shoots at the top; indeed it is in the top that its whole activity is seen. Thus we must endeavour to study in the light of the instances mentioned the differences seen in the various parts of the plant.

General differences (affecting the whole plant).

But there appear to be the following differences which affect the plant’s whole being: some are cultivated, some wild; some fruitful, some barren; some evergreen, some deciduous, as was said, while some again have no leaves at all; some are flowering plants, some flowerless; some are early, some late in producing their shoots and fruits; and there are other differences similar to these. Now it may be said that such differences are seen in the parts, or at least that particular parts are concerned in them. But the special, and in a way the most important distinction is one which may be seen in animals too, namely, that some are of the water, some of the land. For

{kale pws tā ge toiaũta conj. Sch.; kale πῶν tā ge tauta U; kale tā ge toiaũta Ald.}
Theophrastus

'Esti ti toiouton genos o ou dynatai vusebai <mu> en ugrho' 'tac de fuyetai mev, ouchi omoia de alla cheiro. Pantoan de tov deinow 'os aplois eipein kai tov fuvon eidy pleio thychanei kath ekastov genos' skedon gar oudein estin aplwv' alli osa mev uma kai ambria lenetai tauntin emfane-statyn kai megistyn chei diaforan, oion sunik eurineos, elaa kotonos, uptos akhras' osa de en ekaterro toutow tois karpois te kai fullois kai taip allois mofrais te kai tois moriois. Alla tov men ambriw anowumia ta pleista kai empeiroi eligov. Tov de umaeron kai onomasmene ta pleiow kai he aisthesis koinoteran' legyo de oion ampetelo sunkis roas muleas apion diafithi mrriniw twn alloin' he gar chrisei ousta koini suntheverein poiei tas diaforas.

'Idioan de kai touti ef' ekaterwv' tac men gar ambria toi arreni kai to thilei h monois h malista diairousi, tac de umaera pleisoiv ideais. 'Esti de tov men rhoi labeiv kai dairithmias tac eidy, toun de kaloupoteron dia thn polychoian.

'Alla de tas men tov morion diaforas kai tov alloin ourioin ek toutow peiratoleon thewreiv. peri de toun genvesewn metac tauta lekteoun' touto gar kosper efexeis tois eirhmenou 'estin.
of plants too there is a class which cannot grow except in moisture, while others will indeed grow on dry land, but they lose their character and are inferior. Again of all trees, one might almost say, and of all plants there are several forms to each kind; for hardly any kind contains but a single form. But the plants which are called respectively cultivated and wild shew this difference in the clearest and most emphatic way, for instance the cultivated and wild forms of fig, olive and pear. In each of these pairs there are differences in fruit and leaves, and in their forms and parts generally. But most of the wild kinds have no names and few know about them, while most of the cultivated kinds have received names and they are more commonly observed; I mean such plants as vine, fig, pomegranate, apple, pear, bay, myrtle and so forth; for, as many people make use of them, they are led also to study the differences.

But there is this peculiarity as to the two classes respectively; in the wild kinds men find only or chiefly the distinction of 'male' and 'female,' while in the cultivated sorts they recognise a number of distinguishing features. In the former case it is easy to mark and count up the different forms, in the latter it is harder because the points of difference are numerous.

However we have said enough for study of the differences between parts and between general characters. We must now speak of the methods of growth, for this subject comes naturally after what has been said.

1 μὴ add. W.
2 ὄνομασιν τὰ πλεῖον conj. Sch.; ὄνομασινων πλεῖον Ald.
I. Αἱ γενέσεις τῶν δένδρων καὶ ὅλως τῶν φυτῶν ἢ αὐτόμαται ἢ ἀπὸ σπέρματος ἢ ἀπὸ ρίζης ἢ ἀπὸ παρασπάδος ἢ ἀπὸ ἀκρεμόνως ἢ ἀπὸ κλωνός ἢ ἀπ' αὐτοῦ τοῦ στελέχους εἰσίν, ἢ ἔτι τοῦ ξύλου κατακοπέντος εἰς μικρὰ· καὶ γὰρ οὕτως ἐνια φύεται. τούτων δὲ ἡ μὲν αὐτόματος πρώτη τις, αἱ δὲ ἀπὸ σπέρματος καὶ ρίζης φυσικῶταται δόξαιεν ἃν· ὥσπερ γὰρ αὐτόμαται καὶ αὐταί· δι' ὅ ἐκ τοῖς ἀγρίως υπάρχουσιν· αἱ δὲ ἕκκαι τέχνης ἢ ἐν προαιρέσεως.

2 "Απαντα δὲ βλαστάνει κατὰ τινα τῶν τρόπων τούτων, τὰ δὲ πολλὰ κατὰ πλείους· ἐλάα μὲν γὰρ πάντως φύεται πλήν ἀπὸ τοῦ κλωνός· οὐ γὰρ δύναται καταπηγγυμένη, καθάπερ ἡ συκῆ τῆς κράδης καὶ ἡ ῥόα τῆς βάλδου. καίτοι φασί γε τινες ἢδη καὶ χάρακος παγείσης καὶ πρὸς τὸν κιττόν συμβιώσαι καὶ γενέσθαι δένδρον· ἕκκα ἐπάνων τι τὸ τοιοῦτον· θάτερα δὲ τὰ πολλὰ τῆς φύσεως· συκῆ δὲ τοὺς μὲν ἕκκας τρόπους

1 εἰςα φύεται conj. Sch.; ἀνανεύεται Ald.
BOOK II

Of Propagation, especially of Trees:

Of the ways in which trees and plants originate. Instances of degeneration from seed.

I. The ways in which trees and plants in general originate are these:—spontaneous growth, growth from seed, from a root, from a piece torn off, from a branch or twig, from the trunk itself; or again from small pieces into which the wood is cut up (for some trees can be produced even in this manner). Of these methods spontaneous growth comes first, one may say, but growth from seed or root would seem most natural; indeed these methods too may be called spontaneous; wherefore they are found even in wild kinds, while the remaining methods depend on human skill or at least on human choice.

However all plants start in one or other of these ways, and most of them in more than one. Thus the olive is grown in all the ways mentioned, except from a twig; for an olive-twig will not grow if it is set in the ground, as a fig or pomegranate will grow from their young shoots. Not but what some say that cases have been known in which, when a stake of olive-wood was planted to support ivy, it actually lived along with it and became a tree; but such an instance is a rare exception, while the other methods of growth are in most cases the natural ones. The fig grows in all the ways mentioned,
φύεται πάντας, ἀπὸ δὲ τῶν πρέμυων καὶ τῶν ἔχουσιν οὐ φύεται: μηλέα δὲ καὶ ἄπιος καὶ ἀπὸ τῶν ἀκρεμόνων σπανίως. οὐ μὴν ἄλλα τά γε πολλά ἢ πάνθι' ως εἰπεῖν εὐδεχεσθαι δοκεῖ καὶ ἀπὸ τούτων, ἐὰν λείοι καὶ νέοι καὶ εὐαγχεῖς ὄσιν. ἄλλα φυσικότεραι πως ἔκειναι: τὸ δὲ εὐδεχόμενον ὡς δυνατὸν ληπτέον.

3 Ὁλως γὰρ ὀλίγα τὰ ἀπὸ τῶν ἄνω μάλλον βλαστάνοντα καὶ γεννώμενα, καθάπερ ἁμπελος ἀπὸ τῶν κλημάτων: αὐτη γὰρ οὐκ ἀπὸ τῆς πρόφας ἄλλ' ἀπὸ τοῦ κλημάτος φύεται, καὶ εἰ δὴ τι τοιοῦτον ἔτερον ἢ δένδρον ἢ φρυγανώδες, ὡσπερ δοκεῖ τὸ τε πήγανον καὶ ἡ ἱώνια καὶ τὸ σισύμ-βριον καὶ ὁ ἕρπυλλος καὶ τὸ ἔλευνον. κοινοτάτη μὲν οὖν ἐστὶ πᾶσιν ἢ τε ἀπὸ τῆς παρασπάδος καὶ ἀπὸ σπέρματος. ἀπαντα γὰρ ὅσα ἔχει σπέρματα καὶ ἀπὸ σπέρματος γίνεται: ἀπὸ δὲ παρασπάδος καὶ τὴν δάφνην φασίν, εάν τις τὰ ἔρην παρελών φυτεύσῃ. δεὶ δὲ ὑπόρριζον εἶναι μάλιστα γε τὸ παρασπώμενον ἢ ὑπόπρεμον. οὐ μὴν ἄλλα καὶ ἀνεύ τούτου θέλει βλαστάνειν καὶ ἰόα καὶ μηλέα ἔαρινή. βλαστάνει δὲ καὶ ἀμυγδαλή φυτευμένη.

4 κατὰ πλεῖστον δὲ τρόποις ὡς εἰπεῖν ἢ ἐλάα βλαστάνει· καὶ γὰρ ἀπὸ τοῦ στελέχους καὶ ἀπὸ τοῦ πρέμυος κατακοπτομένου καὶ ἀπὸ τῆς βίζης [καὶ ἀπὸ τῶν ἔχουσι] καὶ ἀπὸ ράβδου καὶ χάρακος ὡσπερ εἰρήται. τῶν δ' ἄλλων οἱ μύρρινοι· καὶ γὰρ οὕτος ἀπὸ τῶν ἔχουσι καὶ τῶν πρέμυων

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1 τὰ γε πολλὰ πάνθ' conj. Sch.; ἢ before πάνθ' ins. St.; τὰ τε πολλὰ πάνθ' Ald.
2 εἰαγχεῖς conj. H; αὐχεῖς UMV Ald.
3 οὐκ I conj.; οὔθ' MSS.
except from root-stock and cleft wood; apple and pear grow also from branches, but rarely. However it appears that most, if not practically all,¹ trees may grow from branches, if these are smooth young and vigorous.² But the other methods, one may say, are more natural, and we must reckon what may occasionally occur as a mere possibility.

In fact there are quite few plants which grow and are brought into being more easily from the upper parts, as the vine is grown from branches; for this, though it cannot³ be grown from the ‘head,’⁴ yet can be grown from the branch, as can all similar trees and under-shrubs, for instance, as it appears, rue gilliflower bergamot-mint tufted thyme calamint. So the commonest ways of growth with all plants are from a piece torn off or from seed; for all plants that have seeds grow also from seed. And they say that the bay too grows⁵ from a piece torn off, if one takes off the young shoots and plants them; but it is necessary that the piece torn off should have part of the root or stock ⁶ attached to it. However the pomegranate and ‘spring apple’⁷ will grow even without this, and a slip of almond⁸ grows if it is planted. The olive grows, one may say, in more ways than any other plant; it grows from a piece of the trunk or of the stock,⁹ from the root, from a twig, and from a stake, as has been said.¹⁰ Of other plants the myrtle also can be propagated in several ways; for this too grows from pieces of wood

² cf. C.P. 1. 3. 2. ³ i.e. a ‘heel’ (Lat. perna).
⁴ cf. C.P. 2. 11. 6; Athen. 3. 23. ⁵ cf. Geop. 10. 3. 9.
⁶ καλ ἄπδ τοῦ ξύλου om. Julius Pontedeva on Varro 1. 39. 3: a gloss on ἄπδ τοῦ πρέμνου κατακ. ⁷ 2. 1. 2.

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ϕύεται. δεὶ δὲ καὶ τούτου καὶ τῆς ἐλάσσας τὰ ξύλα διαρείν μὴ ἐλάττω σπιθαμιαίων καὶ τὸν φλοίον μὴ περιαρείν.

Τὰ μὲν οὐν δένδρα βλαστάνει καὶ γίνεται κατὰ τοὺς εἰρημένους τρόπους: ἀι γὰρ ἐμφυτεύει καὶ οἱ ἐνοφθαλμισμοὶ καθάπερ μίξεις τινὲς εἰσὶν ἡ κατ’ ἄλλον τρόπον γενέσεις, περὶ δὲν ύστερον λεκτέον.

II. Τῶν δὲ φρυγανωδῶν καὶ ποιωδῶν τὰ μὲν πλεῖστα ἀπὸ σπέρματος ἡ ρίζης τὰ δὲ καὶ ἀμφοτέρως: ἐνια δὲ καὶ ἀπὸ τῶν βλαστῶν, ὡσπερ εἰρηταί. ῥοδωνία δὲ καὶ κρινωνία κατακοπέντων τῶν καυλῶν, ὡσπερ καὶ ἡ ἀγρωστίς. ϕύεται δὲ ἡ κρινωνία καὶ ἡ ῥοδωνία καὶ ὅλου τοῦ καυλοῦ τεθέντος. ἰδιωτάτη δὲ ἡ ἀπὸ δακρύου καὶ γὰρ οὔτω δοκεῖ τὸ κρίνον φύεσθαι, ὅταν ἔρανθη τὸ ἀπορρυνέν. φασὶ δὲ καὶ ἐπὶ τοῦ ἰπποσελίνου καὶ γὰρ τοῦτο ἀφίησι δάκρυνον. ϕύεται δὲ τις καὶ κάλαμος, ἐὰν τις διατέμνων τὰς ἡλακάτας πλαγίας τιθῇ καὶ κατακρύψῃ κόπρω καὶ γῆ. ἱδίως δὲ ἀπὸ ρίζης [τῶν] φύεσθαι καὶ τὰ κεφαλόρριζα.

2 Τοσανταχῶς δὲ οὕσης τῆς δυνάμεως τὰ μὲν πολλὰ τῶν δένδρων, ὡσπερ ἐλέχθη πρῶτερον, ἐν πλείοσι τρόποις ϕύεται: ἐνια δὲ ἀπὸ σπέρματος

1 ἐμφυτεύειαι conj. R. Const.; ἐμφυλέαι (with erasures) U; ἐμφυλέλαι V; ἐμφυλείαι Ald.
2 2. 1. 3 ; cf. C. P. 1. 4. 4 and 6.
3 i.e. bulbul. cf. 6. 6. 8 ; 9. 1. 4 ; C. P. 1. 4. 6 ; Plin. 21. 24.
4 ἐπὶ conj. W.; ἀπὸ P. Ald.
5 δὲ τίς καὶ Ald.; τίς om. W. after Sch.
and also from pieces of the stock. It is necessary however with this, as with the olive, to cut up the wood into pieces not less than a span long and not to strip off the bark.

Trees then grow and come into being in the above-mentioned ways; for as to methods of grafting\(^1\) and inoculation, these are, as it were, combinations of different kinds of trees; or at all events these are methods of growth of a quite different class and must be treated of at a later stage.

II. Of under-shrubs and herbaceous plants the greater part grow from seed or a root, and some in both ways; some of them also grow from cuttings, as has been said,\(^2\) while roses and lilies grow from pieces of the stems, as also does dog's-tooth grass. Lilies and roses also grow when the whole stem is set. Most peculiar is the method of growth from an exudation\(^3\); for it appears that the lily grows in this way too, when the exudation that has been produced has dried up. They say the same of\(^4\) alexanders, for this too produces an exudation. There is a certain\(^5\) reed also which grows if one cuts it in lengths from joint to joint and sets them\(^6\) sideways, burying it in dung and soil. Again they say that plants which have a bulbous root are peculiar in their way of growing\(^7\) from the root.

The capacity for growth being shewn in so many ways, most trees, as was said before,\(^8\) originate in several ways; but some come\(^9\) only from seed, as silver-

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\(^1\) cf. 1. 4. 4; Plin. 17. 145; Col. 4. 32. 2; τιθη conj. Sch.; ἦ Ald.; ? θη. 
\(^2\) i.e. by offset bulbs. Text probably defective; cf. C. P. 1. 4. 1. τφ U; το UMV. 
\(^3\) 2. 1. 1. 
\(^4\) φνεται I conj.; φησιν ἐστιν or φασιν ἐστιν MSS.; ὁσ φασιν ἐστιν Ald.; παραγίνεται conj. W.
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φύεται μονον, οιον ἐλάτη πεύκη πίτυς ὅλως πάν τὸ κωνοφόρον· ἐτι δὲ καὶ φοίνιξ, πληγὴ εἰ ἀρα ἐν Βαβυλῶνι καὶ ἀπὸ τῶν ράβδων [ὡς] φασὶ τινες μολένειν. κυπάριστος δὲ παρὰ μὲν τοῖς ἄλλοις ἀπὸ σπέρματος, ἐν Κρήτῃ δὲ καὶ ἀπὸ τοῦ στελέχους, οῖον ἐπὶ τῆς ὅρειας ἐν Τάρρᾳ· παρὰ τούτῳ γὰρ ἐστιν ἡ κουριζομένη κυπάριστος· αὕτη δὲ ἀπὸ τῆς τομῆς βλαστάνει πάντα τρόπων τεμνομένη καὶ ἀπὸ γῆς καὶ ἀπὸ τοῦ μέσου καὶ ἀπὸ τοῦ ἀνωτέρω. βλαστάνει δὲ ἐνιαχοῦ καὶ ἀπὸ τῶν ρίζων σπανίως δέ.

3 Περὶ δὲ δρυὸς ἀμφισβητοῦσιν· οἱ μὲν γὰρ ἀπὸ σπέρματος φασὶ μονον, οἱ δὲ καὶ ἀπὸ ρίζης γλύσχρως· οἱ δὲ καὶ ἀπ’ αὐτοῦ τοῦ στελέχους κοπέντος. ἀπὸ παρασπάδος δὲ καὶ ρίζης οὐδὲν φύεται τῶν μὴ παραβλαστανύντων.

4 Ἀπάντων δὲ ὅσων πλείους αἱ γενέσεις, ἡ ἀπὸ παρασπάδος καὶ ἐτὶ μᾶλλον ἡ ἀπὸ παραφυάδος ταχίστη καὶ εὐανυξίας, ἕαν ἀπὸ ρίζης ἡ παραφύας ἦ. καὶ τὰ μὲν οὕτως ἡ ὄλως ἀπὸ φυτευτηρίων πεφυτευμένα πάντα δοκεῖ τοὺς καρποὺς ἔξομοιον. ὁσα δ’ ἀπὸ τοῦ καρποῦ τῶν δυναμενών καὶ οὕτως βλαστάνειν, ἀπανθ’ ὡς εἰπεῖν χεῖρω, τὰ δὲ καὶ ὄλως ἐξίσταται τοῦ γένους, οἰον ἀμπελοὺς μηλέα συκῆ ροιϊ ἄπιος· έκ τε γὰρ τῆς κεχραμίδος οὐδὲν γίνεται γένους ὅλως ἦμερον, ἀλλ’ ἡ ἐρινέως ἡ ἀγρία συκῆ, διαφέρουσα πολλάκις καὶ τῇ χροίᾳ· καὶ γὰρ ἐκ μελαινῆς λευκῆ καὶ ἐκ λευκῆς μέλαινα

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1 μολέειν conj. Sch.; μολύειν MSS.; μοσχεειν conj. R. Const. (cf. C.P. 1. 2 1). But cf. Hesych. s.v. μολεειν.
2 Plin. 16. 141. 3 ἐπὶ conj. W.; τὸ UMVAld.

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fir fir Aleppo pine, and in general all those that bear cones: also the date-palm, except that in Babylon it may be that, as some say, they take cuttings from it. The cypress in most regions grows from seed, but in Crete from the trunk also, for instance in the hill country about Tarra; for there grows the cypress which they clip, and when cut it shoots in every possible way, from the part which has been cut, from the ground, from the middle, and from the upper parts; and occasionally, but rarely, it shoots from the roots also.

About the oak accounts differ; some say it only grows from seed, some from the root also, but not vigorously, others again that it grows from the trunk itself, when this is cut. But no tree grows from a piece torn off or from a root except those which make side-growths.

However in all the trees which have several methods of originating the quickest method and that which promotes the most vigorous growth is from a piece torn off, or still better from a sucker, if this is taken from the root. And, while all the trees which are propagated thus or by some kind of slip seem to be alike in their fruits to the original tree, those raised from the fruit, where this method of growing is also possible, are nearly all inferior, while some quite lose the character of their kind, as vine apple fig pomegranate pear. As for the fig, no cultivated kind is raised from its seed, but either the ordinary wild fig or some wild kind is the result, and this often differs in colour from the parent; a black fig gives a

\[\phi \nu \tau \varepsilon \upsilon \tau \varsigma \rho \iota \omicron \omicron : a \text{ general term including } \pi \alpha \rho \alpha \phi \nu \alpha \varsigma \text{ and } \pi \alpha \rho \alpha \varsigma \pi \alpha \varsigma .\]

b cf. C.P. 1. 9.
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γίνεται ἐκ τε τῆς ἀμπέλου τῆς γενναίας ἀγεννηῆς καὶ πολλάκις ἐτερου γένος· ὅτε δὲ ὅλως οὐδὲν ἕμερον ἄλλ' ἀγριον ἐνίστε καὶ τοιούτον ὡστε μη ἐκπέττειν τὸν καρπὸν· αἱ δ' ὡστε μηδὲ ἀδρύνειν ἀλλὰ μέχρι τοῦ ἀνθήσαι μόνον ἀφικνεῖσθαι.

5 Φύονται δὲ καὶ ἐκ τῶν τῆς ἐλάας πυρῆνων ἀγριέλαιος καὶ ἐκ τῶν τῆς βόας κόκκων τῶν γλυκέων ἀγεννείς καὶ ἐκ τῶν ἀπυρῆνων σκληραῖ, πολλάκις δὲ καὶ οξείαι. τὸν αὐτὸν δὲ τρόπον καὶ ἐκ τῶν οὐπίων καὶ ἐκ τῶν μηλέων· ἐκ μὲν γὰρ τῶν ἀπίων μοχθηρὰ ἡ ἀχρᾶς, ἐκ δὲ τῶν μηλέων χείρων τε τῷ γένει καὶ ἐκ γλυκείας ὀξεία, καὶ ἐκ στρουθίου Κυδώνιοι. χείρων δὲ καὶ ἡ ἄμυγδαλή καὶ τῷ χυλῷ καὶ τῷ σκληρᾷ ἐκ μαλακῆς· δι' ὁ καὶ αὐξηθεὶσαν ἐγκεντρίζειν κελεύσωσιν, ἐδὲ μὴ τὸ μόσχευμα μεταφυτεύειν πολλάκις.

6 Χείρων δὲ καὶ ἡ δρύς· ἀπὸ γούν τῆς ἐν Πύρρα πολλοὶ φυτεύσαντες οὐκ ἐδύνανθ' ὀμοίαν ποιεῖν. δάφνην δὲ καὶ μυρρίνην διαφέρειν ποτὲ φασίν, ὡς ἐπὶ τὸ πολὺ δ' ἐξιστασθαι καὶ οὔδε τὸ χρῶμα διασώζειν, ἀλλ' εξ ἐρυθρῶν καρποῦ γίνεσθαι μέλαιναν, ὡσπερ καὶ τὴν ἐν Ἀντάνδρῳ πολλάκις δὲ καὶ τὴν κυπάριστον ἐκ θηλείας ἄρρενα. μέλιστα δὲ τούτων ὁ φωιίς δοκεὶ διαμένειν ὡσπερ εἰπτείν τελείως τῶν ἀπὸ σπέρματος, καὶ πεύκη ἡ κωνοφόρος καὶ πίτυς ἡ φθειροποιός. ταῦτα μὲν οὖν ἐν τοῖς ἡμερωμένοις. ἐν δὲ τοῖς

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2 γλυκέων conj. St.; γλαυκέων UMV Ald.
3 cf. Athen. 3. 20 and 23.
4 cf. C.P. 1. 9. 1.
5 In Lesbos: cf. 3. 9. 5.
6 cf. C.P. 1. 9. 2.
white, and conversely. Again the seed of an excellent vine produces a degenerate result, which is often of quite a different kind; and at times this is not a cultivated kind at all, but a wild one of such a character that it does not ripen its fruit; with others again the result is that the seedlings do not even mature fruit, but only get as far as flowering.

Again the stones of the olive give\(^1\) a wild olive, and the seeds of a sweet pomegranate\(^2\) give a degenerate kind, while the stoneless kind gives a hard sort and often an acid fruit. So also is it with seedlings of pears and apples; pears give a poor sort of wild pears, apples produce an inferior kind which is acid instead of sweet; quince produces wild quince.\(^3\) Almond again raised from seed is inferior in taste and in being hard instead of soft; and this is why men\(^4\) bid us graft on to the almond, even when it is fully grown, or, failing that, frequently plant the offsets.

The oak also deteriorates from seed; at least many persons having raised trees from acorns of the oak at Pyrrha\(^5\) could not produce one like the parent tree. On the other hand they say that bay and myrtle sometimes improve by seeding, though usually they degenerate and do not even keep their colour, but red fruit gives black—as happened with the tree in Antandros; and frequently seed of a *female* cypress produces a *male* tree. The date-palm seems to be about the most constant of these trees, when raised from seed, and also the *cone-bearing pine*\(^6\) (stone-pine) and the *lice-bearing pine.*\(^7\) So much for degeneration in cultivated trees; among wild kinds it is plain that more in proportion

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\(^1\) Plin. 16. 49. The ‘lice’ are the seeds which were eaten.  
\(^2\) cf. Hdt. 4. 109, \(φ\)ε\(θ\)ε\(ω\)τ\(ρ\)τ\(ρ\)α\(γ\)έ\(ο\)υ\(ς\); Theocr. 5. 49.
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άγριοις δήλον ὃτι πλειω κατὰ λόγον ὡς ἵσχυρο-

tέροις· ἐπεὶ θάτερόν γε καὶ ἄτοπον, εἶ δὴ χεῖρω

καὶ ἐν ἐκείνοις καὶ ὅλως ἐν τοῖς ἀπὸ σπέρματος

μόνον· εἶ μὴ τι τῇ θεραπείᾳ δύνανται μετα-

βάλλειν.

1 Διαφέρουσι δὲ καὶ τόπτων καὶ ἀέρων· ἐνιαχοῦ γὰρ ἐκφέρειν ἡ χώρα δοκεῖ τὰ ὅμοια, καθάπερ καὶ ἐν Φιλίπποις· ἀνάπαλιν ὀλύγα καὶ ὀλυγαχοῦ λαμβάνειν μεταβολήν, ὡστε ἐκ σπέρ-

ματος ἀγρίου ποιεῖν ἡμερον ἢ ἐκ χείρονος ἀπλῶς

βέλτιον· τοῦτο γὰρ ἐπὶ τῆς βοᾶς μόνον ἀκηκόαμεν ἐν

Λυγύπτῳ καὶ ἐν Κιλικίᾳ συμβαίνειν· ἐν

Λυγύπτῳ μὲν γὰρ τὴν ὄξειαν καὶ σπαρείσαν καὶ

φυτευθέσαν γλυκεῖαν γίνεσθαι πως ἢ οἰνώδης·

περὶ δὲ Σόλους τῆς Κιλικίας περὶ ποταμὸν τὸν

Πίναρον, οὐ ἢ μάχη πρὸς Δαρείουν ἐγένετο, πᾶσαι

γίνονται ἀπύρηνοι.

8 Εὐλογον δὲ καὶ εἰ τίς τῶν παρ᾽ ἧμῶν φοίνικα

φυτεύοι ἐν Βαβυλῶνι, κάρπιμον τε γίνεσθαι καὶ

ἐξομοιοῦσθαι τοῖς ἐκεί. τὸν αὐτὸν δὲ τρόπον καὶ

εἰ τις ετέρα προσάλληλον ἔχει καρπὸν τόπῳ

κρείττων γὰρ οὕτως τῆς ἐργασίας καὶ τῆς θερα-

πείας. σημεῖον δὲ ὅτι μεταφέρομεν τὰκείθεν

ἀκαρπα τὰ δὲ καὶ ὅλως ἀβλαστῇ γίνεται.

9 Μεταβάλλει δὲ καὶ τῇ τροφῇ καὶ διὰ τῆν

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1 i.e. that they should improve from seed.
2 Whereas wild trees are produced only from seed.
3 i.e. improve a degenerate seedling.
5 cf. C. P. 1. 9. 2.
degenerate from seed, since the parent trees are stronger. For the contrary \(^1\) would be very strange, seeing that degenerate forms are found even in cultivated trees,\(^2\) and among these only in those which are raised from seed. (As a general rule these are degenerate, though men may in some cases effect a change\(^3\) by cultivation).

*Effects of situation, climate, tendance.*

Again differences in situation and climate affect the result. In some places, as at Philippi, the soil seems to produce plants which resemble their parent; on the other hand a few kinds in some few places seem to undergo a change, so that wild seed gives a cultivated form, or a poor form one actually better.\(^4\) We have heard that this occurs, but only with the pomegranate, in Egypt\(^5\) and Cilicia; in Egypt a tree of the acid kind both from seeds and from cuttings produces one whose fruit has a sort of sweet taste,\(^6\) while about Soli in Cilicia near the river Pinaros (where the battle with Darius was fought) all those pomegranates raised from seed are without stones.

If anyone were to plant our palm at Babylon, it is reasonable to expect that it would become fruitful and like the palms of that country. And so would it be with any other country which has fruits that are congenial to that particular locality; for the locality\(^7\) is more important than cultivation and tendance. A proof of this is the fact that things transplanted thence become unfruitful, and in some cases refuse to grow altogether.

There are also modifications due to feeding\(^8\) and

\(^1\) On 'wine-like.' Cited by Apollon. *Hist. Mir.* 43.
\(^2\) *ὑτοσ* conj. W.; *ὑτοσ* Ald.
\(^3\) *τὴ τροφὴ* conj. W.; *τὴς τροφῆς* UMV Ald.
\(^4\) Or 'wine-like.'
άλλην ἐπιμέλειαν, οἷς καὶ τὸ ἄγριον ἐξημεροῦται καὶ αὐτῶν ὑπὲρ τῶν ἡμερῶν ἔνια ἀπαγριοῦται, οἷον ῥόα καὶ ἄμυγδαλῆ. ἦδη δὲ τινες καὶ ἐκ κριθῶν ἀναφύναι φασὶ πυροὺς καὶ ἐκ πυρῶν κριθὰς καὶ ἐπὶ τοῦ αὐτοῦ πυθμένος ἀμφώ. ταῦτα μὲν οὖν ὡς μυθωδέστερα δεῦ δέχεσθαι. μεταβάλλει δ' οὖν τὰ μεταβάλλοντα τῶν τρόπων τούτων αὐτο-μάτως. ἐξαλλαγῇ δὲ χώρας, ὡσπερ ἐν Ἀιγύπτῳ καὶ Κιλικίᾳ περὶ τῶν ῥόων εἰπομεν, οὖδὲ διὰ μίαν θεραπείαν.

'Ωσαντώς δὲ καὶ ὅπου τὰ κάρπιμα ἀκάρπα γίνεται, καθάπερ τὸ πέρσιον τὸ ἐξ Ἀιγύπτου καὶ ὁ φοίνιξ ἐν τῇ Ἑλλάδι καὶ εἰ δὴ τὰς κομίσεις τὴν ἐν Κρήτῃ λεγομένην αἴγειρον. ἔνιοι δὲ φασὶ καὶ τὴν ὅποι ἐὰν εἰς ἀλεεινὸν ἔλθῃ σφόδρα τόπων ἀκαρπον γίνεσθαι. φύσει γὰρ ψυχρόν. εὐλογον δὲ ἀμφότερα συμβαίνειν κατὰ τὰς ἑναντίωσεις, εὔπερ μηδ' ὅλως ἔνια φύεσθαι θέλει μεταβάλ- λοντα τοὺς τόπους. καὶ κατὰ μὲν τὰς χώρας αἱ τοιαύται μεταβολαί.

Κατὰ δὲ τὴν φυτείαν τὰ ἀπὸ τῶν σπερμάτων φυτεύομενα, καθάπερ ἐλέχθη· παντοῦδε γὰρ αἱ ἐξαλλαγαὶ καὶ τοῦτων. τῇ θεραπείᾳ δὲ μετα-βάλλει ῥόα καὶ ἄμυγδαλῆ· ῥόα μὲν κόπτουν νείαν λαβοῦσα καὶ ὕδατος πλῆθος ῥυποῦ· ἄμυγδαλῆ δὲ ὅταν πάτταλὼν τις εἴθῃ, καὶ τὸ δάκρυνον ἀφαιρῇ τὸ ἐπιρρέον πλεῖω χρόνου καὶ τὴν ἀλλήν ἀποδίδῳ

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1 ἔνια ἀπαγριοῦται οἶνον conj. W.; ἔνια καὶ ἀπόρη τε ῥόα UV; ε. καὶ ἀπόρη τά ῥόα M.; ε. καὶ ἀπορρεῖ τά ῥόα Ald.  
2 i.e. cultivation has nothing to do with it.  
3 cf. 3. 3. 4.  
5 i.e. improve. cf. 2. 2. 6 ad fin.  
6
attention of other kinds, which cause the wild to become cultivated, or again cause some cultivated kinds to go wild, such as pomegranate and almond. Some say that wheat has been known to be produced from barley, and barley from wheat, or again both growing on the same stool; but these accounts should be taken as fabulous. Anyhow those things which do change in this manner do so spontaneously, and the alteration is due to a change of position (as we said happens with pomegranates in Egypt and Cilicia), and not to any particular method of cultivation.

So too is it when fruit-bearing trees become unfruitful, for instance the persimmon when moved from Egypt, the date-palm when planted in Hellas, or the tree which is called 'poplar' in Crete, if anyone should transplant it. Some again say that the sorb becomes unfruitful if it comes into a very warm position, since it is by nature cold-loving. It is reasonable to suppose that both results follow because the natural circumstances are reversed, seeing that some things entirely refuse to grow when their place is changed. Such are the modifications due to position.

As to those due to method of culture, the changes which occur in things grown from seed are as was said; (for with things so grown also the changes are of all kinds). Under cultivation the pomegranate and the almond change character, the pomegranate if it receives pig-manure and a great deal of river water, the almond if one inserts a peg and removes for some time the gum which exudes and gives the other

7 cf. C.P. 2. 14. 2; 3. 9. 3; Plin. 17. 259; Col. 5. 10. 15 and 16.
8 cf. 2. 7. 6; C.P. 1. 17. 10; 2. 14. 1; Plin. 17. 252.
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12 θεραπείαιν. ὡςαύτως δὲ δὴλον ὅτι καὶ ὁσα ἐξημεροῦται τῶν ἀγρίων ἢ ἀπαγριοῦται τῶν ἡμέρων· τὰ μὲν γὰρ θεραπεία τὰ δὲ ἀθεραπευσία μεταβάλλει· πλὴν εἰ τις λέγοι μηδὲ μεταβολὴ ἀλλ' ἐπίδοσιν εἰς τὸ βέλτιον εἶναι καὶ χείρον· οὐ γὰρ οἶνον τε τὸν κότινον ποιεῖν ἐλάλαν οὐδὲ τὴν ἀχράδα ποιεῖν ἀπιον οὐδὲ τὸν ἐρινέον συκῆν. οὐ γὰρ ἐπὶ τοῦ κότινου φασὶ συμβαίνειν, ὡστ' ἐὰν περικοπεῖς τὴν θαλαίαν ὀλως μεταφυτευθῇ φέρειν φαυλίας, μετακίνησίς τις γίνεται οὐ μεγάλῃ. ταύτα μὲν οὖν ὀποτέρως δεῖ λαβεῖν οὐθὲν ἂν διαφέροι.

III. Φασὶ δ' οὖν αὐτομάτην τινὰ γίνεσθαι τῶν τοιούτων μεταβολῆν, ὡτε μὲν τῶν καρπῶν ὡτε δὲ καὶ ὀλως αὐτῶν τῶν δένδρων, ἢ καὶ σημεία νομί-ζουσιν οἱ μάντεις· οἴον ρόαν ὄξειαν γλυκείαν ἐξενεγκείν καὶ γλυκείαιαν ὄξειαν· καὶ πάλιν ἀπλῶς αὐτὰ τὰ δένδρα μεταβάλλειν, ὡστε ἐξ ὀξείας γλυκείαιαν γίνεσθαι καὶ ἐκ γλυκείαιας ὄξειαν· χειρον δὲ τὸ εἰς γλυκείαιας ὄξειαν· καὶ εἶς ἐρινεοῦ συκῆν καὶ ἐκ συκῆς ἐρινεοῦ· χειρον δὲ τὸ ἐκ συκῆς. καὶ εἰς ἐλάας κότινον καὶ ἐκ κότινου ἐλάαν ἥκιστα δὲ τούτο. πάλιν δὲ συκῆν ἕκ

1 περικοπεῖς conj. W.; περισκοπεῖς U; περικόπτης Ald.
2 φαυλίας conj. Salm.; φαύλους U; θάλος Ald. cf. Plin. 16.244. These olives produced little oil, but were valued for perfumery: see C.P. 6. 8. 3 and 5; de odor., 15.
3 οὐ add. Salm.; om. MSS. (?) Ald.H.

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attention required. In like manner plainly some wild things become cultivated and some cultivated things become wild; for the one kind of change is due to cultivation, the other to neglect:—however it might be said that this is not a change but a natural development towards a better or an inferior form; (for that it is not possible to make a wild olive pear or fig into a cultivated olive pear or fig). As to that indeed which is said to occur in the case of the wild olive, that if the tree is transplanted with its top-growth entirely cut off,\(^1\) it produces 'coarse olives,'\(^2\) this is no\(^3\) very great change. However it can make no difference which way\(^4\) one takes this.

*Of spontaneous changes in the character of trees, and of certain marvels.*

**III.** \(^5\)Apart from these changes it is said that in such plants there is a spontaneous kind of change, sometimes of the fruit, sometimes of the tree itself as a whole, and soothsayers call such changes portents. For instance, an acid pomegranate, it is said, may produce sweet fruit, and conversely; and again, in general, the tree itself sometimes undergoes a change, so that it becomes sweet\(^6\) instead of acid, or the reverse happens. And the change to sweet is considered a worse portent. Again a wild fig may turn into a cultivated one, or the contrary change take place; and the latter is a worse portent. So again a cultivated olive may turn into a wild one, or conversely, but the latter change is rare. So again a white fig

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\(^{1}\) *i.e.* whether nature or man is said to cause the admitted change.  
\(^2\) Plin. 17. 242.  
\(^6\) *i.e.* all the fruit is now acid instead of sweet, or the reverse. Sch. brackets ἐὰν ὄξειας... ὄξειαν.
λευκής μέλαιναν καὶ ἐκ μελαίνης λευκήν. ὤμοιώς δὲ τοῦτο καὶ ἐπὶ ἀμπέλου.

2 Καὶ ταύτα μὲν ὡς τέρατα καὶ παρὰ φύσιν ὑπολαμβάνουσιν ὡσα δὲ συνήθη τῶν τοιούτων οὐδὲ θαυμάξουσιν ὅλως· οἶνον τὸ τῆς κάπνειου ἀμπελοῦ καλουμένην καὶ ἐκ μέλανος βότρυος λευκὸν καὶ ἐκ λευκοῦ μέλανα φέρειν· οὐδὲ γὰρ οἱ μάντεις τὰ τοιαύτα κρίνουσιν· ἐπεὶ οὐδὲ ἐκείνα, παρ' οἷς πέφυκεν ἡ χώρα μεταβάλλειν, ὡσπερ ἐλέγχη περὶ τῆς βόας ἐν Αἰγύπτῳ· ἀλλὰ τὸ ἐνταῦθα θαυμαστὸν, διὰ τὸ μίαν μόνον ἡ δύο, καὶ ταύτας ἐν τῷ παντὶ χρόνῳ σπανίας. οὐ μὴν ἀλλ' ἐπερ συμβαίνει, μᾶλλον ἐν τοῖς καρποῖς γίνεσθαι τὴν παραλλαγὴν ἢ ἐν ὀλοίς τοῖς δεύδροις.

3 Ἡπεὶ καὶ τοιαύτῃ τις ἀταξία γίνεται περὶ τοὺς καρποὺς· οἶνον ἡδὴ ποτὲ συκῆ τὰ σύκα ἐφυσεν ἐκ τοῦ ὄπισθεν τῶν θρίων· καὶ ῥόα δὲ καὶ ἀμπελοῦς ἐκ τῶν στελεχῶν, καὶ ἀμπελοῦς ἀνευ φύλλων καρποῦ ἤνεγκεν. ἐλάα δὲ τὰ μὲν φύλλα ἄπεβαλε τὸν ἐκ καρποῦ ἐξήνεγκεν· ῥ καὶ Θετταλῷ τῷ Πεισιστράτῳ γενέσθαι λέγεται. συμβαίνει δὲ καὶ διὰ χειμῶνας τοῦτο καὶ διὰ ἀλλὰς αἰτίας ἐνια τῶν δοκοῦντων εἶναι παρὰ λόγον ὅπι οὕτως ὑπὲρ ὅν ἔλα ὅπτε ἀποκαθεῖσα τελέως ἀνεβλάστησεν ὅλη, καὶ αὐτῇ καὶ ἡ θαλία. ἐν δὲ τῇ Βοωτίᾳ καταβρωθέντων τῶν ἔρνων ὑπ' ἀπελέβων πάλιν

1 ἐπὶ conj. Sch.; ἐξ Ald. H.
2 cf. C. P. 5. 3 and 2; Arist. de gen. an. 4. 4; Hesych. s.v. καπνίας; Schol. ad Ar. Vesp. 151.
3 2. 2. 7.
4 eikós has perhaps dropped out. Sch.
5 θρίων conj. R. Const., cf. C. P. 5. 1. 7 and 8; 5. 2. 2; ἐρυνεᾶν P_{2} Ald. cf. also Athen. 3. 11.
may change into a black one, and conversely; and similar changes occur in\(^1\) the vine.

Now these changes they interpret as miraculous and contrary to nature; but they do not even feel any surprise at the ordinary changes, for instance, when the "smoky" vine,\(^2\) as it is called, produces alike white grapes instead of black or black grapes instead of white. Of such changes the soothsayers take no account, any more than they do of those instances in which the soil produces a natural change, as was said\(^3\) of the pomegranate in Egypt. But it is surprising when such a change occurs in our own country, because there are only one or two instances and these separated by wide intervals of time. However, if such changes occur, it is natural\(^4\) that the variation should be rather in the fruit than in the tree as a whole. In fact the following irregularity also occurs in fruits; a fig-tree has been known to produce its figs from behind the leaves,\(^5\) pomegranate and vines from the stem, while the vine has been known to bear fruit without leaves. The olive again has been known to lose its leaves and yet produce its fruit; this is said to have happened to Thettalos, son of Pisistratus. This may be due to inclement weather; and some changes, which seem to be abnormal, but are not really so, are due to other accidental causes; \(^6\) for instance, there was an olive that, after being completely burnt down, sprang up again entire, the tree and all its branches. And in Boeotia an olive whose young shoots\(^7\) had been eaten off by locusts grew again: in this case however\(^8\) the

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\(^1\) cf. Hdt. 8. 55; Plin. 17. 241.

\(^2\) ἵππρος ὑφίστασθαι Sch.; ἵππρις P2Ald.; κλάδων mU.

\(^3\) i.e. the portent was not so great as in the other case quoted, as the tree itself had not been destroyed.
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ἀνεβλάστησεν τὰ δ΄ οίον ἀπέπεσεν. ἦκιστα δ΄ ἵσως τὰ τοιαύτα ἀτοπα διὰ τὸ φανερᾶς ἔχειν τὰς αὐτιάς, ἀλλὰ μᾶλλον τὸ μὴ ἐκ τῶν οἰκείων τῶν φέρειν τοὺς καρποὺς ἢ μὴ οἰκείους· καὶ μᾶλιστα δ΄ εἰ τῆς ὄλης φύσεως γίνεται μεταβολή, καθάπερ ἐκέχθη. περὶ μὲν οὖν τὰ δένδρα τοιαύτα τινὲς είσι μεταβολαί.

IV. Τῶν δὲ ἄλλων τὸ τε σισύμβριον εἰς μίνθαν δοκεῖ μεταβάλλειν, ἐὰν μὴ κατεχηται τῇ θεραπείᾳ, δι᾽ ὅ καὶ μεταφυτεύουσι πολλάκις, καὶ ὁ πυρὸς εἰς αἵραν. ταῦτα μὲν οὖν ἐν τοῖς δένδροις αὐτομάτως, εἴπερ γίνεται. τὰ δ΄ ἐν τοῖς ἐπετείους διὰ παρασκευῆς οἶον ἡ τίφη καὶ ἡ ζειά μεταβάλλουσιν εἰς πυρὸν ἐὰν πτισθείσαι σπείρωνται, καὶ τοῦτον εἰδὸς εὐθὺς ἄλλα τῷ τρίτῳ ἔτει. σχεδὸν δὲ παραπλήσιον τοῦτό γε τῷ τα σπέρματα κατὰ τὰς χώρας μεταβάλλειν· μεταβάλλει γὰρ καὶ ταῦτα καθ᾽ ἐκάστην χώραν καὶ σχεδὸν ἐν τῷ ἒσῳ χρόνῳ καὶ ἡ τίφη. μεταβάλλουσι δὲ καὶ οἱ ἄγριοι πυροὶ καὶ αἱ κριθαὶ θεραπεύομεναι καὶ ἐξημεροῦμεναι κατὰ τὸν ισον χρόνον.

2 Καὶ ταῦτα μὲν ἐοικε χώρας τε μεταβολή καὶ θεραπείᾳ γίνεσθαι· καὶ ἐνια ἀμφοτέρους, τὰ δὲ τῇ θεραπείᾳ μόνον· οἶον πρὸς τὸ τὰ ὅστρια μὴ γίνεσθαι ἀπεράμονα βρέξαντα κελεύουσιν ἐν νύτῳ

1 oikeiōs· καὶ I conj.; oikeiōtai U MV; oikeiōs Ald. H.; εἰδικότας conj. W. 2 ei ins. Sch. 3 2. 3. 1. 4 cf. 6. 7. 2; Plin. 19. 176. 5 i.e. to prevent the change which cultivated soil induces.
shoots had, so to speak, only been shed. But after all such phenomena are perhaps far from strange, since the cause in each case is obvious; rather is it strange that trees should bear fruit not at the places where it naturally forms, or else fruit which does not belong to the character of the tree. And most surprising of all is it when, as has been said, there is a change in the entire character of the tree. Such are the changes which occur in trees.

Of spontaneous and other changes in other plants.

IV. Of other plants it appears that bergamot-mint turns into cultivated mint, unless it is fixed by special attention; and this is why men frequently transplant it; so too wheat turns into darnel. Now in trees such changes, if they occur, are spontaneous, but in annual plants they are deliberately brought about: for instance, one-seeded wheat and rice-wheat change into wheat, if bruised before they are sown; and this does not happen at once, but in the third year. This change resembles that produced in the seeds by difference of soil; for these grains vary according to the soil, and the change takes about the same time as that which occurs in one-seeded wheat. Again wild wheats and barleys also with tendance and cultivation change in a like period.

These changes appear to be due to change of soil and cultivation, and in some cases the change is due to both, in others to cultivation alone; for instance, in order that pulses may not become uncookable,
νῦκτα τῇ ὑστεραίᾳ σπείρειν ἐν ξηρᾷ φακοῦς ὥστε ἄδρος γίνεσθαι φυτεύουσιν ἐν βολίτῳ τοῖς ἑρεβίνθους δὲ, ὡστε μεγάλους, αὐτοῖς τοῖς κελύφεσι βρέξαντα σπείρειν. μεταβάλλουσι δὲ καὶ κατὰ τὰς ὃρας τοῦ σπόρου πρὸς κοιφότιτα καὶ ἀλυπίαν ὦσιν ἐὰν τις τοὺς ὄρεθους ἐαρινοὺς σπείρῃ τρισάλυπυοι γίνονται, καὶ οὐχ ὡς οἱ μεταπωροῦν βαρεῖς.

3 Ἡγεῖται δὲ καὶ ἐν τοῖς λαχάνοις μεταβολή διὰ τὴν θεραπείαν ὦσιν τὸ σέλων, ἐὰν σταρέν καταπατηθῇ καὶ κυλινδρωθῇ, ἀναφύεσθαι φασίν υδόλου. μεταβάλλει δὲ καὶ τὴν χώραν ἐξαλλάττοντα, καθάπερ καὶ τάλλα. καὶ τὰ μὲν τοιαῦτα κοινὰ πάντων ἔστιν. εἰ δὲ κατὰ τινα πήρωσιν ἢ ἀφαίρεσιν μέρους δένδρον ἄγονον γίνεται, καθάπερ τὰ ξώα, τούτο σκεπτέον οὐδὲν γοὺν φανερὸν κατὰ γε τὴν διαίρεσιν εἰς τὸ πλεῖω καὶ ἐλάττω φέρειν ὦσπερ κακούμενον, ἀλλ' ἢ ἀπόλλυται τὸ ὦλον ἢ διαμένον καρποφορεῖ. τὸ δὲ γῆρας κοινὴ τις φθορὰ πᾶσιν.

4 Ἅτοπον δ' ἂν δόξειε μᾶλλον εἰ ἐν τοῖς ζώοις αἱ τοιαῦται μεταβολὴν φυσικαὶ καὶ πλείους καὶ γὰρ κατὰ τὰς ὀράς ἐνία δοκεῖ μεταβάλλειν, ὦσπερ ὁ ἰέραξ καὶ ἔποψ καὶ ἀλλα τῶν ὄρεθου ὄρνεων. καὶ κατὰ τὰς τῶν τόπων ἀλλοιώσεις, ὦσπερ ὁ ὕδρος εἰς ἐχὺν ἔχραινομένων τῶν λιβά-

1 νῦκτα I conj.; νυκτί MSS.
2 εἰν βολίτῳ conj. Milas. on Geor. 3. 27; ἐμβολον UMY Ald. cf. C.P. 5. 6. 11; Col. 2. 10. 15; Plin. 18. 198.
3 cf. C.P. 5. 6. 11; Geor. 2. 3. 6.
4 ἀλυπίαν conj. Sch.; δι' ἀλυπίας M; δι' ἀλυπίαν Ald.

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men bid one moisten the seed in nitre for a night \(^1\) and sow it in dry ground the next day. To make lentils vigorous they plant the seeds in dung \(^2\); to make chick-peas large they bid one moisten the seed while still in the pods, \(^3\) before sowing. Also the time of sowing makes differences which conduce to digestibility and harmlessness \(^4\): thus, if one sows vetches \(^5\) in spring, they become quite harmless and are not indigestible like those sown in autumn.

Again in pot-herbs change is produced by cultivation; for instance, they say that, \(^6\) if celery seed is trodden and rolled in after sowing, it comes up curly; it also varies from change of soil, like other things. Such variations are common to all; we must now consider whether a tree, like animals, becomes unproductive from mutilation or removal of a part. At all events it does not appear that division \(^7\) is an injury, as it were, which affects the amount of fruit produced; either the whole tree perishes, or else, if it survives, \(^8\) it bears fruit. Old age however is a cause which in all plants puts an end to life. . . . . \(^9\)

It would seem more surprising if \(^{10}\) the following changes occurred in animals naturally and frequently; some animals do indeed seem to change according to the seasons, for instance, the hawk the hoopoe and other similar birds. So also changes in the nature of the ground produce changes in animals, for instance, the water-snake changes into a viper, if the marshes

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5 cf. Plin. 18. 139; Col. 2. 10. 34.
6 cf. C. P. 5. 6. 7; Geop. 12. 23. 2.
7 \(\gamma\varepsilon\) conj. Sch.; \(\tau\varepsilon\) Ald.
8 \(\delta\iota\alpha\mu\varepsilon\nu\nu\) conj. Sch.; \(\delta\iota\alpha\mu\varepsilon\nu\nu\tau\alpha\) Ald.
9 Something seems to have been lost at the end of § 3.
10 \(\epsilon\iota\) ins. Sch.; \(\tau\omega\iota\alpha\nu\tau\alpha\iota\) may however mean 'the above-mentioned,' and refer to something which has been lost.
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δων. φανερώτατα δὲ καὶ κατὰ τὰς γενέσεις ἑνοι, καὶ μεταβάλλει διὰ πλείονων ζωων ὁλον ἐκ κάμπης γίνεται χρυσαλλίς εἰτ’ ἐκ ταύτης ψυχή· καὶ ἐπ’ ἄλλων δ’ ἐστὶ τοῦτο πλείονων, οὐδεν ὦσς ἀτοπον, οὐδ’ ὦμοιον τὸ ξητούμενον. ἀλλ’ ἐκεῖνο συμβαίνει περὶ τὰ δένδρα καὶ ὅλως πᾶσαι τὴν ὕλην, ὡσπερ ἐλέχθη καὶ πρότερον, ὡστε αὐτομάτη τὴν μεταβλαστάνειν μεταβολής τινος γινομένης ἐκ τῶν οὐρανίων τοιαύτης. τὰ μὲν οὖν περὶ τὰς γενέσεις καὶ μεταβολᾶς ἐκ τούτων θεωρητέον.

V. Ἐπεὶ δὲ καὶ αἱ ἐργασίαι καὶ αἱ θεραπεῖαι μεγάλα συμβάλλονται, καὶ ἐτι πρότερον αἱ φυτείαι καὶ ποιοῦσι μεγάλας διαφοράς, λεκτέον καὶ περὶ τούτων.

Καὶ πρώτον περὶ τῶν φυτειῶν. αἱ μὲν οὖν ὁραὶ πρότερον εἶρηνται καθ’ ὃς δεῖ. τὰ δὲ φυτὰ λαμβάνειν κελεύουσιν ὡς κάλλιστα καὶ ἐκ ὦμοιας γῆς εἰς ἣν μέλλεις φυτεύειν, ἡ χειρονος τοὺς δὲ γυροὺς προσορίττειν ὡς πλείοντος χρόνου καὶ βαθυτέρους αἰεὶ καὶ τοῖς ἐπιπολαιορριζότεροις.

1 i.e. in the instance given the development of an insect exhibits, not one, but a series of changes from one creature to another.
2 Whereas the metamorphoses mentioned above are independent of climatic conditions.
3 δὲ conj. W.; τε Ald.
4 κάλλιστα conj. W., cf. C.P. 3. 24. 1; τάχιστα MV Ald.; τὰ χίστα U.
ENQUIRY INTO PLANTS, II. iv. 4-v. i
dry up. Most obvious are certain changes in regard
to the way in which animals are produced, and such
changes run through a series of creatures; thus a
caterpillar changes into a chrysalis, and this in turn
into the perfect insect; and the like occurs in a
number of other cases. But there is hardly anything
abnormal in this, nor is the change in plants, which
is the subject of our enquiry, analogous to it. That
kind of change occurs in trees and in all woodland
plants generally, as was said before, and its effect is
that, when a change of the required character occurs
in the climatic conditions, a spontaneous change in
the way of growth ensues. These instances must
suffice for investigation of the ways in which plants
are produced or modified.

Of methods of propagation, with notes on cultivation.

V. Since however methods of cultivation and ten-
dance largely contribute, and, before these, methods
of planting, and cause great differences, of these too
we must speak.

And first of methods of planting: as to the seasons,
we have already stated at what seasons one should
plant. Further we are told that the plants chosen
should be the best possible, and should be taken
from soil resembling that in which you are going to
plant them, or else inferior; also the holes should
be dug as long as possible beforehand, and should
always be deeper than the original holes, even for
those whose roots do not run very deep.

1 i.e. the shift should be into better soil, if possible. cf.
C.P. 3. 5. 2.
6 τυρώονς προσπορύττειν conj. R. Const.; πυρώονς προσπορύττειν
UMVAlD. cf. C.P. 3. 4. 1.
THEOPHRASTUS

2 Δέγουσι δέ τινες ὡς οὐδεμία κατωτέρῳ διϊκνεῖται τριῶν ἡμιποδίων· δι' ὧ καὶ ἐπιτιμῶσι τοῖς ἐν μεῖζοι βάθει φυτεύουσι· οὐκ ἐοίκασι δὲ ὀρθῶς λέγειν ἐπὶ πολλῶν· ἀλλ' ἐὰν ἢ χώματος ἐπιλάβηται βαθέος ἢ καὶ χώρας τοιαύτης ἢ καὶ τόπου, πολλῷ μακροτέραν ὥθει τὸ τῇ φύσει βαθύρριζον. πεύκην δὲ τις ἐφ' μεταφυτεύων μεμοχλευμένην μεῖζω τὴν ρίζαν ἐχειν ὀκτάπηχυν καίπερ οὕς ὀλίσχειρεῖσθις ἀλλ' ἀπορραγεῖσθι.

3 Τὰ δὲ φυτευτηρία ἐὰν μὲν ἐνδέχηται ὑπόρριζα, εἰ δὲ μή, δεῖ μᾶλλον ἀπὸ τῶν κάτω ἢ τῶν ἀνω λαμβάνειν, πλὴν ἄμπελου· καὶ τὰ μὲν ἔχοντα ρίζας ὀρθὰ ἐμβάλλειν, τὰ δὲ μή ἔχοντα ὑποβάλλειν τοῦ φυτευτηρίου ὅσον σπιθαμὴν ἢ μικρὸν ττλεῖον. ἐνιοῖ δὲ κελεύουσι καὶ τῶν ὑπορρίζων ὑποβάλλειν, τιθέναι δὲ καὶ τὴν θέσιν ὁμοίως ἠμπέρ εἰχεν ἐπὶ τῶν δένδρων τὰ πρόσβορρα καὶ τὰ πρὸς ἐω καὶ τὰ πρὸς μεσημβρίας. ὃσα δὲ ἐνδέχεται τῶν φυτῶν καὶ προμοσχεύειν· τὰ μὲν ἐπ' αὐτῶν τῶν δένδρων, οἷον ἐλάσας ἀπίου μηλέας συκῆς· τὰ δ' ἀφαιροῦντας, οἷον ἀμπέλου· ταύτην γὰρ οὕς οἰόν τε ἐπ' αὐτῆς μοσχεύειν.

4 Ἐὰν δὲ μὴ ὑπόρριζα τὰ φυτὰ μηδὲ ὑπόπρεμμα

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1 ἀλλ' ἐὰν ... τοιοῦτον. ἐὰν ἢ μὲν σώματος M; so V, but ἢ; ἢ om. PAlld; χώματος H; κενάματος for σώματος and εἰδιώδου for ἢ καὶ τόπου conj. W. χώρας refers to exposure, etc., τόπου (sc. τοιοῦτον) to quality of soil: so G.
Some say that no root goes down further than a foot and a half, and accordingly they blame those who plant deeper. However there are many instances in which it appears that what they say does not hold good; a plant which is naturally deep-rooting pushes much deeper if it finds either a deep mass of soil or a position which favours such growth or again the kind of ground which favours it. In fact, a man once said that when he was transplanting a fir which he had uprooted with levers, he found that it had a root more than eight cubits long, though the whole of it had not been removed, but it was broken off.

The slips for planting should be taken, if possible, with roots attached, or, failing that, from the lower rather than from the higher parts of the tree, except in the case of the vine; those that have roots should be set upright, while in the case of those which have none about a handsbreadth or rather more of the slip should be buried. Some say that part even of those which have roots should be buried, and that the position should be the same as that of the tree from which the slip was taken, facing north or east or south, as the case may be. With those plants with which it is possible, shoots from the boughs should also, they say, be planted, some being set on the trees themselves, as with olive pear apple and fig, but in other cases, as in that of the vine, they must be set separately, for that the vine cannot be grafted on itself.

If the slips cannot be taken with root or stock

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3 cf. C. P. 3. 5. 2. 7 i.e. grafted.
λαμβάνειν, καθάπερ τής ἐλίας, σχίσαντά τε τὸ ξύλον κάτωθεν καὶ λίθον ἐμβαλόντα φυτεύειν· ὁμοίως δὲ καὶ τῆς ἐλίας καὶ συκῆς καὶ τῶν ἄλλων. φυτεύεται δὲ ἡ συκῆ καὶ εάν τις κράδην παχείαν ἀποξύνας σφύρα παίη, ἄχρι οὐ ἄν ἀπολίπῃ μικρὸν ὑπὲρ τῆς γῆς, εἰτ' αὐτής ἁμοῦν βαλὼν ἀνωθεν ἐπιχώσῃ· καὶ γίνεσθαι δὴ φασὶ καὶ καλλίω ταῦτα τὰ φυτά, μέχρι οὗ ἂν ἦ νέα.

5 Ἡπαραπληροῖα καὶ τῶν ἀμπέλων, όταν ἂπτο τοῦ παττάλου· προοδοποιεῖ γὰρ ὁ πάτταλος ἐκεῖνω τῷ κλήματι διὰ τὴν ἁσθενείαν φυτεύουσιν οὕτω καὶ ῥόαν καὶ ἄλλα τῶν δένδρων. ἡ συκῆ δὲ, εάν ἐν σκίλλῃ φυτευθῇ, θάττον παραγίνεται καὶ ἦττον ὑπὸ σκολίηκων κατεσθίεται. ὄλως δὲ πᾶν ἐν σκίλλῃ φυτεύομενον εὐβλαστές καὶ θάττον αὐξάνεται. ὅσα δὲ ἐκ τοῦ στελέχους καὶ διακοπτόμενα φυτεύεται, κάτω τρέποντα τῆς τομῆς δεῖ φυτεύειν, διακόπτειν δὲ μὴ ἐλάττω σπιθαμιαίων, ὅσπερ ἐλέχθη, καὶ τῶν φλοίων προσεῖναι φύτει ρ' ἐκ τῶν τοιούτων ἔρνη βλαστανῶν τ' ἀεὶ προσχωνύμεν, ἄχρι οὗ ἄν γενηται ἄρτιον' αὐτή μὲν οὖν τῆς ἐλίας ίδια καὶ τοῦ μυρρίνου, αὐτ' ἄλλα κοινότεραι πᾶσιν.

6 καὶ καὶ ῥυζόσασθαι καὶ φυτεύας μάλιστα τῆς τυχουσῆς ἡ συκῆ. φυτεύειν δὲ ῥόας μὲν

1 ἡ before τῆς om. W. 2 τὸ το conj. W.; τὸ το MVP. 3 καὶ τῆς ἐλίας U; ἐλίας MVP; so W. 4 Plin. 17, 123. 5 cf. C.P. 3. 12. 1. 6 cf. 7. 13. 4; C.P. 5. 6. 10 (where another bulb, σχίνος, is mentioned as being put to the same use); Athen. 3. 13; Plin. 17. 87.

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ENQUIRY INTO PLANTS, II. v. 4–6

attached, as with the olive,\(^1\) they say that one must \(^2\) split the wood at the lower end and plant with a stone on top; and the fig and other trees must be treated in like manner with the olive.\(^3\) The fig \(^4\) is also propagated by sharpening a stout shoot and driving it in with a hammer, till only a small piece of it is left above ground, and then piling sand above so as to earth it up; and they say that the plants thus raised grow finer up to a certain age.

Similar is the method used with vines, when they are propagated by the 'peg' \(^5\) method; for the peg makes a passage for that sort of shoot on account of its weakness; and in the same manner men plant the pomegranate and other trees. The fig progresses more quickly and is less eaten by grubs, if the cutting is set in a squill-bulb \(^6\); in fact anything so planted is vigorous and grows faster. All those trees which are propagated by pieces cut from the stem should be planted with the cut part downwards,\(^7\) and the pieces cut off should not be less than a handsbreadth in length, as was said,\(^8\) and the bark should be left on. From such pieces new shoots grow, and as they grow, one should keep on heaping up earth about them, till the tree becomes strong.\(^9\) This kind of propagation is peculiar to the olive and myrtle, while the others are more or less common to all trees.

The fig is better than any other tree at striking roots, and will, more than any other tree, grow by any method of propagation. \(^10\) We are told that,

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\(^1\) cf. Geop. 9. 11. 8.
\(^2\) 2. 5. 3, where however the method of propagation is different.
\(^3\) ἀρτικον Ald.; ἀρτικελή conj. W. (quoad satis corroboretur G; donec robur planta capiat Plin. 17. 124); ἀρτικελὼν U; ἄρτικελὼν MV; ἄρτικελὼν P₂.
\(^4\) 10 cf. C.P. 3. 7.
καὶ μυρρίνους καὶ δάφνας πυκνὰς κελεύονσι, μὴ πλέον διεστώσας ἢ ἐννέα πόδας, μηλέας δὲ μικρῶ 
μακρότερουν, ἀπίους δὲ καὶ ὀγχυάς ἔτι μᾶλλον, 
ἀμυγδαλάς δὲ καὶ συκὰς πολλὸν πλέον, ὄσαυτώς 
δὲ καὶ τὴν ἐλάαν. ποιεῖσθαι δὲ καὶ πρὸς τὸν 
tόπον τὰς ἀποστάσεις· ἐν γὰρ τοὺς ὀρεινοὺς ἐλάτ-
tους ἢ ἐν τοῖς πεδινοῖς.

Μέγιστον δὲ ὡς εἰπεῖν τὸ τὴν πρόσφορον 
ἐκάστῳ χώραν ἀποδίδοναι· τότε γὰρ εὑθενεὶ 
μάλιστα. ὡς δὲ ἀπλῶς εἰπεῖν ἔλαία μὲν καὶ συκῆ 
καὶ ἀμπέλῳ τὴν πεδεινήν φασιν οἰκειοτάτην εἶναι, 
τοῖς δὲ ἀκροδύνοις τὰς ὑπωρείας. χρῆ δὲ καὶ ἐν 
ὡτοῖς τοῖς ὁμογενεῖσι μὴ ἀγνοεῖν τὰς οἰκείας. 
ἐν πλείστῃ δὲ ὡς εἰπεῖν διαφορὰ τὰ τῶν ἀμπέλων 
ἐστίν· ὁσα γὰρ ἐστὶ γῆς εἶδη, τοσαυτά τινές φασι 
καὶ ἀμπέλων εἶναι. φυτευόμενα μὲν οὖν κατὰ 
φύσιν ἄγαθὰ γίνεσθαι παρὰ φύσιν δὲ ἀκαρπα. 
ταῦτα μὲν οὖν ὡσπέρ κοινὰ πάντων.

VI. Τῶν δὲ φοινίκων ἵδιος ἢ φυτεία παρὰ 
tάλλα καὶ ἢ μετὰ ταῦτα θεραπεῖα. φυτεύομεν 
γὰρ πλείους εἰς ταὐτὸ τιθέντες δύο κάτω καὶ δύο 
ἀνωθεν ἐπιδούντες, πρανεῖς δὲ πάντας. 
τὴν γὰρ ἐκφυσιν οὐκ ἐκ τῶν ὑπτίων καὶ κοίλων ποιεῖται, 
καθάπερ τινές φασιν, ἀλλ’ ἐκ τῶν ἀνω, δι’ ὧ καὶ 
ἐν τῇ ἐπιζεύξει τῶν ἐπιτιθεμένων οὐ δεὶ περικα-
lύπτειν τὰς ἀρχὰς οἶδεν ἢ ἐκφυσις· φανεραί δ’

1 ἐλάαν conj. Bod. (cf. Plin. 17. 88) ; ἰοιαν UAld.H.
2 ἐλάττου conj. Sch. ; ἐλάττου Ald.
3 i.e. apples pears plums, etc.
in planting the pomegranate myrtle or bay, one should set two trees close together, not further than nine feet apart, apples a little further, pears and wild pears still further, almonds and figs further still, and in like manner the olive. Again the distance apart must be regulated by the nature of the ground, being less in hilly parts than in low ground.

Most important of all, one may say, is it to assign to each the suitable soil; for then is the tree most vigorous. Speaking generally, they say that low ground is most suitable for the olive fig and vine, and the lower slopes of hills for fruit trees. Nor should one fail to note what soil suits each variety even of those closely related. There is the greatest difference, one may say, between the different kinds of vine: for they say that there are as many kinds of vine as there are of soil. If they are planted as their nature requires, they turn out well, if otherwise, they are unfruitful. And these remarks apply almost equally to all trees.

Of the propagation of the date-palm; of palms in general.

VI. The method of propagating date-palms is peculiar and exceptional, as also is their subsequent cultivation. They plant several seeds together, putting two below and two above, which are fastened on; but all face downwards. For germination starts not, as some say, from the 'reverse' or hollow side, but from the part which is uppermost; wherefore in joining on the seeds which are placed above one must not cover up the points from which the growth

4 Plin. 13. 32.
5 i.e. with the grooved side downwards.
6 i.e. the grooved side.
7 i.e. the round side.
THEOPHRASTUS

εἰσὶ τοῖς ἐμπείροις. διὰ τοῦτο δ᾽ εἰς τὸ αὐτὸ πλείουσι τιθέασιν ὅτι ἀπὸ τοῦ ἐνὸς ἀσθενεῖς ἡ φυτεία. τοῦτων δὲ αἱ τις πρὸς ἀλλήλας συμπλέκονται καὶ εὐθὺς αἱ πρῶται βλαστήσεις, ὡστε ἐν γίνεσθαι τὸ στέλεχος.

2 Ἡ μὲν οὖν ἀπὸ τῶν καρπῶν φυτεία τοιαύτη τις. ἢ δ᾽ ἀφ᾽ αὐτοῦ, ὅταν ἀφέλωσι τὸ ἀνω ἐν ὕπερ ὁ ἐγκέφαλος ἀφαιροῦσι δὲ ὡσον διπηχυ- σχίσαντες δὲ τοῦτο κάτω τιθέασι τὸ ὕγρον φιλεῖ δὲ χῶραν ἀλμώδην. δὲ ὁ καὶ ὅπου μὴ τοιαύτη τυχάνει περιπάττουσιν ἄλας οἱ γεωργοὶ. τοῦτο δὲ δεῖ ποιεῖν μὴ περὶ αὐτὰς τὰς ῥίζας ἀλλ᾽ ἀποθεῖν ἀποστήσαντα περιπάττειν ὡσον ἡμέκτον. ὅτι δὲ τοιαύτην ζητεῖ χῶραν κάκεινο ποιοῦνται σημεῖον πανταχοῦ γὰρ ὅπου πλήθος φοινίκων ἀλμώδεις αἱ χῶραι καὶ γὰρ ἐν Βαβυλώνῳ φασιν, ὅπου οἱ φοινίκες πεφύκασι, καὶ ἐν Λιβύῃ δὲ καὶ ἐν Λιγύπτῳ καὶ Φοινίκῃ καὶ τῆς Συρίας δὲ τῆς κοίλης, ἐν ἡ γ᾽ οἱ πλείστοι τυχάνουσιν, ἐν τρισὶ μόνοις τόποις ἀλμώδεις εἶναι τοὺς δυναμένους θησαυρίζεσθαι τοὺς δ᾽ ἐν τοῖς ἄλλοις οὐ διαμένειν ἄλλα σήπεσθαι, χλωροῦσι δ᾽ ἤδεις εἶναι καὶ καταναλίσκειαν ὅντω.

3 Φιλεὶ δὲ καὶ ὑδρείαν σφόδρα τὸ δένδρον περὶ δὲ κόπρου διαμφισβητοῦσιν οἱ μὲν γὰρ οὐ φασι χαίρειν ἀλλ᾽ ἐναντίωτατον εἶναι, οἱ δὲ καὶ χρῆσθαι καὶ ἐπίδοσιν πολλὴν ποιεῖν. δεῖν δ᾽ ὑδρεύειν εὖ μάλα κατὰ τὴν κόπρου, καθάπερ οἱ ἐν

1 i.e. 'cabbage.'
2 τοῦτο . . . ὕγρον: I have inserted δ', otherwise retaining the reading of Ald.; τοῦτον κάτω τιθέασι δ᾽ ἐνυγρόν conj. W. cf. Plin. 13. 36. τὸ ὕγρον, viz. the cut end.
3 ἀλμώδη conj. W.; ἀμμώδη P2 Ald. H.
is to come; and these can be recognised by experts. And the reason why they set several together is that a plant that grows from one only is weak. The roots which grow from these seeds become entangled together and so do the first shoots from the very start, so that they combine to make a single stem.

Such is the method of growing from the fruits. But propagation is also possible from the tree itself, by taking off the top, which contains the 'head.' They take off about two cubits' length, and, splitting it, set the moist end. It likes a soil which contains salt; wherefore, where such soil is not available, the growers sprinkle salt about it; and this must not be done about the actual roots: one must keep the salt some way off and sprinkle about a gallon. To shew that it seeks such a soil they offer the following proof; wherever date-palms grow abundantly, the soil is salt, both in Babylon, they say, where the tree is indigenous, in Libya in Egypt and in Phoenicia; while in Coele-Syria, where are most palms, only in three districts, they say, where the soil is salt, are dates produced which can be stored; those that grow in other districts do not keep, but rot, though when fresh they are sweet and men use them at that stage.

The tree is likewise very fond of irrigation; as to dung there is a difference of opinion: some say that the date-palm does not like it, but that it is most injurious, others that it gladly accepts it and makes good growth thereby, but plenty of water should be
'Ρόδω. τούτο μὲν ὦν ἐπισκεπτέον ἵσως γὰρ οἱ μὲν ὄντως οἳ δ' ἐκείνως θεραπεύουσιν, καὶ μετὰ μὲν τοῦ ὕδατος ὕφελμιν ή κόπρος ἀνευ δὲ τούτου Βλαβερά. ὅταν δὲ ἐνιαύσιος γένηται, μεταφυεύουσι καὶ τῶν ἁλῶν συμπαραβάλλουσι, καὶ πάλιν ὅταν διετής· χαίρει γὰρ σφόδρα τῇ μεταφυείᾳ.

4. Μεταφυεύουσι δὲ οἱ μὲν ἄλλοι τοῦ ἱροῦ· οἱ δὲ ἐν Βαβυλῶνι περὶ τὸ ἀστρον, ὅτε καὶ Ὀλος οἳ γε πολλοὶ φυεύουσιν, ὡς καὶ παραγινομένου καὶ αὐξανομένου θάττον. νέου μὲν ὄντως οὐχ ἀπτοῦται, πλὴν ἀναδούσι τὴν κόμην, ὅπως ὀρθοφυή τῇ καὶ αἱ ράβδοι μὴ ἀπαρτῶται. μετὰ δὲ ταῦτα περιτέμνονται, ὅποταν ἀδρός ἤδη γένηται καὶ πάχος ἔχῃ. ἀπολείπουσι δὲ ὅσον στιθαμὴν τῶν ρᾷβδων. δέρει δὲ ἔως μὲν ἄν ἢ νέος ἀπύρημον τὸν καρπὸν, μετὰ δὲ τοῦτο πυρηνώδη.

5. "Ἀλλοι δὲ τινες λέγουσιν ὅσι οἳ γε κατὰ Συρίαν οὐδεμίαν προσάγουσιν ἐργασίαν ἀλλ' ἡ διακαθαίρουσι καὶ ἐπιβρέχουσιν, ἐπιζητεῖν δὲ μᾶλλον τὸ ναματιαῖον ὕδωρ ἢ τὸ ἐκ τοῦ Δίος· εἶναι δὲ πολὺ τοιοῦτον ἐν τῷ αὐλώνι ἐν δὲ καὶ τὰ φοινικόφυτα τυγχάνει, τὸν αὐλῶνα δὲ τοῦτον λέγειν τὸν Σύρον ὅτι διατείνει διὰ τῆς Ἀραβίας μέχρι τῆς ἐρυθρᾶς θαλάσσης καὶ πολλοὺς φάσκειν ἐπηλυθέναι· τοῦτον δὲ ἐν τῷ κοιλοτάτῳ πεφυκέναι τοὺς φοίνικας. ταῦτα μὲν οὖν τὰχ' ἀμφοτέρως ἄν εἴη· κατὰ γὰρ τὰς χώρας, ἀφετέρου καὶ

1 cf. 7. 5. 1. 2 Plin. 13. 37. 3 συμπαραβάλλουσι conj. Sch. from G; συμπαραλαμβάνουσι. UAl. 4 cf. Plin. 13. 38.
given, after manuring, as the Rhodians use. This then is matter for enquiry; it may be that there are two distinct methods of cultivation, and that dung, if accompanied by watering, is beneficial, though without it it is harmful. When the tree is a year old, they transplant it and give plenty of salt, and this treatment is repeated when it is two years old, for it delights greatly in being transplanted.

Most transplant in the spring, but the people of Babylon about the rising of the dog-star, and this is the time when most people propagate it, since it then germinates and grows more quickly. As long as it is young, they do not touch it, except that they tie up the foliage, so that it may grow straight and the slender branches may not hang down. At a later stage they prune it, when it is more vigorous and has become a stout tree, leaving the slender branches only about a handsbreadth long. So long as it is young, it produces its fruit without a stone, but later on the fruit has a stone.

However some say that the people of Syria use no cultivation, except cutting out wood and watering, also that the date-palm requires spring water rather than water from the skies; and that such water is abundant in the valley in which are the palm-groves. And they add that the Syrians say that this valley extends through Arabia to the Red Sea, and that many profess to have visited it, and that it is in the lowest part of it that the date-palms grow. Now both accounts may be true, for it is not strange that

5 ὄρθοφυὴ τ' η' conj. W.; ὄρθοφυὴται P2 Ald.
6 ἀπαρτῶνται conj. R. Const.; ἀπορθὸνται P2M Ald.
7 cf. Diod. 3. 41.
8 i.e. the Arabian Gulf.
9 ἀνθλυθέναι Ald.; διελθλυθέναι conj. W.
Theophrastus

αὐτὰ τὰ δένδρα, διαφέρειν καὶ τὰς ἐργασίας ὦν ἀτοποῦ.

3 Γένη δὲ τῶν φοινικῶν ἐστὶ πλεῖω: πρῶτον μὲν καὶ ὀσπερ ἐν μεγίστῃ διαφορᾷ τὸ μὲν κάρπιμον τὸ δὲ ἀκαρπον, ἐξ ὧν οἱ περὶ Βαβυλῶνα τὰς τε κλίνας καὶ τάλλα σκεῦ ποιοῦνται. ἔπειτα τῶν καρπίμων οἱ μὲν ἀρρενεῖς αἱ δὲ θήλεαι: διαφέρουσι δὲ ἀλλήλων, καθ' ἄν ὁ μὲν ἄρρην ἄνθος πρῶτον φέρει ἐπὶ τῆς σπάθης, ἢ δὲ θήλεια καρπὸν εὐθὺ μικρόν. αὐτῶν δὲ τῶν καρπῶν διαφορὰ πλείους· οἱ μὲν γὰρ ἀπορρητοὶ οἱ δὲ μαλακοπύρηνοι· τὰς χρυσίδας οἱ μὲν λευκοὶ οἱ δὲ μέλανες οἱ δὲ ξανθοὶ· τὸ δὲ ὅλον οὐκ ἐλάττω χρώματα φασιν εἶναι τῶν συκῶν οὐδ' ἀπλῶς τὰ γένη· διαφέρουσι δὲ καὶ κατὰ τὰ μεγέθη καὶ κατὰ τὰ σχῆματα· καὶ γὰρ σφαιροειδεῖς ἐνίους ὠσανεὶ μῆλα καὶ τὰ μεγέθη τῆλικούτων ὡς τέτταρας εἰς τὸν πῆχυν εἶναι, ἢπτα καὶ εὐπόδους· ἀλλοὺς δὲ μικροὺς ἤλικοις ἔρεβίνθους. καὶ τοῖς χυλοῖς δὲ πολὺ διαφέρουτας.

7 Κράτιστων δὲ καὶ τῶν λευκῶν καὶ τῶν μελάνων τὸ βασιλικὸν καλούμενον γένος εἰν ἐκατέρω καὶ μεγέθει καὶ ἀρετῆ· σπάνια δὲ εἶναι ταῦτα λέγουσιν· σχεδὸν γὰρ ἐν μόνῳ τῷ Βαγγὸν κήπῳ τοῦ παλαιοῦ περὶ Βαβυλῶνα. ἐν Κύπρῳ δὲ ἴδιον τι γένος φοινίκων ἐστὶν δ' οὐ πεπαινεῖ τὸν καρπὸν, ἀλλ' ὡμός ὁ ἡδὺς σφόδρα καὶ γλυκύς ἐστι· τὴν δὲ γλυκύτητα ἴδιαν ἔχει. ἔνιοι δ' οὐ μόνον δια-

1 Plin. 13. 39.
2 πρῶτον conj. Sch.; πρῶτος UMVAld.
3 πῆχυν conj. R. Const. from Plin. 13. 45. and G, cf. Diod. 2. 53; στάχυν UMVAld.
4 ἢπτα καὶ εὐπόδους UMV: the words perhaps conceal a
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in different soils the methods of cultivation should differ, like the trees themselves.

There are several kinds of palm. To begin with, to take first the most important difference;—some are fruitful and some not; and it is from this latter kind that the people of Babylom make their beds and other furniture. Again of the fruitful trees some are ‘male,’ others ‘female’; and these differ from one another in that the ‘male’ first bears a flower on the spathe, while the ‘female’ at once bears a small fruit. Again there are various differences in the fruits themselves; some have no stones, others soft stones; as to colour, some are white, some black, some yellow; and in general they say that there is not less variety of colour and even of kind than in figs; also that they differ in size and shape, some being round like apples and of such a size that four of them make up a cubit in length, . . . while others are small, no bigger than chick-peas; and that there is also much difference in flavour.

The best kind alike in size and in quality, whether of the white or black variety, is that which in either form is called ‘the royal palm’; but this, they say, is rare; it grows hardly anywhere except in the park of the ancient Bagoas, near Babylon. In Cyprus there is a peculiar kind of palm which does not ripen its fruit, though, when it is unripe, it is very sweet and luscious, and this lusciousness is of a peculiar kind. Some palms again differ not merely

gloss on πῆχυς, e.g. εἰς πῆχυς δόω πόδες (Salm.); om. G; ἐνίοτε καὶ ἐπὶ πόδα conj. W. ¹ Plin. 13. 42.
² Βαγός: Βάττου MSS. corr. by R. Const. from Plin. 13. 41. τοῦ παλαιοῦ apparently distinguishes this Bagoas from some more recent wearer of the name.
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φέροντι τοῖς καρποῖς ἅλλα καὶ αὐτῶ τῷ δένδρῳ κατὰ τὸ μῆκος καὶ τὴν ἅλλην μορφήν: οὐ γὰρ μεγάλοι καὶ μακροὶ ἅλλα βραχεῖς, ἐτι δὲ καρπιμότεροι τῶν ἅλλων καὶ καρποφοροῦντες εὐθὺς τριετεῖς· πολλοὶ δὲ καὶ οὕτωι περὶ Κύπρου. εἰς δὲ καὶ περὶ Συρίαν καὶ περὶ Αἰγυπτίου φοινικαί οἱ φέροντι τετραετεῖς καὶ πενταετεῖς ἀνδρομήκεις ὄντες.

8 "Ετέρου δ' ἐτι γένος ἐν Κύπρῳ, δ καὶ τὸ φύλλον πλατύτερον ἔχει καὶ τὸν καρπὸν μεῖζω πολλῶ καὶ ἰδιόμορφου· μεγέθει μὲν ἡλίκος ρόα τῷ σχῆματι δὲ προμήκης, οὐκ εὐχύλος δὲ ὡσπερ ἅλλοι ἅλλ' ὁμοίος ταῖς ρόσις, ὡς τε καταδέχεσθαι ἅλλα διαμασησαμένους ἐκβάλλειν. γένη μὲν οὖν, ὡσπερ εἴρηται, πολλά. θησαυρίζεσθαι δὲ μόνους δύνασθαι φασὶ τῶν ἐν Συρίᾳ τούς ἐν τῷ αὐλώνι, τοὺς δ' ἐν Αἰγύπτῳ καὶ Κύπρῳ καὶ παρὰ τοῖς ἅλλοις χλωροῦς ἀναλίσκεσθαι.

9 "Εστὶ δὲ ὁ φοῖνιξ ὡς μὲν ἀπλῶς εἰπεῖν μονοστέλεξε καὶ μονοφυῖς· οὐ μὴν ἅλλα γίνονται τινες καὶ διφυῖς, ὡσπερ ἐν Αἰγύπτῳ, καθάπερ δικρόαν ἔχοντες· τὸ δ' ἁνάστημα τοῦ στελέχους ὧφ' οὐ ἡ σχίσις καὶ πεντάπχυς· πρὸς ἅλληλα δὲ πως ἱσάζοντα. φασὶ δὲ καὶ τοὺς ἐν Κρήτῃ πλεῖους εἶναι τοὺς διφυῖς, εἴνοις δὲ καὶ τριφυῖς· ἐν δὲ τῇ Λαταΐᾳ τινὰ καὶ πεντακέφαλον· οὐκ ἁλογον γοῦν ἐν ταῖς εὐτροφοτέραις χώραις πλείω γίνεσθαι τὰ τοιαῦτα καὶ τὸ ὀλον δὲ τὰ εἴδη πλείω καὶ τὰς διαφοράς.

1 ὁμοίος conj. Bod.; ὁμολος UMV Ald. 2 cf. §5.
3 Plin. 13. 38; cf. 4. 2. 7, where the name (κουκισφόρον) of this tree is given.
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in their fruits but in the character of the tree itself as to stature and general shape; for instead of being large and tall they are low growing; but these are more fruitful than the others, and they begin to bear as soon as they are three years old; this kind too is common in Cyprus. Again in Syria and Egypt there are palms which bear when they are four or five years old, at which age they are the height of a man.

There is yet another kind in Cyprus, which has broader leaves and a much larger fruit of peculiar shape; in size it is as large as a pomegranate, in shape it is long; it is not however juicy like others, but like¹ a pomegranate, so that men do not swallow it, but chew it and then spit it out. Thus, as has been said, there are many kinds. The only dates that will keep, they say, are those which grow in the Valley² of Syria, while those that grow in Egypt Cyprus and elsewhere are used when fresh.

The palm, speaking generally, has a single and simple stem; however there are some with two stems, as in Egypt,³ which make a fork, as it were; the length of the stem up to the point where it divides is as much as five cubits, and the two branches of the fork are about equal in length. They say that the palms in Crete more often than not have this double stem, and that some of them have three stems; and that in Lapaia one with five heads has been known. It is after all not surprising⁴ that in more fertile soils such instances should be commoner, and in general that more kinds and more variation should be found under such conditions.

¹ όυκ ἀλογον γοῦν conj. W. (οὐκ ἀλογον δ’ Sch.); οὐ καλῶς γοῦν Ald.MU (marked doubtful).
10 Ἀλλο δὲ τι γένος ἐστὶν ὁ φαιν γίνεσθαι πλείστον περὶ τὴν Αἰθιοπίαν, ὁ καλοῦσι κόικας. οὕτωι δὲ θαμνώδεις, οὐχὶ ἐν τῷ στέλεχος ἔχοντες ἀλλὰ πλεῖστος καὶ ἐνίοτε συνεργημένα μέχρι τινὸς εἰς ἐν, τὰς δὲ βάρδους οὐ μακρὰς μὲν ἀλλὰ ὅσον πηχυαίας, ἀλλὰ λείας, ἐπὶ δὲ τῶν ἄκρων τὴν κόμην. ἔχουσι δὲ καὶ τὸ φύλλον πλατὺ καὶ ὁσ- περ ἐκ δυνῶν συγκείμενον ἐλαχίστοιν. καλοὶ δὲ καὶ τῇ ὄψει φαίνονται τὸν δὲ καρπὸν καὶ τῷ σχῆ- ματι καὶ τῷ μεγέθει καὶ τῷ χυλῷ διάφορον ἔχουσι: στρογγυλότερον γάρ καὶ μεῖζω καὶ εὐστομώτερον ἵππον δὲ γυλικῶν. πεπαινοῦσι δὲ ἐν τρισὶ ἐτεσιν ὡστ' ἅπι καρπὸν ἔχειν, ἐπικαταλαμβάνοντος τοῦ νέου τῶν ἐνον: ποιοῦσι δὲ καὶ ἄρτους ἐξ αὐτῶν περὶ μὲν ὅν τούτων ἐπισκεπτέον.  

11 Οἱ δὲ χαμαιριφεῖς καλοῦμενοι τῶν φοινίκων ἐτερόν τι γένος ἐστὶν ὡσπερ ὅμώνυμων καὶ γὰρ ἐξαιρεθέντος τοῦ ἐγκεφάλου ξώσι καὶ κοπέντες ἀπὸ τῶν ριζῶν παραβλαστάνουσι. διαφέρουσι δὲ καὶ τῷ καρπῷ καὶ τοῖς φύλλοις: πλατὺ γὰρ καὶ μαλακὸν ἔχουσι τὸ φύλλον, δὴ ὁ καὶ πλε- κοὺσιν ἐξ αὐτῶν τὰς τε σπυρίδας καὶ τοὺς φορμοὺς: πολλοὶ δὲ καὶ ἐν τῇ Κρήτῃ γύνονται καὶ ἐτὶ μάλλον ἐν Σικελία. ταῦτα μὲν ὅν ἐπὶ πλεῖον εἰρηται τῆς ὑποθέσεως.

1 Plin. 13. 47.  
2 κόικας conj. Salm. cf. 1. 10. 5, and the probable reading in Plin. l.c.  
3 συνεργημένα μέχρι τινὸς εἰς ἐν conj. W.; συνεργημένα μὲν

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There is another kind which is said to be abundant in Ethiopia, called the doum-palm; this is a shrubby tree, not having a single stem but several, which sometimes are joined together up to a certain point; and the leaf-stalks are not long, only the length of a cubit, but they are plain, and the leafage is borne only at the tip. The leaf is broad and, as it were, made up of at least two leaflets. This tree is fair to look upon, and its fruit in shape size and flavour differs from the date, being rounder larger and pleasant to the taste, though not so luscious. It ripens in three years, so that there is always fruit on the tree, as the new fruit overtakes that of last year. And they make bread out of it. These reports then call for enquiry.

The dwarf-palm, as it is called, is a distinct kind, having nothing but its name in common with other palms. For if the head is removed, it survives, and, if it is cut down, it shoots again from the roots. It differs too in the fruit and leaves; for the leaf is broad and flexible, and so they weave their baskets and mats out of it. It is common in Crete and still more so in Sicily. However in these matters we have said more than our purpose required.

\[\text{enquiry into plants, II. vi. 10-11}\]

\[\text{Plin. 13. 39. For } \delta\mu\alpha\nu\nu\mu\nu\mu\nu \text{ cf. 9. 10. 1 n.}\]

\[\text{A dwarf palm is now abundant at Selinunte: cf. Verg. Aen. 3. 705, palmosa Selinus.}\]
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12 Ἑν δὲ ταῖς τῶν ἄλλων φυτείαις ἀνάπαλιν τίθενται τὰ φυτευτήρια, καθάπερ τῶν κλημάτων. οἱ μὲν οὖν οὐθέν διαφέρειν φασὶν ἢκιστα δὲ ἐπὶ τῶν ἀμπέλων· ένιοι δὲ ρόαν δασύνεσθαι καὶ σκιάζειν μᾶλλον τὸν καρπὸν· ἐτὶ δὲ ἦττον ἀποβάλλειν τοὺς κυτίνους. συμβαίνειν δὲ τούτὸ φασί καὶ ἐπὶ τῆς συκῆς· οὐ γὰρ ἀποβάλλειν ἀνάπαλιν φυτευθεῖσαν, ἐτὶ δ’ εὐβατώτεραν γίνεσθαι· οὐκ ἀποβάλλειν δὲ οὔδ’ ἐάν τὶς ἀποκλάση φυομένης εὐθὺς τὸ ἄκρον.

Αἳ μὲν οὖν φυτείαι καὶ γενέσεις δὴν τρόπον ἔχουσι σχέδον ὡς τύπῳ περιλαβεῖν εἰρηνται.

VII. Περὶ δὲ τῆς ἐργασίας καὶ τῆς θεραπείας τὰ μὲν ἐστὶ κοινὰ τὰ δὲ ἱδία καθ’ ἐκαστὸν. κοινὰ μὲν ἡ τε σκαπάνη καὶ ἡ ύδρεία καὶ ἡ κόπρωσις, ἐτι δὲ ἡ διακάθαρσις καὶ ἀφαίρεσις τῶν αὐων. διαφέρουσι δὲ τῷ μᾶλλον καὶ ἦττον. τὰ μὲν φίλυδρα καὶ φιλόκοπρα τὰ δ’ οὐχ ὁμοίως, οἶον ἡ κυπάριττος, ἦπερ οὐ φιλόκοπρον οὐδὲ φίλυδρον, ἀλλὰ καὶ ἀπόλλυσθαί φασιν ἐάν γε νέαν οὖσαν ἐφυδρεύσωσι πολλῷ. ρόα δὲ καὶ ἀμπελος φίλυδρα. συκῆ δὲ εὐβλαστοτέρα μὲν ύδρευμένη τὸν δὲ καρπὸν ἵσχει χείρῳ πλὴν τῆς Δακωνικῆς· αὕτη δὲ φίλυδρος.

1 ἀνάπαλιν conj. Sch.; τανάπαλιν Ald. cf. C.P. 2. 9. 4; Geop. 10. 45; Plin. 17. 84. 2 οὔν ins. H.
3 δασύνεσθαι: see LS. reff. s.v. δασύς.
4 cf. C.P. 2. 9. 3.
5 εὐβατώτεραν (i.e. ‘more manageable’). The reference is to a method of keeping the tree dwarf (Bod.). Plin. l.c. has
Further notes on the propagation of trees.

To return to the other trees:—in propagating them they set the cuttings upside down,\(^1\) as with vine-shoots. Some however\(^2\) say that that makes no difference, and least of all in propagating the vine; while others contend that the pomegranate thus propagated has a bushier growth\(^3\) and shades the fruit better, and also that it is then\(^4\) less apt to shed the flower. This also occurs, they say, with the fig; when it is set upside down, it does not shed its fruit, and it makes a more accessible\(^5\) tree; and it does not shed its fruit, even if one breaks off the top\(^6\) as it begins to grow.

Thus we have given a general sketch of what we find about methods of propagation, and of the ways in which these trees are reproduced.

Of the cultivation of trees.

VII.\(^7\) As to cultivation and tendance some requirements apply equally to all trees, some are peculiar to one. Those which apply equally to all are spade-work watering and manuring, and moreover pruning and removal of dead wood. But different trees differ in the degree. Some love moisture and manure, some not so much, as the cypress,\(^8\) which\(^9\) is fond neither of manure nor of water, but actually dies, they say, if it is overwatered when young. But the pomegranate and vine are water-loving. The fig grows more vigorously if it is watered, but then its fruit is inferior, except in the case of the Laconian variety, which is water-loving.\(^10\)

\(^{scansilem}\) (so also G), which seems to be a rendering of \(e\upsilon\beta\alpha\tau\).  
\(^{e\upsilon\beta\alpha\tau\sigma\epsilon\tau\rho\alpha\nu}\) U.

\(^{8}\) το \(\acute{\epsilon}k\rho\omicron\omicron\) conj. R. Const. after G; τον \(\kappa\alpha\pi\tau\omicron\nu\) UMVP\(_2\) Ald.  
\(^{9}\) \(\hat{\eta}\pi\epsilon\rho\) conj. W. from G; \(\hat{\omega}\sigma\pi\epsilon\rho\) Ald.  
\(^{10}\) cf. C.P. 3. 6. 6.  

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2 Διακαθαίρεσθαι δὲ πάντα ζητεῖ: βελτίω γὰρ τῶν αὐθών ἀφαιρομένων ὡσπερ ἄλλοτρών, ἃ καὶ τὰς αὐξήσεις καὶ τὰς τροφὰς ἐμποδίζει. διὲ ὁ καὶ... ὅταν ἡ γεράνθρωπον ὅλως κόπτουσιν· ἡ γὰρ βλάστησις νέα γίνεται τοῦ δένδρου. πλείστης δὲ διακαθάρσεως φησιν Ἀνθρώπων δεῖσθαι μύρρινον καὶ ἐλαίαν· ὅσῳ γὰρ ἀν ἐλάπτω καταλίπῃς, ἀμείωνον βλαστήσει καὶ τὸν καρπὸν οἴσει πλείω· πλὴν ἀμπέλου δήλον ὅτι ταύτη γὰρ ἀναγκαιότερον καὶ πρὸς βλάστησιν καὶ πρὸς εὐκαρπίαν. ἀπὸ δὲ καὶ ταύτην καὶ τὴν ἄλλην θεραπεῖαν πρὸς τὴν ἱδίαν φύσιν ἐκάστω ποιητέου.

3 Δεῖσθαι δὲ φησιν Ἀνθρώπων καὶ κόπτου δριμυτάτης καὶ πλείστης ὑδρείας, ὡσπερ καὶ τῆς διακαθάρσεως, ἐλάιαν καὶ μύρρινον καὶ ρόαν· οὐ γὰρ ἔχειν μήτραν οὐδὲ νόσημα κατὰ γῆς οὐδὲν· ἀλλὰ ἐπειδὰν παλαιὸν ἢ τὸ δένδρον, ἀποτέμνειν δεῖν τοὺς ἀκρεμόνας ἑπείτα τὸ στέλεχος θεραπεύειν ὡσπεράν ἐξ ἀρχῆς φυτεύθεν· οὔτω δὲ φασι πολυχρονιώτερα καὶ ἰσχυρότατα μύρρινον εἰναι καὶ ἐλαίαν. ταύτα μὲν οὖν ἐπισκέψαι ἄν τις, εἰ καὶ μὴ πάντα ἀλλὰ περὶ γε τῆς μήτρας.

4 Ἡ δὲ κόπρος οὔτε πᾶσιν ὁμοίως οὐθ᾽ ἡ αὐτὴ πᾶσιν ἀρμόττει· τὰ μὲν γὰρ δριμεῖας δεῖται τὰ δ' ἦττον τὰ δὲ παντελῶς κούφης. δριμυτάτη δὲ ἡ τοῦ ἀνθρώπου· καθὰπερ καὶ Χαρτόδρας ἀρίστην μὲν ταύτην εἰναί φησι, δευτέραν δὲ τὴν ὑείαν, τρίτην δὲ αἰγός, τετάρτην δὲ προβάτου,

1 Plin. 17. 248.  
2 Name of tree missing. Sch.  
3 cf. C.P. 3. 10. 4.  
4 ταύτη conj. W.; ταύτης Ald.
All trees require pruning; for they are improved by removal of the dead wood, which is, as it were, a foreign body, and prevents growth and nourishment. Wherefore when the (tree)\(^2\) becomes old, they cut off all its boughs: for then the tree breaks afresh. Androtion\(^3\) says that the myrtle and olive need more pruning than any other trees; for the smaller you leave them, the better they will grow, and they will bear better fruit. But the vine of course needs pruning even more; for it is in the case of this tree\(^4\) more necessary for promoting both growth and fruitfulness. However, speaking generally, both this and other kinds of tendance must be suited to the particular natural character in each case.

Androtion further says that the olive the myrtle and the pomegranate require the most pungent manure and the heaviest watering, as well as the most thorough pruning, for that then they do not get 'softwood'\(^5\) nor any disease underground; but when the tree is old, he adds, one should cut off the boughs, and then attend to the stem as though it were a tree just planted. Thus\(^6\) treated they say that the myrtle and olive are longer lived and very robust. These statements might be a subject for further enquiry, or, if not all of them, at least what is stated of the 'softwood.'

Manure does not suit all alike, nor is the same manure equally good for all. Some need it pungent, some less so, some need it quite light. The most pungent is human dung: thus Chartodras\(^7\) says that this is the best, pig-manure being second to it, goat-manure third, fourth that of sheep, fifth that of

\(^1\) 'i.e. effete sap-wood.  \(^5\) oūτω conj. W.; oi Ald.  
\(^2\) Name perhaps corrupt.
πέμπτην δὲ βοῶς, ἐκτην δὲ τὴν λοφοῦρων. ἦ δὲ συμματίτις ἄλλη καὶ ἄλλως. ἦ μὲν γὰρ ἀσθενε-
στέρα ταύτης ἦ δὲ κρείττων.

5 Τὴν δὲ σκαπάνην πᾶσιν οἶνον ταῦτα, συμφέρειν, ὥσπερ καὶ τὴν ὀσκάλην τοῖς ἑλάττοσιν· εὐτρα-
φέστερα γὰρ γίνεσθαι. τρέφειν δὲ δοκεῖ καὶ ὁ κοιν-
ορτὸς ἐνια καὶ θάλλειν ποιεῖν, οἶνον τὸν βότρυν, δι' ὁ καὶ ὑποκοινίσου πολλάκις· οἱ δὲ καὶ τὰς συκᾶς ὑποσκάπτουσιν ἐνθα τούτον δεῖ. Μεγαροί δὲ καὶ τοὺς σικύους καὶ τὰς κολοκύντας, ὅταν οἱ ἐτησίαι πνεύσωσι, σκαλλοντες κοινορτοῦσι καὶ οὕτω ἥλυκυτέρους καὶ ἀπαλωτέρους ποιοῦσιν ὑπὲρ τοῦτοι· τοῦτο μὲν οὖν ὁμολογούμενον. τὴν δ' ἀμπελον οὐ φασὶν τίνες δεῖν [ἡ] ὑποκοινίσειν οὖν ὁλῶς ἀπτεσθαι περκάζοντος τοῦ βότρυος, ἄλλ' εἰπέρ ὅταν ἀπομελανθῆ, οἱ δὲ τὸ ὠλον μηδὲ τὸτε πλὴν ὅσον ὑποτέλαι τὴν βοτάνην· ὑπὲρ μὲν οὖν τοῦτων ἀμφισβητοῦσιν.

6 Ἐαν δὲ τι μῆ φέρῃ καρπὸν ἄλλ' εἰς βλάστησιν τρέπησαι, σχίζουσι τοῦ στελέχους τὸ κατὰ γῆν καὶ λίθον ἐντιθέασιν ὅπου ἀν ῥαγῇ, καὶ φασὶ φέρειν. ὅμοιώς δὲ καὶ εάν τις τῶν ρίζων τινας περιτέμην, δι' ὁ καὶ τῶν ἀμπελῶν οὐταν τραγῳδί τὸ τούτο ποιοῦσι τὰς ἐπιπολῆς. τῶν δὲ συκῶν πρὸς τῷ περιτέμνειν καὶ τέφραν περιπάττουσι καὶ κατασχαζοῦσι τὰ στελέχη καὶ φασὶ φέρειν μᾶλλον. ἀμυγδαλὴ δὲ καὶ πάππαλον ἐγκόψαντες

1 Lit. 'bushy tails,' i.e. horses asses mules.
2 cf. C.P. 3. 16. 3. 3 deī ins. H ; so apparently G read.
4 deīν ὑποκοινίσειν οὖν ὁλῶς conj. W. (so Sch., but keeping [ἡ] after deīν); deīν ἦ ὑποκοινίσειν οὖν ὁλῶς UMV; deīν ἦ ὑποκοι-
νίσειν ἦ ὁλῶς Ald.
5 Plin. 17. 253 and 254.
oxen, and sixth that of beasts of burden. Litter manure is of different kinds and is applied in various ways: some kinds are weaker, some stronger.

Spade-work is held to be beneficial to all trees, and also hoeing for the smaller ones, as they then become more vigorous. Even dust is thought to fertilise some things and make them flourish, for instance the grape; wherefore they often put dust to the roots of the vine. Some also dig in dust about the figs in places where it is deficient. In Megara, when the etesian winds are past, they cover the cucumber and gourd plants with dust by raking, and so make the fruits sweeter and tenderer by not watering. On this point there is general agreement. But some say that dust should not be put to the vine, and that it should not be meddled with at all when the grape is turning, or, if at all, only when it has turned black. Some again say that even then nothing should be done except to pluck up the weeds. So on this point there is a difference of opinion.

If a tree does not bear fruit but inclines to a leafy growth, they split that part of the stem which is underground and insert a stone corresponding to the crack thus made, and then, they say, it will bear. The same result follows, if one cuts off some of the roots, and accordingly they thus treat the surface roots of the vine when it runs to leaf. In the case of figs, in addition to root-pruning, they also sprinkle ashes about the tree, and make gashes in the stems, and then, they say, it bears better. Into the almond tree they drive an iron peg, and, having thus made

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6 ὅπως ἐν ἄγαγι Αλδ.: so G; ὅπως ὅπως ἄνειαγκ conj. W. cf. Geop. 5. 35.
7 Plin. l.c.
8 cf. 2. 2. 11; C.P. 1. 17. 10; 2. 14. 1; Plin. 7. 253.
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σιδηρούν ὅταν τετράνωσιν ἄλλον ἀντεμβάλλουσι δρύινον καὶ τῇ γῇ κρύπτοσιν ὅ καὶ καλοῦσί τινες κολάζειν ὡς ύβρίζον τὸ δένδρον.

7. Ταύτον δὲ τούτο καὶ ἐπὶ τῆς ἀπίου καὶ ἐπὶ ἄλλων τινῶς ποιοῦσιν. ἐν Ἀρκαδίᾳ δὲ καὶ εὐθύνειν καλοῦσι τῇ δαν. πολὺ γὰρ τὸ δένδρον τούτῳ παρ' αὐτοῖς ἑστὶ. καὶ φασίν, ὅταν πάθη τούτῳ, τὰς μὲν μὴ φεροὺσας φέρειν τὰς δὲ μὴ πεπούσας ἐκπέπτειν καλῶς. ἀμυγδαλὴν δὲ καὶ ἐκ πικρᾶς γῆγνεσθαι γλυκείαν, εάν τις περιορύξας τὸ στέλεχος καὶ τιτράνας ὅσον τε παλαιστιαίοι τὸ πανταχόθεν ἄπορρεόν δάκρυν ἐπὶ ταύτῳ ἐξι καταρρεῖν. τούτῳ μὲν οὖν ἄν εἰη πρὸς τε τὸ φέρειν ἁμα καὶ πρὸς τὸ εὐκαρπεῖν.

VIII. Ἀποβάλλει δὲ πρὸ τοῦ πέψαι τὸν καρπὸν ἀμυγδαλῆ μηλεα ῥόα ἄπιος καὶ μάλιστα δὴ πάντων συκῆ καὶ φοίνικις, πρὸς ἃ καὶ τὰς βοηθείας ξητοῦσι· οἶθεν καὶ ὃ ἐρινασμός· ἐκ γὰρ τῶν ἐκεὶ κρεμαννυμένων ἐρινῶν ψῆνες ἐκδυόμενοι κατεσθίοντε καὶ πιαίνουσι τὰς κορυφὰς. διαφέρουσι δὲ καὶ αἱ χώραι πρὸς τὰς ἀποβολάς· περὶ γὰρ Ἰταλίαν οὗ φασίν ἀποβάλλειν, δι᾽ ὃ οὖν ἐρι-

1 The operation being performed at the base of the tree. cf. § 7.
2 ἐκπέπτειν conj. R. Const.; εἰσπέπτειν UMAld.
3 Plin. 17. 252.
5 πέψαι conj. Sch.; πέψαι Ald.
6 ἐκεὶ κρεμαννυμένων ἐρινῶν I conj.; ἐκεὶ κρεμαννυμένων Ald.; ἐπικρεμαννυμένων ἐρινῶν conj. W.; but the present partic. is used C.P. 2. 9. 5.

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a hole, insert in its place a peg of oak-wood and bury it\(^1\) in the earth, and some call this 'punishing' the tree, since its luxuriance is thus chastened.

Some do the same with the pear and with other trees. In Arcadia they have a similar process which is called 'correcting' the sorb (for that tree is common in that country). And they say that under this treatment those trees that would not bear do so, and those that would not ripen their fruit now ripen\(^2\) them well.\(^3\) It is also said that the almond becomes sweet, instead of bitter, if one digs round the stem and, having bored a hole about a palms-breadth, allows the gum which exudes from all sides\(^4\) to flow down into it and collect. The object of this would be alike to make the tree bear and to improve the fruit.

Of remedies for the shedding of the fruit: caprification.

VIII. Trees which are apt to shed their fruit before ripening\(^5\) it are almond apple pomegranate pear and, above all, fig and date-palm; and men try to find the suitable remedies for this. This is the reason for the process called 'caprification'; gall-insects come out of the wild figs which are hanging there,\(^6\) eat the tops of the cultivated figs and so make them swell.\(^7\) The shedding of the fruit differs according to the soil: in Italy\(^8\) they say that it does not occur, and so they do not use caprification,\(^9\)

\(^1\) Τοιούτοις: MV Ald.; διαλέγοντος: W.

\(^2\) Τοιούτοις: MV Ald.; διαλέγοντος: W.

\(^3\) Τοιούτοις: MV Ald.; διαλέγοντος: W.

\(^4\) Τοιούτοις: MV Ald.; διαλέγοντος: W.

\(^5\) Τοιούτοις: MV Ald.; διαλέγοντος: W.

\(^6\) Τοιούτοις: MV Ald.; διαλέγοντος: W.

\(^7\) Τοιούτοις: MV Ald.; διαλέγοντος: W.

\(^8\) Τοιούτοις: MV Ald.; διαλέγοντος: W.

\(^9\) Τοιούτοις: MV Ald.; διαλέγοντος: W.

\(^1\) αναλαμβάνοντοι: MV Ald.; διαλέγοντος: W.

\(^2\) αναλαμβάνοντοι: MV Ald.; διαλέγοντος: W.

\(^3\) αναλαμβάνοντοι: MV Ald.; διαλέγοντος: W.

\(^4\) αναλαμβάνοντοι: MV Ald.; διαλέγοντος: W.

\(^5\) αναλαμβάνοντοι: MV Ald.; διαλέγοντος: W.

\(^6\) αναλαμβάνοντοι: MV Ald.; διαλέγοντος: W.

\(^7\) αναλαμβάνοντοι: MV Ald.; διαλέγοντος: W.

\(^8\) αναλαμβάνοντοι: MV Ald.; διαλέγοντος: W.

\(^9\) αναλαμβάνοντοι: MV Ald.; διαλέγοντος: W.
νάζουσιν. οὐδ' ἐν τοῖς καταβορείοις καὶ λεπτογείοις, οίνον ἐπί Φαλύκῳ τῆς Μεγαρίδος. οὐδὲ τῆς Κορινθίας ἐν τισι τόποις. ἠσαύτως δὲ καὶ ἡ τῶν πνευμάτων κατάστασις βορείοις γὰρ μᾶλλον ἡ νοτίοις ἀποβάλλουσιν, κἂν ψυχρότερα καὶ πλεῖω γένηται μᾶλλον. ἔτι δ' αὐτῶν τῶν δένδρων ἡ φύσις. τὰ πρώια γὰρ ἀποβάλλει, τὰ δ' ὅσια οὐκ ἐκβάλλει, καθάπερ ἡ Δακωνίκη καὶ αἱ ἄλλαι. δὴ δὲ ὁι οὐκ ἐρυμάζουσι ταῦτα. ταῦτα μὲν οὖν ἐν τε τοῖς τόποις καὶ τοῖς γένεσι καὶ τῇ καταστάσει τοῦ ἄερος ἔχει τὰς διαφοράς.

2 Οἱ δὲ ψήνες ἐκδύνονται μὲν ἐκ τοῦ ἐρυμενοῦ, καθάπερ εὑρήται γίνονται δ' ἐκ τῶν κεγχραμίδων. σημεῖον δὲ λέγουσιν, ὅτι ἐπειδὰν ἐκδύωσιν οὐκ ἐνεῖσι κεγχραμίδες. ἐκδύνονται δὲ οἱ πολλοὶ ἐγκαταλείποντες ἢ πόδα ἢ πτεροῦ. γένος δὲ τι καὶ ἔτερον ἐστὶ τῶν ψηνῶν. δὲ καλοῦσι κεντρίνας. οὕτω δ' ἀργὸν καθάπερ κηφήνες. καὶ τοὺς εἰσδυνομένους τῶν ἔτερων κτείνουσιν αὐτοῖς δὲ ἐναποθυησκοῦσιν. ἐπαινοῦσι δὲ μάλιστα τῶν ἐρυμῶν τὰ μέλανα τὰ ἐκ τῶν πετρωδῶν χωρίων. πολλάς γὰρ ἔχει ταῦτα κεγχραμίδας. γιγνώσκεται δὲ τὸ ἐρυνασμένου τῷ ἐρυθρῷ εἶναι καὶ ποικίλου καὶ ἵσχυρόν τὸ δ' ἀνερίναστον λευκοῦ καὶ ἀσθενεῖς. προστιθέασι δὲ τοῖς δεομένοις ὅταν ὑση. ὅπου δὲ πλεῖστος κονιορτός, ἐνταῦθα πλεῖστα καὶ

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1 cf. 8. 2. 11.
2 ψυχρότερα καὶ πλεῖω conj. Sch.; τεχνοτέρα καὶ πλεῖων MV Ald.; τεχνοτέρα καὶ πλεῖω U.
3 πρῶτα conj. Sch. from Г; πρῶτα Ald.H.
4 Plin. 17. 255 and 256.

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nor is it practised in places which face north nor in those with light soils, as at Phalykos¹ in the Megarid, nor in certain parts of the district of Corinth. Also conditions as to wind make a difference; the fruit is shed more with northerly than with southerly winds, and this also happens more if the winds are cold and frequent.² Moreover the character of the tree itself makes a difference; for some kinds, such as the Laconian and other such kinds, shed their early³ figs but not the later ones. Wherefore caprification is not practised with these. Such are the changes to which the fig is subject in respect of locality kind and climatic conditions.

Now the gall-insects come, as has been said, out of the wild fig, and they are engendered from the seeds. The proof given of this is that, when they come out, there are no seeds left in the fruit; and most of them in coming out leave a leg or a wing behind. There is another kind of gall-insect which is called kentrines; these insects are sluggish, like drones, they kill those of the other kind who are entering the figs, and they themselves die in the fruit. The black kind of wild fig which grows in rocky places is most commended for caprification, as these figs contain numerous seeds.⁵ A fig which has been subject to caprification is known by being red and parti-coloured and stout, while one which has not been so treated is pale and sickly. The treatment is applied to the trees which need it, after rain. The wild figs are most plentiful and most potent

¹ i.e. and so should produce more gall-insects: in C.P. 2. 9. 6 it is implied that the insect is produced by putrefaction of the seeds of the wild fig.
ἰσχυρότατα τὰ ἐρινᾶ γίνεται. φασὶ δὲ ἐρινάζειν καὶ τὸ πόλιον, ὅπωταν αὐτῷ καρπὸς ἦ πολὺς, καὶ τοὺς τῆς πτελέας κωρύκους. ἐγκύνεται γὰρ καὶ ἐν τούτοις θηρίδι ἅττα. κύπτες ὅταν ἐν ταῖς συκαῖς γίνωνται κατεσθίουσι τοὺς ψῆνας. ἂκος δὲ τούτου φασὶν εἶναι τοὺς καρκίνους προσπερονῦν· πρὸς γὰρ τούτους τρέπεσθαι τοὺς κυπές. ἀλλὰ γὰρ δὴ ταῖς μὲν συκαῖς αὕται βοήθειαι.

Τοῖς δὲ φοίνιξιν αἱ ὧπὸ τῶν ἄρρενων πρὸς τοὺς θῆλεις· οὕτων γὰρ εἶσιν οἱ ἐπιμέενεις ποιοῦντες καὶ ἐκπέττειν, ὁ καλοῦσί τινες ἐκ τῆς ὁμοιότητος ὀλυνθάζειν. γίνεται δὲ τόνδε τὸν τρόπον. ὅταν ἁνθῆ τὸ ἄρρεν, ὑποτέμνουσι τὴν στάθην ἐφ᾽ ἓς τὸ ἁνθὸς εὐθὺς ὡσπερ ἐχεῖ, τὸν τε χροῖν καὶ τὸ ἁνθὸς καὶ τὸν κοινοτὸν καταστείουσι κατὰ τοῦ καρποῦ τῆς θῆλειας: κἂν τοῦτο πάθη, διατηρεῖ καὶ οὐκ ἀποβύλλει. φαίνεται δ᾽ ἀμφοῖν ὑπὸ τοῦ ἄρρενος τοῖς θῆλεσι βοὴθεια γίνεσθαι· θῆλυ γὰρ καλοῦσι τὸ καρποφόρον· ἀλλ᾽ ἡ μὲν οἰον μίξις· ἡ δὲ κατ᾽ ἀλλον τρόπον.

1 ὅποτ᾽ ἄν ... πολὺς conj. W. from G, cum copiose fructificat; ὅποταν αἰγύππου ὄ πολὺς MSS. U adds καὶ before ὅποταν.
2 κωρύκους I conj. In 3. 14. 1, the elm is said to bear κωνκίδες which contain gnat-like creatures; thes growths are called κωρυκῶθη τινα κοῖλα 3. 15. 4; and in 3. 7. 3, the
where there is most dust. And they say that hulwort also, when it fruits freely,\(^1\) and the ‘gall-bags’\(^2\) of the elm are used for caprification. For certain little creatures are engendered in these also. When the *knips* is found in figs, it eats the gall-insects. It is to prevent this, it is said, that they nail up the crabs; for the *knips* then turns its attention to these. Such are the ways of assisting the fig-trees.

With dates it is helpful to bring the male to the female; for it is the male which causes the fruit to persist and ripen, and this process some call, by analogy, ‘the use of the wild fruit.’\(^3\) The process is thus performed: when the male palm is in flower, they at once cut off the spathe on which the flower is, just as it is, and shake the bloom with the flower and the dust over the fruit of the female, and, if this is done to it, it retains the fruit and does not shed it. In the case both of the fig and of the date it appears that the ‘male’ renders aid to the ‘female,’ — for the fruit-bearing tree is called ‘female’ — but while in the latter case there is a union of the two sexes, in the former the result is brought about somewhat differently.

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\(^1\) Where there is most dust. And they say that hulwort also, when it fruits freely, and the gall-bags of the elm are used for caprification.

\(^2\) And when the *knips* is found in figs, it eats the gall-insects. It is to prevent this, it is said, that they nail up the crabs; for the *knips* then turns its attention to these.

\(^3\) The same thing is referred to as *τὸ θυλακόδες τοῦτο*, where *τοῦτο* = ‘the well-known’; cf. also 9. 1. 2, where Sch. restores *κωφύκους*; cf. Pall. 4. 10. 28. *κυπαίρους (?)* U; *κυπέρους* MV; *κύπεριν* Ald.; *κυππάρους* conj. W.

\(^3\) Οὐκ ὀκάκειν, from οὐκοδός, a kind of wild fig, as ἔρυκαῖν, from ἔρυκος, the wild fig used for caprification. cf. C.P. 3. 18. 1.
Ι. Ἐπεὶ δὲ περὶ τῶν ἡμέρων δένδρων εὑρηταί, λεκτέον ὁμοίως καὶ περὶ τῶν ἄγριων, εἰ τέ τι ταύτων καὶ ἔτερον ἔχουσι τοῖς ἡμέροις εἰ θ’ ὅλως ἵδιον τῆς φύσεως.

Δι’ μὲν οὖν γενέσεις ἀπλαί τινες αὐτῶν εἰσιν πάντα γὰρ ἢ ἀπὸ σπέρματος ἢ ἀπὸ ρίζης φύεται. τούτῳ δ’ οὖν ὡς οὐκ ἐνδεχόμενον καὶ ἄλλως, ἀλλ’ ἵσως διὰ τὸ μὴ πειρᾶσθαι μηδένα μηδὲ φυτεύειν ἐκφύοιτο δ’ ἄν εἰ λαμβάνοιεν τόπους ἐπιτηδείους καὶ θεραπείαν τὴν ἁρμόττουσαν· ὡσπερ καὶ νῦν τὰ ἀλσώδη καὶ φίλυδρα, λέγω δ’ οὖν πλάτανον ἵτεαν λεύκην αὐγειρὸν πτελέων· ἀπαντα γὰρ ταύτα καὶ τὰ τοιαῦτα φυτεύόμενα βλαστάνει καὶ τάχιστα καὶ κάλλιστα ἀπὸ τῶν παρασπάδων, ὡστε καὶ μεγάλας οὕσας ἤδη καὶ ἱσοδένδρους αὖ τις μεταβῇ διαμένειν· φυτεύεται δὲ τὰ πολλὰ αὐτῶν καὶ καταπηγνύμενα, καθάπερ ἢ λεύκη καὶ ἢ αὐγειρός.

2 Τούτων μὲν οὖν πρὸς τῇ σπερματικῇ καὶ τῇ ἀπὸ τῶν ρίζῶν καὶ αὐτῇ γένεσις ἔστιν τῶν δὲ

1 ἐκφύοιτο conj. W; ἐπιφύοιτο UMVAld.
BOOK III

Of Wild Trees.

Of the ways in which wild trees originate.

I. Now that we have spoken of cultivated trees, we must in like manner speak of wild ones, noting in what respects they agree with or differ from cultivated trees, and whether in any respects their character is altogether peculiar to themselves.

Now the ways in which they come into being are fairly simple; they all grow either from seed or from a root. But the reason of this is not that they could not possibly grow in any other way, but merely perhaps that no one even tries to plant them otherwise; whereas they might grow¹ from slips, if they were provided with a suitable position and received the fitting kind of tendance, as may be said even now of the trees of woodland and marsh, such as plane willow abele black poplar and elm; all these and other similar trees grow very quickly and well when they are planted from pieces torn off, so that² they survive, even if at the time of shifting they are already tall and as big as trees. Most of these are simply planted by being set firmly, for instance, the abele and the black poplar.

Such is the way in which these originate as well as from seed or from roots; the others grow only

¹ ωστε καὶ μεγ. conj. Sch.; καὶ ωστε καὶ μεγ. UM; καὶ ωστε μεγ. PAld.

² ωστε καὶ μεγ. conj. Sch.; καὶ ωστε καὶ μεγ. UM; καὶ ωστε μεγ. PAld.
THEOPHRASTUS

 אלהנ εκείναι, πλην ὅσα μόνον ἀπὸ σπέρματος φύεται, καθάπερ ἐλάτη πεύκη πίτυς. ὅσα δὲ ἔχει σπέρμα καὶ καρπὸν, κἂν ἀπὸ ρίζης γίνηται, καὶ ἀπὸ τοῦτον ἐτέει καὶ τὰ δοκοῦντα ἀκαρπα εἶναι γεννᾶν φασίν, οἷον πτελέαν ἱτέαν. σημεῖον δὲ λέγονσιν οὐ μόνον ὅτι φύεται πολλὰ τῶν ρίζῶν ἀπηρτημένα καθ᾽ οὓς ἄν ἥ τόπους, ἀλλὰ καὶ τὰ συμβαίνοντα θεωροῦντες, οἷον ἐν Φενεώ τῆς Ἄρκαδίας, ὡς ἐξερράγη τὸ συναθροισθὲν ὕδωρ ἐν τῷ πεδίῳ φραχθεῖτων τῶν βερέθρων ὅπου μὲν ἐγγὺς ἦσαν ἱτέαι πεφυκυῖαι τοὺς καταποθέσιν τόπου, τῷ ὑστέρῳ ἔτει μετὰ τὴν ἀναξηρασίαν ἐνταῦθα ἄθις ἀναφύναὶ φασίν ἱτέαν· ὅπου δὲ πτελέαι ἄθις πτελέας, καθάπερ καὶ ὅπου πεῦκαι καὶ ἐλαται πεῦκας καὶ ἱτέας, ὅπερ μιμουμένων κάκεινων.

3 Ἀλλὰ τὴν ἱτέαν ταχὺ προκαταβάλλειν πρὸ τοῦ τελείως ἀδρύναι καὶ πέψαι τὸν καρπὸν· δι᾽ ὅ καὶ τὸν ποιητὴν οὐ κακῶς προσαγορεύειν αὐτὴν ὀλεσίκαρπον.

Τῆς δὲ πτελέας κάκεινο σημεῖον ὑπολαμβανοῦσιν· ὅταν γὰρ ἀπὸ τῶν πνευμάτων εἰς τοὺς ἐχομένους τόπους ὁ καρπὸς ἀπενεχθῆ, φύεσθαι φασί. παραπλήσιον δὲ ἐοικεν εἶναι τὸ συμβαίνον ὃ καὶ ἐπὶ τῶν φρυγανικῶν καὶ ποιωδῶν τινῶν ἐστιν· οὐκ ἐχόντων γὰρ σπέρμα δανερόν, ἀλλὰ

1 cf. 5. 4. 6.
2 'Katavothra' (now called 'the devil's holes,' see Lawson, cited below); cf. Paus. 8. 14; Catull. 68. 109; Plut. de sera numinis vindicta, 557 c: Plin. 31. 36; Frazer, Pausanias and other Greek Sketches, pp. 315 foll.; Lawson, Modern Greek Folklore and Ancient Greek Religion, p. 85.

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in these two ways—while some of them, such as silver-fir and Aleppo pine grow only from seed. All those that have seed and fruit, even if they grow from a root, will grow from seed too; for they say that even those which, like elm and willow, appear to have no fruit reproduce themselves. For proof they give the fact that many such trees come up at a distance from the roots of the original tree, whatever the position may be; and further, they have observed a thing which occasionally happens; for instance, when at Pheneos in Arcadia the water which had collected in the plain since the underground channels were blocked burst forth, where there were willows growing near the inundated region, the next year after it had dried up they say that willows grew again; and where there had been elms, elms grew, even as, where there had been firs and silver-firs, these trees reappeared—as if the former trees followed the example of the latter.

But the willow is said to shed its fruit early, before it is completely matured and ripened; and so the poet not unaptly calls it "the willow which loses its fruit."

That the elm also reproduces itself the following is taken to be a proof: when the fruit is carried by the winds to neighbouring spots, they say that young trees grow from it. Something similar to this appears to be what happens in the case of certain under-shrubs and herbaceous plants; though they have no visible seed, but some of them only a sort of

\[\text{\textit{πτελέασ αὖθις πτελέας} conj. St.; πτελέας ἀντὶ πτελέας U; πτελέας ἀντὶ πτελέας MV; πτελέας αὖθις πτελέας P; πτελέα αὖθις πτελέας Ald.}\]

\[\text{i.e. by growing from seed, as conifers normally do.}\]

\[\text{Homer, \textit{Od.} 10. 510; cf. Plin. 16. 110.}\]
Τῶν μὲν οίον χρύν τῶν ὁ δ' ἀνθός, ὥσπερ τὸ θύμοι, ὁμώς ἀπὸ τούτων βλαστάνουσιν. ἐπεὶ ἦ γε πλάτανος ἔχει φανερῶς καὶ ἀπὸ τούτων φύεται. τούτῳ δ' ἐξ ἄλλων τε δήλου κάκεινο μέγιστον σημείον. ὥθησα γὰρ ἤδη ποτὲ πεφυκυία πλάτανος ἐν τρίποδι χαλκῷ.

4 Ταύτας τε δὴ τὰς γενέσεις ὑποληπτέον εἶναι τῶν ἀγρίων καὶ ἐτὶ τὰς αὐτομάτους, ἃς καὶ οἱ νυσιολόγοι λέγουσιν. Ἀναξαγόρας μὲν τὸν ἀέρα πάντων φάσκων ἔχειν σπέρματα καὶ ταύτα συγκαταφερόμενα τῷ ὑδατί γεννᾶν τὰ φυτά. Διογένης δὲ σημομένου τοῦ ὑδάτος καὶ μίξιν τινὰ λαμβάνοντος πρὸς τὴν γῆν. Κλείδημος δὲ συμεστάναι μὲν ἐκ τῶν αὐτῶν τοῖς ξώοις, ὅσον δὲ θολερωτέρων καὶ ψυχροτέρων τοσοῦτον ἀπέχειν τοῦ ζῶα εἶναι. [Λέγουσι δὲ τινὲς καὶ ἀλλοι περὶ τῆς γενέσεως.]

5 'Αλλ' αὐτῇ μὲν ἀπηρτημένῃ πόσ ἐστι τῆς αἰσθήσεως, ἀλλ' οἱ τῶν ὑπολογούμενα καὶ ἐμφανεῖς, οἴον ὅταν ἐφόδος γένηται ποταμοῦ παρεκβάντος τὸ ῥεῖδρον ἢ καὶ ὅλως ἐτέρωθι ποιησαμένον, καθάπερ ἐν τῇ Νέσος ἐν τῇ Ἀβδηρίτιδι πολλάκις μεταβαίνει, καὶ ἀμα τῇ μεταβάσει τοσαύτῃν ὑλὴν συγγεννᾷ τοῖς τόποις, ὡστε τῷ τρίτῳ ἔτει συνηρεφείν. καὶ πάλιν ὅταν ἐπομβρία κατάσχωσι πλεῖο χρόνον καὶ γὰρ ἐν ταύταις βλαστήσεις γίνονται φυτῶν. έοικε δὲ ἡ μὲν τῶν ποταμῶν ἐφόδος ἐπάγειν σπέρματα καὶ καρποὺς, καὶ τοὺς όχετοὺς φασὶ τὰ τῶν ποιωδῶν. ἡ δ' ἐπομβρία

1 cf. C.P. 1. 5. 2.
2 Sc. of Apollonia, the 'Ionian' philosopher.
3 cf. C.P. 1. 10. 3; 3. 23. 1; Arist. Meteor. 2. 9.
down, and others only a flower, such as thyme, young plants nevertheless grow from these. As for the plane, it obviously has seeds, and seedlings grow from them. This is evident in various ways, and here is a very strong proof—a plane-tree has before now been seen which came up in a brass pot.

Such we must suppose are the ways in which wild trees originate, apart from the spontaneous ways of which natural philosophers tell. \(^1\) Anaxagoras says that the air contains the seeds of all things, and that these, carried down by the rain, produce the plants; while Diogenes \(^2\) says that this happens when water decomposes and mixes in some sort with earth. \(^3\) Kleidemnos maintains that plants are made of the same elements as animals, but that they fall short of being animals in proportion as their composition is less pure and as they are colder. \(^4\) And there are other philosophers also who speak of spontaneous generation.

But this kind of generation is somehow beyond the ken of our senses. There are other admitted and observable kinds, as when a river in flood gets over its banks or has altogether changed its course, even as the Nesos in the district of Abdera often alters its course, and in so doing causes such a growth of forest in that region that by the third year it casts a thick shade. The same result ensues when heavy rains prevail for a long time; during these too many plants shoot up. Now, as the flooding of a river, it would appear, conveys seeds and fruits of trees, and, as they say, irrigation channels convey the \(^5\) seeds of herbaceous plants, so heavy

\(^{1}\) λέγουσι .... γενεσέως apparently a gloss (W.).
\(^{2}\) τὰ conj. W.; τὴν MAld.
τούτο ποιεῖ ταύτό· συγκαταφέρει γὰρ πολλά τῶν σπερμάτων, καὶ ἄμα σήψει τινα τῆς γῆς καὶ τοῦ υδάτος· ἐπεὶ καὶ ἡ μίξις αὐτῆ τῆς Αὐγυπτίας ἡ γῆς δοκεῖ τινα γεννᾶν ύλην. ἐνιαχοῦ δὲ, ἄν μόνον ὑπεργάσωσυνται καὶ κινήσωσιν, εὐθὺς ἀναβλαστάνει τὰ οἴκεια τῆς χώρας, ὡσπερ ἐν Κρήτῃ κυπάρισσι. γίνεται δὲ παραπλησίον τι τούτῳ καὶ ἐν τοῖς ἐλάττοσιν· ἄμα γὰρ κινομένης ἀναβλαστάνει πόα τις ἐν ἐκάστοις. ἐν δὲ τοῖς ἡμιβρόχοις ἐὰν υπονεάσης φαίνεσθαι φασὶ τρίβολον. αὐτὰς μὲν οὖν ἐν τῇ μεταβολῇ τῆς χώρας εἰσίν, εἴτε καὶ ἐνυπαρχόντων σπερμάτων εἴτε καὶ αὐτῆς πως διατιθεμένης· ὅπερ ἴσως οὐκ ἄτοπον ἐγκατα-κλειομένων ἀμα τῶν υγρῶν· ἐνιαχοῦ δὲ καὶ υδάτων ἐπιγινομένων ἰδιώτηρον ἀνατείλαι ύλῆς πλῆθος, ὡσπερ ἐν Κυρήνῃ πιττώδους τινὸς γενομένου καὶ παχέος· οὕτως γὰρ ἀνεβλάστησεν ἡ πλησίον ὕλη πρότερον οὐκ οὖσα. φασὶ δὲ καὶ τὸ γε σιλφίου οὐκ ἐν πρότερον ἐκ τοιαύτης τινὸς αὐτίας φαινῆναι. τρόποι μὲν οὖν τοιοῦτοι τῶν τοιούτων γενέσεων.

II. Πάντα δὲ κάρπιμα ἦ ἀκαρπα, καὶ ἄειφυλλα ἦ φυλλοβόλα, καὶ ἀνθοῦντα ἦ ἀνανθή· κοιναὶ

1 ἦ δ'. . . ταύτῳ conj. W.; ἦ δ' ἐπ. τούτῳ αὐτό ἐποίει ταύτῳ UMV (δ' αὖ marked doubtful in U); ἦ δ' ἐπ. τούτῳ αὐτὸ ἐποίει Ald. 2 Plin. 16. 142.
3 i.e. and is released by working the ground.
4 cf. C.P. 1. 5. 1; Plin. 16. 143, who gives the date A.U.C. 130; cf. 19. 41.
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rain acts in the same way; for it brings down many of the seeds with it, and at the same time causes a sort of decomposition of the earth and of the water. In fact, the mere mixture of earth with water in Egypt seems to produce a kind of vegetation. And in some places, if the ground is merely lightly worked and stirred, the plants native to the district immediately spring up; for instance, the cypress in Crete. And something similar to this occurs even in smaller plants; as soon as the earth is stirred, wherever it may be, a sort of vegetation comes up. And in partly saturated soil, if you break up the ground, they say that caltrop appears. Now these ways of origination are due to the change which takes place in the soil, whether there were seeds in it already, or whether the soil itself somehow produces the result. And the latter explanation is perhaps not strange, seeing that the moist element is also locked up in the soil. Again, in some places they say that after rain a more singular abundance of vegetation has been known to spring up; for instance, at Cyrene, after a heavy pitchy shower had fallen: for it was under these circumstances that there sprang up the wood which is near the town, though till then it did not exist. They say also that silphium has been known to appear from some such cause, where there was none before. Such are the ways in which these kinds of generation come about.

Of the differences between wild and cultivated trees.

II. All trees are either fruit-bearing or without fruit, either evergreen or deciduous, either flowering

\[ \text{cf. 6. 3.} \]  
\[ \text{τοιοῦτοι MSS.; τοιοῦτοι conj. W.} \]
γάρ τινες διαιρέσεις ἐπὶ πάντων εἰσὶν ὁμοίως ἡμέρων τε καὶ ἄγριων. ίδια δὲ πρὸς τὰ ἡμερα τῶν ἄγριων ὑψικαρπία τε καὶ ἱσχύς καὶ πολυκαρπία τῷ προφαίνειν πεπαίνει τε γὰρ ὑψιαίτερον καὶ τὸ ὅλον ἀνθεὶ καὶ βλαστάνει ὡς ἐπὶ τὸ πᾶν καὶ ἱσχυρότερα τῇ φύσει καὶ προφαίνει μὲν πλεῖον καρπὸν ἐκπέττει δ' ἦττον, εἰ μὴ καὶ πάντα ἀλλά γε τὰ ὁμογενῆ, οἶον ἐλάας καὶ ἀπίῳ κότινος καὶ ἄχρας. ἀπαντά γὰρ οὕτως, πλην εἰ τι σπάνιον, ὅσπερ ἐπὶ τῶν κρανεῶν καὶ τῶν οὐν. ταύτα γὰρ δὴ ψαυ πεπάστερα καὶ ἡδύτερα τὰ ἄγρια τῶν ἡμέρων εἶναι καὶ εἰ δὴ τι ἄλλο μὴ προσδέχεται γεωργίαν ἢ δεινόν ἢ καὶ τι τῶν ἐλαττώνοι, οἶον τὸ σίλβιον καὶ ἡ κάππαρις καὶ τῶν χεδροπῶν ὁ θέρμος, ᾧ καὶ μάλιστ' ἀν τις 2 ἄγρια τῇ φύσιν εἴποι. τὸ γὰρ μὴ προσδεχόμενον ἡμέρωσιν, ὅσπερ ἐν τοῖς ζώοις, τοῦτο ἄγριον τῇ φύσει. καίτοι φησίν ᾿Ιππων ἀπαν καὶ ἡμερον καὶ ἄγριον εἶναι, καὶ θεραπευόμενον μὲν ἡμερον μὴ θεραπευόμενον δὲ ἄγριον, τῇ μὲν ὀρθῶς λέγων τῇ δὲ οὐκ ὀρθῶς. ἐξαμελούμενον γὰρ ἀπαν χείρον γίνεται καὶ ἀπαγριοῦται, θεραπευόμενον δὲ οὐχ ἀπαν βέλτιον, ώσπερ εἰρηται. ὃ δὴ χωριστέον καὶ τὰ μὲν ἄγρια τὰ δ' ἡμερα λεκτέον,
or flowerless; for certain distinctions apply to all trees alike, whether cultivated or wild. To wild trees, as compared with cultivated ones, belong the special properties of fruiting late, of greater vigour, of abundance of fruit, produced if not matured; for they ripen their fruit later, and in general their time of flowering and making growth is later; also they are more vigorous in growth, and so, though they produce more fruit, they ripen it less; if¹ this is not universally true, at least it holds good of the wild olive and pear as compared with the cultivated forms of these trees. This is generally true with few exceptions, as in the cornelian cherry and sorb; for the wild forms of these, they say, ripen their fruit better, and it is sweeter than in the cultivated forms. ² And the rule also does not hold good of anything which does not admit of cultivation, whether it be a tree or one of the smaller plants, as silphium caper and, among leguminous plants, the lupin; these one might say are specially wild in their character. For, as with animals which do not submit to domestication, so a plant which does not submit to cultivation may be called wild in its essential character. However Hippon ³ declares that of every plant there exists both a cultivated and a wild form, and that 'cultivated' simply means ⁴ that the plant has received attention, while 'wild' means that it has not; but though he is partly right, he is partly wrong. It is true that any plant deteriorates by neglect and so becomes wild; but it is not true that every plant may be improved by attention,⁵ as has been said. Wherefore⁶ we must make our distinction and call some things wild, others culti-

¹ i.e. and so become 'cultivated.'
² & δὴ MSS.; & ἄ conj. Sch. from G.

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3 'Αλλά τούτο μὲν οὐδὲν ἵσως διαφέρει ποτέρως ῥητέον. ἀπαν δὲ τὸ ἐξαγριωμένον τοῖς τε καρποῖς χείρον γίνεται καὶ αὐτὸ βραχύτερον καὶ φύλλοις καὶ κλωσὶ καὶ φλοιῷ καὶ τῇ ὁλῇ μορφῇ καὶ γάρ πυκνότερα καὶ οὐλότερα καὶ σκληρότερα καὶ ταύτα καὶ ὅλῃ ἡ φύσις γίνεται, ὡς ἐν τούτοις μάλιστα τῆς διαφορᾶς τῶν ἡμέρων καὶ τῶν ἁγρίων γινομένης. δὴ δὲ καὶ οὐκ αὐτῶν ἡμερουμένων τοιαύτα τυγχάνει, ταύτα ἁγρία φασίν εἶναι, καθάπερ τὴν πεῦκην καὶ τὴν κυπάρισσον, ἡ ὁλος ἡ τὴν ἀρρενα, καὶ τὴν καρύν δὲ καὶ τὴν διοσβάλανον.

4 'Ετι τε τῷ φιλόφυλχρα καὶ ὅρεινα μᾶλλον εἶναι καὶ γάρ τούτο λαμβάνεται πρὸς τὴν ἁγριώτητα τῶν δένδρων καὶ ὅλως τῶν φυτῶν, εἰτ' οὖν καθ' αὐτὸ λαμβανόμενον εἶτε κατὰ συμβεβηκός.

'O μεν οὖν τῶν ἁγρίων ἀφορισμὸς εἴθ' οὕτως ἢ καὶ ἄλλως ληπτέος, οὐδὲν ἄν ἤσως διενεχέοι πρὸς τὰ νῦν ἐκεῖνο δὲ ἀληθές, ὡς γε τῷ τύπῳ καὶ ἀπλῶς εἰπεῖν, ὅτι μᾶλλον ὅρεινα τὰ ἁγρία καὶ εὐθενεῖ τὰ πλεῖο καὶ μᾶλλον ἐν τούτοις τόσοις, εάν μή τις λαμβάνῃ τὰ φιλυδρα καὶ παραποτάμια καὶ ἀλσώδη. ταύτα γάρ καὶ τὰ τοιαύτα τυγχάνει πεδεινὰ μᾶλλον. οὐ μὴν ἄλλ' ἐν γε τοῖς μεγάλοις ὅρεσιν, οἷον Παρνησίῳ τε καὶ Κυλλήνῃ καὶ Ὀλυμπῷ τῷ Πειρικῷ τε καὶ τῷ Μυσίῳ καὶ εἴ ποι τοιοῦτον ἔτερον, ἀπαντά

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1 τιθασείαν conj. W., cf. Plat. Pol. 264 c; τιθάσιον UMAld. 168
ENQUIRY INTO PLANTS, III. ii. 2–5

vated—the latter class corresponding to those animals which live with man and can be tamed.¹

But perhaps it does not matter which way this should be put. Any tree which runs wild deteriorates in its fruits, and itself becomes dwarfed in leaves branches bark and appearance generally; for under cultivation these parts, as well as the whole growth of the tree, become closer, more compact² and harder; which indicates that the difference between cultivated and wild is chiefly shown in these respects. And so those trees which show these characteristics under cultivation they say are really wild, for instance fir cypress, or at least the ‘male’ kind, hazel and chestnut.

Moreover these wild forms are distinguished by having greater liking for cold and for hilly country: for that too is regarded as a means of recognising wild trees and wild plants generally, whether it is so regarded in itself or as being only incidentally a distinguishing mark.

So the definition of wild kinds, whether it should be thus made or otherwise, perhaps makes no difference for our present purpose. But it is certainly true, speaking³ broadly and generally, that the wild trees are more to be found in hilly country, and that the greater part of them flourish more in such regions, with the exception of those which love water or grow by river sides or in woods; these and such-like trees are rather trees of the plain. However on great mountains, such as Parnassus Cyllene the Pierian and the Mysian Olympus, and such regions anywhere

¹ οὐλώτερα conj. W. from G, spissiora; ὀρθώτερα MSS. cf. C.P. 6. 11. 8.
² ὡς γε conj. Sch.; ἢστε UM; ὡς ἐν Ald.H.
³ 169
φύεται διὰ τὴν πολυεδίαν τῶν τόπων· ἐξουσί
γὰρ καὶ λιμνώδεις καὶ ἐνύγγρους καὶ ἕβρους καὶ
γεώδεις καὶ πετρώδεις καὶ τοὺς ἀνὰ μέσον λει-
μώνας καὶ σχεδὸν ὅσαι διαφοράς τῆς γῆς· ἔτι δὲ
τοὺς μὲν κοίλους καὶ εὐδιεινοὺς τοὺς δὲ μετεώρους
καὶ προσηνέμους· ὡςτε δύνασθαι παντοῖα καὶ τὰ
ἐν τοῖς πεδίοις φέρειν.

6 Οὐδὲν ὁ ἀτόπον οὐδ' ἐ' ἐνια μὴ οὐτὸ πάμφορα
tῶν ὅρων, ἀλλ' ἰδιωτέρας τινὸς ἥλης ἢ πάσης ἢ τῆς
πλείστης, οἶνον ἐν τῇ Κρήτῃ τὰ Ἰδαία· κυπάριστος
γὰρ ἐκεῖ· καὶ τὰ περὶ Κυλικίαν καὶ Συρίαν, ἐν
οἶς κέδρος· ἐνιαχοῦ δὲ τῆς Συρίας τέρμινθωσ. αἴ
γὰρ διαφοράς τῆς χώρας τὴν ἰδιότητα ποιοῦσιν.
ἀλλ' εἴρηται τὸ ἱδιον ὡς ἐπὶ πᾶν.

III. Ἰδια δὲ τὰ τοιάδε τῶν ὅρεινῷ, ἀ ἐν τοῖς
πεδίοις οὐ φύεται, [περὶ τὴν Μακεδονίαν] ἐλάτη
πεύκη πίτυς ἄγρια φίλυρα ζυγία φηγὸς πῦξος
ἀνδράχλη μίλος ἀρκευθὸς τέρμινθος ἐρινεὼς
φιλύκη ἅφρακτη καρύα διοσβόλανος πρίνος. τὰ
de καὶ ἐν τοῖς πεδίοις μυρίκη πτελέα λεύκη ἵτεα
αὐγειρός κρανεία θηλυκρανεία κλήθρα δρῦς λακά-
ρη ἄχρας μηλέα ὀστρύα κηλαστρον μελία πα-
λίουρος ὀξύκανθος <σφένδαμνος> ἢν ἐν μὲν τῷ

1 ἐν . . . Ἰδαία conj. W. (after Sch., who conj. τὰ ἐν
ή κρήτῃ τῇ Ἰδαία ῬAld.
2 i.e. it is not meant that a tree which is 'special' to
Mount Ida (e.g.) occurs only there.
3 περὶ τὴν Μακ. ? a gloss; περὶ τε τὴν Μακ. MP2Ald.; τε om. P.
else, all kinds grow, because of the diversity of positions afforded them. For such mountains offer positions which are marshy, wet, dry, deep-soiled or rocky; they have also their meadow land here and there, and in fact almost every variety of soil; again they present positions which lie low and are sheltered, as well as others which are lofty and exposed to wind; so that they can bear all sorts, even those which belong to the plains.

Yet it is not strange that there should be some mountains which do not thus bear all things, but have a more special kind of vegetation to a great extent if not entirely; for instance the range of Ida in Crete; for there the cypress grows; or the hills of Cilicia and Syria, on which the Syrian cedar grows, or certain parts of Syria, where the terebinth grows. For it is the differences of soil which give a special character to the vegetation. (However the word 'special' is used here in a somewhat extended sense.)

Of mountain trees: of the differences found in wild trees.

III. The following trees are peculiar to mountain country and do not grow in the plains; let us take Macedonia as an example. Silver-fir fir 'wild pine' lime zygia Valonia oak box andrachne yew Phoenician cedar terebinth wild fig alaternus hybrid arbutus hazel chestnut kermes-oak. The following grow also in the plain: tamarisk elm abele willow black poplar cornelian cherry cornel alder oak lakare (bird-cherry) wild pear apple hop-hornbeam holly manna-ash Christ's thorn cotoneaster maple, which

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4 σφένδαμνος add. Palm. in view of what follows; δύκαρτα ἀκανθος UP Ald. Bas.; ἀκανθος P2.
THEOPHRASTUS

ορει πεφυκνιαν ἡγηγίαν καλοῦσιν, ἐν δὲ τῷ πεδίῳ γλεῖνον. οἱ δ’ ἄλλως διαιροῦσι καὶ ἐτερον ποιοῦσιν εἶδος σφενδάμνου καὶ ἡγηγίας.

2 "Ἀπαντά δὲ ὡσα κοινά τῶν ὄρων καὶ τῶν πεδίων, μεῖζω μὲν καὶ καλλίω τῇ ὅσει τὰ ἐν τοῖς πεδίοις γίνεται, κρείττω δὲ τῇ χρείᾳ τῇ τε τῶν ἐξόλων καὶ τῇ τῶν καρπῶν τὰ ὀρεινά· πλὴν ἀχράδος καὶ ἀπίου καὶ μηλέας· αὕται δ’ ἐν τοῖς πεδίοις κρείττους οὐ μόνον τοῖς καρποῖς ἀλλὰ καὶ τοῖς ἐξόλοις· ἐν γὰρ τοὺς ὀρεσί μικρά καὶ ὀξύδεις καὶ ἀκανθώδεις γίνονται· πάντα δὲ καὶ ἐν τοῖς ὀρεσίν, ὅταν ἐπιλάβωνται τῶν οἰκείων τόπων, καὶ καλλίω φύεται καὶ εὑθενεί μᾶλλον ὡς δὲ ἀπλῶς εἰπεῖν τὰ ἐν τοῖς ὄμαλέσι τῶν ὀρῶν καὶ μάλιστα, τῶν δὲ ἄλλων τὰ ἐν τοῖς κάτω καὶ κοίλοις· τὰ δ’ ἐπὶ τῶν ἀκρών χείριστα, πλὴν εἰ τῇ φύσει

3 φιλόψυχρον ἔχει δὲ καὶ ταὐτ’ αὐ τίνα διαφορὰν ἐν τοῖς ἀνομοίοις τῶν τόπων, ὑπὲρ ὃν ὠστερὸν λεκτέον νῦν δὲ διαιρετέον ἐκαστον κατὰ τὰς διαφορὰς τὰς εἰρημένας.

Ἀείφυλλα μὲν οὖν ἔστι τῶν ἄγριῶν ἃ καὶ πρότερον ἑλέχθη, ἑλάτῃ πεύκῃ πίτυς ἄγρια πῦξος ἀνδράχλη μίλος ἄρκευθος τέρμινθος φιλύκη ἀφάρκη δάφνη φελλόδρυς κηλαστρον ὀξύκανθος πρῖνος μυρίκη· τὰ δὲ ἄλλα πάντα φυλλοβολεῖν πλὴν εἰ τί περιττὸν ἐνιαχοῦ, καθάπερ ἑλέχθη περὶ τῆς ἐν τῇ Κρήτῃ πλατάνου καὶ ὀρυός καὶ εἰ που τόπος τίς ἀλώς εὐτρόφος.

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1 δ’ ἄλλως conj. Sch. from G; δ’ αὐ Ald. 2 Plin. 16. 77.
3 i.e. are not always of the poorest quality. ταὐτ’ αὐ τίνα conj. W.; ταὐτα αὐτῶν Ald.H. 4 1. 9. 3.
when it grows in the mountains, is called *zygia*, when in the plain, *gleinos*: others, however, classify differently and make maple and *zygia* distinct trees.

All those trees which are common to both hill and plain are taller and finer in appearance when they grow in the plain; but the mountain forms are better as to producing serviceable timber and fruits, with the exception of wild pear and apple; these are in the plain better in fruit and also in timber; for in the hills they grow small with many knots and much spinous wood. But even on the mountains all trees grow fairer and are more vigorous when they have secured a suitable position; and, to speak generally, those which grow on the level parts of the mountains are specially fair and vigorous; next to these come those which grow on the lower parts and in the hollows; while those that grow on the heights are of the poorest quality, except any that are naturally cold-loving. But even these shew some variation in different positions, of which we must speak later; for the present we must in our distinctions in each case take account only of the differences already mentioned.

Now among wild trees those are evergreen which were mentioned before, silver-fir, wild pine, box, andrachne, yew, Phoenician cedar, terebinth, alaternus, hybrid arbutus, bay *phellodrys* (holm-oak), holly, cotoneaster, kermes-oak, tamarisk; but all the others shed their leaves, unless it be that in certain places they keep them exceptionally, as was said of the plane and oak in Crete and in any other place which is altogether favourable to luxuriant growth.

5 *φελλόδρυς* conj. Bod., *cf*. 1. 9. 3; *φελλάς δρύς* UMV(?) Ald.

6 1. 9. 5.
4 Кάρπιμα δὲ τὰ μὲν ἄλλα πάντα: περὶ δὲ ἵτεας καὶ αὐγείρου καὶ πτελέας, ὡσπερ ἐλέχθη, διαμφισ-βητοῦσιν. ἔνιοι δὲ τὴν αὐγείρου μόνην ἀκαρπεῖν φασίν, ὡσπερ καὶ οἱ ἐν Ἀρκαδίᾳ, τὰ δὲ ἄλλα πάντα τὰ ἐν τοῖς ὅρεσι καρποφορεῖν. ἐν Κρήτῃ δὲ καὶ αὐγείρου κάρπιμοι πλείους εἰσί· μιὰ μὲν ἐν τῷ στομῷ τοῦ ἀντροῦ τοῦ ἐν τῇ Ἰδη, ἐν δὲ τὰ ἀναθήματα ἀνάκειται, ἄλλη δὲ μικρὰ πλησίον ἀπωτέρω δὲ μάλιστα δῶδεκα στάδιοι περὶ τινα κρήνην Σαύρου καλουμένην πολλαί. εἰσὶ δὲ καὶ ἐν τῷ πλησίον ὅρει τῆς Ἰδης ἐν τῷ Κινδρίῳ καλουμένῳ καὶ περὶ Πραισίαν δὲ ἐν τοῖς ὅρεσιν. οἱ δὲ μόνον τῶν τοιούτων τὴν πτελέαν κάρπιμον εἶναι φασί, καθάπερ οἱ περὶ Μακεδονίαν.

5 Μεγάλη δὲ διαφορᾶ πρὸς καρπὸν καὶ ἀκαρπίαν καὶ ἡ τῶν τόπων φύσις, ὡσπερ ἐπὶ τε τῆς περσέας ἔχει καὶ τῶν φοινίκων· ἡ μὲν ἐν Αἰγύπτῳ καρποφορεῖ καὶ εἰ ποι τῶν πλησίον τῶν τόπων, ἐν Ῥώδῃ δὲ μέχρι τοῦ ἀνθέειν μόνου ἀφικνεῖται. ὁ δὲ φοινίξ περὶ μὲν Βαβυλῶνα θαυμαστός, ἐν τῇ Ἑλλάδι δὲ οὖδὲ πεπαίνει, παρ’ ἐνίοις δὲ ὀλως οὖδὲ προφαίνει καρπὸν.

6 Ὀμοιῶς δὲ καὶ ἐτερα πλείω τοιαύτ’ ἐστίν· ἐπεὶ καὶ τῶν ἐλαττόνων ποιαρίων καὶ ἔλημάτων ἐν τῇ

1 2. 2. 10.
2 cf. 2. 2. 10. It appears that the buds of the poplar were mistaken for fruit (Sch.); cf. Diosc. 1. 81. Later writers perpetuated the error by calling them κόκκοι.
3 τοῦ ἐν τῇ Ἰδη conj. Sch.; τοῦ ἐν τῷ Ἰδῆ U; τοῦ ἐν τῷ Ἰδῆs MV; ἐν τῇ Ἰδῆ Ald. H.

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Most trees are fruit-bearing, but about willow black poplar and elm men hold different opinions, as was said¹; and some, as the Arcadians, say that only the black poplar is without fruit, but that all the other mountain trees bear fruit. However in Crete there are a number of black poplars which bear fruit²; there is one at the mouth of the cave on mount Ida,³ in which the dedicatory offerings are hung, and there is another small one not far off, and there are quite a number about a spring called the Lizard's Spring about twelve furlongs off. There are also some in the hill-country of Ida in the same neighbourhood, in the district called Kindria and in the mountains about Praisia.⁴ Others again, as the Macedonians, say that the elm is the only tree of this class which bears fruit.

Again the character of the position makes a great difference as to fruit-bearing, as in the case of the persea⁵ and the date-palm. The persea of Egypt bears fruit, and so it does wherever it grows in the neighbouring districts, but in Rhodes⁶ it only gets as far as flowering. The date-palm in the neighbourhood of Babylon is marvellously fruitful; in Hellas it does not even ripen its fruit, and in some places it does not even produce any.

The same may be said of various other trees: in fact even⁷ of smaller herbaceous plants and bushes some are fruitful, others not, although the latter are

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¹ Ἐπαίοιαν conj. Meurs. Creía; τιρασίαν UMVAld.
² cf. 4. 2. 5. περσέιαi conj. R. Const.; περσέλας U; περσίας Ald.
³ Ῥόδων conj. R. Const. from G, so too Plin. 16. 111; Ῥόδα Ald. cf. 1. 13. 5. for a similar corruption.
⁴ ἐπεῖ kal conj. Sch. from G; ἐπεῖ δὲ kal Ald.
⁵ 175
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αὐτῆς χώρας καὶ συνόρφων χώρας τὰ μὲν κάρπιμα τὰ δ᾽ ἄκαρπα γίνεται: καθάπερ καὶ τὸ κενταύριον ἐν τῇ 'Ηλείᾳ, τὸ μὲν ἐν τῇ ὁρεινῇ κάρπιμῳ, τὸ δ᾽ ἐν τῷ πεδίῳ ἄκαρπον ἀλλὰ μονον ἀνθεὶ, τὸ δ᾽ ἐν τοῖς κοίλοις τῶν οὐδὲ ἀνθεὶ πλῆν κακῶς. δοκεῖ δ᾽ οὖν καὶ τῶν ἄλλων τῶν ὀμογενῶν καὶ ἐν μιᾷ προσγεραίᾳ τὸ μὲν ἄκαρπον εἶναι τὸ δὲ κάρπιμον, οἷον πρίνοις ὁ μὲν κάρπιμος ὁ δ᾽ ἄκαρπος: καὶ
7 κλήθρα δὲ ὡσαύτως: ἀνθεὶ δ᾽ ἁμφω. σχεδὸν δὲ ὁσα καλοῦσιν ἄρρενα τῶν ὀμογενῶν ἄκαρπα: καὶ τούτων τὰ μὲν πολλὰ ἀνθεῖν φασί τὰ δ᾽ ὀλίγον τὰ δ᾽ ὀλως οὐδὲ ἀνθεῖν τὰ δὲ ἀνάπαλιν, τὰ μὲν ἄρρενα μόνα καρποφορεῖν, οὐ μὴν ἀλλ᾽ ἀπὸ γε τῶν ἀνθῶν φύσεια τὰ δεύδρα, καθάπερ καὶ ἀπὸ τῶν καρπῶν ὁσα κάρπιμα: καὶ ἐν ἁμφοῖν οὕτως ἐνίοτε πυκνῆν εἶναι τὴν ἐκφυσιν ὡστε τοὺς ὄρεοτύπους οὐ δύνασθαι διείναι μὴ ὀδοποιησαμένους.

8 Ἀμφισβητεῖται δὲ καὶ περὶ τῶν ἀνθῶν ἐνίων, ὡσπερ εἰπομεν. οἱ μὲν γὰρ καὶ δρῦν ἀνθεῖν οἴονται καὶ τὴν 'Ἡρακλεώτιν καρύαν καὶ διοσ-βάλανον, ἐτὶ δὲ πεύκην καὶ πίτουν: οἱ δ᾽ οὐδὲν τούτων, ἀλλὰ τὸν ἱουλον τὸν ἐν ταῖς καρύαις καὶ τὸ βρύον τὸ δρῦινον καὶ τῶν κύτταρον τῶν πιτύ-

1 χώρα καὶ Ald. ; ἦ καὶ conj. St.
2 i.e. the 'males' are sterile whether they flower or not.
3 i.e. the flowers of the 'female' tree.
4 i.e. (a) in those trees whose 'male' form is sterile, whether it bears flowers or not; (b) in those whose 'male'

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growing in the same place as the former, or quite near it. Take for instance the centaury in Elea; where it grows in hill-country, it is fruitful; where it grows in the plain, it bears no fruit, but only flowers; and where it grows in deep valleys, it does not even flower, unless it be scantily. Any way it appears that, even of other plants which are of the same kind and all go by the same name, one will be without fruit, while another bears fruit; for instance, one kermes-oak will be fruitful, another not; and the same is true of the alder, though both produce flowers. And, generally speaking, all those of any given kind which are called 'male' trees are without fruit, and that though some of these, they say, produce many flowers, some few, some none at all. On the other hand they say that in some cases it is only the 'males' that bear fruit, but that, in spite of this, the trees grow from the flowers, (just as in the case of fruit-bearing trees they grow from the fruit). And they add that in both cases, the crop of seedlings which comes up is sometimes so thick that the woodmen cannot get through except by clearing a way.

There is also a doubt about the flower of some trees, as we said. Some think that the oak bears flowers, and also the filbert the chestnut and even the fir and Aleppo pine; some however think that none of these has a flower, but that,—resembling* and corresponding to the wild figs which drop off prematurely, we have in the nuts the catkin, in the form alone bears fruit, but the fruit is infertile. The passage is obscure: W. gives up the text.

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5 ἐκφυσῖν. cf. 7. 4. 3.
6 ὑμίον conj. W.; ὑμῖν U Ald. cf. 3. 7. 3.
7 cf. 3. 5. 5.
ΤΗΕΟΡΑΣΤΡΟΣ

ίων ὃμιον καὶ ἀνάλογον εἶναι τοῖς προαποπτώτωσις ἑρυνώς. οἱ δὲ περὶ Μακεδονίαν οὐδὲ ταῦτα φασίν ἀνθεῖν ἀρκευθὸν ὄξυνα ἀρίαν σφένδαμνον. ἔνοι δὲ τὰς ἀρκεύθους δύο εἶναι, καὶ τὴν μὲν ἐτέραν ἀνθεῖν μὲν ἀκαρπὸν δ᾽ εἶναι, τὴν δὲ ἐτέραν οὐκ ἀνθεῖν μὲν καρπὸν δὲ φέρειν εὕθυς προφανώμενον, ὡσπερ καὶ τὰς συκᾶς τὰ ἐρινα. συμβαίνει δ᾽ οὖν ὡστε ἐπὶ δῦο ἐτη τὸν καρπὸν ἔχειν μόνον τούτῳ τῶν δένδρων. ταῦτα μὲν οὖν ἐπισκέπτεσφν.

IV. Ἡ δὲ βλάστησις τῶν μὲν ἁμα γίνεται καὶ τῶν ἴμερῶν, τῶν δὲ μικρὸν ἐπιλειπομένην, τῶν δ᾽ ἴδῃ πλέον, ἀπαντῶν δὲ κατὰ τὴν ἴρινὴν ὦραν. ἄλλὰ τῶν καρπῶν ἡ παραλλαγὴ πλείων ὡσπερ δὲ καὶ πρότερον εἴπομεν, οὐ κατὰ τὰς βλαστήσεις αἱ πεπάνσεις ἄλλα πολὺ διαφέρουσιν ἐπεὶ καὶ τῶν ὄψικαρποτέρων, ἡ δὴ τινές φασίν ἐναντιοφορεῖν, οἱν ἀρκευθὸν καὶ πρῖνον, ὃμως αἱ βλαστήσεις τοῦ ἱρος. αὐτὰ δ᾽ αὐτῶν τὰ ὁμογενῆ τῷ πρότερον καὶ ὡστερον διαφέρει κατὰ τοὺς τόπους πρῶτα μὲν γὰρ βλαστάνει τὰ ἐν τοῖς ἐλεσίν, ὡς οἱ περὶ Μακεδονίαν λέγουσι, δεύτερα δὲ τὰ ἐν τοῖς πεδίοις, ἐσχατὰ δὲ τὰ ἐν τοῖς ὀρέσιν.

2 Αὐτῶν δὲ τῶν καθ᾽ ἐκαστὰ δένδρων τὰ μὲν

1 i.e. the male flower, cf. Schol. on Ar. Vesp. 1111. Θεόφραστος κυρίως λέγει κύπταρον τὴν προαίθησιν τῆς πίτους: but no explanation of such a use of the word suggests itself. cf. 3. 3. 8; 4. 8. 7.
2 ἁρίαν conj. Sch., cf. 3. 4. 2; 3. 16. 3; 3. 17. 1; ὄξυνην ἄγριαν Ald.
ENQUIRY INTO PLANTS, III. iii. 8–iv. 2

oak the oak-moss, in the pine the 'flowering tuft.' ¹ The people of Macedonia say that these trees also produce no flowers—Phoenician cedar beech aria ² (holm-oak) maple. Others distinguish two kinds of Phoenician cedar, of which one bears flowers but bears no fruit, while the other, though it has no flower, bears a fruit which shows itself at once ³—just as wild figs produce their abortive fruit. However that may be, ⁴ it is a fact that this is the only tree which keeps its fruit for two years. These matters then need enquiry.

Of the times of budding and fruiting of wild, as compared with cultivated, trees.

IV. Now the budding of wild trees occurs in some cases at the same time as that of the cultivated forms, but in some cases somewhat, and in some a good deal later; but in all cases it is during the spring season. But there is greater diversity in the time of fruiting; as we said before, the times of ripening do not correspond to those of budding, but there are wide differences. For even in the case of those trees which are somewhat late in fruiting,—which some say take a year to ripen their fruit,—such as Phoenician cedar and kermes-oak, the budding nevertheless takes place in the spring. Again there are differences of time between individual trees of the same kind, according to the locality; those in the marshes bud earliest, as the Macedonians say, second to them those in the plains, and latest those in the mountains.

Again of particular trees some wild ones bud

³ i.e. without antecedent flower.
⁴ ὅσον conj. W.; σχέδον U MV Ald.

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συναναβλαστάνει τοῖς ἡμέροις, οἷον ἀνδράχλη ἀφάρκην ἀχρας δὲ μικρῶ ύστερον τῆς ἀπίον. τὰ
dὲ καὶ πρὸ ἤσφύρου καὶ μετὰ πνοαῖς εὐθὺ ἤσφύρουν.
καὶ πρὸ ἤσφύρου μὲν κρανεία καὶ θηλυκρανεία,
μετὰ ἤσφύρου δὲ δάφνη κλήθρα, πρὸ ἰσημερίας δὲ
μικρῶν φίλυρα ζυγία φηγὸς συκῆ. πρωῖβλαστα
dὲ καὶ καρύα καὶ δρῦς καὶ ἀκτέας. ἔτι δὲ μᾶλλον
tὰ ἄκαρπα δοκοῦντα καὶ ἀλσώδῃ, λεύκῃ πτελέᾳ
ιτεά αἰγείρος. πλάτανος δὲ μικρῶ ὑψιαίτερον
tούτων. τὰ δὲ ἄλλα ὡσπερ ἐνισταμένον τοῦ
ἥρος, οἷον ἐρυνεὸς φιλυκῆ ὀξύκακους παλίουρος
tέρμινθος καρύα διοσβάλανος. μηλέα δ' ὕψι-
βλαστος. ὑψιβλαστότατον δὲ σχεδὸν ὕψος ἀρία
tετραγωνία θύεια μῖλος. αἱ μὲν οὖν βλαστήσεις
οὕτως ἔχουσιν.

3 Αἱ δὲ ἄνθησεις ἀκολουθοῦσι μὲν ὡς εἰπεῖν κατὰ
λόγον, οὐ μὴν ἄλλα παραλλάττουσι, μᾶλλον δὲ
καὶ ἐτὶ πλέον ἢ τῶν καρπῶν τελείωσι. κρανεία
μὲν γὰρ ἀποδίδωσι περὶ τροπὰς θερινὰς ἢ πρώιος
σχεδὸν ὡσπερ πρῶτον. ἢ δ' ὑψιος, ἢν δὴ τινὲς
καλοῦσι θηλυκρανείαν, μετ' αὐτὸ τὸ μετόπωρον
ἐστὶ δὲ ὁ ταύτης καρπὸς ἀβρωτὸς καὶ τὸ ξύλον
ἀσθενὲς καὶ χαῦνον. τοσαυτῇ δὴ διαφορὰ περὶ
4 ἄμφω. τέρμινθος δὲ περὶ πυροῦ ἀμητόν ἢ μικρῶ

1 See below, n. 4.
2 τὰ ἀκ. δοκ. καὶ ἀλσ. coni. W.; τὰ ἀκ. καὶ δοκ. καὶ ἀλσ. U
MP; τὰ ἀκ. τὰ δοκ. ἀλσ. Ald.
3 ὡσπερ apologises for the unusual sense given to ἐνιστ.
along with the cultivated forms, as andrachne and hybrid arbutus; and the wild pear is a little later than the cultivated. Some again bud both before zephyr begins to blow, and immediately after it has been blowing. Before it come cornelian cherry and cornel, after it bay and alder; a little before the spring equinox come lime *zygia* Valonia oak *fig.* Hazel ¹ oak and elder are also early in budding, and still more those trees which seem to have no fruit and to grow in groves,² abele elm willow black poplar; and the plane is a little later than these. The others which bud when the spring is, as it were, becoming established,³ are such as wild fig alaternus cotoneaster Christ’s thorn terebinth hazel ⁴ chestnut. The apple is late in budding, latest of all generally are *ipsos* ⁵ (cork-oak) *aria* (holm-oak) *tetragonia* odorous cedar yew. Such are the times of budding.

The flowering times in general follow in proportion; but they present some irregularity, and so in still more cases and to a greater extent do the times at which the fruit is matured. The cornelian cherry produces its fruit about the summer solstice; the early kind, that is to say, and this tree is about the earliest of all.⁶ The late form, which some call ‘female cornelian cherry’ (cornel), fruits quite at the end of autumn. The fruit of this kind is inedible and its wood is weak and spongy; that is what the difference between the two kinds amounts to. The terebinth produces its fruit about the time of wheat-harvest or (usually ‘beginning’).

¹ *Hazel* can hardly be right both here and above.
² See Index.
⁴ *kapřa* can hardly be right both here and above.
⁵ *σχεδόν* *ωσπερ* *πρώτον* not in G, nor in Plin. (16. 105); text perhaps defective.

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οφιαίτερον ἀποδίδωσι καὶ μελία καὶ σφένδαμνος
tου θέρων τον καρπὸν· κλήθρα δὲ καὶ καρύα καὶ
ἀχράδων τι γένος μετοπώρου· δρύς δὲ καὶ διοσ-
βάλανος οφιαίτερον ἔτι περὶ Πλειάδος δύσιν,
ὡςαύτως δὲ καὶ φίλυκη καὶ πρίνος καὶ παλίσουρος
cαι ὀξύκακος μετὰ Πλειάδος δύσιν· ἡ δ’ ἀρία
χειμώνος ἀρχομένου· καὶ ἡ μηλέα μὲν τοῖς πρῶτοις
ψύχεσιν, ἀρχαὶ δὲ ὡφία χειμώνος· ἀνδράχλη δὲ
cαὶ ἀφάρκη τοῦ μὲν πρῶτον πεπαίνουσιν ἀμα τῷ
βότρυϊ περκάζοντι, τὸ δὲ ὑστερον, δοκεῖ γὰρ ταύτα
dικαρπα, ἀρχομένου τοῦ χειμώνος, ἐλάτη δὲ καὶ
μίλος ἀνθοῦσι μικρὸν πρὸ ἡλίου τροπῶν· [καὶ τῆς
γε ἐλατίσι τὸ ἀνθος κρόκινων καὶ ἄλλως καλόν·]
tὸν δὲ καρπὸν ἀφιάσι μετὰ δύσιν Πλειάδος.
πεύκη δὲ καὶ πίτυς προτερόουσι τῇ βλαστήσει
μικρῶν, όσον πεντεκαίδεκα ἡμέραις, τοὺς δὲ καρ-
pοὺς ἀποδιδόσαι μετὰ Πλειάδα κατὰ λόγον.

Ταυτά μὲν οὖν μετριωτέραν μὲν ἔχει παραλλα-
γὴν· πάντων δὲ πλείστην ἡ ἀρκευθος καὶ ἡ κήλασ-
tρος καὶ ἡ πρίνος· ἡ μὲν γὰρ ἀρκευθος ἐνιαύσιον
ἐχειν δοκεῖ· περικαταλαμβάνει γὰρ ὁ νέος τὸν περυ-
σινόν. ὡς δὲ τινὲς φασίν, οὐδὲ πεπαίνει, δ’ ὅ καὶ
προαφαιροῦσι καὶ χρόνου τινὰ τιροῦσιν· ἔων δὲ ἐδ
ἐπὶ τοῦ δεύδρου τις, ἀποξιραίνεται. φασὶ δὲ καὶ τὴν
πρίνον οἱ περὶ Αρκαδίαν ἐνιαυτῷ τελείον· ἀμα
γὰρ τὸν ἐνον πεπαίνει καὶ τὸν νέον ὑποφαίνει·
ὡστε τοῖς τοιούτοις συμβαίνει συνεχῶς τὸν καρπὸν
ἐχειν. φασὶ δὲ γε καὶ τὴν κήλαστρον ὑπὸ τοῦ

1 ἀποδ. καὶ μελία U; ἀποδίδωσι· μελία Ald. Some confusion
in text, but sense clear.
2 ὡφία: ὡ ὡφία W.
a little later, manna-ash and maple in summer; alder hazel and a certain kind of wild pear in autumn; oak and chestnut later still, about the setting of the Pleiad; and in like manner alaternus kermes-oak Christ's-thorn cotoneaster after the setting of the Pleiad; *aria* (holm-oak) when winter is beginning, apple with the first cold weather, wild pear late in winter. Andrachne and hybrid arbutus first ripen their fruit when the grape is turning, and again when winter is beginning; for these trees appear to bear twice. As for *silver-fir* and yew, they flower a little before the solstice; *(the flower of the silver-fir is yellow and otherwise pretty)*; they bear their fruit after the setting of the Pleiad. Fir and Aleppo pine are a little earlier in budding, about fifteen days, but produce their fruit after the setting of the Pleiad, though proportionately earlier than *silver-fir* and yew.

In these trees then the difference of time is not considerable; the greatest difference is shewn in Phoenician cedar holly and kermes-oak; for Phoenician cedar appears to keep its fruit for a year, the new fruit overtaking that of last year; and, according to some, it does not ripen it at all; wherefore men gather it unripe and keep it, whereas if it is left on the tree, it shrivels up. The Arcadians say that the kermes-oak also takes a year to perfect its fruit; for it ripens last year's fruit at the same time that the new fruit appears on it; the result of which is that such trees always have fruit on them. They say also

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3 After ὑστερον Ald. adds ἀνθοδευτι (so also H and G); Plin. 13. 121. omits it; om. W. after Sch.
4 γὰρ Ald.; ὅτε conj. W.
χειμώνοις ἀποβάλλειν. ὁψίκαρπα δὲ σφόδρα καὶ φίλυρα καὶ πύξος. [τὸν δὲ καρπὸν ἄβρωτον ἔχει παντὶ ἵωφ φίλυρα θηλυκρανεία πύξος. ὁψίκαρπα δὲ καὶ κιττός καὶ ἄρκευθος καὶ πεύκη καὶ ἀνδράχλη.] ὡς δὲ οἱ περὶ Ἀρκαδίαν φασίν, ἐτι τούτων ὁψικαρπότερα σχεδόν δὲ πάντων ὁψιαίτερα τετραγωνία θύεια μίλος. αἱ μὲν οὖν τῶν καρπῶν ὑποβολαι καὶ πεπάνσεις τῶν ἁγρίων τουαύτας ἔχουσι διαφόρας οὐ μόνον πρὸς τὰ ἡμέρα ἀλλὰ καὶ πρὸς ἑαυτά.

V. Συμβαίνει δ’ ὅταν ἀρξοίνται βλαστάνειν τὰ μὲν ἄλλα συνεχῇ τὴν τε βλάστησιν καὶ τὴν αὐξησιν ποιεῖσθαι, πεύκην δὲ καὶ ἐλάτην καὶ δρῦν διαλείπειν, καὶ τρεῖς ὀρμᾶς εἶναι καὶ τρεῖς ἀφιέναι βλαστούς, δι’ ὅ ὅταν τρισλοποι. πᾶν γὰρ δὴ δεύδρον ὅταν βλαστάνῃ λοπᾶ. πρῶτον μὲν ἀκρον ἔαρος εὐθὺς ἑσταμένου τοῦ Θαργηλίωνος, ἐν δὲ τῇ Ἰδῇ περὶ πεντεκαίδεκα μάλιστα ἡμέρας. μετὰ δὲ ταῦτα διαλιπόντα περὶ τριάκοντα ἡ μικρὸ πλείους ἐπιβάλλεται πάλιν ἄλλους βλαστοῦς ἀπ’ ἀκρας τῆς κορυνίσεως τῆς ἕπι τὸ προτέρῳ βλαστῶ. καὶ τὰ μὲν ἄνω τὰ δ’ εἰς τὰ πλάγια κύκλῳ ποιεῖται τὴν βλάστησιν, οἷον γόνυ

1 φίλυρα Ald.; φιλυρέα conj. Sch.
2 τὸν δὲ . . . . ἀνδράχλη. Apparently a gloss, W.
3 τετραγωνία conj. Sch. (τετρα- omitted after -τερα): cf. § 2; γωνία MV; γωνίεια U.
4 τῶν ἁγρίων after πεπάνσεις conj. Sch.; after ἡμέρα Ald.
5 Plin. 10. 100.

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that holly loses its fruit owing to the winter. Lime\(^1\) and box are very late in fruiting, (lime has a fruit which no animal can eat, and so have cornel and box. Ivy Phoenician cedar fir and andrachne are late fruiting\(^2\)) though, according to the Arcadians, still later than these and almost latest of all are \textit{tetragonia}\(^3\) odorous cedar and yew. Such then are the differences as to the time of shedding and ripening their fruit between wild\(^4\) as compared with cultivated trees, and likewise as compared with one another.

\textit{Of the seasons of budding.}

V. \(^5\) Now most trees, when they have once begun to bud, make their budding and their growth continuously, but with fir silver-fir and oak there are intervals. They make three fresh starts in growth and produce three separate sets of buds; wherefore also they lose their bark thrice\(^6\) a year. For every tree loses its bark when it is budding. This first happens in mid-spring\(^7\) at the very beginning of the month Thargelion,\(^8\) on Mount Ida within about fifteen days of that time; later, after an interval of about thirty days or rather more, the tree\(^9\) puts on fresh buds which start from the head of the knobby growth\(^10\) which formed at the first budding-time; and it makes its budding partly on the top of this,\(^11\) partly all round it laterally,\(^12\) using the knob formed at the

\(^{1}\) τρισλοιτοι conj. Sch.; τρισλοιτοι \textit{UM}_{2}V; τρισλεποι \textit{M}_{1}\textit{Ald.}
\(\text{cf. 4. 15. 3; 5. 1. 1.}\)

\(^{2}\) ἕαρος conj. R. Const.; ἄεσος \textit{V}\textit{Ald. cf. Plin. l.c.}

\(^{3}\) About May.

\(^{4}\) What follows evidently applies only to the oak.

\(^{5}\) κορυνησέως conj. Sch.; κορύνης \textit{ew} \textit{UMV}; κορυφής \textit{ew} \textit{Ald.}
\(\text{cf. 3. 6. 2.}\)

\(^{6}\) \(\tau à\) add. Sch.
ποιησάμενα τὴν τοῦ πρώτου βλαστοῦ κορώνην, ὥσπερ καὶ ἡ πρώτη βλάστησις ἔχει. γίνεται δὲ τούτῳ περὶ τὸν Σκιρροφορίωνα λήγοντα.

2. Κατὰ δὲ ταύτην τὴν βλάστησιν καὶ ἡ κηκίς φύεται πᾶσα, καὶ ἡ λευκὴ καὶ ἡ μέλαινα. φύεται δὲ ὡς ἐπὶ τὸ πολὺ νυκτὸς ἀθρόος· ἐφ᾽ ἡμέραν δὲ μίαν αὐξηθεῖσα, πλὴν τῆς πιττοειδοῦς, ἐὰν ὑπὸ τοῦ καύματος λῃθῇ ξηραῖνεται, καὶ ἀναυξῆς ἐπὶ τὸ μείζον, ἐγίνετο γὰρ ἂν μείζων τῷ μεγέθει. διόπερ τινὲς αὐτῶν οὐ μείζον ἔχοντες κυάμου τὸ μέγεθος. ἦ δὲ μέλαινα καὶ ἐπὶ πλείους ἡμέρας ἐγχλωρὸς ἔστι, καὶ αὐξάνονται καὶ λαμβανοῦσιν ἐνιαὶ μέγεθος μήλου.

Διαλείποντα δὲ μετὰ τοῦτο περὶ πεντεκαίδεκα ἡμέρας πάλιν τὸ τρίτον ἐπιβάλλεται βλαστοῦς Ἐκατομβαιώνος, ἑλαχίστας ἡμέρας τῶν πρώτερον. ἵσως γὰρ ἐξ ἡ ἐπτὰ τὸ πλείστον· ἦ δὲ βλάστησις ὄμοια καὶ τὸν αὐτὸν τρόπον. παρελθοῦσών δὲ τούτων ὅνκετι εἰς μῆκος ἀλλ᾽ εἰς πάχος ἡ αὐξηθεῖσα τρέπεται.

3. Πάσι μὲν οὖν τοῖς δένδροις αἱ βλαστήσεις φανεραὶ, μάλιστα δὲ τῇ ἐλάτῃ καὶ τῇ πεύκῃ διὰ τὸ στοιχεῖν τὰ γόνατα καὶ ἐξ ἵσου τοὺς ὅζους ἔχειν. ὥρα δὲ καὶ πρός τὸ τέμνεσθαι τὰ ξύλα τότε διὰ τὸ λοπῶν· ἔν γὰρ τοῖς ἄλλοις καϊροῖς οὐκ εὐπεραιρέτος ὁ φλοιός, ἀλλὰ καὶ περιαρεθέντος μέλαν τὸ ξύλον γίνεται καὶ τῇ ὄψιν χεῖρον· ἐπεὶ καὶ πρός γε τὴν χρείαν οὐδέν, ἀλλὰ καὶ

1 About June.
2 cf. 3. 7. 4; 3. 8. 6; Plin. 16. 27.
3 ἐγχλωρὸς conj. Coraës; εἰγχλωρὸς Ald.
4 διαλείποντα conj. St.; διαλείπονται Ald.H.
first budding as a sort of joint, just as in the case of the first budding. This happens about the end of the month Skirrophorion.¹

²(It is only at the time of this second budding that the galls also are produced, both the white and the black; the liquid forming them is mostly produced in quantity at night, and, after swelling for one day—except the part which is of resinous character—it hardens if it is caught by the heat, and so cannot grow any more; otherwise it would have grown greater in bulk; wherefore in some trees the formation is not larger than a bean. The black gall is for several days of a pale green³ colour; then it swells and sometimes attains the size of an apple.)

Then, after an interval ⁴ of about fifteen days, the tree for the third time puts on buds in the month Hekatombaion ⁵; but this growth continues for fewer days than on either of the previous occasions, perhaps for six or seven at most. However the formation of the buds is as before and takes place in the same manner. After this period there is no increase in length, but the only increase is in thickness.

The periods of budding can be seen in all trees, but especially in fir and silver-fir, because the joints of these are in a regular series and have the knots at even distances. It is then the season also for cutting the timber, because the bark is being shed ⁶; for at other times the bark is not easy to strip off, and moreover, if it is stripped off, the wood turns black ⁷ and is inferior in appearance; for as to its utility ⁸ this makes no difference, though the wood

¹ About July.
² λοπάν conj. Sch.; λοπάν U MV; λιπάν Ald.
³ cf. Plin. 16. 74.
⁴ γε conj. Sch.; τε Ald.
Ταῦτα μὲν οὖν ἰδία τῶν προειρημένων δένδρων. αἱ δὲ βλαστήσεις αἱ ἐπὶ Κυνὶ καὶ Ἀρκτοῦρῳ γυνό-μεναι μετὰ τὴν ἑαρμηνήν σχεδὸν κοιναὶ πάντων· ἐνδήλου δὲ μᾶλλον ἐν τοῖς ἡμέροις καὶ τοῦτων μάλιστα συκῆ καὶ ἀμπέλῳ καὶ ἤοι καὶ ὡς ὥσα εὐτραφῆ καὶ ὅπου χώρα τοιαύτη· διὸ καὶ τὴν ἐπ᾽ Ἀρκτοὺρῷ πλείστην φασὶ γίνεσθαι περὶ Θετ- 
ταλίαν καὶ Μακεδονίαν· ἀμα γὰρ συμβαίνει καὶ 
tὸ μετόπωρον καλὸν γίνεσθαι καὶ μακρὸν, ὅστε 
καὶ τὴν μαλακότητα συμβαλλεσθαι τοῦ ἀέρος. 
ἐπεὶ καὶ ἐν Αἰγύπτῳ διὰ τοῦθ᾽ ὡς εἴπειν αἰεὶ 
βλαστάνει τὰ δένδρα, ἦ καὶ μικρὸν τινα διαλείπει 
χρόνον.

Ἀλλὰ τὰ μὲν περὶ τὰς ἐπιβλαστήσεις, ὡσπερ 
εἰρηταί, κοινά, τὰ δὲ περὶ τὰς διαλείψεις ἀπὸ τῆς 
πρώτης ἰδία τῶν λεχθέντων. ἰδιοὺ δὲ ἐνώ 
υπάρχει καὶ τὸ τῆς καλουμένης κάχρυνος, οἷον 
tοὺς [τε] προειρημένους· ἔχει γὰρ καὶ ἑλατή καὶ 
πεύκη καὶ δρῦς, καὶ ἔτι φίλυρα καὶ καρύα καὶ 
dιοσβάλανος καὶ πίτυς. αὐταὶ δὲ γίνονται δρῦ 
μὲν πρὸ τῆς βλαστήσεως υποφανοῦσης τῆς 
ἡμιμης ὄρας. ἐστὶ δὲ ὡς περεῖ κύησις φυλλικῆ 
μεταξὺ πίπτουσα τῆς ἐξ ἀρχῆς ἐποιήθησεως καὶ 
tῆς φυλλικῆς βλαστήσεως· τῇ δ᾽ ὡθ ἐστὶ τοῦ

1 δένδρων conj. R. Const.; καρπῶν Ald. H.
2 cf. C. P. 1. 10. 6; 1. 12. 4; 1. 13. 3; 1. 13. 5; 1. 13. 10; Plin. 16. 98.
3 cf. C. P. 1. 14. 11.
4 cf. 5. 1. 4; Plin. 16. 30.
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is stronger if it is cut after the ripening of the fruit.

Now what has been said is peculiar to the above-mentioned trees. But the buddings which take place at the rising of the dog-star and at that of Arcturus after the spring budding are common to nearly all, though they may be most clearly seen in cultivated trees, and, among these, especially in fig vine pomegranate, and in general in all those that are luxuriant in growth or are growing in rich soil. Accordingly they say that the budding at the rising of Arcturus is most considerable in Thessaly and Macedonia; for it also happens that the autumn in these countries is a fair and a long season; so that the mildness of the climate also contributes. Indeed it is for this reason, one may say, that in Egypt too the trees are always budding, or at least that the process is only suspended for quite a short time.

Now the facts as to the later buddings apply, as has been said, to all trees alike; but those which belong to the intervals after the first period of budding are peculiar to those mentioned above. Peculiar to some also is the growth of what are called 'winter buds,' for instance in the above-mentioned trees; silver-fir fir and oak have them, and also lime hazel chestnut and Aleppo pine. These are found in the oak before the leaf-buds grow, when the spring season is just beginning. This growth consists of a sort of leaf-like formation, which occurs between the first swelling of the leaf-buds and the time when they burst into leaf. In the sorb it

5 ἐστί... φυλλική: ἐστί conj. R. Const.; ὠπερεῖ conj. Sch.; ἐτι δὲ ὠπερ ἡ κύπςας φυλλικῇ UAld. H.; φυλλική mBas. etc.
6 τῇ δ' ὅτι ἐστὶ conj. W. (cf. the description of ὅη, 3. 12. 8); τῇ δ' ἰδιότητι Ald.
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μετοπώρου μετά τὴν φυλλοβολίαν εὐθὺς λιπαρὰ τις καὶ ὄσπερ ἐπωδηκώνια, καθαπεραεῖ μέλλουσα βλαστάνειν, καὶ διαμένει τὸν χειμώνα μέχρι τοῦ ἱρος. δὲ Ἦρακλεωτικὴ μετὰ τὴν ἀποβολήν τοῦ καρποῦ φύει τὸ βοτρυώδες ἥλικον σκώληξ εὐμεγέθης, ἔξ ἐνὸς μύσχου πλεῖον δῆ, ἀ καλοῦσι τινὲς ΙΟΫΛΟΥΣ. τούτων ἐκαστὸν ἐκ μικρῶν σύγκειται μορίων φολιδωτῶν τῇ τάξει, καθάπερ οἱ στροβίλοι τῆς πεύκης, ὡστε μὴ ἀνομοίαν εἶναι τὴν ὅψιν στροβιλῳν νέω καὶ χλωρῳ πλήν προμηκέστερον καὶ σχέδου ἵσοπαχες διόλου. τούτῳ δὲ αὔξεται τὸν χειμώνα· (καὶ ἁμα τῷ ἢρι χάνει τὰ φολιδωτὰ καὶ ξανθὰ γίνεται), καὶ τὸ μῆκος λαμβάνει καὶ τριδάκτυλον· ὅταν δὲ τοῦ ἱρος τὸ φύλλον βλαστάνῃ, ταῦτ' ἀποτίπτει καὶ τὰ τοῦ καρποῦ καλυκόδην περικάρπια γίνεται συμμεμυκότα κατὰ τοῦ μύσχου, τοσαῦτα ὡσα καὶ ἢν τὰ ἁνθῆ· τούτων δ' ἐν ἐκάστῳ καρποῦ ἐν. περὶ δὲ τῆς φιλύρας ἐπισκεπτέον, καὶ εἰ τι ἀλλο καχρυφόρον.

VI. Ἡστὶ δὲ καὶ τὰ μὲν εὐαὐξῆ γὰρ δὲ δυσαυξῆ.

εὐαὐξῆ μὲν τὰ τε πάρυδρα, οἶον πετέλεα πλάτανος λεύκη αὐχειρός ἢτεά· καὶ τοι περὶ ταύτης ἀμφισβητοῦσι τῖνες ὡς δυσαυξουσ' καὶ τῶν καρποφόρων δὲ ἑλάτη πεύκη δρῦς. εὐαὐξέστατον δὲ ... μίλος

1 εὐθὺς λιπαρὰ conj. Sch.; tis add. W.; εὐθὺς αἱ παρὰ τῆς U.
2 φύει conj. W.; φύεται Ald. ∞ i.e. catkins. cf. 3. 3. 8.
3 πλεῖον δῆ conj. Sch.; πλῶδη UMV Ald.; πλεῖονα U ?.
5 cf. 3. 10. 4.
6 συμμεμυκότα κατὰ τοῦ μ.: G evidently had a different text; ? συμπεφυκότα W.

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occurs in the autumn after the shedding of the leaves, and has from the first a glistening look, as though swelling had taken place, just as if it were about to burst into leaves; and it persists through the winter till the spring. The filbert after casting its fruit produces its clustering growth, which is as large as a good-sized grub: several of these grow from one stalk, and some call them catkins. Each of these is made up of small processes arranged like scales, and resembles the cone of the fir, so that its appearance is not unlike that of a young green fir-cone, except that it is longer and almost of the same thickness throughout. This grows through the winter (when spring comes, the scale-like processes open and turn yellow); it grows to the length of three fingers, but, when in spring the leaves are shooting, it falls off, and the cup-like fruit-cases of the nut are formed, closed all down the stalk and corresponding in number to the flowers; and in each of these is a single nut. The case of the lime and of any other tree that produces winter-buds needs further consideration.

Of the comparative rate of growth in trees, and of the length of their roots.

VI. Some trees are quick-growing, some slow. Quick-growing are those which grow by the waterside, as elm plane abele black poplar willow; (however some dispute about the last-named, and consider it a slow grower :) and of fruit-bearing trees, silver-fir fir oak. Quickest growing of all are ... yew lakaru

7 ὅσα καὶ ἥν τὰ ἄνθη conj. W.; ὅσα καὶ κατὰ ἄνθη Ald.
8 Lacuna in text (Sch.W.). The following list of trees also appears to be in confusion, and includes some of both classes.
καὶ λάκαρα φηγὸς ἀρκευθὸς σφένδαμνος ὀστρυα χυγία μελιὰ κλήθρα πῖτυς ἀνδράχλη κρανεία πύξος ἄχρας. καρποφορεῖ δ' εὕθὺς ἐλάτη πεύκη πῖτυς, καὶ ὀπηλικοῦνοι μέγεθος λάβωσιν.

2 'Η δὲ αὐξησις καὶ ἡ βλαστησις τῶν μὲν ἄλλων ἀτακτὸς κατὰ τοὺς τόπους τῶν βλαστῶν, τῆς δ' ἐλάτης ὑρισμένη καὶ συνεχὴς καὶ ύστερον. ὅταν γὰρ ἐκ τοῦ στελέχους τὰ πρῶτα σχισθῆ, πάλιν ἐξ ἑκεῖνου ἡ ἕτερα σχίσις γίνεται κατὰ τὸν αὐτὸν τρόπον, καὶ τοῦτ' αἰε ποιεῖ κατὰ πάσας τὰς ἐπι- βλαστήσεις. ἐν δὲ τοῖς ἄλλοις οὐδ' οἱ ὄξοι κατ' ἀλλήλους πλην ἐπὶ τινῶν ὅλιγων, οἱ δὲν κοτῖνος καὶ ἄλλων' ἔχει δὲ καὶ τῇ διαφορὰν ἡ αὐξήσις κοινῆ πάντων ὁμοίως ἡμέρων τε καὶ ἀγρίων· τὰ μὲν γὰρ καὶ ἐκ τοῦ ἄκρου τῶν βλαστῶν καὶ ἐκ τῶν πλαγίων φύεται, καθάπερ ἄπιος ὑφα συκῆ μύρρινος σχεδὸν τὰ πλείστα· τὰ δ' ἐκ τοῦ ἄκρου μὲν οὐκ ἀνύησιν ἐκ δὲ τῶν πλαγίων, καὶ αὐτὸ προωθεῖται τὸ ὑπάρχον, ὡσπερ καὶ τὸ ὅλον στέ- λεχος καὶ οἱ ἄκρεμόνες. συμβαύνει δὲ τούτῳ ἐπὶ τῆς Περσικῆς καρύας καὶ τῆς Ἰρακλεωτικῆς καὶ ἄλλων. ἀπάντων δὲ τῶν τοιούτων εἰς ἐν φύλλον ἀποτελευτῶσιν οἱ βλαστοὶ, δι' ὁ καὶ εὐλόγως οὐκ ἐπιβλαστάνει καὶ αὐξάνεται μὴ ἔχοντα ἀρχήν. ὁμοία δὲ τρόπον τινὰ ἡ αὐξήσις καὶ τοῦ σιτοῦ.

1 κατὰ . . . βλαστῶν conj. W.; κατὰ τοὺς τρόπους (corrected to τόπους) καὶ βλαστῶν U; MVP insert τοὺς before βλαστῶν.
2 ἑκεῖνον . . . κατὰ conj. W.; ἑκεῖνον ἡ ἕτερα σχίζεται τὰ ίσο καὶ ΟAlD.
3 ἄλλων : ? ἐλάας W.; I suggest ἄλλων ἐλαῶν.
(bird-cherry) Valonia oak Phoenician cedar maple hop-hornbeam zygia manna-ash alder Aleppo pine andrachne cornelian cherry box wild pear. But silver-fir and Aleppo pine bear fruit from the very first, whatever size they have attained.

While the growth and budding of most trees are irregular as regards the position in which the buds appear,¹ the growth and budding of the silver-fir follow a regular rule, and its development afterwards is also in a regular sequence. For, when the trunk first divides, then again from the divided trunk the second division ² takes place in like manner, and so the tree goes on with each fresh formation of buds. In other trees not even the knots are opposite to one another, except in some few cases, as wild olive and others.³ Here too we find a difference in the manner of growth which belongs to all trees alike, both cultivated and wild: in some cases the growth is from the top of the shoots and also from the side-buds,⁴ as in pear pomegranate fig myrtle and the majority of trees, one may say: in some cases the growth is not from the top, but only from the side-buds, and the already existing part is pushed out ⁵ further, as is the whole trunk with the upper branches. This occurs in the walnut and in the filbert as well as in other trees. In all such trees the buds end in a single leaf ⁶; wherefore it is reasonable that they should not make fresh buds and growth from this point, as they have no point of departure. (To a certain extent the growth of corn is similar; for it

⁴ ἐκ τοῦ ... πλαγίων: ἐκ τοῦ ἄκρου καὶ ἐκ τῶν πλαγίων βλαστῶν. cf. 3. 5. 1.
⁵ i.e. grows without dividing. cf. Plin. 16. 100. (of different trees).
⁶ φύλλων perhaps conceals some other word.
καὶ γὰρ οὕτως ἡ ἐν τῇ προώσει τοῦ ὑπάρχοντος αὐξάνεται, καὶ κολοβωθῇ τὰ φύλλα, καθάπερ ἐν τοῖς ἐπιβοσκομένοις· πλὴν οὕτως γε οὐκ ἐκ τοῦ πλαγίου παραφύει, καθάπερ ἐνια τῶν χεδροπῶν.) αὕτη μὲν οὖν διαφορά τις ἀν εἶη βλαστήσεως ἀμα καὶ αὐξήσεως.

4 Βαθύρριζα δὲ οὐ φασὶν τινες εἰσὶν τὰ ἀγρία διὰ τὸ φύσθαι πάντα ἀπὸ σπέρματος, οὐκ ἄγαν ὅρθως λέγοντες. ἐνδεχεται γὰρ ὅταν ἐμβιώσῃ πόρρῳ καθέναι τὰς ρίζας· ἐπεὶ καὶ τῶν λαχάνων τὰ πολλὰ τοῦτο ποιεῖ, καὶ πέρ ἁσθενέστερα ὑντα καὶ ἐναργῶς φυόμενα <ἐν> τῇ γῇ. Βαθυρρίζοτατον δὲ οὖν δοκεῖ τῶν ἀγρίων εἰσὶν ἡ πρίνος· ἐλάτη δὲ καὶ πεύκη μετρίας, ἐπιπολαιότατον δὲ θραύσαλος καὶ κοκκυμηλέα καὶ σποδιάς· αὕτη δὲ ἐστὶν ὄσπερ ἀγρία κοκκυμηλέα. ταῦτα μὲν οὖν καὶ ὅληγόρριζα· ὁ δὲ θραύσαλος πολύρριζον. συμβαίνει δὲ τοῖς ἄλλοις τοῖς μὴ κατὰ βάθους ἔχουσι, καὶ οὖχ ἕκιστα ἐλάτη καὶ πεύκη, προρρίζοις ύπὸ τῶν νυμμάτων ἐκτύπτειν.

5 Οἱ μὲν οὖν περὶ Ἀρκαδίαν οὕτω λέγουσιν. οἱ δὲ εἰς τῆς Ἰδῆς Βαθυρρίζοτερον ἐλάτην ὅρνος ἄλλη ἐλάττους ἔχειν καὶ εὐθυρρίζοτέραν εἶναι· Βαθυρρίζοτατον δὲ καὶ τὴν κοκκυμηλέαν καὶ τὴν Ἡρακλεωτικὴν, τὰς δὲ ρίζας λεπτὰς καὶ ἰσχυρὰς τὴν Ἡρακλεωτικὴν, τὴν δὲ κοκκυμηλέαν πολύρριζον, ἀμφοὶ δὲ ἐμβιώσαι δεῖς· δυσώλεθρον δὲ τὴν κοκκυμηλέαν. ἐπιπολῆς δὲ σφενδάμνον καὶ
also regularly increases by pushing forward of the already existing part, even if the leaves are mutilated, as in corn which is bitten down by animals. Corn however does not make side-growth, as some leguminous plants do.) Here then we may find a difference which occurs both in the making of buds and in the making of fresh growth.

Some say that wild trees are not deep rooting, because they all grow from seed; but this is not a very accurate statement. For it is possible that, when they are well established, they may send their roots down far; in fact even most pot-herbs do this, though these are not so strong as trees, and are undoubtedly grown from seed planted in the ground. The kermes-oak however seems to be the deepest rooting of wild trees; silver-fir and fir are only moderately so, and shallowest are joint-fir plum bullace (which is a sort of wild plum). The last two also have few roots, while joint-fir has many. Trees which do not root deep, and especially silver-fir and fir, are liable to be rooted up by winds.

So the Arcadians say. But the people who live near Mount Ida say that the silver fir is deeper rooting than the oak, and has straighter roots, though they are fewer. Also that those which have the deepest roots are plum and filbert, the latter having strong slender roots, the former having many: but they add that both trees must be well established to acquire these characters; also that plum is very tenacious of life. Maple, they say,
ολίγας· τήν δὲ μελίαν πλείους καὶ εἶναι πυκνόρριζον καὶ βαθύρριζον. ἐπιτολὴς δὲ καὶ ἄρκευθον καὶ κέδρον· καὶ κλήθρας λεπτὰς καὶ ὀμαλεῖς· ἐτι δ' ὀξύνυ καὶ γὰρ τοῦτ' ἐπιτολαιόρριζον καὶ ὀλυγόρριζον. τὴν δὲ οὖν ἐπιτολαίονς μὲν ἴσχυρας δὲ καὶ παχείας καὶ δυσωλέθρους πλήθει δὲ μετρίας. βαθύρριζα μὲν οὖν καὶ οὗ βαθύρριζα τὰ τοιαύτ' ἐστίν.

VII. ' Ἀποκοπέντος δὲ τοῦ στελέχους τὰ μὲν ἀλλὰ πάνθ' ὡς εἰπεῖν παραβλαστάνει, πλὴν ἐὰν αἱ ρίζαι πρότερον τύχωσι πεπονηκυίαι· πεύκη δὲ καὶ ἐλάτη τελέως ἐκ ρίζῶν αὐτοτείς αὐταίνονται καὶ ἐὰν τὸ ἄκρον ἐπικοπῇ. συμβαίνει δὲ ἢδιον τι περὶ τὴν ἐλάτην· ὅταν γὰρ κοπῇ ἡ κολουσθῇ ὑπὸ πνεύματος ἢ καὶ ἄλλου τινὸς περὶ τὸ λείον τοῦ στελέχους—ἐχει γὰρ μέχρι τινὸς λειοῦν καὶ ἁοξον καὶ ὀμαλὸν ἰκανὸν ἱστῳ πλοίου—περιφύται μικρόν, ὑποδέστερον εἰς ψύγοις, καὶ καλοῦσιν οἱ μὲν ἄμφαυξιν οἱ δὲ ἄμφιφυαν, τῷ μὲν χρόματι μέλαι τῇ δὲ σκληρότητι ὑπερβάλλον, εξ οὗ τοὺς κρατήρας ποιοῦσιν οἱ περὶ Ἀρκαδίαν· τὸ δὲ πάχος οἰον ἀν τύχῃ τὸ δένδρον, ὀσφυτερὸν ἀν ἰσχυρότερον καὶ ἐγχυλότερον ἢ παχύτερον. συμβαίνει δὲ κάκεινο ἢδιον ἐν ταύτῳ τοῦτῳ περὶ

1 σφ. καὶ ὀλίγας conj. W.; σφ. κατ' ὀλίγον UMVAld.
2 i.e. not very fibrous.
3 cf. Hdt. 6. 37, and the proverb πίτυος τρόπον ἐκτρίβεσθαι.
4 ὀμαλὸν conj. Scal.; ὀμαίον Ald.
5 ἰκανὸν ἱστῳ πλοίου conj. W.; ἡ καὶ ἡλίκον πλείων Ald.; at UH, but with πλοίον.

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has shallow roots and few of them\(^1\); but manna-ash
has more and they are thickly matted and run
deep; Phoenician cedar and prickly cedar, they say,
have shallow roots, those of alder are slender and
plain,\(^2\) as also are those of beech; for this too has
few roots, and they are near the surface. Sorb, they
say, has its roots near the surface, but they are
strong and thick and hard to kill, though not very
numerous. Such are the trees which are or are
not deep-rooting.

*Of the effects of cutting down the whole or part of a tree.*

VII. Almost all trees shoot from the side if the
trunk is cut down, unless the roots have previously
been injured; but fir and silver-fir wither away\(^3\)
completely from the roots within the year, if merely
the top has been cut off. And there is a peculiar
thing about the silver-fir; when it is topped or
broken off short by wind or some other cause
affecting the smooth part of the trunk—for up to a
certain height the trunk is smooth knotless and
plain\(^4\) (and so suitable for making a ship’s mast\(^5\)),—
a certain amount of new growth forms round it,
which does not however grow much vertically; and
this is called by some *amphauxis*\(^6\) and by others
*amhiphya*\(^6\); it is black in colour and exceedingly
hard, and the Arcadians make their mixing-bowls
out of it; the thickness is in proportion\(^7\) to the tree,
according as that is more or less vigorous and sappy,
or again according to its thickness. There\(^8\) is this
peculiarity too in the silver-fir in the same connexion;

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\(^6\) Two words meaning ‘growth about,’ *i.e.* *callus.*

\(^7\)  *oioi* \*conj. W.;  *oioi* \*Ald.;  *oioi* \*conj. Scal.

\(^8\) Plin. 16. 123.
3. Φέρει δὲ τὰ μὲν ἄλλα τὸν τε καρπὸν τὸν ἑαυτῶν καὶ τὰ κατ’ ἐνιαυτὸν ἐπιγινόμενα ταῦτα, φύλλον ἄνθος βλαστόν· τὰ δὲ καὶ βρύων ἡ ἑλικα· τὰ δὲ πλείω, καθάπερ ἢ τε πτελέα τὸν τε βότρυν καὶ τὸ θυλακῶδες τοῦτο, καὶ συκή καὶ τὰ ἑρινά τὰ προαποπίπτοντα καὶ εἰ τινὲς ἢρα τῶν συκῶν ὀλυνθοφοροῦσιν. ἵσως δὲ τρόπων τινὰ καρπὸς οὖτος. ἀλλ’ ἡ Ἡρακλεωτική καρύα τὸν ίουλον καὶ ἡ πρίνος τὸν φοινικοῦν κόκκον ἢ δέ δάφνη τὸ βότρυν. φέρει μὲν καὶ ἡ καρποφόρος, εἰ μὴ καὶ πᾶσα ἄλλα τοι γένος τι αὐτῆς, οὐ μὴν ἄλλα πλέον ἢ ἀκαρπος, ἢν δὴ καὶ ἄρρενα τινὲς καλοῦ· σιν. ἀλλ’ ἡ πεύκη τὸν προαποπίπτοντα κύτ· ταρον.

4. Πλεῖστα δὲ πάντων ἡ δρῦς παρὰ τὸν καρπὸν, οἷον τῆν τε κηκίδα τῆν μικρὰν καὶ τῆν ἐτέραν

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1 i.e. and so does not, like other trees under like treatment, put its strength into these. cf. C.P. 5. 17. 4.
2 ἑαυτῶν conj. Sch. from G; αὐτὰν Ald.
3 The leaf-gall, cf. 2. 8. 3; 3. 14. 1. For τοῦτο cf. 3. 18. 11; 4. 7. 1.
4 Lat. grossi. cf. C.P. 5. 1. 8.
5 τινὰ καρπὸς conj. Sch.; τινὰ ἀκαρπός U.Ald.
when, after taking off all the branches, one cuts off the top, it soon dies; yet, when one takes off the lower parts, those about the smooth portion of the trunk, what is left survives, and it is on this part that the amphaiaxis forms. And plainly the reason why the tree survives is that it is sappy and green because it has no side-growths. Now this is peculiar to the silver-fir.

Of other things borne by trees besides their leaves flowers and fruit.

Now, while other trees bear merely their own fruit and the obvious parts which form annually, to wit, leaf flower and bud, some bear also catkins or tendrils, and some produce other things as well, for instance the elm its ‘cluster’ and the familiar bag-like thing, the fig both the immature figs which drop off and (in some kinds) the untimely figs—though perhaps in a sense these should be reckoned as fruit. Again filbert produces its catkin, kermes-oak its scarlet ‘berry,’ and bay its ‘cluster.’ The fruit-bearing sort of bay also produces this, or at all events one kind certainly does so; however the sterile kind, which some call the ‘male,’ produces it in greater quantity. The fir again bears its ‘tuft,’ which drops off.

The oak however bears more things besides its fruit than any other tree; as the small gall and its
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τὴν πιττώδη μέλαιναν. ἐτὶ δὲ συκαμινώδες ἄλλο τῇ μορφῇ πλὴν σκληρόν καὶ δυσκάτακτον, σπάνιον δὲ τούτο· καὶ ἔτερον αἰδοιώδη σχέσιν ἔχου, τελειούμενον δ’ ἐτὶ σκληρὸν κατὰ τὴν ἐπανάστασιν καὶ πετρυσμένον προσεμφερές τρόπον τινὰ τούτ’ ἐστὶ καὶ ταύρου κεφαλῆ, περικαταγνύμενον δὲ ἐνδοθέν ἔχει πυρῆνος ἐλάας ἱσοφυές. φύει δὲ καὶ τὸν ὑπ’ ἐνίων καλούμενον πῖλον τοῦτο δ’ ἐστὶ σφαιρίον ἐρίωδες μαλακὸν περὶ πυρῆνον σκληρότερον πεφυκός, ὥς χρῶνται πρὸς τοὺς λύχνους: καίεται γὰρ καλῶς, ὀστέρη καὶ ἡ μέλαινα κηκίς. φύει δὲ καὶ ἔτερον σφαιρίον κόμην ἔχου, τὰ μὲν ἄλλα ἀχρείουν, κατὰ δὲ τὴν ἑαρινήν ὥραν ἐπίβαπτον χυλῷ μελιτηρῷ καὶ κατὰ τὴν ἀφήν καὶ κατὰ τὴν γεύσιν.

5 Παραφύει δ’ ἐνδοτέρω τῆς τῶν ῥαβδῶν μασχαλίδος ἔτερον σφαιρίον ἀμισχον ἡ καὶ κοιλόμισχον ἵδιον καὶ ποικίλον· τοὺς μὲν γὰρ ἐπανεστηκότας ὀμφαλοὺς ἐπιλεύκουν ἡ ἐπεστηγμένους ἔχει μέλαινας τὸ δ’ ἀνὰ μέσον κοκκοβαφὲς καὶ λαμπρὸν ἀνουγόμενον δ’ ἐστὶ μέλαν καὶ ἐπίσαπτον. σπάνιον δὲ παραφύει καὶ λιθάριον κισσηροειδὲς ἐπὶ πλείουν. ἐτὶ δ’ ἄλλο τούτον σπαναίτερον φυλλικοῦ συμπεπιλημένου πρόμηχες σφαιρίον. ἐπὶ δὲ τοῦ φύλλου φύει κατὰ τὴν ράχιν σφαιρίον λευκῶν διαγγές υδατῶδες, ὅταν ἀπαλόν ἠ’ τοῦτο δὲ καὶ

1 πυρῆνος ἐλάας ἱσοφυές conj. W.; πυρῆνος ἐλαία εἰρουφυήν UMV; πυρῆνα ἐλαία εἰρουφυήν Ald.
2 περὶ πυρήνων σκληρότερον I conj.; περὶ πυρήνων σκληρότερα U; περὶ πυρηνίων σκληρότερον M; περὶπυρήνων σκληρότερον VAld. W. prints the reading of U. For πῖλος see Index.
other black resinous gall. Again it has another growth, like a mulberry in shape, but hard and difficult to break; this however is not common. It has also another growth like the penis in shape, which, when it is further developed, makes a hard prominence and has a hole through it. This to a certain extent resembles also a bull’s head, but, when split open, it contains inside a thing shaped like the stone of an olive.\(^1\) The oak also produces what some call the ‘ball’; this is a soft woolly spherical object enclosing a small stone which is harder,\(^2\) and men use it for their lamps; for it burns well, as does the black gall. The oak also produces another hairy ball, which is generally useless, but in the spring season it is covered with a juice which is like honey both to touch and taste.

\(^3\) Further the oak produces right inside the axil\(^4\) of the branches another ball with no stalk or else\(^5\) a hollow one; this is peculiar and of various colours: for the knobs which arise on it are whitish or black and spotted,\(^6\) while the part between these is brilliant scarlet; but, when it is opened, it is black and rotten.\(^7\) It also occasionally produces a small stone which more or less resembles pumice-stone; also, less commonly, there is a leaf-like ball, which is oblong and of close texture. Further the oak produces on the rib of the leaf a white transparent ball, which is watery, when it is young; and this sometimes con-

\(^3\) Plin. 16. 29.
\(^4\) εὐδοτέρω . . μασχαλίδος conj. R. Const.; ἐντερίωνας τῶν ἰνατῶν μασχαλίδας UAld. Plin., l.c., gignunt et alae ramorum eius pilulas.
\(^5\) ἡ ins. St.
\(^6\) Plin., l.c., nigra varietate dispersa.
\(^7\) ἐπισακρον; Plin., l.c., has apertis amara inanitas est whence εἵπικρον conj. Sch.
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μύας ἐνίοτε ἐνδὸν ἵσχει. τελειούμενοι δὲ σκληρῶς ῥύνεται κηκίδος μικρᾶς λείας τρόπουν.

Ἡ μὲν οὖν δρῦς τοσαύτα φέρει παρὰ τὸν καρπὸν. οἱ γὰρ μύκητες ἀπὸ τῶν ρίζων καὶ παρὰ τὰς ρίζας φυόμενοι κοινοὶ καὶ ἐτέρων εἶσιν. ὡσαύτως δὲ καὶ ἡ ἱζία· καὶ γὰρ αὐτῇ φύεται καὶ ἐν ἄλλοις· ἀλλ' οὐδὲν ἦττον, ὡσπερ ἐλέχθη, πλειστοφόρον ἐστίν· εἰ δὲ γε δὴ καθ' Ἡσίοδον φέρει μέλι καὶ μελίττας, ἐτί μᾶλλον· φαίνεται δ' οὖν καὶ ὁ μελιτώδης οὕτος χυλὸς ἐκ τοῦ ἀέρος ἐπὶ ταύτης μάλιστα προσίζειν. φασὶ δὲ καὶ ὅταν κατακαυθῇ γίνεσθαι λίτρον ἐξ αὐτῆς. ταύτα μὲν οὖν ἰδία τῆς δρυός.

VIII. Πάντων δὲ, ὡσπερ ἐλέχθη, τῶν δευδρών ὃς καθ' ἐκαστὸν γένος λαβεῖν διαφοραί πλείους εἰσίν· ἡ μὲν κοινὴ πᾶσιν, ἦ διαιροῦσι τὸ θῆλυ καὶ τὸ ἄρρεν, ὡν τὸ μὲν καρποφόρον τὸ δὲ ἀκάρπον ἐπὶ τινων. ἐν οἷς δὲ ἀμφοῖ καρποφόρα τὸ θῆλυ καλλικαρπότερον καὶ πολυκαρπότερον· πλὴν οἷς ταύτα καλούσιν ἄρρενα, καλούσι γὰρ τινες· παραπλησία δ' ἡ τοιαύτη διαφορὰ καὶ ὡς τὸ ἧμερον διήρηται πρὸς τὸ ἁγριον. έτέρα δὲ κατ' εἰδοὺς αὐτῶν τῶν ὁμογενῶν· ὑπὲρ ὧν λεκτέον ἃμα συνεμφαίνοντας καὶ τὰς ἰδίας μορφὰς τῶν μῆ λανερῶν καὶ γνωρίμων.

3 Plin. 16. 16. 4 λεκτέον add. Sch.

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tains flies: but as it develops, it becomes hard, like a small smooth gall.

Such are the growths which the oak produces as well as its fruit. For as for the fungi\(^1\) which grow from the roots or beside them, these occur also in other trees. So too with the oak-mistletoe; for this grows on other trees also. However, apart from that, the oak, as was said, produces more things than any other tree; and all the more so if, as Hesiod\(^2\) says, it produces honey and even bees; however, the truth appears to be that this honey-like juice comes from the air and settles on this more than on other trees. They say also that, when the oak is burnt, nitre is produced from it. Such are the things peculiar to the oak.

Of ‘male’ and ‘female’ in trees: the oak as an example of this and other differences.

VIII. \(^3\) Taking, as was said, all trees according to their kinds, we find a number of differences. Common to them all is that by which men distinguish the ‘male’ and the ‘female,’ the latter being fruit-bearing, the former barren in some kinds. In those kinds in which both forms are fruit-bearing the ‘female’ has fairer and more abundant fruit; however some call these the ‘male’ trees—for there are those who actually thus invert the names. This difference is of the same character as that which distinguishes the cultivated from the wild tree, while other differences distinguish different forms of the same kind; and these we must discuss,\(^4\) at the same time indicating the peculiar forms, where these are not\(^5\) obvious and easy to recognise.

\(^{5}\) \(\mu\eta\) conj. St.; \(\mu\eta\tau\varepsilon\) Ald.H.
2 Δρυὸς δὴ γένη—ταύτην γὰρ μάλιστα διαιροῦσι· καὶ ἕνιοὶ γε εὐθὺς τὴν μὲν ἡμερον καλοῦσι τὴν δ' ἀγρίαν οὺ τῇ γλυκύτητι τοῦ καρποῦ διαιροῦντες· ἐπεὶ γλυκύτατος γε ὁ τῆς φηγοῦ, ταύτην δ' ἀγρίαν ποιοῦσιν· ἄλλα τῷ μᾶλλον ἐν τοῖς ἑργα- σίμοις φύεσθαι καὶ τὸ ἕύλον ἔχειν λειότερον, τὴν δὲ φηγὸν τραχὺ καὶ ἐν τοῖς ὅρεινοις—γένη μὲν οὐν οἱ μὲν τέτταρα ποιοῦσιν οἱ δὲ πέντε. διαλλάσσουσι δ' ἐνια τοῖς ὀνόμασιν, οἶνον τὴν τὰς γλυκείας φέρουσαν οἱ μὲν ἡμερίδα καλοῦντες οἱ δ' ἐτυμῳδρυν. ὀμοίως δὲ καὶ ἐπ' ἄλλων. ὡς δ' οὖν οἱ περὶ τὴν 'Ιδην διαιροῦσι, τάδ' ἐστὶ τὰ εὐδη· ἡμερίς αἰγίλωψ πλατύφυλλος φηγὸς ἄλφλοιος· οἱ δὲ εὐθύφλοιον καλοῦσιν. κάρπιμα μὲν πάντα· γλυκύτατον δὲ τὰ τῆς φηγοῦ, καθάπερ εἰρηται, καὶ δεύτερον τὰ τῆς ἡμερίδος, ἐπειτα τῆς πλατυ- φύλλου, καὶ τέταρτον η ἄλφλοιος, ἐσχατον δὲ καὶ πικρότατον ἡ αἰγίλωψ. οὐχ ἀπασαι δὲ γλυκείαι ἐν τοῖς γένεσιν ἄλλ' ἐνίοτε καὶ πικραί, καθάπερ ἡ φηγός. διαφέρουσι δὲ καὶ τοῖς μεγέθεσι καὶ τοῖς σχῆμασι καὶ τοῖς χρώμασι τῶν βαλανῶν. ἱδιον δὲ ἔχουσιν ἡ τε φηγός καὶ ἡ ἄλφλοιος· ἀμφότεραι γὰρ παραλιθάζουσιν ἐν τοῖς ἄρρεσι καλουμένοις ἐξ ἄκρων τῶν βαλανῶν ἑκατέρωθεν, αἱ μὲν πρὸς τῷ κελύφει αἱ δὲ πρὸς

1 Plin. 16. 16 and 17.
2 See Index, δρῦς and ἡμερίς. ἡμερίς, lit. 'cultivated oak.'
3 Plin. 16. 20.

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Take then the various kinds of oak; for in this tree men recognise more differences than in any other. Some simply speak of a cultivated and a wild kind, not recognising any distinction made by the sweetness of the fruit; (for sweetest is that of the kind called Valonia oak, and this they make the wild kind), but distinguishing the cultivated kind by its growing more commonly on tilled land and having smoother timber, while the Valonia oak has rough wood and grows in mountain districts. Thus some make four kinds, others five. They also in some cases vary as to the names assigned; thus the kind which bears sweet fruit is called by some *hemeris*, by others *true oak*. So too with other kinds. However, to take the classification given by the people of Mount Ida, these are the kinds: *hemeris* (gall-oak), *aigilops* (Turkey-oak), *broad-leaved* oak (scrub oak), Valonia oak, sea-bark oak, which some call *straight-barked* oak. All these bear fruit; but the fruits of Valonia oak are the sweetest, as has been said; second to these those of *hemeris* (gall-oak), third those of the *broad-leaved* oak (scrub oak), fourth sea-bark oak, and last *aigilops* (Turkey-oak), whose fruits are very bitter. However the fruit is not always sweet in the kinds specified as such; sometimes it is bitter, that of the Valonia oak for instance. There are also differences in the size shape and colour of the acorns. Those of Valonia oak and sea-bark oak are peculiar; in both of these kinds on what are called the *male* trees the acorns become stony at one end or the other; in one kind this hardening takes place in the end which is

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1 Plin. 16. 19-21.
2 obx . . . ενλοτε conj. W.; text defective in Ald.H.
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αὐτῇ τῇ σαρκί. δι' ὃ καὶ ἀφαιρεθέντων ὁμοία γίνεται κοιλώματα τοῖς ἐπὶ τῶν ζώων.

4 Διαφέρουσι δὲ καὶ τοῖς φύλλοις καὶ τοῖς στελέχεσι καὶ τοῖς ἐξύλοις καὶ τῇ ὄλῃ μορφῇ. ἢ μὲν γὰρ ἡμερίς οὐκ ὀρθοφυής οὐδὲ λεία οὐδὲ μακρά: περίκομος γὰρ ἡ φυτεία καὶ ἐπεστραμμένη καὶ πολυμάσχαλος, ὡστε ὦζώδη καὶ βραχεῖαν γίνεσθαι: τὸ δὲ ἐξύλον ἵσχυρον μὲν ἀσθενέστερον δὲ τῆς φηγοῦ τούτῳ ἵσχυρότατον καὶ ἁσαπέστατον. οὐκ ὀρθοφυής δὲ οὐδ' αὐτὴ ἀλλ' ἵττον ἐτὶ τῆς ἡμερίδος, τὸ δὲ στελέχος παχύτατον, ὡστε καὶ τὴν ὄλην μορφὴν βραχείαν εἶναι. καὶ γὰρ ἡ φυτεία περίκομος καὶ ταύτη καὶ οὐκ εἰς ὀρθόν. ἢ δὲ αὐγίλωψ ὀρθοφυέστατον καὶ ὑψηλότατον καὶ λειότατον καὶ τὸ ἐξύλον εἰς μῆκος ἵσχυρότατον. οὐ φύεται δὲ ἐν τοῖς ἐργασίμοις ἡ σπανίως.

5 'Η δὲ πλατύφυλλος δεύτερον ὀρθοφυίᾳ καὶ μῆκει, πρὸς δὲ τὴν χρείαν τὴν οἰκοδομικὴν χειριστὸν μετὰ τὴν ἀλίφλοιον, φαύλον δὲ καὶ εἰς τὸ καῖειν καὶ ἄνθρακευεῖν, ὡσπερ καὶ τὸ τῆς ἀλιφλοίου, καὶ θριπτηδέστατον μετ' ἐκείνην ἢ γὰρ ἀλίφλοιος παχύ μὲν ἔχει τὸ στελέχος χαῦνον δὲ καὶ κοῖλον ἐὰν ἔχῃ πάχος ὡς ἐπὶ τὸ πολὺ, δι' ὃ καὶ ἄχρειον εἰς τὰς οἰκοδομάς· ἐτὶ δὲ σύπτεται τάχιστα: καὶ γὰρ ἐνυγρόν ἐστὶ τὸ δεύτερον· δι' ὃ καὶ κοίλη γίνεται. ἑασῑ δὲ τινὲς οὔθ' ἐγκάρδιον εἶναι μόνη. λέγονσιν ὡς καὶ κεραυνοβλήτες αὐταὶ μόναι γίνονται καἰπερ ὑψος οὐκ ἐχοῦσαι

1 ι.ε. at the 'top' end; πρὸς: ἐν, πρὸς being repeated by mistake.
2 ζώων MSS.; ὀῶν conj. Palm.  3 Plin. 16. 22.
attached to the cup, in the other in the flesh itself.\(^1\)
Wherefore, when the cups are taken off, we find a cavity like the visceral cavities in animals.\(^2\)

\(^3\) There are also differences in leaves trunk timber and general appearance. *Hemeris* (gall-oak) is not straight-growing nor smooth nor tall, for its growth is very leafy \(^4\) and twisted, with many side-branches, so that it makes a low much-branched tree: its timber is strong, but not so strong as that of the Valonia oak, for that is the strongest and the least liable to rot. This \(^5\) kind too is not straight-growing, even less so than the *hemeris* (gall-oak), but the trunk is very thick, so that the whole appearance is stunted; for in growth this kind too is very leafy \(^4\) and not erect. The *aigilops* (Turkey oak) is the straightest growing and also the tallest and smoothest, and its wood, cut lengthways, is the strongest. It does not grow on tilled land, or very rarely.

The 'broad-leaved' oak (scrub oak) \(^6\) comes second as to straightness of growth and length of timber to be got from it, but for use in building it is the worst next after the sea-bark oak, and it is even poor wood for burning and making charcoal, as is also that of the sea-bark oak, and next after this kind it is the most worm-eaten. For the sea-bark oak has a thick trunk, but it is generally spongy and hollow when it is thick; wherefore it is useless for building. Moreover it rots very quickly, for the tree contains much moisture; and that is why it also becomes hollow; and some say that it is the only \(^7\) oak which has no heart. And some of the Aeolians say that these are the only oaks which are struck by light-

\(^1\) i.e. of bushy habit. Plin. 16. 23 and 24.  
\(^2\) αὐτὴ conj. Sch.; αὐτὴ Ald.  
\(^3\) μόνη conj. St.; μόνη Ald. H.
Κηκίδας δὲ πάντα φέρει τὰ γενή, μόνη δὲ εἰς τὰ δέρματα χρησίμην ἢ ἡμερίν. ἢ δὲ τῆς αἰγίλωπος καὶ τῆς πλατυφύλλου τῇ μὲν ὅψει παρομοία τῇ τῆς ἡμερίδος, πλῆν λειστέρα, ἀχρείος δὲ. φέρει καὶ τὴν ἐτέραν τὴν μέλαιναν ἢ τὰ ἔρια βάπτουσιν. ὃ δὲ καλοῦσι τινας φάσκον ὁμοιον τοῖς βακίοις ἢ αἰγίλωψι μόνη φέρει πολιόν καὶ τραχυ καὶ γὰρ πηχυαῖον κατακρεμάννυται, καθάπερ τρύχος ὀθονίον μακρόν. φύεται δὲ τούτο ἐκ τοῦ φλοιοῦ καὶ οὐκ ἐκ τῆς κορύνης οὔθεν ἢ βάλανος, οὔδ' ἐξ ὀφθαλμοῦ ἀλλ' ἐκ τοῦ πλαγίου τῶν ἀνωθεν ὤξων. ἢ δ' ἀλίφλοιος ἐπὶ-μελαν τούτο φύει καὶ βραχύ.

Οἱ μὲν οὖν ἐκ τῆς Ἰδησ οὕτως διαιροῦσιν. οἱ δὲ περὶ Μακεδονίαν τέτταρα γένη ποιοῦσιν, ἐτυμόδρυν ἢ τὰς γλυκείας, πλατυφυλλοῦ ἢ τὰς πικρᾶς, φηγοῦ ἢ τὰς στρογγυλᾶς, ἁστρῶν—ταύτην δὲ οἱ μὲν ἀκαρπὸν ὄλως οἱ δὲ φαύλος τῶν καρπῶν, ὡστε μηδὲν ἐσθίειν ἥρων πλην ύσι, καὶ ταύτην ὅταν ἐτέραν μὴ ἔχη καὶ τὰ πολλά λαμβάνεσθαι περικεφαλαία. μοχθηρᾷ δὲ καὶ τὰ ἤλων: πελε-

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3 τραχυ conj. W.; βραχυ UP. 4 κορύνης. cf. 3. 5. 1.
ning, although they are not lofty; nor do they use the wood for their sacrifices. Such then are the differences as to timber and general appearance.

1 All the kinds produce galls, but only hemeris (gall-oak) produces one which is of use for tanning hides. That of aigilops (Turkey-oak) and that of the 'broad-leaved' oak (scrub oak) are in appearance like that of hemeris (gall-oak), but smoother and useless. This also produces the other gall, the black kind, with which they dye wool. The substance which some call tree-moss and which resembles rags\(^2\) is borne only by the aigilops (Turkey-oak); it is grey and rough\(^3\) and hangs down for a cubit's length, like a long shred of linen. This grows from the bark and not from the knob\(^4\) whence the acorn starts; nor does it grow from an eye, but from the side of the upper boughs. The sea-bark oak also produces this, but it is blackish\(^5\) and short.

Thus the people of Mount Ida distinguish. But the people of Macedonia make four kinds, 'true-oak,' or the oak which bears the sweet acorns, 'broad-leaved' oak (scrub oak), or that which bears the bitter ones, Valonia oak, or that which bears the round ones, and aspris\(^6\) (Turkey-oak); \(^7\) the last-named some say is altogether without fruit, some say it bears poor fruit, so that no animal eats it except the pig, and only he when he can get no others, and that after eating it the pig mostly gets an affection of the head.\(^8\) The wood is also wretched; when hewn with the axe it is altogether

\(^{5}\) εἰπιμελαν τοῦτο φύει conj. Scal.; ἐπιμ. τοῦτο φύει U; ἐπὶ μελιάν τοῦτο φύει MVAld.

\(^{6}\) See Index.

\(^{7}\) Plin. 16. 24.

\(^{8}\) περικεφαλαία: apparently the name of a disease.
κηθέιτα μὲν ὅλως ἀχρεία: καταρίγμωται γὰρ καὶ
diαπίπτει· ἀπελέκητα δὲ βελτίω, δι’ ὅ καὶ οὕτω
χρῶται. μοχθηρὰ δὲ καὶ εἰς καῦσιν καὶ εἰς
ἀνθρακείαν· ἀχρείος γὰρ ὅ ἀνθραξ διὰ τὸ
πηδᾶν καὶ σπινθηρίζειν πλῆν τοῖς χαλκεύσι.
tούτοις δὲ χρησιμώτερος τῶν ἄλλων; διὰ γὰρ τὸ
ἀποσβέννυσθαι, ὅταν παύσηται φυσώμενος, ὅλιγος
ἀναλῖσκεται. [τὸ δὲ τῆς ἀλιφλοίου χρήσιμον εἰς
τοὺς ἄξονας μόνον καὶ τὰ τοιαύτα.] δρυὸς μὲν
οὖν ταύτας ποιοῦσι τὰς ἴδεας.

IX. Τῶν δὲ ἄλλων ἐλάττους· καὶ σχεδὸν τὰ
γε πλεῖστα διαρροῦσι ἄρρενι καὶ θῆλει, καθ’ ἄπερ
eἰρηταί, πλῆν ὅλιγων ὃν ἔστι καὶ ἡ πεύκη·
πεύκης γὰρ τὸ μὲν ἦμερον ποιοῦσι τὸ δ’ ἄγριον,
τῆς δ’ ἄγριας δύο γένης· καλοῦσι δὲ τὴν μὲν Ἰδαίαν
τὴν δὲ παραλίαν· τούτων δὲ ὀρθοτέρα καὶ μακρο-
τέρα καὶ τὸ φύλλον ἑχουσα παχύτερον ἡ Ἰδαία,
tὸ δὲ φύλλον λεπτότερον καὶ ἀμενηνότερον ἡ
παραλία καὶ λειότερον τὸν φλοιόν καὶ εἰς τὰ
ｄέρματα χρήσιμον· ἡ δὲ ἐτέρα οὐ. καὶ τῶν
στροβίλων ὃ μὲν τῆς παραλίας στρογγύλος τε
καὶ διαχάκσκων ταχέως, ὁ δὲ τῆς Ἰδαίας μακρό-
tερος καὶ χλωρὸς καὶ ἦττον χάσκων ως ἀν
ἀγριώτερος· τὸ δὲ ξύλον ἰσχυρότερον τὸ τῆς
παραλίας· δεῖ γὰρ καὶ τὰς τοιαύτας διαφορὰς

1 Plin. 16. 23.
2 τὸ δὲ . . . τοιαύτα: this sentence seems out of place, as
ἀλιφλοίος was not one of the ‘Macedonian’ oaks mentioned
above (Sch.).
useless, for it breaks in pieces and falls asunder; if it is not hewn with the axe it is better, wherefore they so use it.  It is even wretched for burning and for making charcoal; for the charcoal is entirely useless except to the smith, because it springs about and emits sparks. But for use in the smithy it is more serviceable than the other kinds, since, as it goes out when it ceases to be blown, little of it is consumed. The wood of the sea-bark oak is only useful for wheel-axles and the like purposes. Such are the varieties of the oak which men make out.

Of the differences in firs.

IX. The differences between other trees are fewer; for the most part men distinguish them merely according as they are 'male' or 'female,' as has been said, except in a few cases including the fir; for in this tree they distinguish the wild and the cultivated kinds, and make two wild kinds, calling one the 'fir of Ida' (Corsican pine) the other the 'fir of the sea-shore' (Aleppo pine); of these the former is straighter and taller and has thicker leaves, while in the latter the leaves are slenderer and weaker, and the bark is smoother and useful for tanning hides, which the other is not. Moreover the cone of the seaside kind is round and soon splits open, while that of the Idaean kind is longer and green and does not open so much, as being of wilder character. The timber of the seaside kind is stronger,—for one must note such differences also between trees of the

3 T. describes πρῖνος σμύλαξ, and φελλάδρυς in 3. 16, φελλός in 3. 17. 1.
4 Plin. 16. 43. 5 Stone pine. See Index.
6 Plin. 16. 48. 7 φύλλων W. conj.; ξύλον UMVP.

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λαμβάνειν τῶν συγγενῶν· γνώριμοι γὰρ διὰ τὴν χρείαν.

2 Ὅρθότερον δὲ καὶ παχύτερον, ἀσπέρ εἴπομεν, ἡ Ἰδαία, καὶ πρὸς τούτοις πιττωδέστερον ὅλως τὸ δένδρον, μελαντέρα δὲ πίττη καὶ γλυκυτέρα καὶ λεπτοτέρα καὶ εὐωδεστέρα, ὅταν ἡ ὁμήρη ἐψηθείσα δὲ χείρων ἐκβαίνει διὰ τὸ πολὺν ἔχειν τὸν ὄρρον. ἑοῖκασι δ' ἀπερ ὅτοι διαιροῦσιν ὅνομασιν ἰδίως οἱ ἄλλοι διαρείων τῷ ἄρρενι καὶ θῆλει. φασὶ δ' οἱ περὶ Μακεδονίαν καὶ ἀκαρπὸν τι γένος ὅλως εἶναι πεύκης, καὶ τὸ μὲν ἄρρεν βραχύτερον τε καὶ σκληροφυλλότερον, τὸ δὲ θῆλυ εὐμηκέστερον, καὶ τὰ φύλλα λιπαρὰ καὶ ἀπαλὰ καὶ κεκλιμένα μᾶλλον ἔχειν· ἐτὶ δὲ τὰ ξύλα τῆς μὲν ἄρρενος περίμετρα καὶ σκληρὰ καὶ ἐν ταῖς ἐργασίαις στρεφόμενα, τῆς δὲ θηλείας εὐεργά καὶ ἀστραβὴ καὶ μαλακότερα.

3 Σχεδὸν δὲ κοινὴ τις ἡ διαφορὰ πάντων τῶν ἄρρενων καὶ θηλείων, ὡς οἱ υλοτόμοι φασίν. ἅπαν γὰρ τὸ ἄρρεν τῇ πελεκήσει καὶ βραχύτερον καὶ ἐπεστραμμένον μᾶλλον καὶ δυσεργότερον καὶ τῷ χρώματι μελάντερον, τὸ δὲ θῆλυ εὐμηκέστερον ἐπεί καὶ τὴν αἰγίδα τῆς καλομέμενη ἡ θῆλεια τῆς πεύκης ἔχει· τούτῳ δ' ἐστὶ τὸ ἐγκάρδιον αὐτῆς.

1 συγγενῶν conj. R. Const.; ἀγγείων UAld.; ἐγγείων MV mBas.
2 γνώριμοι conj. R. Const.; γνώριμοι UAld.H.; γνώριμα conj. W.
3 ὄρθότερον conj. R. Const.; ὄξυτερον UMVAld.
4 μελαντέρα... εὐωδεστέρα conj. W.; μελαντέραι δὲ πίττη καὶ γλυκύτεραι καὶ λεπτότεραι καὶ εὐωδεστέραι UMV; μελαντέρα

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same kind, since it is by their use that the different characters are recognised.

The Idaean kind is, as we have said, of straighter and stouter growth, and moreover the tree is altogether more full of pitch, and its pitch is blacker sweeter thinner and more fragrant when it is fresh; though, when it is boiled, it turns out inferior, because it contains so much watery matter. However it appears that the kinds which these people distinguish by special names are distinguished by others merely as 'male' and 'female.' The people of Macedonia say that there is also a kind of fir which bears no fruit whatever, in which the 'male' (Aleppo pine) is shorter and has harder leaves, while the 'female' (Corsican pine) is taller and has glistening delicate leaves which are more pendent. Moreover the timber of the 'male' kind has much heart-wood, is tough, and warps in joinery work, while that of the 'female' is easy to work, does not warp, and is softer.

This distinction between 'male' and 'female' may, according to the woodmen, be said to be common to all trees. Any wood of a 'male' tree, when one comes to cut it with the axe, gives shorter lengths, is more twisted, harder to work, and darker in colour; while the 'female' gives better lengths. For it is the 'female' fir which contains what is called the aegis; this is the heart of the tree; the

δὲ καὶ γλυκυτέρα καὶ λεπτοτέρα καὶ εὐωδεστέρα Ald. λεπτοτέρα, less viscous.

6 cf. 9. 2. 5; Plin. 16. 60. 7 Plin. 16. 47.

6 Plin. 16. 47. 7 περιμήτρα conj. R. Const.: so Mold. explains; περιμήτρια UMV. cf. 3. 9. 6.

8 ἀστραβῆ conj. R. Const.; εὐστραβῆ Ald.

9 αἰγίδα: cf. 5. 1. 9; Plin. 16. 187.
αὔτιον δὲ ὑπευκοτέρα καὶ ἦττον ἐνδαδός καὶ λειοτέρα καὶ εὐκτεανωτέρα. γίνεται δὲ ἐν τοῖς μέγεθος ἐξουσί τῶν δενδρών, ὅταν ἐκπεσόντα περισπῇ τὰ λευκὰ τὰ κύκλῳ. τούτων γὰρ περιαρεθέντων καὶ καταλειφθείσης τῆς μήτρας ἐκ ταύτης πελεκάται: ἐστὶ δὲ εὐχρονν σφόδρα καὶ λεπτοίνου. ὃ δὲ οἱ περὶ τὴν Ἰδὴν δάδουργοι καλοῦσι τυκήν, τὸ ἐπιγιγνόμενον ἐν ταῖς πεύκαις, ἐρυθρότερον τὴν χροιὰν τῆς δαδός, ἐν τοῖς ἄρρεσίν ἐστὶ μᾶλλον· δυσῶδες δὲ τούτῳ καὶ οὐκ ὄζει δαδὸς οὐδὲ καίεται ἀλλ᾽ ἀποπηδὰ ἀπὸ τοῦ πυρὸς.

4 Πεύκης μὲν οὖν ταῦτα γένη ποιοῦσιν, ἥμερον τε καὶ ἄγριον, καὶ τῆς ἄγριας ἄρρενα τε καὶ θύλειαν καὶ τρίτην τὴν ἀκαρπον. οἱ δὲ περὶ τὴν Ἀρκαδίαν οὔτε τὴν ἀκαρπον λέγουσιν οὔτε τὴν ἥμερον πεύκην, ἀλλὰ πίτυν εἶναι φασὶ καὶ γὰρ τὸ στέλεχος ἐμφερέστατον εἶναι τῇ πίτυϊ καὶ ἔχειν τὴν τε λεπτότητα καὶ τὸ μέγεθος καὶ ἐν ταῖς ἐργασίαις ταῦτο τὸ ἔξολον τὸ γὰρ τῆς πεύκης καὶ παχύτερον καὶ λειότερον καὶ υψηλότερον εἶναι καὶ τὰ φύλλα τὴν μὲν πεύκην ἔχειν πολλὰ καὶ λιπαρὰ καὶ βαθέα καὶ κεκλιμένα, τὴν δὲ πίτυν καὶ τὴν κωνοφόρον ταύτῃ ὀλίγα τε καὶ αὐχμοδέστερα καὶ πεφρικότα μᾶλλον· ἄμφω δὲ τριχο-φύλλα. ἐτὶ δὲ τὴν πίτταν ἐμφερεστέραν τῆς

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1 εὐκτεανωτέρα; εὐκτηδονωτέρα conj. R. Const. cf. 5. 1. 9; but text is supported by Hesych. s.v. ιθυκτεάνον.
2 I omit καὶ before τὰ κύκλῳ.
3 Plin. 16. 44.
reason being that it is less resinous, less soaked with
pitch, smoother, and of straighter grain.¹ This aegis
is found in the larger trees, when, as they have fallen
down, the white outside part² has decayed; when
this has been stripped off and the core left, it is
cut out of this with the axe; and it is of a good
colour with fine fibre. However the substance
which the torch-cutters of Mount Ida call the 'fig,'³
which forms in the fir and is redder in colour than
the resin, is found more in the 'male' trees; it has
an evil smell, not like the smell of resin, nor will it
burn, but it leaps away from the fire.

⁴Such are the kinds of fir which they make out,
the cultivated and the wild, the latter including the
'male' and the 'female' and also the kind which
bears no fruit. However the Arcadians say that
neither the sterile kind nor the cultivated is a fir,
but a pine; for, they say, the trunk closely resembles
the pine and has its slenderness, its stature, and the
same kind⁵ of wood for purposes of joinery, the
trunk of the fir being thicker smoother and taller;
moreover that the fir has many leaves, which are
glossy massed together⁶ and pendent, while in the
pine and in the above-mentioned cone-bearing tree⁷
the leaves are few and drier and stiffer; though in
both the leaves are hair-like.⁸ Also, they say, the
pitch of this tree is more like that of the pine; for

⁴ ταυτα γενη conj. R. Const. from G; ταυτα γε UMV Ald.;
Plin. 16. 45–49.
⁵ ταυτα conj. W.; αυτα Ald.
⁶ βαθαια: δασεα conj. R. Const. cf. 3. 16. 2.
⁷ i.e. the cultivated πευκη (so called). T. uses this peri-
phrasis to avoid begging the question of the name.
⁸ άμφω δε τριχ. ins. here by Sch.; in MSS. and Ald. the
words occur in § 5 after πιττωδεστερον.
πίτνος· καὶ γὰρ τὴν πίτνυν ἔχειν ὀλύγην τε καὶ πικρὰν, ὡσπερ καὶ τὴν κωνοφόρον, τὴν δὲ πεύκην εὐώδη καὶ πολλὴν. φύει δὲ ἐν μὲν τῇ Ἀρκαδίᾳ ἡ πίτνυν ὀλύγη περὶ δὲ τῇ Ἡλείᾳ πολλῆ. οὕτωι μὲν οὖν ὅλω τῷ γένει διαμφισβητοῦσιν.

5 Ἡ δὲ πίτνυν ὕκει τής πεύκης καὶ διαφέρειν τῷ λιπαρωτέρᾳ τε εἶναι καὶ λεπτοφυλλοτέρᾳ καὶ τὸ μέγεθος ἐλάττων καὶ ήττων ὀρθοφυής. έτι δὲ τὸν κώνον ἐλαττῶν φέρει καὶ πεφρικότα μᾶλλον καὶ τὸ κάρυν πιττωδέστερον καὶ τὰ ξύλα λευκότερα καὶ ὀμοιότερα τῇ ἐλάτῃ καὶ τὸ ὅλω άπενκα. διαφοράν δ’ ἔχει καὶ ταύτην μεγάλην πρὸς τὴν πεύκην· πεύκην μὲν γὰρ ἑπικαυθεισῶν τῶν ριζῶν οὐκ ἀναβλαστάνειν, τὴν πίτνυν δὲ φασὶ τινες ἀνα-βλαστάνειν, ὡσπερ καὶ ἐν Λέσβῳ ἔμπροσθέντοι τοῦ Πυρραίων ὄρους τοῦ πιτνώδους. νόσημα δὲ ταῖς πεύκαις τοιούτοι τοί λέγονσι συμβαίνειν οἱ περὶ τὴν Ἰδην ὡςτ’, ὅταν μὴ μόνον τὸ ἐγκάρδιον ἄλλα καὶ τὸ έξω τοῦ στελέχους ἐνδαδὸν γένηται, τηνικάυτα ὡσπερ ἀποπνίγεσθαι. τούτο δὲ αὐτό-ματον συμβαίνει δ’ εὔτροφίαν τοῦ δένδρου, ὡς ἂν τις εἰκάσειειν. ὅλον γὰρ γίνεται δάσ. περὶ μὲν οὖν τὴν πεύκην ἵδιον τοῦτο πάθος.

6 Ἐλάτη δ’ ἐστὶν ἡ μὲν ἄρρην ἡ δὲ θῆλεια, δια-φορὰς δ’ ἔχουσα τοῖς φύλλοις. ὡξύτερα γὰρ καὶ κευτητικότερα τὰ τοῦ ἄρρενος καὶ ἐπεσταθαμμένα μᾶλλον, δ’ δὲ καὶ οὐλότερον τῇ ὅψει φαίνεται τὸ δένδρον ὅλον. καὶ τὸ ξύλῳ. λευκότερον γὰρ καὶ μαλακώτερον καὶ ἑνεργέστερον τὸ τῆς θηλείας καὶ

1 πικρὰν conj. R. Const. from G; μικρὰν VAld.
2 καὶ ταύτην μεγάλην πρὸς conj. Sch.; καὶ τὴν μεγ. πρὸς UMV; μεγάλην πρὸς Ald.

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in the pine too it is scanty and bitter,¹ as in this other cone-bearing tree, but in the fir it is fragrant and abundant. Now the pine is rare in Arcadia, but common in Elis. The Arcadians then dispute altogether the nomenclature.

The pine appears to differ also from the fir in being glossier and having finer leaves, while it is smaller in stature and does not grow so straight; also in bearing a smaller cone, which is stiffer and has a more pitchy kernel, while its wood is whiter, more like that of the silver-fir, and wholly free from pitch. And there is another great difference² between it and the fir; the fir, if it is burnt down to the roots, does not shoot up again, while the pine, according to some, will do so; for instance this happened in Lesbos,³ when the pine-forest of Pyrrha⁴ was burnt. The people of Ida say that the fir is liable to a kind of disease;—when not only the heart but the outer part of the trunk becomes glutted⁵ with pitch, the tree then is as it were choked. This happens of its own accord through the excessive luxuriance of the tree, as one may conjecture; for it all turns into pitch-glutted wood. This then is an affection peculiar to the fir.

The silver-fir is either ‘male’ or ‘female,’ and has differences in its leaves⁷; those of the ‘male’ are sharper more needle-like and more bent; wherefore the whole tree has a more compact appearance. There are also differences in the wood, that of the ‘female’ being whiter softer and easier to work,

³ ἐν Αἰόσβοι conj. W. from G, and Plin. 16. 46; eis Αἰόσβον MSS.
⁴ On the W. of Lesbos, modern Caloni. cf. 2. 2. 6; Plin. l.c.
⁵ cf. 1. 6. 1; Plin. 16. 44.
⁶ Plin. 16. 48. ⁷ cf. 1. 8. 2.
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to ὅλου στέλεχος εὐμηκέστερον· τὸ δὲ τοῦ ἄρρενος ποικιλῶτερον καὶ παχύτερον καὶ σκληρότερον καὶ περίμυτρον μᾶλλον ὄλως δὲ φαυλότερον τὴν ὀψιν. ἐν δὲ τῷ κόμῳ τῷ μὲν τοῦ ἄρρενος ἐστὶ κάρνα ὀλύγα ἐπὶ τοῦ ἀκροῦ, τῷ δὲ τῆς θηλείας ὄλως οὐδέν, ὡς οἱ ἐκ Μακεδονίας ἔλεγον. ἔχει δὲ πτέρυγας τὸ φύλλον καὶ ἔπ᾽ ἐλαττόν, ὡστε τὴν ὀλην μορφὴν εἶναι θολοειδῆ καὶ παρόμοιον μάλιστα ταῖς Βουττίαις κυνέαις· πυκνὸν δὲ οὕτως ὡστε μήτε χίονα διϊέναι μηθ᾽ υετον. ὄλως δὲ καὶ τῇ ὀψεῖ τὸ δένδρον καλὸν· καὶ γάρ ἡ βλάστησις ἰδία τις, ὥσπερ εἰρήται, παρὰ τὰς ἄλλας καὶ μόνῃ τάξιν ἔχουσα· τῷ δὲ μεγέθει μέγα καὶ πολὺ τῆς πεύκης εὐμηκέστερον.

7. Διαφέρει δὲ καὶ κατὰ τὸ ξύλον οὐ μικρόν τὸ μὲν γὰρ τῆς ἐλάτης ἱνώδες καὶ μαλακὸν καὶ κούφον, τὸ δὲ τῆς πεύκης δαδώδες καὶ βαρύ καὶ σαρκωδέστερον. ὄξους δὲ ἔχει πλείους μὲν ἡ πεύκη σκληροτέρους δὲ ἡ ἐλάτη, σχεδὸν δὲ πάντων ὡς εἰπεῖν σκληροτέρους, τὸ δὲ ξύλον μαλακότερον. ὄλως δὲ οἱ ὀξιν πυκνότατοι καὶ στερεώτατοι μόνον οὐ διαφανεῖς ἐλάτης καὶ πεύκης καὶ τῷ χρώματι δαδώδεις καὶ μάλιστα διάφοροι τοῦ ξύλου, μᾶλλον δὲ τῆς ἐλάτης. ἔχει δὲ, ὥσπερ ἡ πεύκη τὴν αὐγίδα, καὶ ἡ ἐλάτη τῷ λευκοῦ λουσσον

1 παχύτερον conj. W.; πλατύτερον Ald.
2 Plin. 16. 48 and 49. 3 For the tense see Intr. p. xx.
4 φύλλον, i.e. the leafy shoot. Sch. considers φύλλον to be corrupt, and refers the following description to the cone; W. marks a lacuna after φύλλον. Pliny, l.c., seems to have read φύλλον, but does not render καὶ ἐπ᾽ ἐλαττόν... κυνέαις. The words καὶ ἐπ᾽ ἐλαττόν can hardly be sound as they stand. For the description of the foliage cf. 1. 10. 5.

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while the whole trunk is longer; that of the 'male' is less of a uniform colour thicker¹ and harder, has more heart-wood, and is altogether inferior in appearance. In the cone² of the 'male' are a few seeds at the apex, while that of the 'female,' according to what the Macedonians said,³ contains none at all. The foliage⁴ is feathered and the height disproportionate so that the general appearance of the tree is dome-like,⁵ and closely resembles the Boeotian peasant's hat⁶; and it is so dense that neither snow nor rain penetrates it. And in general the tree has a handsome appearance; for its growth is somewhat peculiar, as has been said, compared with the others, it being the only one which is regular, and in stature it is large, much taller than the fir.

⁷There is also not a little difference in the wood: that of the silver-fir is fibrous⁸ soft and light, that of the fir is resinous heavy and more fleshy. The fir has more knots,⁹ but the silver-fir harder ones; indeed they may be said to be harder than those of any tree, though the wood otherwise is softer. And in general the knots of silver-fir and fir are of the closest and most solid¹⁰ texture and almost¹¹ transparent: in colour they are like resin-glutted wood, and quite different from the rest of the wood; and this is especially so¹² in the silver-fir. And just as the fir has its aigis,¹³ so the silver-fir has what is

¹ ἑλοεἰδῆ conj. Scal.; ἑλοεἰδῆ U (erased); ἑλοεἰδῆς MV; ut concameratum imitetur G; ἑλοεἰδῆ in Theocr. 15. 39. ἑλαία seems to be a sun-hat.
² κυνέαις: cf. Hesych. s.v. κυνῆ Βοιωτία, apparently a hat worn in the fields.
³ cf. 5. 1. 7.
⁴ cf. 5. 1. 5.
⁵ cf. 5. 1. 6.
⁶ cf. 5. 1. 6, κερατώδεις.
⁷ ov ins. Sch.
⁸ cf. 3. 9. 3.
καλούμενον, οἶον ἀντίστροφον τῇ ἀγίδι, πλήν τὸ μὲν λευκὸν ἡ δ' ἀγίας εὐχρως διὰ τὸ ἐνδάδον. πυκνὸν δὲ καὶ λευκὸν γίνεται καὶ καλὸν ἐκ τῶν πρεσβυτέρων ἤδη δενδρων· ἀλλὰ σπάνιον τὸ χριστόν, τὸ δὲ τυχὸν δαψιλές, ἐξ οὐ τὰ τῶν ξωγράφων πινάκια ποιοῦσι καὶ τὰ γραμματεῖα τὰ πολλά· τὰ δ’ ἐσπουδασμένα ἐκ τοῦ βελτίωνος.

8 Οἱ δὲ περὶ Ἀρκαδίαν ἀμφότερα καλοῦσιν αἰγίδα καὶ τὴν τῆς πεύκης καὶ τὴν τῆς ἐλάτης, καὶ εἶναι πλεῖω τὴν τῆς ἐλάτης ἀλλὰ καλλίω τὴν τῆς πεύκης; εἶναι γὰρ τῆς μὲν ἐλάτης πολλήν τε καὶ λείαν καὶ πυκνήν, τῆς δὲ πεύκης ὀλύγην, τὴν μέντοι οὐσαν οὐλοτέραν καὶ ἵσχυροτέραν καὶ τὸ ὅλον καλλίω. οὕτωι μὲν οὖν οἰκικαὶ τοῖς ὀνόμασι διαφωνεῖν. ἡ δὲ ἐλάτη ταῦτας ἔχει τὰς διαφορὰς πρὸς τὴν πεύκην καὶ ἔτι τὴν περὶ τὴν ἀμφαιξιν, ἢν πρότερον εἴπομεν.

Χ. Ὁξὺν δ’ οὖν ἔχεις διαφοράς ἀλλ’ ἐστὶ μονογενές· ὀρθοφυνές δὲ καὶ λεῖον καὶ ἀνοξόν καὶ πάχος καὶ ϊψις ἔχουσα σχεδοῦν ἵσον τῇ ἐλάτῃ· καὶ ταλλα δὲ παρόμοιον [τε] τὸ δενδρον’ ξύλον δὲ εὐχρων ἱσχυρὸν εὐινον καὶ φλοίον λείον καὶ παχύν, φύλλον δ’ ἀσχίδες προμηκέστερον ἀπίον καὶ ἑπακάνθιζον εξ ἀκρον, βίζας οὔτε πολλὰς οὔτε κατὰ βάθους· οὗ τε καρπῶς λεῖον βαλανώδης ἐν ἐχίνῳ

2 τὰ δ’ conj. Scal.; καὶ Ald.
3 πεύκης conj. Scal. from G; ἐλάτης Ald.
4 ἐλάτης conj. Scal. from G; πεύκης Ald.
called its white 'centre,' which answers, as it were, to the aegis of the fir, except that it is white, while the other is bright-coloured because it is glutted with pitch. It becomes close white and good in trees which are of some age, but it is seldom found in good condition, while the ordinary form of it is abundant and is used to make painters' boards and ordinary writing tablets,\(^1\) superior ones being\(^2\) made of the better form.

However the Arcadians call both substances aegis, alike that of the fir\(^5\) and the corresponding part of the silver-fir,\(^4\) and say that, though the silver-fir produces more, that of the fir is better; for that, though that of the silver-fir is abundant\(^6\) smooth and close, that of the fir, though scanty, is compacter stronger and fairer in general. The Arcadians then appear to differ as to the names which they give. Such are the differences in the silver-fir as compared with the fir, and there is also that of having the amphauxis,\(^6\) which we mentioned before.

Of beech, yew, hop-hornbeam, lime.

X. The beech presents no differences, there being but one kind. It is a straight-growing smooth and unbranched tree, and in thickness and height is about equal to the silver-fir, which it also resembles in other respects; the wood is of a fair colour strong and of good grain, the bark smooth and thick, the leaf undivided, longer than a pear-leaf, spinous at the tip,\(^7\) the roots neither numerous nor running deep; the fruit is smooth like an acorn, enclosed in a shell,

\(^{5}\) πολλήν conj. Gesner; ὀβλήν UmBas.; ὄλην MV Ald.

\(^{6}\) cf. 3. 7. 1.

\(^{7}\) i.e. mucronate. cf. 3. 11. 3.
πλὴν [οὐκ] ἀνακάνθω καὶ λείψ, καὶ οὐχ ὅς ἡ διοσβάλανος ἀκανθώδει, προσεμφερής δὲ καὶ κατὰ γλυκύτητα καὶ κατὰ τὸν χυλὸν ἐκείνῳ. γίνεται δὲ καὶ ἐν τῷ ὅρει λευκῆ, ἢ καὶ χρήσιμοι ἐχει τὸ ξύλον πρὸς πολλά· καὶ γὰρ πρὸς ἀμαξούργιαν καὶ πρὸς κλινοπηγίαν καὶ εἰς διφρούργιαν καὶ εἰς τραπεζίαν καὶ εἰς ναυτηγίαν· ἢ δ’ ἐν τοῖς πεδίοις μέλαινα καὶ ἄχρηστος πρὸς ταῦτα· τὸν δὲ καρπὸν ἔχουσι παραπλήσιον.

2 Μονογενής δὲ καὶ ἡ μίλος, ὀρθοφυὴς δὲ καὶ εὐανεῖς καὶ ὁμοία τῇ ἐλάτη, πλὴν οὐχ ὑψηλῶν οὕτω, πολυμάσχαλον δὲ μᾶλλον. ὅμοιον δὲ καὶ τὸ φύλλον ἐχει τῇ ἐλάτη, λιπαρώτερον δὲ καὶ μαλακώτερον. τὸ δὲ ξύλον ἡ μὲν ἐξ Ἄρκασίας μέλαν καὶ φοινικοῦν, ἢ δ’ ἐκ τῆς Ἰδης ξανθὸν σφόδρα καὶ ὅμοιον τῇ κέδρῳ, δι’ ὅ καὶ τοὺς πωλούντας φασίν ἐξαπατῶν ὡς κέδρον πωλοῦντας· πάν γὰρ εἶναι καρδίαν, ὅταν ὁ φλοιὸς περιαρεθη’ ὅμοιον δὲ καὶ τὸν φλοίον ἐχειν καὶ τῇ τραχύτητι καὶ τῷ χρώματι τῇ κέδρῳ, ρίζας δὲ μικρὰς καὶ λεπτὰς καὶ ἐπιπολαίους. σπάνιον δὲ τὸ δένδρον περὶ τὴν Ἰδην, περὶ δὲ Μακεδονίαν καὶ Ἄρκασίαν πολὺ καὶ καρπὸν φέρει στρογγύλου μικρὸν μείζων κυάμου, τῷ χρώματι δ’ ἐρυθρὸν καὶ μαλακον’ φασί δὲ τὰ μὲν λόφουρα ἐὰν φάγῃ τῶν φύλλων ἀποθεμέσκειν, τὰ δὲ μηρυκάζοντα οὕδεν πάσχειν. τὸν δὲ καρπὸν ἐσθίουσι καὶ τῶν ἀνθρώπων τινὲς καὶ ἐστιν ἱδὺς καὶ ἄσινῆς.

1 ἐχίνος being otherwise used of a prickly case, such as that of the chestnut. πλὴν ἀνακ. καὶ λείψ conj. W.; πλὴν οὐκ ἀνακάνθως καὶ λείπω U; πλὴν οὐκ ἐν ἀκάνθο ΜVAld.
which is however without prickles\(^1\) and smooth, not spinous,\(^2\) like the chestnut, though in sweetness and flavour it resembles it. In mountain country it also grows white and has\(^3\) timber which is useful for many purposes, for making carts beds chairs and tables, and for shipbuilding\(^4\); while the tree of the plains is black and useless for these purposes; but the fruit is much the same in both.

\(^5\) The yew has also but one kind, is straight-growing, grows readily, and is like the silver-fir, except that it is not so tall and is more branched. Its leaf is also like that of the silver-fir, but glossier and less stiff. As to the wood, in the Arcadian yew it is black or red, in that of Ida bright yellow and like prickly cedar; wherefore they say that dealers practise deceit, selling it for that wood: for that it is all heart, when the bark is stripped off; its bark also resembles that of prickly cedar in roughness and colour, its roots are few slender and shallow. The tree is rare about Ida, but common in Macedonia and Arcadia; it bears a round fruit a little larger than a bean, which is red in colour and soft; and they say that, if beasts of burden\(^6\) eat of the leaves they die, while ruminants take no hurt. Even men sometimes eat the fruit, which is sweet and harmless.

\(^2\) \(\alpha\kappa\alpha\nu\theta\omega\delta\epsilon\) conj. R. Const.; \(\alpha\kappa\alpha\nu\theta\omega\delta\eta\) Ald.H.

\(^3\) \(\lambda\nu\kappa\nu\eta\ \eta\ \kappa\alpha\ l\) conj. W.; \(\lambda\nu\kappa\nu\eta\ \tau\varepsilon\ \kappa\alpha\ l\) Ald.H.

\(^4\) cf. 5. 6. 4; 5. 7. 2 and 6.

\(^5\) Plin. 16. 62. (description taken from this passage, but applied to \(f\rho\alpha\zeta\iota\nu\iota\), apparently from confusion between \(\mu\lambda\omega\silon\) and \(\mu\epsilon\lambda\alpha\).)

\(^6\) cf. 2. 7. 4 n.
"Εστι δὲ καὶ ἡ ὄστρυς μονοειδής, ἢν καλούσι τινες ὄστρυν, ὁμοφυὴς τῇ ὀξὺα τῇ τε φυτεία καὶ τῷ φλοιῷ. φύλλα δὲ ἀποειδή τῷ σχῆματι, πλὴν προμικέστερα πολλῷ καὶ εἰς ὀξὺ συνηγμένα καὶ μείζω, πολυῖνα δὲ, ἀπὸ τῆς μέσης εὐθείας καὶ μεγάλης τῶν ἄλλων πλευρειδῶς κατατείνουσῶν καὶ πάχος ἔχουσῶν. ἔτι δὲ ἔρρυτιδωμένα κατὰ τάς ἱνας καὶ χαραγμον ἔχοντα κύκλῳ λεπτὸν τὸ δὲ ἕξιλον σκληρὸν καὶ ἄχρον, ἐκλευκὸν. καρπὸν δὲ μικρόν πρόμακρον ὀμοιον κρίθη κατὰ. ρίζας δὲ ἔχει μετέφρους. ἐνυδρον δὲ καὶ φαραγγώδες. λέγεται δὲ ὡς ὅνε ἐπιτίθειν εἰς οἰκίαις εἰσφέρειν. δυσθανατείν γὰρ φασὶ καὶ δυστοκεῖν οὐ ἀν ἦν.

Τῆς δὲ φιλώρας ἢ μὲν ἀρρην ἐστὶν ἡ δὲ θῆλεια, διαφέρουσι δὲ τῇ μορφῇ τῇ ὅλῃ καὶ τῇ τοῦ ἑξιλού καὶ τῷ τὸ μὲν εἶναι κάρπημον τὸ δ' ἀκαρπον. τὸ μὲν γὰρ τῆς ἄρρενος ἑξιλον σκληρὸν καὶ κατὰ ὀξωδέστερον καὶ πυκνότερον ἐστι, ἔτι δ' εὐωδέστερον, τὸ δὲ τῆς θῆλειας λευκότερον. καὶ ὁ φλοιὸς τῆς μὲν ἄρρενος παχύτερος καὶ περαιρεθεὶς ἀκαμπτὴς διὰ τὴν σκληρότητα, τῆς δὲ θῆλειας λεπτότερος καὶ εὐκαμπτὴς, ἐξ οὗ τὰς κύστας ποιοῦσιν καὶ ἡ μὲν ἀκαρπος καὶ ἀνανθῆς, ἡ δὲ θῆλεια καὶ ἄνθος ἔχει καὶ καρπὸν τὸ μὲν ἄνθος καλνκωδες παρὰ τὸν τοῦ φύλλου μίσχον καὶ παρά

1 cf. 1. 8. 2 (ὄστρυν), 3. 3. 1; C.P. 5. 12. 9 (ὀστρύν); Plin. 13. 117.
2 μέσης... κατατείνουσῶν conj. Sch.; μέσης πλευρειδῶς τῶν ἄλλων εὐθείων καὶ μεγάλην κατατείνουσῶν Ald. cf. 1. 10. 2; 3. 17. 3.

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The *ostrys* (hop-hornbeam),¹ which some call *ostrya*, has also but one kind: it is like the beech in growth and bark; its leaves are in shape like a pear's, except that they are much longer, come to a sharp point, are larger, and have many fibres, which branch out like ribs from a large straight one² in the middle, and are thick; also the leaves are wrinkled along the fibres and have a finely serrated edge; the wood is hard, colourless and whitish; the fruit is small oblong and yellow like barley; it has shallow roots; it loves water and is found in ravines. It is said to be unlucky to bring it into the house, since, wherever it is, it is supposed to cause a painful death³ or painful labour in giving birth.

The lime has both ‘male’ and ‘female’ forms, which differ in their general appearance, in that of the wood, and in being respectively fruit-bearing and sterile. The wood of the ‘male’ tree is hard yellow more branched closer, and also more fragrant⁵; that of the ‘female’ is whiter. The bark of the ‘male’ is thicker, and, when stripped off, is unbending because of its hardness; that of the ‘female’ is thinner⁶ and flexible; men make their writing-cases⁷ out of it. The ‘male’ has neither fruit nor flower, but the ‘female’ has both flower and fruit; the flower is cup-shaped, and appears alongside of the stalk of the leaf, or alongside of next year's

³ δυσθανατεῖν I conj.; δυσθάνατον P₂ Ald.; δυσθανατῶν conj. Sch., but δυσθανατὰν has a desiderative sense.  
⁴ Plin. 16. 65.  
⁵ ἕτι δ' εὐώδ. inserted here by Sch.; cf. Plin., l.c. In Ald. the words, with the addition τὸ τῆς θηλεῖας, occur after ποιοῦσιν.  
⁶ λεπτότερος conj. Sch; λευκότερος Ald.  
⁷ cf. 3. 13. 1; Ar. Vesp. 529.
ΤΗΝ ΕΙΣ ΒΕΩΤΑ ΚΑΛΧΡΥΝ ΕΦ’ ΕΤΕΡΟΝ ΜΥΣΧΟΥ, ΧΛΟΕΡΟΝ
ΔΕ ΌΤΑΝ Η ΚΑΛΥΚΩΔΗΣ, ΕΚΚΑΛΥΠΤΟΜΕΝΟΝ ΔΕ ΕΠΙΞΑΝ-
ΘΟΝ Η ΔΕ ΑΝΘΗΞΙΣ ΑΜΑ ΤΟΙΣ ΗΜΕΡΟΙΣ. Ο ΔΕ ΚΑΡΠΟΣ
ΣΤΡΟΓΥΛΟΣ ΠΡΟΜΑΚΡΟΣ ΗΛΙΚΟΣ ΚΥΜΑΣ ΟΜΟΙΟΣ ΤΟΥ
ΤΟΥ ΚΙΤΤΟΥ, ΓΩΝΙΑΣ ΕΧΩΝ Ο ΆΔΡΟΣ ΠΕΝΤΕ ΟΙΟΝ ΙΝΩΝ
ΕΞΕΧΟΥΣΩΝ ΚΑΙ ΕΙΣ ΟΣΥ ΣΥΝΝΙΚΟΜΕΝΩΝ. Ο ΔΕ ΜΗ
ΑΔΡΟΣ ΑΔΙΑΡΘΡΟΤΕΡΟΣ. ΔΙΑΚΝΙΣΩΝ ΔΕ Ο ΆΔΡΟΣ
ΕΧΕΙ ΜΙΚΡ’ ΆΤΤΑ ΚΑΙ ΛΕΨΤΑ ΣΠΕΡΜΑΤΙΑ ΗΛΙΚΑ ΚΑΙ
Ο ΤΗΣ ΑΔΡΑΦΑΞΕΝΩΣ. ΤΟ ΔΕ ΦΥΛΛΟΝ ΚΑΙ Ο ΦΛΟΙΟΣ
ΗΔΕΑ ΚΑΙ ΓΥΛΙΚΕΑ ΤΗΝ ΔΕ ΜΟΡΦΗΝ ΚΙΤΤΩΔΕΣ ΤΟ
ΦΥΛΛΟΝ, ΠΛΗΝ ΕΚ ΠΡΟΣΑΓΩΓΗΣ ΜΑΛΛΟΝ Η ΠΕΡΙ-
ΦΕΡΕΙΑ, ΚΑΤΑ ΤΟ ΠΡΟΣ ΤΟΥ ΜΙΣΧΟΥ ΚΥΡΤΟΤΑΤΟΝ,
ΑΛΛΑ ΚΑΤΑ ΜΕΣΟΝ ΕΙΣ ΟΞΥΤΕΡΟΝ ΤΗΝ ΣΥΝΝΙΚΟΓΗΝ
ΕΧΟΝ ΚΑΙ ΜΑΚΡΟΤΕΡΟΝ, ΕΤΟΥΛΟΝ ΔΕ ΚΥΚΛΟ ΚΑΙ ΚΕΧΑ-
ΡΑΓΜΕΝΟΝ. ΜΗΤΡΑΝ Δ’ ΕΧΕΙ ΤΟ ΞΥΛΟΝ ΜΙΚΡΑΝ ΚΑΙ ΟΥ
ΠΟΛΥ ΜΑΛΑΚΩΤΕΡΑΝ ΤΟΥ ΑΛΛΟΥ ΜΑΛΑΚΟΝ ΥΑΡ ΚΑΙ
ΤΟ ΑΛΛΟ ΞΥΛΟΝ.

XI. ΤΗΣ ΔΕ ΣΦΕΝΔΑΜΝΟΥ, ΚΑΘΑΠΕΡ ΕΙΤΟΜΕΝ, ΔΥΟ
ΓΕΝΗ ΠΟΙΟΥΣΙΝ, ΟΙ ΔΕ ΤΡΙΑ: ΕΝ ΜΕΝ ΔΕ ΤΟΥ ΚΟΙΝΟΥ
ΠΡΟΣΑΓΟΡΕΥΟΥΣΙ ΣΦΕΝΔΑΜΝΟΥ, ΕΤΕΡΟΝ ΔΕ ΞΥΓΙΑΝ,
ΤΡΙΤΟΝ ΔΕ ΚΛΙΝΟΤΡΟΧΟΝ, ΟΣ ΟΙ ΠΕΡΙ ΣΤΑΥΓΕΙΡΑ. ΔΙΑ-
ΦΟΡΑ Δ’ ΕΣΤΙ ΤΗΣ ΞΥΓΙΑΣ ΚΑΙ ΤΗΣ ΣΦΕΝΔΑΜΝΟΥ ΟΤΙ
Η ΜΕΝ ΣΦΕΝΔΑΜΝΟΣ ΛΕΝΚΟΝ ΕΧΕΙ ΤΟ ΞΥΛΟΝ ΚΑΙ
ΕΥΝΙΤΕΡΟΝ, Η ΔΕ ΞΥΓΙΑ ΞΑΝΘΟΝ ΚΑΙ ΟΥΛΟΝ: ΔΕ ΔΕ
ΦΥΛΛΟΝ ΕΥΜΕΓΕΘΕΣ ΑΜΦΩ, ΤΗ ΣΧΙΣΕΙ ΟΜΟΙΟΝ ΤΟΥ

1 cf. 3. 5. 5. and 6.
2 Διακνισών: Διασχιζών, 'when split open,' conj. W.
3 cf. 1. 12. 4; C.P. 6. 12. 7. 4 3. 3. 1.
5 Προσαγορεύοντοι conj. W. from G; Προσαγορεύεταί Ald.

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winter-bud on a separate stalk; it is green, when in the cup-like stage, but brownish as it opens; it appears at the same time as in the cultivated trees. The fruit is rounded oblong as large as a bean, resembling the fruit of the ivy; when mature, it has five angular projections, as it were, made by projecting fibres which meet in a point; the immature fruit is less articulated. When the mature fruit is pulled to pieces, it shows some small fine seeds of the same size as those of orach. The leaf and the bark are well flavoured and sweet; the leaf is like that of the ivy in shape, except that it rounds more gradually, being most curved at the part next the stalk, but in the middle contracting to a sharper and longer apex, and its edge is somewhat puckered and jagged. The timber contains little core, which is not much softer than the other part; for the rest of the wood is also soft.

Of maple and ash.

XI. Of the maple, as we have said, some make two kinds, some three; one they call by the general name 'maple,' another zygia, the third klinotrokhos; this name, for instance, is used by the people of Stagira. The difference between zygia and maple proper is that the latter has white wood of finer fibre, while that of zygia is yellow and of compact texture. The leaf in both trees is large, resembling that of the plane in the way in which it is

6 κλινότροχος Ald.; κλινότροχος U; ἰνότροχος conj. Salm. from Plin. 16. 66 and 67, cursivenium or crassivenium. Sch. thinks that the word conceals γλῖνος; cf. 3. 3. 1; 3. 11. 2.
7 φύλλον conj. R. Const.; εύλον UMVAld. H. G.
THEOPHRASTUS

this platānu τετανὸν λεπτότερον δὲ καὶ ἀσαρκό-
terōn καὶ μαλακότερον καὶ προμηκέστερον. τὰ δὲ
σχίσμαθʼ ὅλα τ’ εἰς ὅξυ συνήκοντα καὶ οὕχ οὕτω
μεσοσχιδῆ ἀλλʼ ἀκροσχιδέστερα: οὐ πολύνα δὲ
ὡς κατὰ μέγεθος. ἔχει δὲ καὶ φλοιὸν μικρῷ
tραχύτερον τοῦ τῆς φιλίρας, ὑποπέλιον παχύν καὶ
πυκνότερον ἦ τ’ τῆς πίτυν καὶ ἀκαμπὴ: βίζαι δ’
ολίγαι καὶ μετέώρου καὶ οὐλαί σχεδον αἱ πλείσται
καὶ αἱ τῆς ξανθῆς καὶ αἱ τῆς λευκῆς. γίνεται δὲ
μάλιστα ἐν τοῖς ἐφύδροις, ὡς οἱ περὶ τὴν Ἰδην λέ-
γουσι, καὶ ἐστὶ σπάνιον. περὶ ἄνθους δὲ οὐκ ἦδεσαν
tὸν δὲ καρπὸν οὐ λίαν μὲν προμήκη, παρόμοιον δὲ
tῷ παλιούρῳ πλὴν προμηκέστερον. οἱ δ’ ἐν τῷ
Ὀλύμπῳ τὴν μὲν ξυνίαν ὅρειον μᾶλλον, τὴν δὲ
σφείνδαμον καὶ ἐν τοῖς πεδίοις φύεσθαι: εἶναι δὲ
tὴν μὲν ἐν τῷ ὅρει φυομένην ξανθὴν καὶ εὐχρον
καὶ οὐλὴν καὶ στερεάν, ἢ καὶ πρὸς τὰ πολυτελῆ
tῶν ἔργων χρώνται, τὴν δὲ πεδεινὴν λευκήν τε
καὶ μανοτέραν καὶ ἦπτον οὐλὴν· καλοῦσι δ’ αὐτὴν
ἐνῳ γλεῖνον, οὐ σφείνδαμον. . . καὶ τῆς ἄρρενος
οὐλότερα τὰ ξύλα συνεστραμμένα, καὶ ἐν τῷ
πεδίῳ ταύτην φύεσθαι μᾶλλον καὶ βλαστάνειν
πρωίτερον.

3 "Εστὶ δὲ καὶ μελιας γένη δυο. τούτων δ’ ἡ
μὲν ύψηλῆ καὶ εὐμῆκης ἐστὶ τὸ ξύλον ἐχουσα
λευκόν καὶ εὐῖνον καὶ μαλακότερον καὶ ἀνοξί-

1 τετανόν : cf. 3. 12. 5 ; 3. 15. 6.
2 σχίσμαθʼ conj. R. Const. from G ; σχίσμαθʼ Ald.Cam.;
σχίσμαθʼ Bas., which W. reads.
3 ὅλα : ἰδλως.
4 i.e. do not run back so far.
5 πολυίνα conj. R. Const.; πολυ· ινα δὲ Ald.; πολυ· ινα δὲ M.
divided; it is smooth, but more delicate, less fleshy, softer, longer in proportion to its breadth, and the divisions all tend to meet in a point, while they do not occur so much in the middle of the leaf, but rather at the tip; and for their size the leaves have not many fibres. The bark too is somewhat rougher than that of the lime, of blackish colour thick closer than that of the Aleppo pine, and stiff; the roots are few shallow and compact for the most part, both those of the yellow and those of the white-wooded tree. This tree occurs chiefly in wet ground, as the people of Mount Ida say, and is rare. About its flower they did not know, but the fruit, they said, is not very oblong, but like that of Christ's thorn, except that it is more oblong than that. But the people of Mount Olympus say that, while zygia is rather a mountain tree, the maple proper grows also in the plains; and that the form which grows in the mountains has yellow wood of a bright colour, which is of compact texture and hard, and is used even for expensive work, while that of the plains has white wood of looser make and less compact texture. And some call it gleinos instead of maple. The wood of the 'male' tree is of compact texture and twisted; this tree, it is said, grows rather in the plain and puts forth its leaves earlier.

There are also two kinds of ash. Of these one is lofty and of strong growth with white wood of good fibre, softer, with less knots, and of more compact

6 πυκνότερον conj. Scal. from G; πυρότερον U Ald.
7 ἐφύδροις: ὑφύδροις conj. Sch. cf. ὑφαμος, ὑπόπετρος.
8 cf. 3. 9. 6 n.; Intr. p. xx. 9 cf. 3. 18. 3.
10 cf. 3. 3. 1; Plin. 16. 67.
11 W. marks a lacuna: the description of the 'female' tree seems to be missing. 12 Plin. 16. 62-64.
τερον καὶ οὐλότερον· ἦ δὲ ταπεινοτέρα καὶ ὑπον εὐανείς καὶ τραχυτέρα καὶ σκληροτέρα καὶ ξανθοτέρα. τὰ δὲ φύλλα τῷ μὲν σχήματι δαφνοειδῆ, πλατυφύλλου δάφνης, εἰς ὀξύτερον δὲ συνηγμένα, χαραγμον δὲ τιν' ἔχουτα κύκλω καὶ ἐπακανθῆξοντα· τὸ δὲ ὅλον, ὅπερ εὑποι τις ἂν φύλλον τῷ ἀμα φυλλορροεῖν, ἀφ' ἐνὸς μίσχου καὶ περὶ μίαν ὀιον ἴνα κατὰ γόνυ καὶ συζυγίαν τὰ φύλλα καθ' ἐκαστον πέφυκε, συχνῶν διεξουσῶν τῶν συζυγίων, ὁμοίως καὶ ἐπὶ τῆς οὖς. ἔστι δὲ τῶν μὲν βραχέα τὰ γόνατα καὶ αἱ συζυγίαι τὸ πλῆθος ἐλάττως, τῶν δὲ τῆς λευκῆς καὶ μακρὰ καὶ πλεῖους· καὶ τὰ καθ' ἐκαστον φύλλα μακρότερα καὶ στενότερα, τὴν δὲ χρώαν πρασώδη. φλοιόν δὲ λειόν ἔχει, καπνοῦ δὲ καὶ λεπτὸν καὶ τῇ χρώα πυρρον. πυκνόρριζον δὲ καὶ παχύρριζον καὶ μετέωρον. καρπὸν δὲ οἱ μὲν περὶ τὴν Ἰδὴν οὐχ ὑπελάμβανον ἔχειν οὐδ' ἁνθος· ἔχει δ' ἐν λοβῷ λεπτῷ καρπὸν καρυηρὸν ὡς τῶν ἁμυγδαλῶν ὑπόπτικρον τῇ γεύσει. φέρει δὲ καὶ ἐτερ' ἅττα οἴνον βρύα, καθάπερ ἡ δάφνη, πλὴν στιφρότερα· καὶ ἐκαστον καθ' αὐτὸ σφαιροειδῆς, ὡσπερ τὰ τῶν πλατάνων· τούτων δὲ τὰ μὲν περὶ τὸν καρπὸν, τὰ δ' ἀπηρτημένα πολύ, καὶ τὰ πλεῖστα οὔτω. φύεται δὲ ἡ μὲν λεία περὶ τὰ βαθύτατα μάλιστα καὶ ἐφυδρα, ἡ δὲ τραχεία καὶ περὶ τὰ ἕτη καὶ πετρώδη. ἔνιοι δὲ καλοῦσι τὴν μὲν μελαν

1 οὐλότερον: ἄνουλότερον W. from Sch.'s conj.; ἄνουλος does not occur elsewhere, and T. uses μανός as the opposite of οὐλος.
2 ἦ τ.ε. instead of considering the leaflet as the unit. For the description cf. 3. 12. 5; 3. 15. 4.
texture; the other is shorter, less vigorous in growth, rougher harder and yellower. The leaves in shape are like those of the bay, that is, the broad-leaved bay, but they contract to a sharper point, and they have a sort of jagged outline with sharp points. The whole leaf (if one may consider this as a 'leaf' because it is all shed at once) grows on a single stalk; on either side of a single fibre, as it were, the leaflets grow at a joint in pairs, which are numerous and distinct, just as in the sorb. In some leaves the joints are short and the pairs fewer in number, but in those of the white kind the joint is long and the pairs more numerous, while the leaflets are longer narrower and leek-green in colour. Also this tree has a smooth bark, which is dry thin and red in colour. The roots are matted stout and shallow. As to the fruit, the people of Ida supposed it to have none, and no flower either; however it has a nut-like fruit in a thin pod, like the fruit of the almond, and it is somewhat bitter in taste. And it also bears certain other things like winter-buds, as does the bay, but they are more solid, and each separate one is globular, like those of the plane; some of these occur around the fruit, some, in fact the greater number, are at a distance from it. The smooth kind grows mostly in deep ravines and damp places, the rough kind occurs also in dry and rocky parts. Some, for instance the Macedonians, call the

3 βραχέα conj. Scal. from G; τραχέα U Ald. H.
4 Bod. inserts οὐ before μετέωρον; cf. 3. 6. 5. (Idaean account.)
5 στυφρότερα conj. Dalec.; στρυφφότερα MSS.
6 πλείστα conj. R. Const.; πλεκτά UMV Ald.
7 cf. Plin., l.c.

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κείζων δὲ καὶ μανότερον ἡ βουμέλιος, δι’ ὅ καὶ ἤττουν οὐλον. φύσει δὲ τὸ μὲν πεδεινὸν καὶ τραχὺ, τὸ δ’ ὅρεινὸν καὶ λεῖν. ἔστι δὲ ἡ μὲν ἐν τοῖς ὀρεσὶ φυομένη εὐχροὺς καὶ λεῖα καὶ στερέα καὶ γλύσχρα, ἡ δ’ ἐν τῷ πεδίῳ ἄχρους καὶ μανὴ καὶ τραχεία. (τὸ δ’ ὅλον ὡς εἶπεῖν τὰ δεύδρα ὅσα καὶ ἐν τῷ πεδίῳ καὶ ἐν τῷ ὀρεί φύσει, τὰ μὲν ὀρεινὰ εὐχροά τε καὶ στερεὰ καὶ λεῖα γύνεται, καθάπερ ὄξυν πτελέα τὰ ἄλλα: τὰ δὲ πεδεινὰ μανότερα καὶ ἄχρονστερα καὶ χείρω, πλὴν ἄπιον καὶ μηλέας καὶ ἄχράδος, ὡς οἱ περὶ τὸν Ὁλυμπόν φασὶ: ταῦτα δ’ ἐν τῷ πεδίῳ κρείττω ταχι καὶ τῷ καρπῷ καὶ τοῖς ξύλοις. ἐν μὲν γὰρ τῷ ὀρεί τραχεῖς καὶ ἀκανθώδεις καὶ ὀξώδεις εἰσίν, ἐν δὲ τῷ πεδίῳ λειτορεῖ καὶ μείζον καὶ τὸν καρπὸν ἔχουσι γλυκύτερον καὶ σαρκωδέστερον. μεγέθει δὲ αἰεὶ μείζω τὰ πεδεινὰ.)

XII. Κρανείας δὲ τὸ μὲν ἄρρεν τὸ δὲ θῆλυ, ἰπὸ δὴ καὶ θηλυκρανείαν καλοῦσιν. ἔχουσι δὲ φύλλον μὲν ἄμυγδαλὴ ὀμοιον, πλὴν λιπωδέστερον καὶ παχύτερον, φλοιὸν δ’ ἵνωδη λεπτὸν. τὸ δὲ στελεχος οὐ παχὺ λίαι, ἀλλὰ παραφύει ράβδους ὀσπερ ἀγνος. ἔλάττους δὲ ἡ θηλυκρανεία καὶ θαμνωδέστερὸν ἔστιν. τοὺς δὲ ὅξους ὀμοίως ἔχουσιν ἀμφω τῇ ἄγνῳ καὶ κατὰ δύο καὶ κατ’

1 cf. Plin., l.c., and Index.
2 μείζων δὲ καὶ μανότερον conj. W. from G.; μ. δὲ καὶ μανότερα MVU (? μανότερον); μείζων δὲ καὶ μακροτέρα Ald. H.
one 'ash' (manna-ash), the other 'horse-ash' (ash). The 'horse-ash' is a larger and more spreading tree, wherefore it is of less compact appearance. It is naturally a tree of the plains and rough, while the other belongs to the mountains and is smooth; the one which grows on the mountains is fair-coloured smooth hard and stunted, while that of the plains is colourless spreading and rough. (In general one may say of trees that grow in the plain and on the mountain respectively, that the latter are of fair colour hard and smooth, as beech elm and the rest; while those of the plain are more spreading, of less good colour and inferior, except the pear apple and wild pear, according to the people of Mount Olympus. These when they grow in the plain are better both in fruit and in wood; for on the mountain they are rough spinous and much branched, in the plain smoother larger and with sweeter and fleshier fruit. However the trees of the plain are always of larger size.)

Of cornelian cherry, cornel, 'cedars,' medlar, thorns, sorb.

XII. Of the cornelian cherry there is a 'male' and a 'female' kind (cornel), and the latter bears a corresponding name. Both have a leaf like that of the almond, but oilier and thicker; the bark is fibrous and thin, the stem is not very thick, but it puts out side-branches like the chaste-tree, those of the 'female' tree, which is more shrubby, being fewer. Both kinds have branches like those of the chaste-tree,
The Idaeans are evidently responsible for this statement. T. himself (3. 4. 3) says the fruit is inedible.

But (1. 11. 4) only certain varieties of the olive are said to have this character: the next statement seems also inconsistent with 3. 4. 3. Perhaps T. is still reproducing his Idaean authority.
arranged in pairs opposite one another. The wood of the ‘male’ tree has no heart, but is hard throughout, like horn in closeness and strength; whereas that of the ‘female’ tree has heart-wood and is softer and goes into holes; wherefore it is useless for javelins. The height of the ‘male’ tree is at most twelve cubits, the length of the longest Macedonian spear, the stem up to the point where it divides not being very tall. The people of Mount Ida in the Troad say that the ‘male’ tree is barren, but that the ‘female’ bears fruit. The fruit has a stone like an olive and is sweet to the taste and fragrant; the flower is like that of the olive, and the tree produces its flowers and fruit in the same manner, inasmuch as it has several growing from one stalk, and they are produced at almost the same time in both forms. However the people of Macedonia say that both trees bear fruit, though that of the ‘female’ is uneatible, and the roots are like those of the chaste-tree, strong and indestructible. This tree grows in wet ground and not only in dry places; and it comes from seed, and also can be propagated from a piece torn off.

The ‘cedar,’ some say, has two forms, the Lycian and the Phoenician; but some, as the people of Mount Ida, say that there is only one form. It resembles the arkeuthos (Phoenician cedar), differing chiefly in the leaf, that of ‘cedar’ being hard sharp and spinous, while that of arkeuthos is softer: the latter tree also seems to be of taller growth. However some do not give them distinct names, but call

3 μήνων ins. R. Const. from G.
4 Plin. 13. 52. See Index κέδρος and ἀρκευθός.
5 Φοινίκην: Φοινικην conj. W. cf. 9. 2. 3; Plin. l.c.
τοις ὄνομασιν ἀλλ' ἄμφω καλοῦσι κέδρους; πλὴν παρασήμωσ την κέδρον ὀξύκεδρον. ὦζωδὴ γ' ἄμφω καὶ πολυμάσχαλα καὶ ἐπεστραμμένα ἐχοντα τὰ ἑύλα: μήτραν δ' ἢ μὲν ἄρκευθος ἔχει μικράν καὶ πυκνήν καὶ ὅταν κοπῇ ταχὺ σηπομένην: ἢ δὲ κέδρος τὸ πλεῖστον ἐγκάρδιον καὶ ἀσαπτές, ἐρυθροκάρδια δ' ἄμφω· καὶ ἢ μὲν τῆς κέδρου εὐώδης ἢ δὲ τῆς ἑτέρας οὖ. καρπὸς δ' ὁ μὲν τῆς κέδρου ξανθὸς μύρτον μέγεθος ἐχον εὐώδης ἤδος ἔσθεσθαι. ὡς δὲ τῆς ἄρκευθου τὰ μὲν ἄλλα ὁμοία, μέλας δὲ καὶ στρυφὸς καὶ ὀσπερ ἀβρωτος: διαμένει δ' εἰς ἐνιαυτόν, εἰθ' ὅταν ἄλλος ἐπιφύη ὁ περυσινος ἀποτίπτει. ὥς δὲ οἱ ἐν Ἀρκαδίᾳ λέγουσι, τρεῖς ἀμα καρποὺς ἔχει, τὸν τε περυσινον ὑπῷ πέπονα καὶ τὸν προπερύσινον ἕδη πέπονα καὶ ἐδώδιμον καὶ τρίτον τὸν νέον ὑποφαίνει. ἐφη δὲ Σάτυρος καὶ κομίσαι τοὺς ὀρεστύπους αὐτῷ ἀνανθεῖς ἄμφω. τὸν δὲ φλοιὸν ὁμοίον ἔχει κυπαρίστῳ τραχύτερον δἐ· ρίζας δὲ μανᾶς ἀμφότεραι καὶ ἐπιτοποιάται. φύσονται περὶ τὰ πετρώδη καὶ χειμέρια καὶ τούτους τοὺς τόπους ζητοῦσι.

5 Μεσπίλης δ' ἐστὶ τρία γένη, ἀνθηδῶν σατάνειως ἀνθηδονοειδής, ὡς οἱ περὶ τὴν ἑδυν διαρούσι. φέρει δὲ ἢ μὲν σατάνειος τὸν καρπὸν μείζω καὶ λευκότερον καὶ χαυνότερον καὶ τοὺς πυρήνας ἔχοντα μαλακωτέρους· αἳ δ' ἑτεραι

1 παρασήμωσ τὴν κέδρον U; π. τὸν κέδρον M; Ald. omits the article; παρασήμωσια κέδρου conj. W.
ENQUIRY INTO PLANTS, III. xii. 3-5

them both 'cedar,' distinguishing them however as 'the cedar' and 'prickly cedar.' Both are branching trees with many joints and twisted wood. On the other hand arkeuthos has only a small amount of close core, which, when the tree is cut, soon rots, while the trunk of 'cedar' consists mainly of heart and does not rot. The colour of the heart in each case is red: that of the 'cedar' is fragrant, but not that of the other. The fruit of 'cedar' is yellow, as large as the myrtle-berry, fragrant, and sweet to the taste. That of arkeuthos is like it in other respects, but black, of astringent taste and practically uneatable; it remains on the tree for a year, and then, when another grows, last year's fruit falls off. According to the Arcadians it has three fruits on the tree at once, last year's, which is not yet ripe, that of the year before last which is now ripe and eatable, and it also shews the new fruit. Satyrus said that the wood-cutters gathered him specimens of both kinds which were flowerless. The bark is like that of the cypress but rougher. Both kinds have spreading shallow roots. These trees grow in rocky cold parts and seek out such districts.

There are three kinds of mespile, anthedon (oriental thorn), salancios (medlar) and anthedonoeides (hawthorn), as the people of mount Ida distinguish them. The fruit of the medlar is larger paler more spongy and contains softer stones; in the other πυκνή; but the words καὶ δηταν...σηπομένη (which P. does not render) seem inconsistent. An enquirer sent out by the Lyceum: see Intr. p. xxi. 

3 An enquirer sent out by the Lyceum: see Intr. p. xxi. 

4 ἕκει conj. W.; ἐδοκεῖ Ald. 

5 ἄμφοτεραι conj. W.; ἄμφοτέρας U; ἄμφοτέρους Ald.H. 

6 Plin. 15. 84. 

7 cf. C.P. 2. 8. 2; 6. 14. 4; 6. 16. 1.
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ελάττω τε τι καὶ εὐωδέστερον καὶ στρυφνότερον, ὥστε δύνασθαι πλεῖον χρόνον θησαυρίζεσθαι. πυκνότερον δὲ καὶ τὸ ξύλον τούτων καὶ ξανθότερον, τὰ δὲ άλλα ομοίον. τὸ δ’ άνθος πασῶν ομοίον ἀμυγδαλῆ, πλῆν ούκ ἐρυθρῶν ὀστερ ἐκείνο ἀλλ’ ἐγχλωρότερον. . . . . . μεγέθει μέγα τὸ δένδρον καὶ περίκομον. φύλλων δὲ τὸ μὲν ἐπὶ . . . . . . πολυσχιδές δὲ καὶ ἐν άκρῳ σελινοειδές, τὸ δ’ ἐπὶ τῶν παλαιότερων πολυσχιδὲς σφόδρα καὶ ἐγγωνοειδές μείζονι σχίσμασι, τετανόν ίνωδες λεπτότερον σελίνου καὶ προμηκέστερον καὶ τὸ ὅλου καὶ τὰ σχίσματα, περικεχαραγμένον δὲ ὅλου’ μίσχου δ’ ἔχει λεπτῶν μακρόν πρὸ τοῦ φυλλορροεῖν δ’ ἐρυθραίνεται σφόδρα. πολύρριζον δὲ τὸ δένδρον καὶ βαθύρριζον δι’ ὅ καὶ χρώμων καὶ δυσώλεθρον. καὶ τὸ ξύλον ἔχει πυκνών καὶ στερεών καὶ ἀσαπές. φύτει τε καὶ ἀπὸ σπέρματος καὶ ἀπὸ παρασπάδος. νόσημα δὲ αὐτῶν ἐστὶν ὡστε γηράσκοντα σκωληκόβρωτα γίνεσθαι καὶ οἱ σκώληκες μεγάλοι καὶ ἰδιοὶ ἢ οἱ ἐκ τῶν δένδρων τῶν ἀλλῶν.

Τῶν δ’ οἰῶν δύο γενὴ ποιοῦσι, τὸ μὲν δὴ καρποφόρον θῆλυ τὸ δὲ ἀρρεν ἀκαρπον’ οὐ μὴν άλλά διαφέρουσι τοῖς καρποῖς, τῶν τὰς μὲν στρογγύλου τὰς δὲ προμηκὴ τὰς δ’ ὑοειδῆ φέρειν. διαφέρουσι δὲ καὶ τοῖς χυλοῖς’ ὡς γάρ ἐπὶ τὸ

1 ἤλαττω τε τι conj. W.; ἤλαττω εἰσὶ UAld.
2 W. suggests that some words are missing here, as it does not appear to which kind of μεσπιλη the following description belongs; hence various difficulties. See Sch.
3 Probably a lacuna in the text. W. thus supplies the sense: he suggests σελινοειδὲς for σελινοειδές.
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kinds it is somewhat smaller, more fragrant and of more astringent taste, so that it can be stored for a longer time. The wood also of these kinds is closer and yellower, though in other respects it does not differ. The flower in all the kinds is like the almond flower, except that it is not pink, as that is, but greenish . . . . . 2 In stature the tree is large and it has thick foliage. The leaf in the young tree is round but much divided and like celery at the tip; but the leaf of older trees is very much divided and forms angles with larger divisions; it is smooth fibrous thinner and more oblong than the celery leaf, both as a whole and in its divisions, and it has a jagged edge all round. 5 It has a long thin stalk, and the leaves turn bright red before they are shed. The tree has many roots, which run deep; wherefore it lives a long time and is hard to kill. The wood is close and hard and does not rot. The tree grows from seed and also from a piece torn off. It is subject to a disease which causes it to become worm-eaten in its old age, and the worms are large and different to those engendered by other trees.

8 Of the sorb they make two kinds, the 'female' which bears fruit and the 'male' which is barren. There are moreover differences in the fruit of the 'female' kind; in some forms it is round, in others oblong and egg-shaped. There are also differences

4 ἄνθων: cf. 3. 11. 1; 3. 15. 6.
5 περικεφαλαρμένον conj. Scal.; περικεθαρμένον U; περικεκαρμένον MV Ald. cf. allusions to the leaf of μεστή, 3. 13. 1; 3. 15. 6.
6 cf. 4. 14. 10; Plin. 17. 221; Pall. 4. 10.
7 ἰδίοι Ald. (for construction cf. Plat. Gorg. 481 c); ἰδίους UMV (the first i corrected in U). W. adopts Sch.'s conj., ἰδίους, in allusion to the edible cossus: cf. Plin. l.c.
8 Plin. 15. 85.
πάν εὐωδέστερα καὶ γλυκύτερα τὰ στρογγύλα, τὰ δ ὁῳειδῆ πολλάκις ἐστίν ὅξεα καὶ ἥττουν

7 εὐώδη, φύλλα δ' ἀμφοῖν κατὰ μίσχον μακρὸν ἱνοειδῆ πεφύκασι στοιχήδον ἐκ τῶν πλαγίων πτερυγοειδῶς, ὡς ἐνὸς ὄντος τοῦ ὅλου λοβούς δὲ ἔχοντος ἐσχισμένους ἐως τῆς ἰνός· πλὴν διεστάσιν ἀφ' ἐαυτῶν ὑπόσυνχον τὰ κατὰ μέρος· φυλλοβολεῖ δὲ οὗ κατὰ μέρος ἄλλα ὅλον ἀμα τὸ πτερυγώδες. εἰσὶ δὲ περὶ μὲν τὰ παλαιότερα καὶ μακρότερα πλείους αἱ συζυγίαι, περὶ δὲ τὰ νεώτερα καὶ βραχύτερα ἐλάττους, πάντων δὲ ἐπ' ἀκρον τοῦ μίσχου φύλλον περιττόν, ὡστε καὶ πάντ' εἶναι περιττά. τῶ δὲ σχῆματι δαφνοειδῆ τῆς λεπτοφύλλου, πλὴν χαραγμὸν ἔχοντα καὶ βραχύτερα καὶ οὐκ εἰς ὅξυ τὸ ἀκρον συνηκόν ἄλλ' εἰς περιφερέστερον. ἀνθος δὲ ἔχει βοτρυώδες ἀπὸ μίσας κορύνης ἐκ πολλῶν μικρῶν καὶ λευκῶν συγκείμενον. καὶ ὁ καρπὸς ὅταν εὐκαρπὴ βοτρυώδης· πολλὰ γὰρ ἀπὸ τῆς αὐτῆς κορύνης, ὡστ' εἶναι καθάπερ κηρίον. σκωληκόβορος ἐπὶ τοῦ δένδρου ὁ καρπὸς ἀπεπτὸς ὃν ἐτί γίνεται μᾶλλον τῶν μεστίλων καὶ ἀπίων καὶ ἀχράδων· καίτοι πολὺ στρυφύνότατος. γίνεται δὲ καὶ αὐτὸ τὸ δένδρον σκωληκόβρωτον καὶ οὐτός αἰνιγεται γηράσκον· καὶ ὁ σκώληξ ἰδιος ἐρυθρὸς δασύς. καρποφορεῖ δ' ἐπιεικῶς νέα· τριετής γὰρ εὐθὺς φύει. τοὐ μετοπώρου δ' ὅταν ἀποβάλῃ τὸ φύλλον, εὐθὺς ἵσχις τὴν καχρυώδη κορύνην λιπαρᾶν καὶ

1 φύλλα... στοιχῆδον conj. W.; φύλλον δ' ἀμφοῖν το ὅν μίσχον μακρὸν ἱνοειδῆ· πεφ. [δὲ] στοιχῆδον U, M, V, A, Ld.
2 ἀφ' ἐαυτῶν (= ἀντ' ἀλλῆλων) conj. Seal.; ἀντ' αὐτῶν U: so W., who however renders inter se.
in taste; the round fruits are generally more fragrant and sweeter, the oval ones are often sour and less fragrant. The leaves in both grow attached to a long fibrous stalk, and project on each side in a row like the feathers of a bird’s wing, the whole forming a single leaf but being divided into lobes with divisions which extend to the rib; but each pair are some distance apart, and, when the leaves fall, these divisions do not drop separately, but the whole wing-like structure drops at once. When the leaves are older and longer, the pairs are more numerous; in the younger and shorter leaves they are fewer; but in all at the end of the leaf-stalk there is an extra leaflet, so that the total number of leaflets is an odd number. In form the leaflets resemble the leaves of the ‘fine-leaved’ bay, except that they are jagged and shorter and do not narrow to a sharp point but to a more rounded end. The flower is clustering and made up of a number of small white blossoms from a single knob. The fruit too is clustering, when the tree fruits well; for a number of fruits are formed from the same knob, giving an appearance like a honeycomb. The fruit gets eaten by worms on the tree before it is ripe to a greater extent than that of medlar pear or wild pear, and yet it is much more astringent than any of these. The tree itself also gets worm-eaten, and so withers away as it ages; and the worm which infests it is a peculiar one, red and hairy. This tree bears fruit when it is quite young, that is as soon as it is three years old. In autumn, when it has shed its leaves, it immediately produces its winter-bud-like knob,

3 Plin. 16. 92. 4 For construction cf. 3. 11. 3.
5 i.e. inflorescence. 6 Plin. 17. 221. 7 cf. 3. 5. 5.
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επωδηκυίαν ὤσάν ἣδη βλαστικόν, καὶ διαμένει τὸν χειμῶνα. ἀνάκαυθον δὲ ἐστὶ καὶ ἡ σύν καὶ ἡ μεσπίλη φλοιόν δ' ἔχει λείαν ὑπολήπαρον, ὥσπερ μὴ γεράνδρα, τὴν δὲ χρόαν ξανθῶν ἐπιλευκαίνοντα; τὰ δὲ γεράνδρα τραχῦν. καὶ μέλανα. τὸ δὲ δένδρον εὐμέγεθες ὀρθοφυὲς εὐρυθμον τῇ κόμῃ σχεδὸν γὰρ ὡς ἐπὶ τὸ πολὺ στροβιλοειδὲς σχῆμα λαμβάνει κατὰ τὴν κόμην, ἕαν μὴ τὶ ἐμποδίσῃ. τὸ δὲ ξύλον στερεὸν πυκνὸν ἰσχυρὸν εὐχρυον, ρίζας δὲ οὐ πολλὰς μὲν οὐδὲ κατὰ βάθους, ἰσχυρὰς δὲ καὶ παχεῖας καὶ ἀνω- λέθρους ἔχει. φῦνται δὲ καὶ ἀπὸ ρίζης καὶ ἀπὸ παρασπάδος καὶ ἀπὸ στέρματος; τόπον δὲ ζητεῖ ψυχρὸν ἐνικομον, φιλόξωον δ' εὖ τούτῳ καὶ δυσώλεθρον· οὐ μὴν ἀλλὰ καὶ φῦνται εὖ τοῖς ὀρέσιν.

XIII. Ἡδιον δὲ τῇ φύσει δένδρον ὁ κέρασος ἐστὶ· μεγεθεὶς μὲν μέγα· καὶ γὰρ εἰς τέτταρας καὶ εἰκοσι πτέρεις. ἐστὶ δ' ὀρθοφυὲς σφόδρα· πάχος δὲ ὡστε καὶ διπηχών τὴν περίμετρον ἀπὸ τῆς ρίζῆς ἐχειν. φῦλλον δ' ὀμοιον τῷ τῆς μεσπίλης σκληρὸν δὲ σφόδρα καὶ παχύτερον, ὡστε τῇ χροϊά πόρρωθεν φανερὸν εἶναι τὸ δένδρον. φλοιόν δὲ τὴν λειώτητα καὶ τὴν χρόαν καὶ τὸ πάχος ὀμοιον φιλύρα, δι' ὁ καὶ τὰς κίστας ἅν αὐτοῦ ποιοῦσιν ὥσπερ καὶ ἐκ τοῦ τῆς φιλύρας. περιπέμφυκε δὲ οὕτος οὕτε ὀρθοφυής οὕτε κύκλω κατ' ἵσον, ἀλλ' ἐλεικηδὸν περιείληφε κάτωθεν ἀνω

1 ὥσπερ μὴ conj. Bod.; ὥσπερ τὰ Ald.; ὥστε τὰ M.
2 κόμῃ Ald.H.; κορυφᾶν conj. Sch.; vertice G.
3 Plin. 16. 125; cf. 16. 74 ; 17. 234.
4 παχύτερον: so quoted by Athen. 2. 34; πλατύτερον MSS.
which is glistening and swollen as though the tree were just about to burst into leaf, and this persists through the winter. The sorb, like the medlar, is thornless; it has smooth rather shiny bark, (except when the tree is old), which in colour is a whitish yellow; but in old trees it is rough and black. The tree is of a good size, of erect growth and with well balanced foliage; for in general it assumes a cone-like shape as to its foliage, unless something interferes. The wood is hard close strong and of a good colour; the roots are not numerous and do not run deep, but they are strong and thick and indestructible. The tree grows from a root, from a piece torn off, or from seed, and seeks a cold moist position; in such a position it is tenacious of life and hard to kill: however it also grows on mountains.

Of bird-cherry, elder, willow.

XIII. The keraos (bird-cherry) is peculiar in character; it is of great stature, growing as much as twenty-four cubits high; and it is of very erect growth; as to thickness, it is as much as two cubits in circumference at the base. The leaves are like those of the medlar, but very tough and thicker, so that the tree is conspicuous by its colour from a distance. The bark in smoothness colour and thickness is like that of the lime; wherefore men make their writing-cases from it, as from the bark of that tree. This bark does not grow straight nor evenly all round the tree, but runs round it in a spiral

5 cf. 4. 15. 1; Hesych. s.v. keraos.
6 cf. 3. 10. 4; Ar. Vesp. 529.
7 περιπέφυκε . . . περιπέφυκός: text as restored by Sch. and others, following U as closely as possible.
8 περιειληφε conj. R. Const.
προσάγων, ὦσπερ ἡ διαγραφή τῶν φύλλων· καὶ λοπιζόμενος οὗτος ἐνδέρεται, ἐκείνος δ’ ἐπίτομος
2 γίνεται καὶ οὐ δύναται· μέρος δ’ αὐτοῦ τι τῶν αὐτῶν τρόπον ἀφαιρεῖται κατὰ πάχος σχίζομενον λεπτὸν ὡς ἀν φύλλον, τὸ δὲ λοιπὸν προσμένειν
tε δύναται καὶ σώζει τὸ δένδρον ὡσαύτως περι-
πεφυκός. περιαιρουμένου δὲ ὅταν λοιπὰ τοῦ
φλοιοῦ συνεκραίνει καὶ τότε τὴν ύγρότητα· καὶ
ὅταν ὁ ἔξω χιτῶν περιαιρεθῇ, μόνον ὁ υπολιπθής
ἐπιμελαίνεται ὦσπερ μυξώδει υγρασία, καὶ πάλιν
ὑποφύεται τῷ δευτέρῳ ἔτει χιτῶν ἄλλος ἀντ’
ἐκείνου πλῆν λεπτότερος. πεφυκε καὶ τὸ ἐξὸν
ὀμοίου ταῖς ἵστ τῷ φλοιῷ στρεπτῶς ἐλπτόμενων
cαὶ οἱ ράβδοι φύονται τὸν αὐτὸν τρόπον εὐθύς·
tοὺς ὄξους δ’ αὐξανομένου συμβαίνει τοὺς μὲν
3 κάτω ἀεὶ ἀπόλλυσθαι τοὺς δ’ ἀνω αὔξειν. τὸ δ’
ὁλον οὐ πολύοξον τὸ δένδρον ἄλλ’ ἀνοξότερον
πολὺ τῆς αὐγείρου. πολύρριζον δὲ καὶ ἐπι-
πολαιόρριζον οὐκ ἀγαν δὲ παχύρριζον· ἡ δ’
ἐπιστροφὴ· σαλτῆς ῥίζης καὶ τοῦ φλοιοῦ τοῦ περὶ
αὐτῆς ἡ αὐτή. ἀνθὸς δὲ λευκῶν ἀπώ καὶ μεσπιλή
ὁμοίων, ἐκ μικρῶν ἀνθῶν συγκείμενον κηρώδεις.
ὁ δὲ καρπὸς ἐρυθρὸς ὁμοίος διοσπύρῳ τὸ σχῆμα,
tὸ δὲ μέγεθος ἠλίκου κύαμος, πλῆν τοῦ διοσπύρου
μὲν ὁ πυρήν σκληρὸς τοῦ δὲ κεράσου μαλακὸς.
φύεται δ’ ὁποὺ καὶ ἡ φίλυρα, τὸ δὲ ὅλον ὁποὺ
ποταμοὶ καὶ ἔφυδρα.
4 Φύεται δὲ καὶ ἡ ἄκτη μάλιστα παρ’ ὑδώρ καὶ

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1 Which is an ellipse, the segment of a cylinder: so Sch. explains.
2 ἐκείνος: i.e. lower down the trunk, where the spiral is less open.
3 ἐπίτομος: cf. 5. 1. 12.
(which becomes closer as it gets higher up the tree) like the outline of the leaves. And this part of it can be stripped off by peeling, whereas with the other part this is not possible and it has to be cut in short lengths. In the same manner part is removed by being split off in flakes as thin as a leaf, while the rest can be left and protects the tree, growing about it as described. If the bark is stripped off when the tree is peeling, there is also at the time a discharge of the sap; further, when only the outside coat is stripped off, what remains turns black with a kind of mucus-like moisture; and in the second year another coat grows to replace what is lost, but this is thinner. The wood in its fibres is like the bark, twisting spirally, and the branches grow in the same manner from the first; and, as the tree grows, it comes to pass that the lower branches keep on perishing, while the upper ones increase. However the whole tree is not much branched, but has far fewer branches than the black poplar. Its roots are numerous and shallow and not very thick; and there is a similar twisting of the root and of the bark which surrounds it. The flower is white, like that of the pear and medlar, composed of a number of small blossoms arranged like a honeycomb. The fruit is red, like that of Diospyros in shape, and in size it is as large as a bean. However the stone of the Diospyros fruit is hard, while that of the bird-cherry is soft. The tree grows where the lime grows, and in general where there are rivers and damp places.

The elder also grows chiefly by water and in shady

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1 cf. 3. 12. 7. 7 Plin. 17. 151.
ἐν τοῖς σκιεροῖς, οὐ μὴν ἄλλα καὶ ἐν τοῖς μὴ τοιούτοις· θαμνώδες δὲ ράβδοις ἐπετειοῦσ αὐξανομέναις μέχρι τῆς φυλλορροίας εἰς μῆκος, εἶτα μετὰ ταῦτα εἰς πάχος· τὸ δὲ ύψος τῶν ράβδων οὐ μέγα λίαν ἄλλα καὶ μάλιστα ὡς ἐξάπηχυτῶν δὲ στελεχῶν πάχος τῶν γερανδρῶν ὅσον περικεφαλαίας, φλοίος δὲ λείος λεπτὸς κατυρός· τὸ δὲ ξύλον χαύνω καὶ κούφον ἔχοντα, ἐντεριώνς δὲ ἔξοχον μαλακίν, ὡστε δὲ ὅλου καὶ κοιλαίνεσθαι τάς ράβδους, ἐξ ὃν καὶ τάς βακτηρίας ποιοῦσι τάς κουφας. ἔξοχον τὸ ἰσχυροῦ καὶ ἀγέρων ἐὰν βρέχηται, κἂν ἡ λεοπτισμένον· λοπίζεται δὲ αὐτόματον ἔχοντα, ὡς καὶ ἐξει μετεώρους οὐ πολλὰς δὲ οὐδὲ μεγάλας.

5 φύλλον δὲ τὸ μὲν καθ' ἐκαστὸν μαλακόν, πρόμηκες ὡς τὸ τῆς πλατυφύλλου δάφνης, μείζων δὲ καὶ πλατύτερον καὶ περιφερέστερον ἐκ μέσου καὶ κάτωθεν, τὸ δ' ἄκρον εἰς ἄξιον μᾶλλον συνήκουν κύκλω δ' ἔξοχον χαραγμόν· τὸ δὲ ὅλον, περὶ ἕνα μύσχον παχύν καὶ ἱώδη ὡσάν κλωνίων τὰ μὲν ἐνθοὺς τὰ δὲ ἐνθοὺς κατὰ γόνω καὶ σύζυγαν περύκασι τῶν φύλλων διέχοντα ὑπ' ἀλλήλων, ἐν δὲ ἐξ ἄκρου τοῦ μύσχου. ὑπέρυθρα δὲ τὰ φύλλα ἐπίεικῶς καὶ χαύνα καὶ σαρκώδη· φυλλορροεῖ δὲ τοῦτο ὅλον, διόπερ φύλλον ἄν τις εἰποί τὸ ὅλον. ἔχονσι δὲ καὶ οἱ κλώνες οἱ νέοι γνωσίει τυχα.

6 τὸ δ' ἄνθος λευκὸν ἐκ μικρῶν λευκῶν πολλῶν ἐπὶ τῇ τοῦ μύσχου σχίσει κηριώδες· εὐωδίαν

1 περικεφαλαίας, some part of a ship's prow: so Pollux.
2 κατυρός conj. Sch.; καὶ πυρσὸς U (?); καὶ πυρρός V; καὶ πυρρός M. 3 Sc. pith.

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places, but likewise in places which are not of this character. It is shrubby, with annual branches which go on growing in length till the fall of the leaf, after which they increase in thickness. The branches do not grow to a very great height, about six cubits at most. The thickness of the stem of old trees is about that of the 'helmet' of a ship; the bark is smooth thin and brittle; the wood is porous and light when dried, and has a soft heart-wood, so that the boughs are hollow right through, and men make of them their light walking-sticks. When dried it is strong and durable if it is soaked, even if it is stripped of the bark; and it strips itself of its own accord as it dries. The roots are shallow and neither numerous nor large. The single leaflet is soft and oblong, like the leaf of the 'broad-leaved' bay, but larger broader and rounder at the middle and base, though the tip narrows more to a point and is jagged all round. The whole leaf is composed of leaflets growing about a single thick fibrous stalk, as it were, to which they are attached at either side in pairs at each joint; and they are separate from one another, while one is attached to the tip of the stalk. The leaves are somewhat reddish porous and fleshy: the whole is shed in one piece; wherefore one may consider the whole structure as a 'leaf.' The young twigs too have certain crooks in them. The flower is white, made up of a number of small white blossoms attached to the point where the stalk divides, in form like a honeycomb, and it has the heavy

4 Χαραγμόν conj. R. Const. from G; παραγμόν UMV; οπαραγμόν Ald. 5 cf. 3. 11. 3 n.
6 γωνοειδή U; ?γωνοειδή; G seems to have read γωνατοειδή; Sch. considers the text defective or mutilated.
7 cf. 3. 12. 7 n.
THEOPHRASTUS

... 

7. Πάρυδρον δὲ καὶ ἡ ἵτεα καὶ πολυειδές· ἢ μὲν μέλαινα καλουμένη τῷ τὸν φλοίον ἔχειν μέλαινα καὶ φοινικόν, ἢ δὲ λευκὴ τῷ λευκὸν. καλλίους δὲ ἔχει τὰς βάσιδους καὶ χρησιμωτέρας εἰς τὸ πλέκειν ἡ μέλαινα, ἢ δὲ λευκή καπνωτέρας. ἐστὶ δὲ καὶ τῆς μελαίνης καὶ τῆς λευκῆς ἕνοι γένος μικρὸν καὶ οὗκ ἔχον αὐξησιν εἰς υψὸς, ὠσπέρ καὶ ἐπ᾽ ἀλλῶν τούτῳ δένδρων, οὗν κέδρου φοίνικος. καλοῦσι δ᾽ οἱ περὶ Ἀρκαδίαν οἷκ ἱτεάν ἀλλὰ ἐλίκην τὸ δένδρον· οἴονται δὲ, ὠσπέρ ἐλέχθη, καὶ καρπὸν ἔχειν αὐτὴν γόνιμον.

XIV. Ἡ ἐστὶ δὲ τῆς πτελέας δύο γένη, καὶ τὸ μὲν ὀρειπτελέα καλεῖται τὸ δὲ πτελέα· διαφέρει δὲ τῷ θαμνωδέστερον εἶναι τὴν πτελέαν εὐανεξέστερον δὲ τὴν ὀρειπτελέαν. φύλλον δὲ ἀσχιδὲς περικεχαραγμένου ἡσυχῆ, προμηκέστερον δὲ τοῦ τῆς ἀπίου,

1 καταπεπαίνομενος conj. W.; καὶ πεπ. V Ald.
2 καὶ . . . βάπτονται I conj., following Scal., W., etc., but keeping closer to U: certain restoration perhaps impossible; καὶ τὰς χείρας τελείους ἀναβλάστει δὲ καὶ τὰς κεφαλάς U; χείρας δὲ τελείους: ἀναβλάστει MV; om. G.
3 Plin. 16. 174 and 175.

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fragrance of lilies. The fruit is in like manner attached to a single thick stalk, but in a cluster: as it becomes quite ripe, it turns black, but when unripe it is like unripe grapes; in size the berry is a little larger than the seed of a vetch; the juice is like wine in appearance, and in it men bathe their hands and heads when they are being initiated into the mysteries. The seeds inside the berry are like sesame.

The willow also grows by the water, and there are many kinds. There is that which is called the black willow because its bark is black and red, and that which is called the white from the colour of its bark. The black kind has boughs which are fairer and more serviceable for basket-work, while those of the white are more brittle. There is a form both of the black and of the white which is small and does not grow to a height,—just as there are dwarf forms of other trees, such as prickly cedar and palm. The people of Arcadia call the tree not 'willow' but helike: they believe, as was said, that it bears fruitful seed.

Of elm, poplars, alder, [semyda, bladder-senna].

XIV. Of the elm there are two kinds, of which one is called the 'mountain elm,' the other simply the ‘elm’: the difference is that the latter is shrubbier, while the mountain elm grows more vigorously. The leaf is undivided and slightly jagged, longer than that of the pear, but rough

4 See Index.
5 κατωτέρας conj. Sch.; καὶ πυρωτέρας U; καὶ πυρωτέρας MV Ald. cf. 3. 13. 4.
6 Sc. itéa generally. 7 3. 1. 2. 8 Plin. 16. 72.
ταξιν δὲ και οὔ λειον. μέγα δὲ τὸ δένδρον καὶ τῷ ὑψει καὶ τῷ μεγέθει. πολὺ δ’ οὐκ ἔστι περὶ τὴν Ἰδην ἀλλὰ σπάνιον: τόπον δὲ ἐφυδρὸν φιλεῖ. τὸ δὲ ξύλον ξανθὸν καὶ ἰσχυρὸν καὶ εὐινὸν καὶ γλύσχρον ἀπαν γαρ καρδία: χρῶνται δ’ αὐτῶ καὶ πρὸς θυρώματα πολυτελῆ, καὶ χλωρὸν μὲν εὐτομὸν ξηρὸν δὲ δύστομον. ἀκαρπον δὲ νομί-ζουσιν, ἀλλ’ ἐν ταῖς κωρυκίσι τὸ κόμμυ καὶ θηρί ἀττα κωνωποειδῆ φέρει. τας δὲ κάχρους ίδιας ἰσχει τοῦ μετοπῶρον πολλὰς καὶ μικρὰς καὶ μελαίνας, ἐν δὲ ταῖς ἀλλαίς ὀραίς οὐκ ἐπεσκέπταται.

2 Ἡ δὲ λεύκη καὶ η ἀγειρος μονοειδῆς, ὅρθοψυγι δὲ ἀμφώ, πλὴν μακρότερον πολὺ καὶ μανότερον καὶ λειότερον ἡ αὐγειρος, τὸ δὲ σχῆμα τῶν φύλλων παρόμοιον. ὅμοιον δὲ καὶ τὸ ξύλον τεμνόμενον τῇ λευκότητι. καρπὸν δ’ οὐδέτερον τούτων οὐδὲ ἀνθος ἔχειν δοκεῖ.

Ἡ κερκις δὲ παρόμοιον τῇ λεύκη καὶ τῷ μεγέθει καὶ τῷ τούς κλάδους ἐπιλεύκους ἔχειν: τὸ δὲ φύλλον κιττωδὲς μὲν ἀγώνιον δὲ ἐκ τοῦ ἄλλου, τῶν δὲ μίαν προμῆν καὶ εἰς ὃν συνῆκουσαν τῷ δὲ χρώματι σχέδου ὅμοιον τὸ ὑπτιον καὶ τὸ πρανέσ: μίσχῳ δὲ προσηρτημένον μακρῷ καὶ λεπτῷ, δ’ δ’ καὶ οὐκ ὄρθον ἀλλ’ ἐγκεκλιμένον. φλοιόν δὲ τραχύτερον τῆς λεύκης καὶ μᾶλλον ὑπόλεπτον, ὀσπερ ὁ τῆς ἀχράδος. ἀκαρπον δὲ.

3 Μονογενὲς δὲ καὶ ἡ κλήθρα: φύσει δὲ καὶ
rather than smooth. The tree is large, being both tall and wide-spreading. It is not common about Ida, but rare, and likes wet ground. The wood is yellow strong fibrous and tough; for it is all heart. Men use it for expensive doors: it is easy to cut when it is green, but difficult when it is dry. The tree is thought to bear no fruit, but in the ‘wallets’ it produces its gum and certain creatures like gnats; and it has in autumn its peculiar ‘winter-buds’ which are numerous small and black, but these have not been observed at other seasons.

The abele and the black poplar have each but a single kind: both are of erect growth, but the black poplar is much taller and of more open growth, and is smoother, while the shape of its leaves is similar to those of the other. The wood also of both, when cut, is much the same in whiteness. Neither of these trees appears to have fruit or flower.

The aspen is a tree resembling the abele both in size and in having whitish branches, but the leaf is ivy-like: while however it is otherwise without angles, its one angular projection is long and narrows to a sharp point: in colour the upper and under sides are much alike. The leaf is attached to a long thin stalk: wherefore the leaf is not set straight, but has a droop. The bark of the abele is rougher and more scaly, like that of the wild pear, and it bears no fruit.

The alder also has but one form: in growth it is

4 καχρος, here probably a gall, mistaken for winter-bud.
5 cf., however, 3. 3. 4; 4. 10. 2, where T. seems to follow a different authority.
6 Supply γωνιαι from αγώνιον.
7 εγκλιπενον: so. is not in line with the stalk.
Part of the description of the flower, and perhaps of the fruit, seems to be missing. Sch.

1 cf. 4. 8. 1; but in 1. 4. 3 the alder is classed with 'amphibious' trees, and in 3. 3. 1 with 'trees of the plain.'

2 Betulam, G from Plin. 16. 74.
also erect, and it has soft wood and a soft heart-wood, so that the slender boughs are hollow throughout. The leaf is like that of the pear, but larger and more fibrous. It has rough bark, which on the inner side is red: wherefore it is used for dyeing hides. It has shallow roots... the flower is as large as that of the bay. It grows in wet places and nowhere else.

The semyda has a leaf like that of the tree called the 'Persian nut' (walnut), but it is rather narrower: the bark is variegated and the wood light: it is only of use for making walking-sticks and for no other purpose.

The bladder-senna has a leaf near that of the willow, but is many-branched and has much foliage; and the tree altogether is a large one. The fruit is in a pod, as in leguminous plants: the pods in fact are broad rather than narrow, and the seed in them is comparatively small, and is moderately hard, but not so very hard. For its size the tree does not bear much fruit. It is uncommon to have the fruit in a pod; in fact there are few such trees.

Of filbert, terebinth, box, krataigos.

XV. The filbert is also naturally a wild tree, in that its fruit is little, if at all, inferior to that of the tree in cultivation, that it can stand winter, that it grows commonly on the mountains, and that it bears abundance of fruit in mountain regions; also because it does not make a trunk, but is shrubby with

4 Sch. remarks that the description of κολυτέα is out of place: cf. 3. 17. 2. W. thinks the whole section spurious. The antitheses in the latter part suggest a different context, in which κολυτέα was described by comparison with some other tree. 5 ὁρελοις conj. W.; φοραῖς Ald.
νόδες εἶναι ράβδοις ἀνευ μασχαλῶν καὶ ἀνόξους μακραῖς δὲ καὶ παχεῖαις ἐνίας:—οὐ μὴν ἄλλα καὶ ἐξημεροῦται. διαφοράν δὲ ἔχει τῷ τὸν καρπὸν ἀποδιδόναι βελτίω καὶ μεῖζον τὸ φύλλων κεχαραγμένον ὃ ἄμφοίν ὁμοιότατον τὸ τῆς κλήθρας, πλὴν πλατύτερον καὶ αὐτὸ τὸ δένδρον μεῖζον. καντιμῶτερον ὃ αἰεὶ γίνεται κατα-
2 κοπτόμενον τὰς ράβδους. γένη δὲ δύο ἄμφοιν· αἱ μὲν γὰρ στρογγύλου αἱ δὲ πρόμακρων φέρουσι τὸ κάρυνον· ἐκλευκότερον δὲ τὸ τῶν ἰμέρων. καὶ καλλικαρπεῖ μάλιστα γ' ἐν τοῖς ἐφύδροις. ἐξη-
μεροῦται δὲ τὰ ἄγρια μεταφυτεύομενα. φλοιον ὃ ἔχει λειόν ἐπιτόλαιον λεπτὸν λιταρὸν ἴδιος στυγμάς λευκὰς ἔχουτα ἐν αὐτῷ· τὸ δὲ ξύλον σφόδρα γλίσχρον, ὡστε καὶ τὰ λεπτὰ πάνυ ράβ-
δια περιλοπίσαντες κανέα ποιοῦσι, καὶ τὰ παχέα δὲ καταξύσαντες. ἔχει δὲ καὶ ἐντεριώνην λεπτὴν ἕανθην, ἢ κοιλαίνεται. ἴδιον δ' αὐτῶν τὸ περὶ τὸν ἴολον, ὡσπερ εἴπομεν.
3 Τῆς δὲ τερμύνθου τὸ μὲν ἀρρεν τὸ δὲ θῆλυ. τὸ μὲν οὖν ἀρρεν ἀκαρπον, δι' ὃ καὶ καλοῦσιν ἀρρεν-
τῶν δὲ θηλείων ἃ μὲν ἑρυθρῶν εὐθὺς φέρει τὸν καρπὸν ἡλίκου φακὸν ἀπεπτον, ἡ δὲ χλοερὸν ἐνέγκασα μετὰ ταῦτα ἐρυθραίνει, καὶ ἀμα τῇ ἀμπέλω πεπαίνουσα τὸ ἐσχάτον ποιεῖ μέλανα, μέγεθος ἡλίκου κύμαν, ῥητυνώδη δὲ καὶ θυμ-
δέστερον. ἔστι δὲ τὸ δένδρον περὶ μὲν τὴν Ἰδην καὶ Μακεδονίαν βραχὺ θαμνῶδες ἐστραμμένον, περὶ δὲ Δαμασκὸν τῆς Συρίας μέγα καὶ πολύ καὶ καλὸν ὁρὸς γὰρ τὴ φασιν εἶναι πάμμεστον

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unbranched stems without knots; though some of these are long and stout. Nevertheless it also submits to cultivation. The cultivated form differs in producing better fruit and larger leaves; in both forms the leaf has a jagged edge: the leaf of the alder most closely resembles it, but is broader, and the tree itself is bigger. The filbert is always more fruitful if it has its slender boughs cut off. There are two kinds of each sort; some have a round, others an oblong nut; that of the cultivated tree is paler, and it fruits best in damp places. The wild tree becomes cultivated by being transplanted. Its bark is smooth, consisting of one layer, thin glossy and with peculiar white blotches on it. The wood is extremely tough, so that men make baskets even of the quite thin twigs, having stripped them of their bark, and of the stout ones when they have whittled them. Also it has a small amount of yellow heart-wood, which makes the branches hollow. Peculiar to these trees is the matter of the catkin, as we mentioned.

The terebinth has a 'male' and a 'female' form. The 'male' is barren, which is why it is called 'male'; the fruit of one of the 'female' forms is red from the first and as large as an unripe lentil; the other produces a green fruit which subsequently turns red, and, ripening at the same time as the grapes, becomes eventually black and is as large as a bean, but resinous and somewhat aromatic. About Ida and in Macedonia the tree is low shrubby and twisted, but in the Syrian Damascus, where it abounds, it is tall and handsome; indeed they say

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4 5 Ald.H.; ¼ W. with U. cf. 3. 13. 4.
5 3. 7. 3. 6 Plin. 13. 54.
7 kal before ἀπεπτον om. St.
4 τερμίνθων, ἄλλο δ’ οὐδὲν πεφυκέναι. ξύλον δὲ ἐχει γλύσχρον καὶ ρίζας ἴσχυρὰς κατὰ βάθους, καὶ τὸ ὅλον ἀνώλεθρον. ἀνθος δὲ ὢμοιον τῷ τῆς ἐλασίας, τῷ χρώματι δὲ ἐρυθρόν. φύλλου, περὶ ἑνα μίσχον πλείω δαφνοειδῆ κατὰ συνυγίαν, ὦσπερ καὶ τὸ τῆς οὐης καὶ τὸ ἑξ’ ἀκρον περιττῶν πλῆν ἐγγυωντέρον τῆς οὐης καὶ δαφνοειδέστερον δὲ κύκλῳ καὶ λιπαρών ἀπαν ἀμα τῷ καρπῷ. φέρει δὲ καὶ κωρυκώδη τινὰ κοῦλα, καθάπερ ἡ πτελέα, ἐν οἷς θηρίδα ἐγγύγυνεται κωνωποειδῆ; εὐγύγυνεται δὲ τὶ καὶ ῥητινώδες ἐν τούτοις καὶ γλύσχρον’ ὅ ὑμῖν εὐθεύτεν γε ή ῥητίνῃ συνέγεται ἀλλ’ ἀπὸ τοῦ ξύλου. ο’ δὲ καρπὸς οὐκ ἀφίησιν ῥητίνῃς πλῆθος, ἀλλὰ προσέχεται μὲν ταῖς χερσί, καὶ μὴ πλυθὴ μετὰ τὴν συνυγίαν συνεγεται πλυνόμενος δὲ ὦ μὲν λευκὸς καὶ ἀπεπτὸς ἐπιπλεῖ, ο’ δὲ μέλας υψίσταται.

5 Ἡ δὲ πῦξος μεγέθει μὲν οὐ μεγάλη, τὸ δὲ φύλλον ὀμοιον ἐχει μυρρίνῳ. φύεται δ’ ἐν τοῖς ψυχροῖς τόποις καὶ τραχέσι’ καὶ γὰρ τὰ Κύτωρα τοιοῦτον, οὐ ἡ πλείστη γίνεται: ψυχρός δὲ καὶ ὁ ’Ολυμπὸς ὁ Μακεδονικός’ καὶ γὰρ ἐνταῦθα γίνεται πλῆν οὐ μεγάλη μεγίστη δὲ καὶ καλνήστῃ ἐν Κύρνω’ καὶ γὰρ εὔμηκεις καὶ πάχος ἔχουσιν πολὺ παρὰ τὰς ἄλλας. δί’ ο’ καὶ τὸ μέλι οὐχ ἤδυ οξον τῆς πῦξον.

1 πλείω: sc. φύλλα, in loose apposition to φύλλον. Apparently the leaf is said to resemble that of οἶη in its composite structure, but that of the bay in shape: cf. 3. 12. 7.
2 ἀπαν ἀμα conj. W.; ἀμα ἀπαν UAld.
3 cf. 2. 8. 3; 3. 7. 3; 3. 14. 1. κωρυκώδη conj. R. Const.; κωρυκώδη Ald.; κωρυκώδη H.; κωρυκώδη mBas.
that there is a certain hill which is covered with terebinths, though nothing else grows on it. It has tough wood and strong roots which run deep, and the tree as a whole is impossible to destroy. The flower is like that of the olive, but red in colour. The leaf is made up of a number of leaflets, like bay leaves, attached in pairs to a single leaf-stalk. So far it resembles the leaf of the sorb; there is also the extra leaflet at the tip: but the leaf is more angular than that of the sorb, and the edge resembles more the leaf of the bay; the leaf is glossy all over, as is the fruit. It bears also some hollow bag-like growths, like the elm, in which are found little creatures like gnats; and resinous sticky matter is found also in these bags; but the resin is gathered from the wood and not from these. The fruit does not discharge much resin, but it clings to the hands, and, if it is not washed after gathering, it all sticks together; if it is washed, the part which is white and unripe floats, but the black part sinks.

The box is not a large tree, and it has a leaf like that of the myrtle. It grows in cold rough places; for of this character is Cytora, where it is most abundant. The Macedonian Olympus is also a cold region; for there too it grows, though not to a great size. It is largest and fairest in Corsica, where the tree grows taller and stouter than anywhere else; wherefore the honey there is not sweet, as it smells of the box.

4 ἑπιπλεῖ conj. R. Const. from G; ἐπὶ πλεῖον Ald.; ἐπὶ πλεῖ (erased) U.
5 cf. Cytore buxifer, Catull. 4. 13; Plin. 16. 70.
6 cf. 5. 7. 7.
7 ὂπρυφον conj. R. Const. from Plin. l.c.; ὂπρυφοι Λ Φ; ὂπρυφον Λ Φ Ald.

ΧΩ. Ο δὲ πρώτος φύλλον μὲν ἔχει δρυώδες, ἔλαττον δὲ καὶ ἐπακανθίζου, τὸν δὲ φλοιὸν λειώτερον δρυός. αὐτὸ δὲ τὸ δένδρον μέγα, καθάπερ ἡ δρύς, εὰν ἔχῃ τόπον καὶ ἐδαφος· ἔλυον δὲ πυκνὸν καὶ ἵσχυρὸν· βαθύρριζον δὲ ἐπιεικῶς καὶ πολύρριζον. καρπὸν δὲ ἔχει βαλανώδη· μικρὰ δὲ ἡ βάλανος· περικαταλαμβάνει δὲ ὁ νέος τὸν ἐνοὺ όψε γὰρ πεπαίνει, δ' ὁ καὶ διφορεῖν τινές φασι. φέρει δὲ παρὰ τὴν βάλανον καὶ κόκκον τινὰ φοινικοῦν· ἵσχε δὲ καὶ ἰξίαν καὶ υφέαρ: ὡστε ἐνίοτε συμβαίνει τέταρας ἀμα καρποὺς ἔχειν αὐτόν, δύο μὲν τοὺς ἑαυτοῦ δύο δ' ἄλλους τὸν τε τῆς ἰξίας καὶ τὸν τοῦ υφεάρος. καὶ τὴν

1 Quoted by Athen. 2. 34; cf. Plin. 16. 120; 26. 99; 27. 62 and 63.
2 τετανόν: cf. 3. 11. 1; 3. 12. 5. Athen., l.c., has τεταμένον.
3 ἐκείνο Athen. l.c.; κάκείνο Ald.
4 ἕαυθόν before ἵσχυρὸν Athen. l.c.
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ENQUIRY INTO PLANTS, III. xv. 6–xvi. 1

1 The *krataigos* is a very common tree; some call it *krataigon*. It has a smooth leaf like that of the medlar, but longer, and its breadth is greater than its length, while the edge is not jagged like that of the medlar. The tree does not grow very tall or thick; its wood is mottled strong and brown; it has a smooth bark like that of the medlar; it has generally a single root, which runs deep. The fruit is round and as large as that of the wild olive; as it ripens it turns brown and black; in taste and flavour it is like that of the medlar; wherefore this might seem to be a sort of wild form of that tree. There is only one form of it and it shews no variation.

Of certain other oaks, *arbutus, andrachne, wig-tree.*

XVI. The *kermes-oak* has a leaf like that of the oak, but smaller and spinous, while its bark is smoother than that of the oak. The tree itself is large, like the oak, if it has space and root-room; the wood is close and strong; it roots fairly deep and it has many roots. The fruit is like an acorn, but the kermes-oak’s acorn is small; the new one overtakes that of last year, for it ripens late. Wherefore some say that it bears twice. Besides the acorn it bears a kind of scarlet berry; it also has oak-mistletoe and mistletoe; so that sometimes it happens that it has four fruits on it at once, two which are its own and two others, namely those of the oak-mistletoe and

5 κότινος Athen. l.c.; κόψιμος UMVald.
6 μεσόπιλη added from Athen. l.c.
7 cf. 3. 7. 3. 8 cf. 3. 16. 2. 9 cf. 3. 4. 1, 4 and 6.
11 cf. C.P. 2. 17. 1.
μὲν ἱξίαν φέρει ἐκ τῶν πρὸς βορράν, τὸ δὲ ύφεαρ ἐκ τῶν πρὸς μεσημβρίαν.

2 Οἱ δὲ περὶ Ἀρκαδίαν δένδρον τι σμίλακα καλοῦσιν, ὦ ἐστιν ὦμοιον τὸ πρίνω, τὰ δὲ φύλλα ύμνικ ἄκανθωδὴ ἔχει ἀλλ’ ἀπαλώτερα καὶ βαθύτερα καὶ διαφοράς ἔχουσα πλείουσ’ οὔτε τὸ ξύλον ὑσπερ ἐκεῖνο στερεὸν καὶ πυκνόν, ἀλλὰ καὶ μαλακὸν ἐν ταῖς ἑργασίαις.

3 “Ο δὲ καλοῦσιν οἱ Ἀρκάδες φελλόδρυν τοιάνδε ἔχει τὴν φύσιν· ὄς μὲν ἀπλῶς εἶπεῖν ἀνα μέσον πρίνου καὶ δρυός ἐστιν καὶ εἰμι γε ὑπολαμβάνονσιν εἶναι θῆλυν πρίνου” δι’ ο καὶ ὅπως μὴ φύτειν πρίνοις τούτω χρώνται πρὸς τὰς ἀμάξας καὶ τὰ τοιάντα, καθάπερ οἱ περὶ Δακεδαίμονα καὶ Ἡλείαν. καλοὺσι δὲ οἳ γε Δωριεῖς καὶ ἀριάν τὸ δένδρον’ ἐστὶ δὲ μαλακότερον μὲν καὶ μανότερον τοῦ πρίνου, σκληρότερον δὲ καὶ πυκνότερον τῆς δρυός· καὶ τὸ χρώμα φλοίσθεντος τοῦ ξύλου λευκότερον μὲν τοῦ πρίνου, οἰνωπότερον δὲ τῆς δρυός· τὰ δὲ φύλλα προσέοικε μὲν ἁμφοῖν, ἔχει δὲ μείζω μὲν ἦ ὡς πρίνος ἐλάττω δὲ ἦ ὡς δρύς· καὶ τὸν καρπὸν τοῦ μὲν πρίνου κατὰ μέγεθος ἐλάττω ταῖς ἑλαχίσταις δὲ βαλάνοις ἵσον, καὶ γλυκύτερον μὲν τοῦ πρίνου πικρότερον δὲ τῆς δρυός. καλοῦσι δὲ τινες τὸν μὲν τοῦ πρίνου καὶ τῶν ταύτης καρπὸν ἄκυλον, τὸν δὲ τῆς δρυός βάλανον. μὴτραν δὲ ἔχει φανερωτέραν ἦ ὁ πρίνος· καὶ ἦ μὲν φελλόδρυν τοιαύτην τινὰ ἔχει φύσιν.

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1 Plin. 16. 19. See Index. 
2 βαθύτερα MSS.; εὐθύτερα conj. Dalec. 
3 Plin. l.c. See Index.
of the mistletoe. It produces the oak-mistletoe on the north side and the mistletoe on the south.

The Arcadians have a tree which they call *smilax*¹ (holm-oak), which resembles the kermes-oak, but has not spinous leaves, its leaves being softer and longer² and differing in several other ways. Nor is the wood hard and close like that of the kermes-oak, but quite soft to work.

The tree which the Arcadians call *'cork-oak'*³ (holm-oak) has this character:—to put it generally, it is between the kermes-oak and the oak; and some suppose it to be the 'female' kermes-oak; wherefore, where the kermes-oak does not grow, they use this tree for their carts and such-like purposes; for instance it is so used by the peoples of Lacedaemon and Elis. The Dorians also call the tree *aria*.² Its wood is softer and less compact than that of the kermes-oak, but harder and closer than that of the oak. When it is barked,⁵ the colour of the wood is paler than that of the kermes-oak, but redder than that of the oak. The leaves resemble those of both trees, but they are somewhat large, if we consider the tree as a kermes-oak, and somewhat small if we regard it as an oak. The fruit is smaller in size than that of the kermes-oak, and equal to the smallest acorns; it is sweeter than that of the kermes-oak, bitterer than that of the oak. Some call the fruit of the kermes-oak and of the *aria* 'mast,'⁶ keeping the name 'acorn' for the fruit of the oak. It has a core which is more obvious than in kermes-oak. Such is the character of the 'cork-oak.'

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¹ Already described; cf. 3. 4. 2; 3. 17. 1.
THEOPHRASTUS

4 Ἡ δὲ κόμαρος, ἢ τὸ μεμαίκυλον φέρουσα τὸ ἐδώδιμον, ἔστι μὲν ὦκ ἀγαν μέγα, τὸν δὲ φλοίον ἔχει λεπτὸν μὲν παρόμοιον μυρίκη, τὸ δὲ φύλλον μεταξὺ πρίνου καὶ δάφνης. ἀνθεί δὲ τοῦ Πυανεψιῶνος· τὰ δὲ ἀνθή πέφυκεν ἀπὸ μιᾶς κρεμάστρας ἐπ’ ἀκρων βοτρυδὸν· τὴν δὲ μορφὴν ἐκαστὸν ἐστίν ὦμοιον μύρτῳ προμῆκει καὶ τῷ μεγέθει δὲ σχεδὸν τηλικοῦτον· ἀφυλλὸν δὲ καὶ κοίλον ὡσπερ ὄνων ἐκκεκολαμμένον τὸ στόμα δὲ ἀνεφγιένον· ὅταν δ’ ἀπανθήση, καὶ ἡ πρόσφοις πετρύστηκαί, τὸ δ’ ἀπανθήσαν λεπτὸν καὶ ὡσπερ σφόνδυλος περὶ ἀτρακτὸν ἡ κάρνειος Δωρικός· ὁ δὲ καρπὸς ἐνιαυτῷ πεπαίνεται, ὡσθ’ ἀμα συμβαίνει τοῦτον τ’ ἐχειν καὶ τὸν ἐτερον ἀνθείν.

5 Παρόμοιον δὲ τὸ φύλλον καὶ ἡ ἀνδράχλη ἔχει τῷ κομάρῳ, μέγεθος οὐκ ἀγαν μέγα· τὸν δὲ φλοίον λείον ἔχει καὶ περιρρηγυμένον· καρπὸν δ’ ἔχει ὦμοιον τῇ κομάρῳ.

6 "Ὀμοίον δ’ ἐστὶ τούτοις τὸ φύλλον καὶ τὸ τῆς κοκκυγεάς· τὸ δὲ δένδρον μικρόν. Ὡδιόν δὲ ἔχει τὸ ἐκπαπποῦσθαί τὸν καρπὸν· τούτο γὰρ οὐδ’ ἐφ’ ἐνὸς ἀκηκόαμεν ἄλλου δένδρου. ταῦτα μὲν οὖν κοινότερα πλείοσι χώραις καὶ τόποις.

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1 Plin. 15. 98 and 99; Diosc. 1. 122. 2 October. 3 ἐκκεκολαμμένον MV, cf. Arist. H.A. 6. 3; ἐγκεκολαμμένον UAld. 4 cf. 1. 13. 3. 5 κάρνειος, an unknown word, probably corrupt; κιόνος Δωρικοῦ conj. Sch., ‘drum of a Doric column,’ cf. Athen. 5. 39.

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The arbutus, which produces the edible fruit called *memaihylon*, is not a very large tree; its bark is thin and like that of the tamarisk, the leaf is between that of the kermes-oak and that of the bay. It blooms in the month Pyanepsion; the flowers grow in clusters at the end of the boughs from a single attachment; in shape each of them is like an oblong myrtle flower and it is of about the same size; it has no petals, but forms a cup like an empty eggshell, and the mouth is open: when the flower drops off, there is a hole also through the part by which it is attached, and the fallen flower is delicate and like a whorl on a spindle or a Doric *karneëios*. The fruit takes a year to ripen, so that it comes to pass that this and the new flower are on the tree together.

The andrachne has a leaf like that of the arbutus and is not a very large tree; the bark is smooth and cracked, the fruit is like that of the arbutus. The leaf of the wig-tree is also like that of the last named tree, but it is a small tree. Peculiar to it is the fact that the fruit passes into down: we have not heard of such a thing in any other tree. These trees are found in a good many positions and regions.

6 Plin. 13. 120.
7 λείον conj. Sch.; λευκὸν UAld. In Pletho’s excerpt the passage has λείον, and Plin., l.c., evidently read λείον.
8 περιρρηγυφύμενον. Plin., l.c., seems to have read περιπηγυφύμενον. cf. 1. 5. 2; 9. 4. 3.
9 Plin. 13. 121. κοκκυγέας conj. Sch. after Plin. l.c., cf. Hesych. s.v. κεκκοκυγωμένη; κοκκομηλέας Υ; κοκκυμήλεας PAlD.
10 ἐκκαπαποῦσθαι: fructum amittere lanugine Plin. l.c. cf. 6. 8. 4.
THEOPHRASTUS

XVII. Ἔνια δὲ ἰδιώτερα, καθάπερ καὶ ὁ φελλὸς· γίνεται μὲν ἐν Τυρρηνίᾳ, τὸ δὲ δένδρον ἐστὶ στελεχώδες μὲν καὶ ὀλυγόκλαδον, εὑμηκες δὲ ἐπιεικῶς καὶ εὐαυξές· ξύλον ἰσχυρόν· τὸν δὲ φλοίδαν παχῦν σφόδρα καὶ καταρρηγνύμενον, ὡσπερ ὁ τῆς πίτους, πλήν κατὰ μείζω. τὸ δὲ φύλλον ὅμοιον ταῖς μελίαις παχὺ προμηκέστερον· οὔκ ἀείφυλλον ἀλλὰ φυλλοβολοῦν. καρπὸν δὲ [αἰεὶ] φέρει βαλανηρὸν ὅμοιον τῇ ἀρίᾳ. περιαρουσὶ δὲ τὸν φλοίδον καὶ φασὶ δεῖν πάντα ἄφαιρεῖν, εἰ δὲ μὴ χείρον γίνεται τὸ δένδρον· ἐξαναπληροῦται δὲ πάλιν σχεδὸν ἐν τρισίν ἔτεσιν.

2 Ἰδιον δὲ καὶ ἡ κολουτέα περὶ Λιπάραν· δένδρον μὲν εὐμέγεθες, τὸν δὲ καρπὸν φέρει ἐν λοβοῖς ἥλικον φακόν, ὥς πιαίνει τὰ πρόβατα θαυμαστῶς. φύεται δὲ ἀπὸ σπέρματος καὶ ἐκ τῆς τῶν προβάτων κόπρου κάλλιστα. ὥρα δὲ τῆς φυτείας ἀμα Ἀρκτούρῳ δυομένῳ· δεῖ δὲ φυτεύειν προβρέχοντας ὅταν ἧδη διαφύτηται ἐν τῷ ύδατι. φύλλον δ᾽ ἔχει παρόμοιον τύλει. βλαστάνει δὲ τὸ πρῶτον μονοφυὲς ἐπὶ ἐτη μύλιστα τρία ἐν οἷς καὶ τὰς βακτηρίας τέμνουσι· δοκοῦσι γὰρ εἶναι καλὰ· καὶ ἐὰν τὶς κολούσῃ ἀποθνήσκει· καὶ γὰρ ἀπαράβλαστον ἔστι· εἰτα σχίζεται καὶ ἀποδενδροῦται τῷ τετάρτῳ ἔτει.

1 Plin. 16. 34.
2 Τυρρηνίᾳ conj. R. Const.; πυρρηνίαι UMV; πυρρηνία Ald.
3 aiel must be corrupt: probably repeated from ἀείφυλλον.
4 βαλανηρὸν conj. Sch.; βαλανῆφορον UMV Ald.
5 ἀρίᾳ conj. R. Const. from G; ἀγρίᾳ P2MV Ald.; ἀγρίαι U.
Of cork-oak, kolutea, koloitia, and of certain other trees peculiar to particular localities.

XVII. Some however are more local, such as the cork-oak: this occurs in Tyrrhenia; it is a tree with a distinct trunk and few branches, and is fairly tall and of vigorous growth. The wood is strong, the bark very thick and cracked, like that of the Aleppo pine, save that the cracks are larger. The leaf is like that of the manna-ash, thick and somewhat oblong. The tree is not evergreen but deciduous. It has always an acorn-like fruit like that of the *aria* (holm-oak). They strip off the bark, and they say that it should all be removed, otherwise the tree deteriorates: it is renewed again in about three years.

The *kolutea* too is a local tree, occurring in the Lipari islands. It is a tree of good size, and bears its fruit, which is as large as a lentil, in pods; this fattens sheep wonderfully. It grows from seed, and also grows very well from sheep-droppings. The time for sowing it is the setting of Arcturus; and one should first soak the seed and sow it when it is already sprouting in the water. It has a leaf like *telis* (fenugreek). At first it grows for about three years with a single stem, and in this period men cut their walking-sticks from it; for it seems that it makes excellent ones. And, if the top is cut off during this period, it dies, for it makes no side-shoots. After this period it divides, and in the fourth year develops into a tree.

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6 cf. 1. 5. 2; 4. 15. 1; Plin. 17. 234.
7 ἀφαίρειν conj. Coraës; διαφαίρειν P. Ald.
8 cf. 1. 11. 2; 3. 17. 3.
9 τῆλει conj. R. Const. from G, faeno graeco; τιλει UMV; τύλη Ald.
3 Ἡ δὲ περὶ τὴν ἶδην, ἣν καλοῦσι κολούτιαν, ἐτερον εἰδός ἐστιν, θαμνοεῖδες δὲ καὶ ὄξωδες καὶ πολυμάσχαλον, σπάνιον δὲ, οὐ πολὺ: ἔχει δὲ φύλλον δαφνοεῖδες πλατυφύλλου δάφνης, πλὴν στρογγυλῶτερον καὶ μεῖζον ὅσθ’ ὄμοιον φαίνεσθαι τῷ τῆς πτελέας, προμηκόστετον δὲ, τὴν χρόαν ἐπὶ θάτερα χλοερὸν ὀπίσθεν δὲ ἐπιλευκαῖνον, καὶ πολύνον ἐκ τῶν ὀπίσθεν ταῖς λεπταῖς ὑσὶ ἐκ τε τῆς ράχεως καὶ μεταξὺ τῶν πλευροειδῶν ἀπὸ τῆς μέσης κατατεινουσῶν φλοιῶν δ’ οὐ λείον ἀλλ’ οἶνον τὸν τῆς ἀμπέλου: τὸ δὲ ξύλων σκληρὸν καὶ πυκνὸν ρίζας δὲ ἐπιπολαίουσα καὶ λεπταῖς καὶ μανάς οὐλὰς δ’ ἐνίστε, καὶ ξανθὰς σφόδρα. καρπὸν δὲ οὐκ ἔχειν φασίν οὐδὲ ἄνθος: τὴν δὲ κορυνώδη κάχρυν καὶ τοὺς ὀφθαλμοὺς τοὺς παρὰ τὰ φύλλα λείους σφόδρα καὶ λιπαρούς καὶ λευκοὺς τῷ σχῆματι δὲ καχρυώδεις: ἀποκοπεῖ δὲ καὶ ἐπικαυθέν παραφύτει καὶ ἀναβλαστάνει.

4 Ἰδια δὲ καὶ τάδε τὰ περὶ τὴν ἶδην ἐστίν, οἶνον ὑ τε Ἀλεξάνδρεια καλομένη δάφνη καὶ συκῆ τις καὶ ἀμπέλος. τῆς μὲν οὖν δάφνης ἐν τούτῳ τῷ ἱδιον, ὅτι ἐπιφυλλόκαρπόν ἐστιν, ὡσπερ καὶ ἡ κεντρομυρρίνη: ἀμφότερα γὰρ τὸν καρπὸν ἔχουσιν ἐκ τῆς ράχεως τοῦ φύλλου.

5 Ἡ δὲ συκῆ βαμνώδες μὲν καὶ οὖχ ὑψηλόν, πάχος δ’ ἔχου ὡστε καὶ τηχναιόν εἶναι τὴν περίμετρον: τὸ δὲ ξύλων ἐπεστραμμένον γλύσχρον κάτωθεν μὲν λείον καὶ ἀνοξον ἀνωθεν δὲ περί-

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1 κολοτίαιαν (? κολοτίαιαν) U. cf. 1. 11. 2; 3. 17. 2. Whichever spelling is correct should probably be adopted in all three places. 2 cf. 3. 11. 3.
The tree found about Mount Ida, called *koloitia*, is a distinct kind and is shrubby and branching with many boughs; but it is rather rare. It has a leaf like that of the 'broad-leaved' bay, but rounder and larger, so that it looks like that of the elm, but it is more oblong: the colour on both sides is green, but the base is whitish; in this part it is very fibrous, because of its fine fibres which spring partly from the midrib, partly between the ribs (so to call them) which run out from the midrib. The bark is not smooth but like that of the vine; the wood is hard and close, the roots are shallow slender and spreading, (though sometimes they are compact), and they are very yellow. They say that this shrub has no fruit nor flower, but has its knobby winter-bud and its 'eyes'; these grow alongside of the leaves, and are very smooth glossy and white, and in shape are like a winter-bud. When the tree is cut or burnt down, it grows from the side and springs up again.

There are also three trees peculiar to Mount Ida, the tree called Alexandrian laurel, a sort of fig, and a 'vine' (currant grape). The peculiarity of the laurel is that it bears fruit on its leaves, like the 'prickly myrtle' (butcher's broom): both have their fruit on the midrib of the leaf.

The 'fig' is shrubby and not tall, but so thick that the stem is a cubit in circumference. The wood is twisted and tough; below it is smooth and unbranched, above it has thick foliage: the colour both
κομον' χρώμα δὲ καὶ φύλλου καὶ φλοιοῦ πελιόν, τὸ δὲ σχῆμα τῶν φύλλων ὦμοιον τῷ τῆς φιλύρας καὶ μαλακῶν καὶ πλατύ καὶ τὸ μέγεθος παραπλήσιου· ἀνθοὺς μεστυλώδες καὶ ἀνθεῖ ἀμα τῇ μεστίλη. ὡ δὲ καρπός, ὅν καλούσι σύκον, ἐρυθρός ἥλικος ἐλάσ πλήν στρογγυλώτερος, ἐσθιόμενος δὲ μεστυλώδης· ρίζας δὲ ἔχει παχείας ὡσὰν συκῆς ἥμερον καὶ γλύσχρας. ἄσπατες δὲ ἔστι τὸ δένδρον καὶ καρδίαν ἔχει στερεὰν ὑλὴ ἐντεριώνην.

8 Ἡ δὲ ἀμπελος φύτει αἱ μὲν τῆς Ἰδῆς περὶ τὰς Φαλάκρας καλομένας· ἔστι δὲ θαμνώδες ῥαβδίοις μικροῖς· τεῦνονται δὲ οἱ κλώνες ὡς πυγνωνιαῖοι, πρὸς οὓς βάγες εἰσιν ἐκ πλαγίου μέλαιναι τὸ μέγεθος ἥλικος κύμας γλυκεῖαν· ἔχουσι δὲ ἐντὸς γιγαρτώδες τι μαλακόν· φύλλου στρογγυλον ἀσχίδες μικρόν.

ΧVIII. Ἐχει δὲ καὶ τἀλλα σχεδὸν ὄρη φύσεως τινὰς ἱδίας τὰ μὲν δένδρων τὰ δὲ θάμνων τὰ δ’ ἄλλων ὑλημάτων. ἀλλὰ γὰρ περὶ μὲν τῆς ἱδιότητος εἰρηται πλεονάκις ὅτι γίνεται καθ’ ἐκάστους τόπους. ὥ δὲ ἐν αὐτῶι τοῖς ὦμογενεσίων διαφορά, καθάπερ ἡ τῶν δένδρων καὶ τῶν θάμνων, ὦμοίως ἐστὶ καὶ τῶν ἄλλων, ὕσπερ εἰρηται, τῶν πλείστων, ὕσπερ καὶ ράμνου καὶ παλιουρου καὶ οὔσου [καὶ οἴτου] καὶ ῥοῦ καὶ κιττοῦ καὶ βάτου καὶ ἐτέρων πολλῶν.

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1 Lit. grape-stone.
2 I omit ἦ before διαφορά with Sch.
of leaf and bark is a dull green, the shape of the leaf is like that of the lime; it is soft and broad, and in size it also corresponds; the flower is like that of the medlar, and the tree blooms at the same time as that tree. The fruit, which they call a 'fig,' is red, and as large as an olive, but it is rounder and is like the medlar in taste; the roots are thick like those of the cultivated fig, and tough. The tree does not rot, and it has a solid heart, instead of ordinary heart-wood.

The 'vine' (currant grape) grows about the place called Phalakrai in the district of Ida; it is shrubby with small twigs; the branches are about a cubit long, and attached to them at the side are black berries, which are the size of a bean and sweet; inside they have a sort of soft stone; the leaf is round undivided and small.

Of the differences in various shrubs—buckthorn, withy, Christ's thorn, bramble, sumach, ivy, smilax, [spindle-tree].

XVIII. Most other mountains too have certain peculiar products, whether trees shrubs or other woody plants. However we have several times remarked as to such peculiarities that they occur in all regions. Moreover the variation between things of the same kind which we find in trees obtains also among shrubs and most other things, as has been said: for instance, we find it in buckthorn Christ's thorn withy sumach ivy bramble and many others.

³ [καὶ οἶτον] bracketed by W.; καὶ ὑσοῦ Ald.; καὶ ὕσον καὶ οἶτον MVP; καὶ ὑσοῦ καὶ οἶτοι U. Only ὑσος is mentioned in the following descriptions.
THEOPHRASTUS

2  'Pámnos te γάρ ἐστιν ἡ μὲν μέλαινα ἡ δὲ λευκή, καὶ ὁ καρπὸς διάφορος, ἀκανθοφόροι δὲ ἄμφω. 
Τοῦ τε οὖσου τὸ μὲν λευκὸν τὸ δὲ μέλαν· καὶ τὸ ἄνθος ἐκατέρου καὶ ὁ καρπὸς κατὰ λόγον ὁ μὲν λευκὸς ὁ δὲ μέλας· ἐνιοὶ δὲ καὶ ὦσπερ ἀνὰ μέσον, ὥν καὶ τὸ ἄνθος ἐπιπορφυρίζει καὶ οὔτε οἰνωπὸν οὔτε ἐκλευκόν ἐστιν ὦσπερ τῶν ἐτέρων. ἔχει δὲ καὶ τὰ φύλλα λεπτότερα καὶ λειότερα καὶ τὰς ράβδους τοῖς λευκοῖς.

3  "Ὁ τε παλίουρος ἔχει διαφορὰς . . . ἀπαντα δὲ ταύτα καρποφόρα. καὶ ὁ γε παλίουρος ἐν λοβῷ τινὶ τὸν καρπὸν ἔχει καθαπερεῖ φύλλω, ἐν ὁ τρία ἢ τέτταρα γίνεται. χρῶνται δ' αὐτῷ πρὸς τὰς βῆχας οἱ ἰατροὶ κοπτοντες· ἔχει γάρ τινα γλυκρότητα καὶ λίπος, ὦσπερ τὸ τοῦ λίνου σπέρμα. φύεται δὲ καὶ ἐπὶ τοῖς ἐφύδροις καὶ ἐν τοῖς ἔηροις, ὦσπερ ὁ βάτος. [οὐχ ἦτον δὲ ἐστὶ τὸ δένδρον πάρυδρον.] φυλλοβόλον δὲ καὶ οὐχ ὦσπερ ἡ ράμνος αἰείφυλλον.

4  "Ἕτι δὲ καὶ τοῦ βάτου πλείω γένη, μεγίστην δὲ ἔχουτες διαφοράν ὅτι ὁ μὲν ὀρθοφυὴς καὶ ὴψος ἔχων, ὁ δ' ἐπὶ τῆς γῆς καὶ εὐθὺς κάτω νεῦον καὶ ὅταν συνάπτῃ τῇ γῇ ῥιζούμενος πάλιν, ὅν δὴ καλοῦσί τινες χαμαίβατον. τὸ δὲ κυνόσβατον τὸν καρπὸν ὑπέρυθρον ἔχει καὶ παραπλήσιον τῷ τῆς ρόας· ἐστι δὲ θάμνον καὶ δένδρον μεταξὺ καὶ παρόμοιον ταῖς ρόαις, τὸ δὲ φύλλον ἀκανθώδες.

1 cf. 1. 9. 4; 3. 18. 12; C.P. 1. 10. 7.
2 Some words are missing, which described various forms of παλίουρος, alluded to in πάντα ταύτα (Sch.). cf. 4. 3. 3, where an African παλίουρος is described.
3 καθαπερεὶ φύλλῳ conj. W., cf. 3. 11. 2; καθάπερ τὸ φύλλον UMV.

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Thus of buckthorn there is the black and the white form, and there is difference in the fruit, though both bear thorns.

Of the withy there is a black and a white form; the flower and fruit of each respectively correspond in colour to the name; but some specimens are, as it were, intermediate, the flower being purplish, and neither wine-coloured nor whitish as in the others. The leaves in the white kind are also slenderer and smoother, as also are the branches.

There is variation also in the Christ's thorn . . . all these forms are fruit-bearing. Christ's thorn has its fruit in a sort of pod, resembling a leaf, which contains three or four seeds. Doctors bruise them and use them against coughs; for they have a certain viscous and oily character, like linseed. The shrub grows in wet and dry places alike, like the Bramble. But it is deciduous, and not evergreen like buckthorn.

Of the Bramble again there are several kinds, shewing very great variation; one is erect and tall, another runs along the ground and from the first bends downwards, and, when it touches the earth, it roots again; this some call the 'ground Bramble.' The 'dog's Bramble' (Wild Rose) has a reddish fruit, like that of the Pomegranate; and, like the Pomegranate, it is intermediate between a shrub and a tree; but the leaf is spinous.
Τής δὲ ροῦ τὸ μὲν ἀρρεν τὸ δὲ θῆλυ καλοῦσι τῷ τὸ μὲν ἄκαρπον εἶναι τὸ δὲ κάρπιμον. οὐκ ἔχει δὲ οὐδὲ τὰς ράβδους υψηλὰς οὐδὲ παχείας, φύλλου δ' ὀμοιον πτελέα πλὴν μικρὸν προμηκέστερον καὶ ἐπίδασυν. τῶν δὲ κλωνίων τῶν νέων ἔξ ἵσον τὰ φύλλα εἰς δύο, κατ' ἄλληλα δὲ ἐκ τῶν πλαγίων ὡστε στοιχεῖν. βάπτουσι δὲ τούτῳ καὶ οἱ σκυτοδέψαι τὰ δέρματα τὰ λευκά. ἀνθὸς λευκὸν βοτρυῶδες, τῷ σχῆματι δὲ τὸ ὀλοσχερὲς ὀστλεγγας ἔχον ὄσπερ καὶ ὁ βότρυς. ἀπαυθή- σαντος δὲ ὁ καρπός ἁμα τῇ σταφύλῃ ἐρυθραίνεται, καὶ γίνονται οἰον φακοι λεπτοι συγκείμενοι. βοτρυῶδες δὲ τὸ σχῆμα καὶ τούτων. ἔχει δὲ τὸ φαρμακώδες τοῦτο ὁ καλείται ρούς ἐν αὐτῷ ὀστώδες, ὁ καὶ τῆς ῥοῦ διητημένης ἔχει πολλάκις ῥίξα δ' ἐπιπόλαιος καὶ μονοφυὴς ὡστε ἀνακάμπτεσθαι βαδίως ὀλόρριξα: τὸ δὲ ξύλον ἐντεριώνῃ ἔχει, εὐφθαρτον δὲ καὶ κοπτόμενον. ἐν πᾶσι δὲ γίγνεται τοῖς τόποις, εὐθειεὶ δὲ μάλιστα ἐν τοῖς ἄργυλώδεσι.

6 Πολυειδὴς δὲ ὁ κιττός· καὶ γὰρ ἐπίγειος, ὁ δὲ εἰς υψὸς αἰρόμενος· καὶ τῶν ἐν υψεὶ πλείω γένη· τρία δ' οὖν φαίνεται τὰ μέγιστα ὁ τε λευκὸς καὶ ὁ μέλας καὶ τρίτον ἡ ἐλιξ. εἶδη δὲ καὶ ἐκάστου τούτων πλείω· λευκὸς γὰρ ὁ μὲν τῷ καρπῷ μόνον, ὁ δὲ καὶ τοῖς φύλλοις ἐστὶ. πάλιν δὲ τῶν λευκοκάρπων μόνον ὁ μὲν ἄδρον καὶ πυκνὸν καὶ συνεστηκότα τὸν καρπὸν ἔχει καθαπερεῖ σφαίραν,

1 Plin. 13. 55; 24. 91.
2 στοιχεῖν: cf. 3. 5. 3; Plin. 13. 55.
3 Βοτρυῶδες conj. W.; Βοτρυῶδες U; Βοτρυῶδες Ald.
4 ὁ ροῦς masc. cf. Diosc. 1. 108.
Of the sumach they recognise a 'male' and a 'female' form, the former being barren, the latter fruit-bearing. The branches are not lofty nor stout, the leaf is like that of the elm, but small more oblong and hairy. On the young shoots the leaves grow in pairs at equal distances apart, corresponding to each other on the two sides, so that they are in regular rows. Tanners use this tree for dyeing white leather. The flower is white and grows in clusters; the general form of it, with branchlets, is like that of the grape-bunch; when the flowering is over, the fruit reddens like the grape, and the appearance of it is like small lentils set close together; the form of these too is clustering. The fruit contains the drug called by the same name, which is a bony substance; it is often still found even when the fruit has been put through a sieve. The root is shallow and single, so that these trees are easily bent right over, root and all. The wood has heart-wood, and it readily perishes and gets worm-eaten. The tree occurs in all regions, but flourishes most in clayey soils.

The ivy also has many forms; one kind grows on the ground, another grows tall, and of the tall-growing ivies there are several kinds. However the three most important seem to be the white the black and the helix. And of each of these there are several forms. Of the 'white' one is white only in its fruit, another in its leaves also. Again to take only white-fruited sorts, one of these has its fruit well formed close and compact like a ball; and this

[i.e. nearly uprooted by wind.]

[κατά Kıtevov: cf. 8. 11. 2, 3 and 5.]

[Plin. 16. 144-147.]
THEOPHRASTUS

ον δὴ καλοῦσι τινες κορυμβίαν, οἵ δ’ Ἀθηνησίου Ἀχαρνικών. ὁ δὲ ἐλάττων διακεχυμένος ώσπερ καὶ ὁ μέλας· ἔχει δὲ καὶ ὁ μέλας διαφοράς ἀλλ' οὐχ ὀμοίως φανεράς.

7 Ἡ δὲ ἐλιξ ἐν μεγίσταις διαφοράις· καὶ γὰρ τοῖς φύλλοις πλείστον διαφέρει τῇ τε μικρότητι καὶ τῷ γωνοεἰδῇ καὶ εὐρυθμότερα εἶναι· τὰ δὲ τοῦ κιττοῦ περιφερέστερα καὶ ἀπλὰ· καὶ τῷ μήκει τῶν κλημάτων καὶ ἐτι τῷ ἀκαρπος εἶναι. διατείνονται γὰρ τινες τῷ μὴ ἀποκιττούσθαι τῇ φύσει τὴν ἔλικα ἀλλὰ τὴν ἐκ τοῦ κιττοῦ τελειομένην. (εἰ δὲ πᾶσα ἀποκιττούσθαι, καθάπερ τινὲς φασίν, ἤλικίας ἃν εἶνε ταῖς καὶ διαθέσεως οὐκ εἶδους διαφορά, καθάπερ καὶ τῆς ἀπίου πρὸς τὴν ἀχράδα.) πλὴν τὸ γε φύλλον καὶ ταύτης πολὺ διαφέρει πρὸς τοῦ κιττοῦ. ὅπως δὲ τοῦτο καὶ ἐν ὀλίγοις ἐστὶν ὡστε παλαιοῦμενον μεταβάλλειν,

8 ὃς περ ἐπὶ τῆς λεύκης καὶ τοῦ κρότωνος. εἴδη δ’ ἐστὶ πλείω τῆς ἐλίκος, ὡς μὲν τὰ προφανεστάτα καὶ μέγιστα λαβεῖν τρία, ἢ τε χλοερὰ καὶ ποιώδης ἢπερ καὶ πλείστη, καὶ ἐτέρα ἡ λευκή, καὶ τρίτη ἡ ποικίλη, ἢν δὴ καλοῦσι τινες Θρακίαν.

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1 cf. Theocr. 11. 46.  2 Plin. 16. 145 foll.
3 i.e. is the most 'distinct' of the ivies.
4 cf. 1. 10. 1; Diosc. 2. 179.
5 i.e. as an explanation of the barrenness of *helix*.
6 i.e. and so becomes fertile.
7 διατείνονται: cf. C.P. 4. 6. 1. διατ. τῷ... apparently = "insist on the view that,"... but the dative is strange. The sentence, which is highly elliptical, is freely emended by most editors.
kind some call *korymbias*, but the Athenians call it the 'Acharnian' ivy. Another kind is smaller and loose in growth like the black ivy. There are also variations in the black kind, but they are not so well marked.

The *helix* presents the greatest differences; the principal difference is in the leaves, which are small angular and of more graceful proportions, while those of the ivy proper are rounder and simple; there is also difference in the length of the twigs, and further in the fact that this tree is barren. For, as to the view that the *helix* by natural development turns into the ivy, some insist that this is not so, the only true ivy according to these being that which was ivy from the first; (whereas if, as some say, the *helix* invariably turns into ivy, the difference would be merely one of age and condition, and not of kind, like the difference between the cultivated and the wild pear). However the leaf even of the full-grown *helix* is very different from that of the ivy, and it happens but rarely and in a few specimens that in this plant a change in the leaf occurs as it grows older, as it does in the abele and the castor-oil plant. There are several forms of the *helix*, of which the three most conspicuous and important are the green 'herbaceous' kind (which is the commonest), the white, and the variegated, which some call the 'Thracian' *helix*. Each of these appears to

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8 i.e. and *helix* being a distinct plant which is always barren.

9 τάσα conj. Sch.; τάς Ald.

10 Sc. as well as in *ivy*; cf. 1. 10. 1, where this change is said to be characteristic of these three trees. (The rendering attempted of this obscure section is mainly from W.'s note.)

11 Plin. 16. 148 foll.
ΤΗΕΟΡΦΡΑΣΤΟΣ

ἐκάστη δὲ τούτων δοκεῖ διαφέρειν καὶ γὰρ τῆς χλοώδους ἢ μὲν λεπτοτέρα καὶ ταξιφυλλοτέρα καὶ ἐτι πυκνοφυλλοτέρα, ἢ δ' ἦττον πάντα ταῦτ' ἐχουσα. καὶ τῆς ποικίλης ἢ μὲν μεῖζον ἢ δ' ἐλαττων τὸ φύλλον, καὶ τὴν ποικιλίαν διαφέρουσα. ὡσαύτως δὲ καὶ τὰ τῆς λευκῆς τῷ μεγέθει καὶ τῇ χροᾶ διαφέρουσιν. ευανχεστάτη δὲ ἡ ποιώδης καὶ ἐπὶ πλείστου προϊόνσα. φανερὰν δ' εἰναι φασίν τὴν ἀποκιττομένην οὐ μόνον τοῖς φύλλοις ὅτι μείζω καὶ πλατύτερα ἔχει ἄλλα καὶ τοῖς βλαστοῖς: εὐθὺς γὰρ ὅρθοις ἔχει, καὶ οὐχ ὥσπερ ἡ ἑτέρα κατακεκαμμένη, καὶ διὰ τὴν λεπτότητα καὶ διὰ τὸ μῆκος: τῆς δὲ κιττώδους καὶ βραχύτεροι καὶ παχύτεροι. καὶ ὁ κιττὸς ὅταν ἀρχηται σπερμοῦσθαι μετέωρον ἔχει καὶ ὅρθον τὸν βλαστὸν.

9 Πολύφρριδος μὲν ὅπως κιττῶς καὶ πυκνόρριξις συνεστραμμένος ταῖς ῥίζαις καὶ ξυλώδεσι καὶ παχείας καὶ οὐκ ἄγαν βαθύρριδος, μάλιστα δ' ὁ μέλας, καὶ τοῦ λευκοῦ ὁ τραχύτατος καὶ ἀγριώτατος: δι' ὁ καὶ χαλεπῶς παραφύσειν τάσι τοῖς δένδροι: ἀπόλλυσι γὰρ πάντα καὶ ἀφαναίνει παραιρούμενος τὴν τροφὴν. λαμβάνει δὲ μάλιστα πάχος οὕτος καὶ ἀποδενδροῦται καὶ γίνεται αὐτὸ καθ' αὐτὸ κιττῶν δένδρων. ὡς δ' ἐπὶ τὸ πλεῖον εἶναι πρὸς ἑτέρῳ φιλεῖ καὶ ξητεῖ καὶ ὦσπερ ἐπαλλόκαυλον ἔστιν. ἔχει δ' εὐθὺς καὶ τῆς

1 ταξιφυλλοτέρα conj. W. from Plin. 16. 149, folia in ordinem digesta; μακροφυλλοτέρα MSS. cf. 1. 10. 8.
2 κατακεκαμμένη conj. W.; κατακεκαμμένη UAld.; κατακεκαμμένους conj. Sch.
3 κιττῶδους MSS.; ποώδους conj. St. 4 cf. C.P. 1. 16. 4.
present variations; of the green one form is slenderer and has more regular and also closer leaves, the other has all these characteristics in a less degree. Of the variegated kind again one sort has a larger, one a smaller leaf, and the variegation is variable. In like manner the various forms of the white helix differ in size and colour. The 'herbaceous' kind is the most vigorous and covers most space. They say that the form which is supposed to turn into ivy is clearly marked not only by its leaves, because they are larger and broader, but also by its shoots; for these are straight from the first, and this form does not bend over like the other; also because the shoots are slenderer and larger, while those of the ivy-like form are shorter and stouter. The ivy too, when it begins to seed, has its shoots upward-growing and erect.

All ivies have numerous close roots, which are tangled together woody and stout, and do not run very deep; but this is specially true of the black kind and of the roughest and wildest forms of the white. Therefore it is mischievous to plant this against any tree; for it destroys and starves any tree by withdrawing the moisture. This form also more than the others grows stout and becomes tree-like, and in fact becomes itself an independent ivy tree, though in general it likes and seeks to be against another tree, and is, as it were, parasitic. Moreover from the first it has also this natural

5 εἰναι conj. W.; αἰέ UM; αἰε Ald.
6 i.e. depends on another tree; not, of course, in the strict botanical sense. cf. 3. 18. 11. ἐπαλλόκαυλον conj. Scal.; ἐπαυλόκαυλον MV Ald. U (with v corrected). cf. περι·
7 Plin. 16. 152.
THEOPHRASTUS

φύσεως τι τοιούτων· ἐκ γὰρ τῶν βλαστῶν ἀφίησιν ὑπὶ ρίζας ἀνὰ μέσον τῶν φύλλων, αἰσπερ ἐνδυέται τοῖς δένδροις καὶ τοῖς τειχίοις ὅτιν ἐξεπίτηδες πεποιημέναις ὑπὸ τῆς φύσεως· δι’ ὁ καὶ ἐξαιροῦμενος τὴν ὑγρότητα καὶ ἐλκων ἀφαναίνει, καὶ ἐὰν ἀποκοπῇ κάτωθεν δύναται διαμένειν καὶ ξῆν. ἔχει δὲ καὶ ἑτέραν διαφόραν κατὰ τὸν καρπὸν οὐ μικράν· ὁ μὲν γὰρ ἐπίγυλυκος ἔστιν ὁ δὲ σφόδρα πικρὸς καὶ τοῦ λευκοῦ καὶ τοῦ μέλανος· σημεῖον δὲ ὅτι τὸν μὲν ἑσθίουσιν οἱ ὄρνιθες τὸν δ’ οὖ. τὰ μὲν οὖν περὶ τὸν κιττὸν οὕτως ἔχει.

11 Ἡ δὲ σμῖλαξ ἔστι μὲν ἐπαλλόκαυλον, ὁ δὲ καυλός ἀκανθώδης καὶ ὀσπερ ὀρθάκαυλος, τὸ δὲ φύλλου κιττῶδες μικρὸν ἀγώνιον, κατὰ τὴν μύσχου πρὸσφυσιν τυληρόν. ἵδιον δ’ ὅτι τὴν τε διὰ μέσον ταύτην ὀσπερ ῥάχιν λεπτὴν ἔχει καὶ τὰς στημονίους διαλήψεις οὐκ ἀπὸ ταύτης, ὀσπερ τὰ τῶν ἄλλων, ἀλλὰ περὶ αὐτῆς περιφερεῖς ἥγμενας ἀπὸ τῆς πρὸσφυσεως τοῦ μύσχου τῷ φύλλῳ. παρὰ δὲ τοῦ καυλοῦ τὰ γόνατα καὶ παρὰ τὰς διαλείψεις τὰς φυλλικάς ἐκ τῶν αὐτῶν μύσχων τοῖς φύλλοις παραπέφυκεν ἵουλος λεπτὸς καὶ ἔλικτος· ἀνθὸς δὲ λευκὸν καὶ εὐώδες λείρινον·

1 σμῖλαξ: μιλαξ W. cf. 1. 10. 5; Plin. 16. 153–155.
2 ἐπαλλόκαυλον conj. Sch.; ἐπαυλόκαυλον V. cf. 3. 18. 10.
3 καυλός conj. R. Const.; καρπὸς UMVAld.
5 ταύτην: cf. τὸ βυλακῶδες τούτο, 3. 7. 3. Is the pronoun
characteristic, that it regularly puts forth roots from the shoots between the leaves, by means of which it gets a hold of trees and walls, as if these roots were made by nature on purpose. Wherefore also by withdrawing and drinking up the moisture it starves its host, while, if it is cut off below, it is able to survive and live. There are also other not inconsiderable differences in the fruit; both in the white and in the black kind it is in some cases rather sweet, in others extremely bitter; in proof whereof birds eat one but not the other. Such are the facts about ivy.

The smilax\textsuperscript{1} is parasitic,\textsuperscript{2} but its stem\textsuperscript{3} is thorny and has, as it were, straight thorns; the leaf is ivy-like small and without angles, and makes a callus\textsuperscript{4} at the junction with the stalk. A peculiarity of it is its conspicuous\textsuperscript{5} slender midrib, so to call it, which divides it in two; also the fact that the thread-like branchings\textsuperscript{6} do not start from this, as in other leaves, but are carried in circles round it, starting from the junction of the leaflet with the leaf. And at the joints of the stem\textsuperscript{7} and the spaces between the leaves there grows from the same stalk as the leaves a fine spiral tendril.\textsuperscript{8} The flower is white and fragrant like a lily\textsuperscript{9}. The fruit
deictic, referring to an actual specimen shewn in lecture? cf. also 4. 7. 1.

\textsuperscript{6} \deltaιαλη\ςεις Ald.; \διαλεί\ςεις UMV. A mistake probably due to \διαλεί\ςεις below, where it is right. \διάλη\ςεις is the Aristotelian word for a 'division.'

\textsuperscript{7} τού καυλού τά γόνατα conj. Sch.; τὸν καυλὸν τὸν ἄτονον Ald.

\textsuperscript{8} This must be the meaning of \τοῦλος here, qualified by \ἐλικτός; but elsewhere it = catkin. cf. 3. 5. 5.

\textsuperscript{9} λειρυνον conj. R. Const. from Plin. l.c. olente lilium; ἥρυνον UAld.
THEOPHRASTUS

tòn dé karptòn êxhe prosemferή tò στρύχνῳ καὶ tò μηλώθρῳ καὶ μάλιστα tῆ kaloumēnī σταφυλῆ
12 ἀγρία: κατακρέμαστοι δ' οἱ βότρυνες κιττοῦ τρό-
povn' parēγγýzei δ' ὁ παραθρηγικισμὸς πρὸς τήν
stafylîn' ἀπὸ γὰρ ἐνὸς σημείου οἱ μύσχοι οἱ ῥαγικοί. ὃ δὲ karptós èruthróz, êxwv purîmas tò
mèn ἐπὶ πάν δύο, ἐν τοῖς μείζων τρεῖς ἐν δὲ τοῖς
μικροῖς ἔνα: σκληρὸς δ' ὁ πυρῆν εὗ μάλα καὶ τῶ
χρώματι μέλας êxwthēn. ἵδιον δὲ τὸ τῶν βοτρύνων,
ὅτι ἐκ πλαγίων τε τῶν καυλῶν παραθρηγικίζουσιν,
καὶ κατ' ἄκρον ὁ μέγιστος βότρυς τοῦ καυλοῦ,
ὡσπερ ἐπὶ τῆς ράμμοι καὶ τοῦ βάτου. τοῦτο δὲ
dêlou ὡς καὶ ἄκροκαρπον καὶ πλαγίοκαρπον.

13 [Τὸ δ' εὐώνυμος καλούμενον δένδρον φύεται μὲν
ἀλλοθύ τε καὶ τῆς Λέσβου ἐν τῷ ὅρει τῷ Ὄρδύν-
νῳ καλούμένῳ: ἐστὶ δὲ ἥλιον ῥῶαι καὶ τὸ φύλλον
êxheī ῥῶθες, μείζων δὲ ἡ χαμαιδάφνης, καὶ μαλα-
κὸν δὲ ὡσπερ ἡ ῥῶα. ἡ δὲ βλάστησις ἀρχεῖα
μὲν αὐτῷ περὶ τοῦ Ποσειδέωνα: ἀνθεῖ δὲ τοῦ
ήρος: τὸ δὲ ἄνθος ὀμοιοῦ τῆν χρῶαν τῷ λευκῷ
ὡς ὀξεῖ δὲ δεινὸν ὡσπερ φόνου. ὁ δὲ karptós
ἐμφερής τῆς μορφῆς μετὰ τοῦ κελύφους τοῦ τῶν
σησάμου λοβῆ: ἐνδοθεν δὲ στερεὸν πλὴν διηρή-
μένου κατὰ τῆν τετραστοιχίαν. τοῦτο έσθιό-

1 Presumably σ. ò ἐδώδιμος. See Index.
2 parēγγýzei δ' ὁ παραθρηγικίζους ἵνα conj., cf. παραθρηγικίζουν; below; parωγγýzei δὲ παραθρηνικίζει δὲ ὡς U; παρωγγýzei δὲ
παραθρηνικίζει δὲ ὡς MV; παραθρηγικίζει δὲ ὡς conj. W.
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is like the *strykhnos*¹ and the *melothron* (bryony), and most of all like the berry which is called the 'wild grape' (bryony). The clusters hang down as in the ivy, but the regular setting² of the berries resembles the grape-cluster more closely; for the stalks which bear the berries start from a single point. The fruit is red, having generally two stones, the larger ones three and the smaller one; the stone is very hard and in colour black outside. A peculiarity of the clusters is that they make a row³ along the sides of the stalk, and the longest cluster is at the end of the stalk, as in the buckthorn and the bramble. It is clear that the fruit is produced both at the end and at the sides.

The tree called the spindle-tree⁴ grows, among other places, in Lesbos, on the mountain called Ordynnos.⁶ It is as large as the pomegranate and has a leaf like that of that tree, but larger than that of the periwinkle,⁷ and soft, like the pomegranate leaf. It begins to shoot about the month Poseideon,⁸ and flowers in the spring; the flower in colour is like the gilliflower, but it has a horrible smell, like shed blood.⁹ The fruit, with its case, is like the pod of sesame¹⁰; inside it is hard, but it splits easily according to its four divisions. This tree, if eaten

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³ παραθρυγκίζουσιν conj. Sch.; παραθρυγκίζουσαν U (corrected); παραθρυγκίζουσι M.

⁴ This section down to the word ἀνόχωφ is clearly out of place: εὐώνυμος was not one of the plants proposed for discussion 3. 18. 1. It should come somewhere among the descriptions of trees characteristic of special localities.

⁶ cf. Plin. 5. 140.

⁷ This irrelevant comparison probably indicates confusion in the text, as is shewn also by Pletho's excerpt of part of this section: see Sch.

⁸ January. ⁹ φόνον: cf. 6. 4. 6. ¹⁰ cf. 8. 5. 2.
μενον ὑπὸ τῶν προβάτων ἀποκτινώει, καὶ τὸ φύλλον καὶ ὁ καρπός, καὶ μάλιστα τὰς αἰγας ἐὰν μὴ καθάρσεως τύχῃ. καθαίρεται δὲ ἀνόχω.] περὶ μὲν οὖν δένδρων καὶ θάμνων εἰρηται: ἐν δὲ τοῖς ἔξης περὶ τῶν λειπομένων λεκτέον.
by sheep, is fatal\(^1\) to them, both the leaf and the fruit, and it is especially fatal to goats unless they are purged by it; and the purging is effected by diarrhoea.\(^2\) So we have spoken of trees and shrubs; in what follows we must speak of the plants which remain.

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1 In Pletho's excerpt (see above) this is said of periwinkle.  
2 *i.e.* and not by vomiting.
Δ

Ι. Αἱ μὲν οὖν διαφορὰ τῶν ὀμογενῶν τεθεώ-ρηται πρῶτερον. ἀπαντά δὲ ἐν τοῖς οἰκείοις τόποις καλλίω γίνεται καὶ μᾶλλον εὐσθενεῖ· καὶ γὰρ τοῖς ἁγρίοις εἰσὶν ἐκάστοις οἰκείοι, καθάπερ τοῖς ἡμέροις· τὰ μὲν γὰρ φίλει τοὺς ἐφύδρους καὶ ἐλώδεις, οἱ οὖν αἴγειρος λεύκη ἱτέα καὶ ὅλως τὰ παρὰ τοὺς ποταμοὺς φυόμενα, τὰ δὲ τοὺς εὐθε-πεῖς καὶ εὐηλίους, τὰ δὲ μᾶλλον τοὺς παλισκίους. πεύκη μὲν γὰρ ἐν τοῖς προσεῖλοις καλλίστη καὶ μεγίστη, ἐν δὲ τοῖς παλισκίοις ὅλως οὐ φύεται· ἐλάτη δὲ ἀνάπαλω ἐν τοῖς παλισκίοις καλλίστη τοῖς δὲ εὔείλοις οὐχ ὀμοίως.

2 Ἑν 'Ἀρκαδία γοῦν περὶ τὴν Κράινην καλοῦ-μένην τόπος ἐστὶ τις κοῖλος καὶ ἄπνους, εἰς ὁν οὐδέποθ' ὅλως ἥλιον ἐμβάλλειν φασίν· ἐν τούτῳ δὲ πολὺ διαφέρουσιν αἱ ἐλάται καὶ τῷ μήκει καὶ τῷ πάχει, οὐ μὴν ὀμοίως γε πυκναὶ ὄνδ' ὄραται ἄλλ' ἤκιστα, καθάπερ καὶ αἱ πεύκαι αἱ ἐν τοῖς παλισκίοις· δι' ὅ καὶ πρὸς τὰ πολυτελῆ τῶν ἔργων, οἱν θυρώματα καὶ εἰ τὶ ἄλλο σπουδαῖον, οὐ χρωται τούτοις ἄλλα πρὸς τὰς ναυπηγίας μᾶλλον καὶ τὰς οἰκοδομὰς· καὶ γὰρ δοκοὶ κάλλι-
BOOK IV
Of the Trees and Plants special to particular
Districts and Positions.

Of the importance of position and climate.

I. The differences between trees of the same kind have already been considered. Now all grow fairer and are more vigorous in their proper positions; for wild, no less than cultivated trees, have each their own positions: some love wet and marshy ground, as black poplar abele willow, and in general those that grow by rivers; some love exposed\(^1\) and sunny positions; some prefer a shady place. The fir is fairest and tallest in a sunny position, and does not grow at all in a shady one; the silver-fir on the contrary is fairest in a shady place, and not so vigorous in a sunny one.

Thus there is in Arcadia near the place called Krane a low-lying district sheltered from wind, into which they say that the sun never strikes; and in this district the silver-firs excel greatly in height and stoutness, though they have not such close grain nor such comely wood, but quite the reverse,—like the fir when it grows in a shady place. Wherefore men do not use these for expensive work, such as doors or other choice articles, but rather for ship-building and house-building. For excellent

\(^1\) \textit{e\upsilon\sigma\kappa\epsilon\tau\epsilon\iota\varsigma} should mean 'sheltered,' but cannot in this context, nor in \textit{C.P.} 1. 13, 11 and 12: the word seems to have been confused with \textit{e\upsilon\sigma\kappa\omicron\omicron\omicron\omicron\omicron\omicron}.
σται καὶ τανεῖαι καὶ κέραιαι αἱ ἐκ τούτων, ἔτι δ᾽ ἴστοι τῷ μήκει διαφέροντες ἀλλ᾽ οὖχ ὁμοίως ἱσχυροὶ καὶ ἐκ τῶν προσεῖλον ἁμα τῇ βραχύτητι πυκνότεροί τε ἐκεῖνον καὶ ἱσχυρότεροι γίνονται.

3 Χαίρει δὲ σφόδρα καὶ ἡ μίλος τοῖς παλισκίοις καὶ ἡ πάδος καὶ ἡ θραύσαιος. περὶ δὲ τὰς κορυφὰς τῶν ὀρέων καὶ τοὺς ψυχροὺς τόπους θυία μὲν φύεται καὶ εἰς ύψος, ἐλάτη δὲ καὶ ἄρκευθος φύεται μὲν οὖν εἰς ύψος δὲ, καθάπερ καὶ περὶ τὴν ἄκραν Κυλλήνην. φύεται δὲ καὶ ἡ κήλαστρος ἐπὶ τῶν ἄκρων καὶ χειμεριωτάτων. ταύτα μὲν οὖν ἀν τις θείη φιλοψυχρα, τὰ δ᾽ ἄλλα πάντα ὡς εἰπεῖν [οὐ] μᾶλλον χαίρει τοῖς προσεῖλοις. οὐ μὴν ἀλλὰ καὶ τούτο συμβαίνει κατά τὴν χώραν τὴν οἰκείαν ἐκάστῳ τῶν δείνδρων. ἐν Κρήτῃ γούν βασίν ἐν τοῖς Ἰδαίοις ὅρεσι καὶ ἐν τοῖς Λευκοῖς καλουμένοις ἐπὶ τῶν ἄκρων οθὲν οὐδέποτε ἐπιλείπει χιών κυπάριστον εἶναι πλείστη γὰρ αὐτῇ τῆς ὑλῆς καὶ ὅλως ἐν τῇ νήσῳ καὶ ἐν τοῖς ὅρεσιν.

4 Ἔστι δὲ, ὠσπερ καὶ πρότερον εἴρηται, καὶ τῶν ἅγριών καὶ τῶν ἡμέρων τὰ μὲν ὅρεινα τὰ δὲ πεδεινὰ μᾶλλον. ἀναλογίᾳ δὲ καὶ ἐν αὐτοῖς τοῖς ὅρεσι τὰ μὲν ἐν τοῖς ὑποκάτω τὰ δὲ περὶ τὰς κορυφὰς, ὡστε καὶ καλλίω γίνεται καὶ εὐθεῖα πανταχοῦ δὲ καὶ πάσης τῆς ὕλης πρὸς βορρὰῖ τὰ ἄξια πυκνότερα καὶ οὐλότερα καὶ ἀπλῶς καλλίω· καὶ ὅλως δὲ πλείω ἐν τοῖς προσβορείοις φύεται. αὐξάνεται δὲ καὶ ἐπιδίδωσι τὰ πυκνά

1 I omit αἱ before κέραιαι with P.

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rafters beams and yard-arms\(^1\) are made from these, and also masts of great length which are not however equally strong; while masts made of trees grown in a sunny place are necessarily\(^2\) short but of closer grain and stronger than the others.

Yew *pados* and joint-fir rejoice exceedingly in shade. On mountain tops and in cold positions odorous cedar grows even to a height, while silver-fir and Phoenician cedar grow, but not to a height,—for instance on the top of Mount Cyllene; and holly also grows in high and very wintry positions. These trees then we may reckon as cold-loving; all others, one may say in general, prefer a sunny position. However this too depends partly on the soil appropriate to each tree; thus they say that in Crete on the mountains of Ida and on those called the White Mountains the cypress is found on the peaks whence the snow never disappears; for this is the principal tree both in the island generally and in the mountains.

Again, as has been said\(^3\) already, both of wild and of cultivated trees some belong more to the mountains, some to the plains. And on the mountains themselves in proportion to the height some grow fairer\(^4\) and more vigorous in the lower regions, some about the peaks. However it is true of all trees anywhere that with a north aspect the wood is closer and more compact\(^5\) and better generally; and, generally speaking, more trees grow in positions facing the north. Again trees which are close

\(^3\) 3. 2. 4.

\(^4\) Something seems to have dropped out before ὧστε.

\(^5\) ὠὐλὸτερα conj. W. from mutilated word in U; καλλιωτερα MV; καλλίω Ald.
μὲν ὄντα μᾶλλον εἰς μῆκος, δι' ὧν καὶ ἀνοξα καὶ εὐθέα καὶ ὀρθοφυὴ γίνεται, καὶ κωπεῶνες ἐκ τούτων κάλλιστοι. <τὰ δὲ μανὰ> μᾶλλον εἰς βάθος καὶ πάχος, δι' ὧν καὶ σκολιότερα καὶ ὀξωδέστερα καὶ τὸ ὅλον στερεώτερα καὶ πυκνότερα φύεται.

5 Ἐχει δὲ τὰς αὐτὰς ἐχει διαφορὰς τούτως καὶ ἐν τοῖς παλισκίοις καὶ ἐν τοῖς εὐείλους καὶ ἐν τοῖς ἀπνόοις καὶ εὐπνόοις. ὀξωδέστερα γὰρ καὶ βραχύτερα καὶ ἦττον εὐθέα τὰ ἐν τοῖς εὐείλοις ἢ τοῖς προσηνέμοις. ὅτι δὲ ἐκαστὸν ξητεί καὶ χώραν οἰκεῖαν καὶ κρᾶσιν ἀέρος φανερὸν τῷ τὰ μὲν φέρειν ἐνίους τόπους τὰ δὲ μὴ φέρειν μήτε αὐτὰ γυγνόμενα μήτε φυτευόμενα ῥαδίως, εὰν δὲ καὶ ἀντιλάβηται μὴ καρποφορεῖν, ὥσπερ ἐπὶ τοῦ φοίνικος ἐλέχθη καὶ τῆς Αἰγυπτίας συκαμίνου καὶ ἄλλων εἰσὶ γὰρ πλείω καὶ ἐν πλείοσι χώραις τὰ μὲν ὅλως οὐ φυόμενα τὰ δὲ φυόμενα μὲν ἀναυξῇ δὲ καὶ ἀκαρπα καὶ τὸ ὅλον φαύλα. περὶ δὲν ίςως λεκτέον ἐφ' ὅσον ἐχομεν ἰστορίας.

Π. Ἐν Αἰγυπτίω γὰρ ἐστιν ἱδία δὲνδρα πλείω, ἢ τε συκάμινος καὶ ἡ περσέα καλουμένη καὶ ἡ βάλανος καὶ ἡ ἀκανθα καὶ ἔτερ' ἀττα.

"Εστὶ δὲ ἡ μὲν συκάμινος παραπλησία πῶς τῇ ἐνταῦθα συκαμίνῳ καὶ γὰρ τὸ φύλλον παρόμοιον

1 κωπεῶνες: cf. 5. 1. 7. 2 τὰ δὲ μανὰ add. W.
3 cf. 5. 1. 8. 4 2. 2. 10.
5 ὄλως ... μὲν conj. W.; ὄλως οὐ φυτευόμενα U; ὄλως φυτευόμενα MVP Ald.
together grow and increase more in height, and so become unbranched straight and erect, and the best oar-spars\(^1\) are made from these, while those that grow far apart\(^2\) are of greater bulk and denser habit\(^3\); wherefore they grow less straight and with more branches, and in general have harder wood and a closer grain.

Such trees exhibit nearly the same differences, whether the position be shady or sunny, windless or windy; for trees growing in a sunny or windy position are more branched shorter and less straight. Further that each tree seeks an appropriate position and climate is plain from the fact that some districts bear some trees but not others; (the latter do not grow there of their own accord, nor can they easily be made to grow), and that, even if they obtain a hold, they do not bear fruit—as was said\(^4\) of the date-palm the sycamore and others; for there are many trees which in many places either do not grow at all, or,\(^5\) if they do, do not thrive nor bear fruit, but are in general of inferior quality. And perhaps we should discuss this matter, so far as our enquiries go.

*Of the trees special to Egypt, and of the carob.*

II.\(^6\) Thus in Egypt there are a number of trees which are peculiar\(^7\) to that country, the sycamore the tree called *persea* the *balanos* the acacia and some others.

Now the sycamore to a certain extent resembles the tree which bears that name\(^8\) in our country; its

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\(^1\) Plin. 13. 56 and 57.  
\(^2\) ἡδια conj. R. Const.; επια Ald.  
\(^3\) *i.e.* mulberry. See Index.
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έχει καὶ τὸ μέγεθος καὶ τὴν ὀλην πρόσοψιν, τὸν δὲ καρπὸν ἰδίως φέρει παρὰ τὰ ἄλλα, καθάπερ ἐλέχθη καὶ ἐν τοῖς ἑξ ἂρχησί οὐ γὰρ ἀπὸ τῶν βλαστῶν οὐδ’ ἃπὸ τῶν ἄκρεμώνων ἀλλ’ ἐκ τοῦ στελέχους, μέγεθος μὲν ἥλικον σύκον καὶ τῇ ὁψεὶ δὲ παραπλήσιον, τῷ χυλῷ δὲ καὶ τῇ γυλικύτητι τοῖς ὀλύνθοις, πλὴν γυλικύτερον πολὺ καὶ κεγ-
χραμίδας ὅλως οὖκ ἔχοντα, πληθεὶ δὲ πολὺν.
καὶ πέττειν οὐ δύναται μὴ ἐπικυνθέντα: ἀλλ’ ἔχοντες ὄνυχας σιδηροῦσι ἐπικυνζουσιν’ ἃ δ’ ἂν ἐπικυνζῆ τεταρταία πέττεται: τούτων δ’ ἀφαι-
ρεθέντων πάλιν ἄλλα φύεται καὶ ἄλλα καὶ ἐκ τοῦ αὐτοῦ τόπου μηδὲν παραλλάττοντα: καὶ τούθ’ οἱ μὲν τρίς οἱ δὲ πλεονάκις φασὶ γίνεσθαι.

2 πολύσομον δὲ τὸ δένδρον σφόδρα ἐστὶ καὶ τὸ ἕψιλον αὐτοῦ εἰς πολλὰ χρήσιμον. ἰδιον δὲ ἔχειν δοκεῖ παρὰ τάλλα: τμηθὲν γὰρ εὐθὺς χλωρὸν ἐστὶν αὐαίνεται δὲ ἐμβύθιον εἰς βόθρον δὲ ἐμβάλλουσιν καὶ εἰς τὰς λίμνας εὐθὺς καὶ ταριχεύουσιν’ βρεχόμενον δ’ ἐν τῷ βυθῷ ἔρραίνεται καὶ ὅταν τελέως ἔρρων γένηται, τότε ἀναφέρεται καὶ ἐπινεῖ καὶ δοκεῖ τότε καλῶς τεταριχεύσθαι γίνεται γὰρ κούφον καὶ μανόν. ἡ μὲν οὖν συκιώμοις ἔχει ταύτας τὰς ἴδιότητας.

3 Ἐν δὲ τῆς παραπλησία ἡ φύσις εἶναι καὶ τῆς ἐν Κρήτῃ καλουμένης Κυπρίας συκῆς καὶ γὰρ ἐκείνη φέρει τὸν καρπὸν ἐκ τοῦ στελέχους καὶ ἐκ τῶν παχυτάτων ἀκρεμώνων, πλὴν ὅτι βλαστῶν τινα ἀφίησι μικρὸν ἀφυλλὸν ὀστερ ριζίου, πρὸς ὃ γε ὁ καρπός. τὸ δὲ στελέχος μέγα

1 1. 1. 7; cf. 1. 14 2.
2 cf. C.P. 1. 17. 9; Diosc. 1. 127; Athen. 2. 36. This 292
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leaf is similar, its size, and its general appearance; but it bears its fruit in a quite peculiar manner, as was said at the very outset; it is borne not on the shoots or branches, but on the stem; in size it is as large as a fig, which it resembles also in appearance, but in flavour and sweetness it is like the 'immature figs,' except that it is much sweeter and contains absolutely no seeds, and it is produced in large numbers. It cannot ripen unless it is scraped; but they scrape it with iron 'claws'; the fruits thus scraped ripen in four days. If these are removed, others and others again grow from exactly the same point, and this some say occurs three times over, others say it can happen more times than that. Again the tree is very full of sap, and its wood is useful for many purposes. There is another peculiar property which it appears to possess; when it is cut, it is at first green, but it dries in deep water; they put it at once in a hole or in pools and so season it; and it becomes dry by being soaked in the deep water, and when it is completely dry, it is fetched up and floats and is then thought to be duly seasoned; for it is now light and porous. Such are the peculiarities of the sycamore.

Somewhat similar appears to be the character of the tree which in Crete is called the 'Cyprian fig' (sycamore). For this also bears its fruit on the stem and on the thickest branches; but in this case there is a small leafless shoot, like a root, to which the fruit is attached. The stem is large and like the scraping was the prophet Amos' occupation: cf. Amos 7. 14. comm.

See Index. cf. Athen. 3. 11; Plin. 13. 58; Diosc. 1. 127. 3.

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καὶ παρόμοιον τῇ λεύκῃ, φύλλον δὲ τῇ πτελέᾳ. πεπαίνει δὲ τέτταρας καρποὺς, οὔσαιπερ αὐτοῦ καὶ αἱ βλαστήσεις: οὐδένα δὲ πεπαίνει μὴ ἔπιτμηθέντος τοῦ ἔρινοι καὶ ἐκρυνετος τοῦ ὅποιο. ἥ δὲ γλυκύτης προσεμφερής τῷ σύκῳ καὶ τὰ ἐσωθεν τοὺς ἔρινοις: μέγεθος ἥλικων κοκκύμηλον.

4 (Ταῦτῇ δὲ παραπλησία καὶ ἤν οἱ "Ἰωνες κερωνίαις καλοῦσιν" ἐκ τοῦ στελέχους γάρ καὶ αὐτῇ φέρει τὸν πλείστον καρπόν, ἀπὸ δὲ τῶν ἀκρεμώνων, ὥσπερ εἴπομεν, ὀλίγον. ὁ δὲ καρπὸς ἐλλοβος, ὅν καλοῦσι τινες Αἰγύπτιου σύκων διημαρτηκτές· οὐ γίνεται γάρ ὅλως περὶ Αἰγύπτου ἀλλ' ἐν Συρίᾳ καὶ ἐν Ιωνίᾳ δὲ καὶ περὶ Κνίδου καὶ Ῥώδου. ἀείφυλλον δὲ καὶ ἀνθος ἐκλευκὸν ἔχουν καὶ τι βαρύτητος, μὴ μετεωρίζου δὲ σφόδρα καὶ ὅλως ἐκ τῶν κάτω παραβλαστητικῶν ἀνωθέν δὲ ὑποξηραινομενον. ἔχει δὲ ἀμα καὶ τὸν ἔνου καὶ τὸν νέου καρπὸν: ἀφαιρομένου γάρ θατέρου μετά Κῦνα καὶ ὁ ἐτερος εὐθὺς φανερὸς κυνομενος· κύνεται γάρ ὥσπερ βότρυς ὀμοσχήμων· εἰτ' αὐξηθεῖς ἀνθεὶ περὶ Ἀρκτοῦρον καὶ ἵσημεριαν· ἀπὸ τοῦτο δὴ διαμένει τὸν χειμῶνα μέχρι Κύνος. ἡ μὲν οὖν ὁμοιότης ὃτι στελέχοκαρπα καὶ ταῦτα· διαφορα δὲ αἱ εἰρημέναι πρὸς τὴν συκάμινον.)

5 Ἔν Αἰγύπτῳ δ' ἐστὶν ἐτερον ἡ περσέα καλούμενον, τῇ μὲν προσοψεῖ μέγα καὶ καλόν, παραπλησίον δὲ μάλιστα τῇ ἀπίαρ καὶ φύλλοις καὶ ἀνθεσι καὶ ἀκρεμοῖ καὶ τὸ ὅλῳ σχῆματι: πλην

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1 ὅσαιπερ conj. R. Const., etc., cf. Athen. l.c.; ὃς ἐπὶ αὐτοῦ U (corrected); ὃς ἐπὶ αὐτοῦ M; ὃς ἐπὶ αὐτοῦ Ald.
2 Plin. 13. 59.
3 1. 14. 2.

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abele, but the leaf is like that of the elm. It ripens its fruit four times a year, having also four periods of growth; but it ripens no fruit unless the 'fig' is split and the juice let out. The sweet taste resembles that of the fig, and the inside of the fruit is like that of wild figs: it is as large as a plum.

2 (Like this too is the tree which the Ionians call carob; for this too bears most of its fruit on the stem, though it bears a little also on the branches, as we said.) The fruit is in a pod; some call it the 'Egyptian fig'—erroneously; for it does not occur at all in Egypt, but in Syria and Ionia and also in Cnidos and Rhodes. It is evergreen and has a whitish flower and is somewhat acrid; it does not attain to a great height, and it sends out side-shoots entirely from its lower parts, while it withers above. It has on it at the same time both last year's fruit and the new fruit; for if the one is removed after the rising of the dog-star, immediately the other is seen swelling up; for there swells up as it were another similar cluster. This then increases and flowers about the rising of Arcturus and the equinox; and thenceforward it persists through the winter to the rising of the dog-star. The likeness then consists in the fact that these trees too bear fruit on their stems, and the differences between them and the sycamore are as has been said.)

6 In Egypt there is another tree called the *persea*, which in appearance is large and fair, and it most resembles the pear in leaves flowers branches and general form, but it is evergreen, while the other is

4 **κυεται** conj. W. from G; **κύει** MSS.

5 *i.e.* the cluster, now in the fruit stage.

6 Plin. 13. 60 and 61.
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tο μὲν ἀείφυλλον τὸ δὲ φυλλοβόλον. καρπον δὲ φέρει πολύν καὶ πᾶσαν ὄραν. περικαταλαμβάνει γὰρ ὁ νέος ἀεὶ τὸν ἐνον. πέττει δὲ ὑπὸ τοὺς ἔτηςιας. τὸν δ' ἀλλον ὀμότερον ἀφαιροῦσι καὶ ἀποτιθέασιν. ἐστὶ δὲ τὸ μέγεθος ἥλικον ἀπίος, τῷ σχῆματι δὲ πρόμακρος ἀμυγδαλώδης, χρώμα δὲ αὐτοῦ ποιῶδες. ἔχει δὲ ἐντὸς κάρυν, ὡσπερ τὸ κοκκύμηλον, πλην ἔλαττον πολὺ καὶ μαλακότερον. τὴν δὲ σάρκα γλυκείαν σφόδρα καὶ ἱδείαν καὶ εὐπεπτον. οὐδὲν γὰρ ἐνοχλεῖ πολὺ προσενεγκαμένων. εὐρίζου δὲ τὸ δένδρον καὶ μῆκει καὶ πάχει καὶ πλῆθει πολὺ. ἔχει δὲ καὶ ξύλον ἵσχυρὸν καὶ καλὸν τῇ ὄψει μέλαν, ὡσπερ ὁ λωτὸς, εἷς οὐ καὶ τὰ ἀγάλματα καὶ τὰ κλινία καὶ τραπέζια καὶ τάλλα τὰ τοιαῦτα ποιῶσιν.

6 Ἡ δὲ βάλανος ἔχει μὲν τὴν προσηγορίαν ἀπὸ τοῦ καρποῦ. φύλλον δ' αὐτῆς παραπληγίου τῷ τῆς μυρρῆς πλην προμηκέστερον. ἐστὶ δὲ τῷ δένδρῳ εὐπαχές μὲν καὶ εὐμέγεθες, οὐκ εὐφυὲς δὲ ἀλλὰ παρεστραμμένοι. τοῦ καρποῦ δὲ τοῖς κελύφεσι χρῶνται οἱ μυρεψοί κόπτοντες. εὐῳδὲς γὰρ ἔχει τὸν δὲ καρποῦ αὐτοῦ ἀχρείον. ἐστὶ δὲ καὶ τῷ μεγέθει καὶ τῇ ὄψει παραπληγίοι τῷ τῆς καππάριοι. ξύλον δὲ ἵσχυρὸν καὶ εἶς ἀλλὰ τὰς χρήσιμον καὶ εἰς τὰς ναυπηγίας.

7 Τὸ δὲ καλοῦμενον κουκιόφορον ἐστὶν ὄρμιον τῷ φοίνικι. τὴν δὲ ὀμοιότητα κατὰ τὸ στέλεχος ἔχει καὶ τὰ φύλλα. διαφέρει δὲ ὅτι ὁ μὲν φοίνιξ μονοφυές καὶ ἀπλοῦν ἐστὶ, τούτῳ δὲ προσανεξηθεῖν σχέζεται καὶ γίνεται δίκρουν, εἶτα πάλιν ἐκάτερον

1 ἀποτιθέασιν conj. R. Const. from G (recondunt); τιθέασι
UMV Ald.
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deciduous. It bears abundant fruit and at every season, for the new fruit always overtakes that of last year. It ripens its fruit at the season of the etesian winds: the other fruit they gather somewhat unripe and store\(^1\) it. In size it is as large as a pear, but in shape it is oblong, almond-shaped, and its colour is grass-green. It has inside a stone like the plum, but much smaller and softer; the flesh is sweet and luscious and easily digested; for it does no hurt if one eats it in quantity. The tree has good roots as to length thickness and number. Moreover its wood is strong and fair in appearance, black like the nettle-tree: out of it men make their images beds tables and other such things.

2 The balanos gets its name from its fruit\(^3\); its leaf is like that of the myrtle\(^4\) but it is longer. The tree is of a good stoutness\(^5\) and stature, but not of a good shape, being crooked. The perfumers use the husks of the fruit, which they bruise; for this is fragrant, though the fruit itself is useless. In size and appearance it is like the fruit of the caper; the wood is strong and useful for shipbuilding and other purposes.

6 The tree called the doum-palm is like the date-palm; the resemblance is in the stem and the leaves, but it differs in that the date-palm is a tree with a single undivided stem, while the other, as it increases, splits and becomes forked,\(^7\) and then each of the two

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2 Plin. 13. 61.

3 i.e. it is like an acorn (βάλανος).

4 μυριδνις MVP Ald.; μυρικης U.

5 εὐπαθες conj. Sch.; εὐπαθες U; ἄπαθες Ald. H.

6 Plin. 13. 62.

7 cf. 2. 6. 9, where the same tree is evidently indicated. δικρον conj. Salm., Scal., etc.; ἄκρον UAld. H.
τούτων ὀμοίως: ἔτι δὲ τὰς ῥάβδους βραχείας ἔχει σφόδρα καὶ οὐ πολλὰς. χρώνται δὲ τῷ φύλλῳ, καθάπερ τῷ φοίνικι, πρὸς τὰ πλέγματα. καρποὺν δὲ ἱδίου ἔχει πολὺ διαφέροντα καὶ μεγέθει καὶ σχῆματι καὶ χυλῷ· μέγεθος μὲν γὰρ ἔχει σχεδὸν χειροπληθεῖς· στρογγύλου δὲ καὶ οὐ προμήκη· χρώμα ἐπίξανθου· χυλὸν δὲ γλυκύν καὶ εὐστομον· οὐκ ἀθρόον δὲ, ἀστερὸν οὖν φοίνιξ, ἀλλὰ κεχωρισμένον καθ᾽ ἕνα: πυρῆνα δὲ μέγαν καὶ σφόδρα σκληρῶν, ἔξι οὖ τοὺς κρίκους τορνεύουσι τοὺς εἰς τοὺς στρωματεῖς τοὺς διαποικίους· διαφέρει δὲ πολὺ τὸ ἕυλον τοῦ φοίνικος· τὸ μὲν γὰρ μανὼν καὶ ἱνώδες καὶ χαῖνου, τὸ δὲ πυκνὸν καὶ βαρύ καὶ σαρκώδες καὶ διατμηθέν οὐλοῦ σφόδρα καὶ σκληρόν ἔστιν. καὶ οὐ γε δὴ Πέρσαι πάνω ἐτίμων αὐτὸ καὶ ἐκ τούτου τῶν κλινῶν ἐποιοῦντο τοὺς πόδας.

8 Ἡ δὲ ἀκανθα καλεῖται μὲν διὰ τὸ ἀκανθώδες ὅλον τὸ δένδρον εἶναι πλήν τοῦ στελέχους· καὶ γὰρ ἐπὶ τῶν ἀκρεμῶν καὶ ἐπὶ τῶν βλαστῶν καὶ ἐπὶ τῶν φύλλων ἔχει. μεγέθει δὲ μέγα, καὶ γὰρ δωδεκάπηχος ἐξ αὐτῆς ἐρέχθεσον ὑλή τεμνεται. δυττὸν δὲ τὸ γένος αὐτῆς, ἢ μὲν γὰρ ἐστὶ λευκὴ ἢ δὲ μέλαινα· καὶ ἢ μὲν λευκὴ ἀσθενής τε καὶ ἕυσηπτος· ἢ δὲ μέλαινα ἴσχυρότερα τε καὶ ἄσηπτος, δι᾽ οὗ καὶ ἐν ταῖς ναυπηγίαις χρώνται πρὸς τὰ ἐγκοίλια αὐτῇ. τὸ δένδρον δὲ οὐκ ἄγαν ὀρθοφυὲς· ὃ δὲ καρπὸς ἐλλοβος, καθάπερ τῶν χειροποτῶν, ωθεῖ τοῖς ἐγχώριοι πρὸς τὰ δέρματα ἀντὶ κηκίδος. τὸ δὲ ἀνθός καὶ τῇ ὄψει καλὸν, ὥστε καὶ στεφάνους ποιεῖν ἐξ αὐτοῦ, καὶ φαρμα-
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branches forks again: moreover the twigs are very short and not numerous. They use the leaf, like the palm-leaf, for plaiting. It has a peculiar fruit, very different from that of the date-palm in size form and taste; for in size it is nearly big enough to fill the hand, but it is round rather than long; the colour is yellowish, the flavour sweet and palatable. It does not grow bunched together, like the fruit of the date-palm, but each fruit grows separately; it has a large and very hard stone, out of which they turn the rings for embroidered bed-hangings.\(^1\) The wood is very different to that of the date-palm; whereas the latter is of loose texture fibrous and porous,\(^2\) that of the doum-palm is close heavy and fleshy, and when split is exceedingly compact and hard. The Persians\(^3\) used to esteem it highly and made the feet of their couches out of it.

\(^4\) The *akantha* (acacia) is so called because the whole tree is spinous (*akanthodes*) except the stem; for it has spines on the branches shoots and leaves. It is of large stature, since lengths of timber for roofing of twelve cubits are cut from it. There are two kinds, the white and the black; the white is weak and easily decays, the black is stronger and less liable to decay; wherefore they use it in shipbuilding for the ribs.\(^5\) The tree is not very erect in growth. The fruit is in a pod, like that of leguminous plants, and the natives use it for tanning hides instead of gall. \(^6\) The flower is very beautiful in appearance, so that they make garlands of it, and it has medicinal

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\(^1\) Plin. l.c., *velares annulos*; cf. Athen. 12. 71, *ad fin.*

\(^2\) *χαννον* conj. Sch.; *χλωρυν* Ald.

\(^3\) *i.e.* during their occupation of Egypt.

\(^4\) Plin. 13. 63; Athen. 15. 25.

\(^5\) cf. Hdt. 2. 96.

\(^6\) cf. Athen. *l.c.*
κώδες, δὲ ὀ καὶ συλλέγονσιν οἱ λατροὶ. γίνεται δὲ ἐκ ταύτης καὶ τὸ κόμμυ καὶ ρέει καὶ πληγείσης καὶ αὐτόματον ἀνευ σχάσεως. ὅταν δὲ κοπῇ, μετὰ τρίτων ἔτος εὐθὺς ἀναβεβλάστηκε: πολὺ δὲ τὸ δένδρου ἑστὶ, καὶ δρυμὸς μέγας περὶ τὸν Θηβαϊκὸν νόμον, οὐπερ καὶ ἡ δρῦς καὶ ἡ περσέα πλείστη καὶ ἡ ἐλάα.

9 Καὶ γὰρ ἡ ἐλάα περὶ τούτων τὸν τόπουν ἑστὶ, τῷ ποταμῷ μὲν οὐκ ἀρδευμένη, πλεῖω γὰρ ἡ τριακόσια στάδια ἀπέχει, ναματιαίοις δὲ ὑδασίων εἰσὶ γὰρ κρῆναι πολλαὶ. τὸ δὲ ἔλαιον οὐδὲν χείρον τοῦ ἐνθάδε, πλὴν κακωδέστερον διὰ τὸ σπανίως τοῖς ἀλοιχρήσθαι φύσει δὲ τὸ ἐξύλον τοῦ δένδρου καὶ σκληρὸν καὶ παραπλήσιον τεμνόμενον τὴν χρόαν τῷ λωτύνῳ.

10 Ἀλλο δὲ τι δένδρου ἡ κοκκυμηλέα, μέγα μὲν τῷ μεγέθει καὶ τὴν φύσιν τοῦ καρποῦ ὁμοίοις τοῖς μεσπίλοις, καὶ τὸ μέγεθος παραπλήσιον πλὴν ἔχοντα πυρῆνα στρογγύλουν ἀρχεται δὲ ἀνθείν μηνὸς Πυανεψιώνος, τὸν δὲ καρπὸν πεπαίνει περὶ ἡλίου τροπὰς χειμερινάς· ἀείφυλλον δ' ἑστίν. οἱ δὲ περὶ τὴν Θηβαϊδα κατοικοῦντες διὰ τὴν ἀφθονίαν τοῦ δένδρου ξηραῖνουσι τὸν καρπὸν καὶ τὸν πυρῆνα ἐξαιροῦντες κόπτουσι καὶ ποιοῦσι παλάθας.

11 "Τλημα δὲ ἰδίων τι φύσει περὶ Μέμφιν, οὐ κατὰ φύλλα καὶ βλαστοῦσι καὶ τὴν ὅλην μορφὴν

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1 cf. Hdt. l.c.
2 σχάσεως conj. R. Const.; σχλὲσεως Ald.
3 πλείστη conj. R. Const.; πλεκτῆ UMVAld.
4 cf. C.P. 6. 8. 7, where this olive is said to produce no oil.
5 cf. Strabo, 17. 1. 35.
properties, wherefore physicians gather it. 1 Gum is also produced from it, which flows both when the tree is wounded and also of its own accord without any incision 2 being made. When the tree is cut down, after the third year it immediately shoots up again; it is a common tree, and there is a great wood of it in the Thebaid, where grow the oak, the persea in great abundance, 3 and the olive.

4 For the olive also grows in that district, though it is not watered by the river, being more than 300 furlongs distant from it, but by brooks; for there are many springs. The oil produced is not inferior to that of our country, except that it has a less pleasing smell, 5 because it has not a sufficient natural supply of salt. 6 The wood of the tree is hard in character, and, when split, is like in colour 7 to that of the nettle-tree.

8 There is another tree, the (Egyptian) plum (sebesten), which is of great stature, and the character of its fruit 9 is like the medlar (which it resembles in size), except that it has a round stone. It begins to flower in the month Pyanepsion, 10 and ripens its fruit about the winter solstice, and it is evergreen. 11 The inhabitants of the Thebaid, because of the abundance of the tree, dry the fruit; they take out the stones, bruise it, and make cakes of it.

There is a peculiar bush 12 which grows about Memphis, whose peculiarity does not lie in its leaves

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1. Gum
2. incision
3. persea
4. olive
5. pleasing smell
6. natural supply of salt
7. hard
8. plum (sebesten)
9. fruit
10. Pyanepsion
11. evergreen
12. peculiar bush

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έχων τὸ ἴδιον ἄλλ' εἰς τὸ συμβαίνον περὶ αὐτὸ πάθος· ἢ μὲν γὰρ πρόσοψις ἀκανθώδης ἐστὶν αὐτοῦ, καὶ τὸ φύλλον παρόμοιον ταῖς πτερίσιν· ὅταν δὲ τις ἀψηταὶ τῶν κλωνίων, ὥσπερ ἀφανανόμενα τὰ φύλλα συμπίπτειν φασὶν εἴτε μετὰ τινὰ χρόνον ἀναβιώσκεσθαι πάλιν καὶ θάλλειν. καὶ τὰ μὲν ἴδια τῆς χώρας, ὡσα γ' ἂν δένδρα τις ἢ θάμνους ἔποιο, τὰ γ' ἑπιφανέστατα ταῦτ' ἐστὶ. περὶ γὰρ τῶν ἐν τῷ ποταμῷ καὶ τοῖς ἔλεσιν ύστερον ἔρουμεν, ὅταν καὶ περὶ τῶν ἄλλων ἐνύδρων.

12 ['Ἀπαντά δὲ ἐν τῇ χώρᾳ τὰ δένδρα τὰ τοιαύτα μεγάλα καὶ τοῖς μήκεσι καὶ τοῖς πάχεσιν· ἐν γοῦν Μέμφιντη θηλικοῦτο δένδρον εἶναι λέγεται τὸ πάχος. δὲ τρεῖς ἀνδρεῖς οὐ δύνανται περιλαμβανεῖν. ἐστὶ δὲ καὶ τὸ κυνοὸν τὸ ἔξολον καλὸν πυκνὸν τε γὰρ σφόδρα καὶ τῷ χρώματι λωτοειδὲς.]

III. 'Ἐν Διβύῃ δὲ ὁ λωτὸς πλεῖστος καὶ κάλλιστος καὶ ὁ πάλινυρος καὶ ἐν τ僳 μέρεσι τῇ τῇ Νασαμωνικῇ καὶ παρ' Ἀρμωνι καὶ ἄλλοις ὁ φοίνιξ· ἐν δὲ τῇ Κυρηναίᾳ κυπάρισσος καὶ ἐδάνει τε κάλλιστα καὶ ἔλαιον πλείστον. ἰδιώτατον δὲ πάντων τὸ σίλφιον· ἔτι κρόκον πολὺν ἡ χώρα φέρει καὶ εὐσμοὺν. ἐστὶ δὲ τοῦ λωτοῦ τὸ μὲν ὅλου δένδρου ἴδιον εὐμέγεθες ἡλίκων ἄπιος ἡ μικρὸν ἐλαττον· φύλλον δὲ ἐντομᾶς ἐχόν καὶ πρυνόδες· τὸ μὲν ἔξολον μέλαν· γενή δὲ αὐτοῦ πλείω διαφοράς ἐχοντα τοῖς καρποῖς· ὁ δὲ καρπὸς

1 πάθος: cf. 1. 1. 1 n.
2 cf. Schol. ad Nic. Ther. 683 of a sensitive plant called καρποσίουμος or ἵσχύουσα. ἀφανανύμενα conj. Scal; ἀφανινύμενα UMVP2Ald.
shoots and general form, but in the strange property\(^1\) which belongs to it. Its appearance is spinous and the leaf is like ferns, but, when one touches the twigs, they say that the leaves as it were wither up\(^2\) and collapse and then after a time come to life again and flourish. Such are the most conspicuous things peculiar to the country, to speak only of trees or shrubs. For we will speak later of the things which grow in the river and the marshes, when we come to speak of the other water plants.

All the trees of this kind in that country are large, both in height and stoutness; thus at Memphis there is said to be a tree of such girth that three men cannot embrace it. The wood too, when split, is good, being of extremely close grain and in colour like the nettle-tree.

Of the trees and shrubs special to Libya.

III. \(^4\) In Libya the *lotos* is most abundant and fairest; so also is the Christ’s thorn, and in some parts, such as the Nasamonian district and near the temple of Zeus Ammon, the date-palm. In the Cyrenaica the cypress grows and the olives are fairest and the oil most abundant. Most special of all to this district is the silphium, and the land also bears abundant fragrant saffron-crocus. As to the *lotos*—the whole tree is peculiar, of good stature, as tall as a pear-tree, or nearly so; the leaf is divided and like that of the kermes-oak, and the wood is black. There are several sorts, which differ in their fruits; the fruit

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\(^1\) This section is evidently out of place; its probable place is at the end of § 10, so that the description will belong to the ‘Egyptian plum.’

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ηλίκος κύαμος, πεπαινεται δέ, ὁσπερ οἱ βότρυνες, μεταβάλλων τὰς χροιάς· φύεται δέ, καθάπερ τὰ μῦρτα, παρ’ ἀλληλα πυκνοὶ ἐπὶ τῶν βλαστῶν· ἐσθιόμενος δ’ ὁ ἐν τοῖς Δωτοφάγοις καλουμένοις γλυκὺς καὶ ἡδὺς καὶ ἁσινής καὶ ἐτὶ πρὸς τὴν κοιλίαν ἀγαθὸς· ἡδίων δ’ ὁ ἀπύρηνος, ἐστὶ γὰρ καὶ τοιούτων τι γένος· ποιοῦσι δὲ καὶ οἶνον ἔξ αὐτοῦ.

2 Πολὺ δὲ τὸ δένδρον καὶ πολύκαρπον· τὸ γ’ ὄν ό ’Οφέλλου στρατόπεδον, ἴνικα ἐβάδιζεν εἰς Καρχηδόνα, καὶ τούτῳ φασὶ τραφήναι πλείους ἱμέρας ἐπιλιπόντων τῶν ἐπιτηδείων. ἔστι μὲν οὖν καὶ ἐν τῇ νήσῳ τῇ Δωτοφαγίτιδι καλουμένη πολὺς· αὐτὴ δ’ ἐπικείται καὶ ἀπέχει μικρῶν’ οὐ μὴν οὐθέν γε μέρος ἀλλὰ πολλὸ πλεῖον ἐν τῇ ἡπείρῳ πλείστον γὰρ ὀλως ἐν τῇ Λιβύῃ, καθάπερ εἰρηται, τούτο καὶ ὁ παλίουρος ἐστὶν· ἐν γὰρ Εὐσπερίσι τούτοις καυσίμοις χρῶνται. διαφέρει δὲ οὗτος οὐ λωτὸς τοῦ παρὰ τοῖς Δωτοφάγοις.

3 Ὁ δὲ παλίουρος θαμνωδέστερος τοῦ λωτοῦ· φύλλον δὲ παρόμοιον ἔχει τῷ ἐνταῦθα, τὸν δὲ καρπὸν διάφορον· οὐ γὰρ πλατὺν ἀλλὰ ὀστρογγυλὸν καὶ ἐρυθρὸν, μέγεθος δὲ ἦλίκον τῆς κέδρου ἢ μικρὸ μείζον· πυρῆνα δὲ ἔχει οὐ συνεσθιόμενον καθάπερ ταῖς ροαῖς· ἡδίων δὲ τοῦ καρποῦ· καὶ ἐὰν τις οἶνον ἐπιχέῃ καὶ αὐτὸν ἡδίω γίνεσθαι φασὶ καὶ τὸν οἶνον ἡδίω ποιεῖν.

1 cf. Hdt. 4. 177; Athen. 14. 651; Scyl. Peripl. Lotophagi.
2 A ruler of Cyrene, who invaded Carthaginian territory in conjunction with Agathocles, B.C. 308.
3 τῇ λωτοφαγίτιδι conj. W.; τῇ Δωτοφαγίτιδι φάρίδι UMAld.
4 μέρος: μελὼν conj. Sch. (non minor G).
is as large as a bean, and in ripening like grapes it changes its colour: it grows, like myrtle-berries, close together on the shoots; to eat, that which grows among the people called the Lotus-eaters is sweet pleasant and harmless, and even good for the stomach; but that which has no stone is pleasanter (for there is also such a sort), and they also make wine from it.

The tree is abundant and produces much fruit; thus the army of Ophellias, when it was marching on Carthage, was fed, they say, on this alone for several days, when the provisions ran short. It is abundant also in the island called the island of the Lotus-eaters; this lies off the mainland at no great distance: it grows however in no less quantity, but even more abundantly on the mainland; for, as has been said, this tree is common in Libya generally as well as the Christ's thorn; for in the islands called Euesperides they use these trees as fuel. However this lotos differs from that found in the land of the Lotus-eaters.

The (Egyptian) Christ's thorn is more shrubby than the lotos; it has a leaf like the tree of the same name of our country, but the fruit is different; for it is not flat, but round and red, and in size as large as the fruit of the prickly cedar or a little larger; it has a stone which is not eaten with the fruit, as in the case of the pomegranate, but the fruit is sweet, and, if one pours wine over it, they say that it becomes sweeter and that it makes the wine sweeter.

5 πλειών U; ? πλειών with MV.
6 4. 3. 1. 7 cf. Hdt. 4. 191.
8 cf. Hdt. 2. 96.
9 See Index. Plin. 13. 111.
4 "Ενοικ δὲ τὸ τοῦ λωτοῦ δένδρον θαμνῶδες εἶναι καὶ πολύκλαδον, τῷ στελέχει δὲ εὐπαχές· τὸν δὲ καρπὸν μέγα τὸ κάρυνον ἔχειν· τὸ δ' ἐκτὸς οὐ σαρκώδες ἀλλὰ δερματωδεστερὸν ἐσθιόμενον δὲ οὐχ οὗτῳ γλυκῶν ὡς εὐστομοῦ· καὶ τὸν οἰνὸν δὲν ἐξ αὐτοῦ ποιοῦσιν οὐ διαμένειν ἀλλ' ἢ δύο ἢ τρεῖς ἡμέρας εἰτ' ὄξυνειν. ἥδιω μὲν οὖν τὸν καρπὸν τὸν ἐν τοῖς Δωτοφάγοις, Ξύλου δὲ κάλλιον τὸ ἐν Κυρηναίᾳ· θερμοτέραν δὲ εἶναι τὴν χώραν τὴν τῶν Δωτοφάγων· τοῦ Ξύλου δὲ τὴν ρίζαν εἶναι μελαντέραν μὲν πολὺ πυκνήν δὲ ἦττον καὶ εἰς ἐλάττω χρησίμην· εἰς γὰρ τὰ ἐγχειρίδια καὶ τὰ ἐπικολλήματα χρῆσθαι, τὸ Ἐκλυσίω δὲ εῖς τε τοὺς αὐλοὺς καὶ εἰς ἄλλα πλείω.

5 Ἐν δὲ τῇ μὴ υομένῃ τῆς Διβύης ἄλλα τε πλεῖω φύεσθαι καὶ φοινικας μεγάλους καὶ καλούς· οὐ μὴν ἄλλ' ὅπου μὲν φοινιξ ἄλμυρίδα τε εἶναι καὶ ἐφυδρον τὸν τόπον, οὐκ ἐν πολλῷ δὲ βάθει ἄλλα μάλιστα ἐπ' ὀργυίαις τρισίν. τὸ δ' ὑδωρ ἐνθα μὲν γλυκὺ σφόδρα ἕνθα δὲ ἄλυκών πλησίον ὄντων ἄλληλοις· ὅπου δὲ τὰ ἄλλα φύεται ξηρὸν καὶ ἀνυδρον' ἐνιαχοῦ δὲ καὶ τὰ φρέατα εἶναι ἐκατὸν ὀργυίων, ὡς τε ὑποξυγίοις ἀπὸ τροχηλίας ἀνιμάν· δι' ὅ καὶ θανμαστὼν πῶς ποτὲ ωφρύχθη τηλικαύτα βάθη· τὸ δ' οὖν τῶν υδάτων τῶν ὑπὸ τοὺς φοινικας καὶ ἐν 'Ἀμμωνος εἶναι διαφορὰν ἐχον τὴν εἰρημένην. φύεσθαι δὲ ἐν τῇ μὴ υομένῃ τὸ θύμον πολὺ καὶ ἄλλα ἱδιὰ τε καὶ πλείω γίνεσθαι

1 Sch. after Scal. places this section before § 3, making the account of this tree consecutive.  2 Plin. 13. 17. 104–106.  3 εὐπαχές conj. R. Const.; εὐσταχές U; εὐσταχεῖς MP2Ald.  4 cf. Hdt. 2. 96.
Some say that the *lotos* is shrubby and much branched, though it has a stout stem; and that the stone in the fruit is large, while the outside is not fleshy but somewhat leathery; and that to eat it is not so much sweet as palatable; and that the wine which they make out of it does not keep more than two or three days, after which it gets sour; and so that the fruit found in the Lotus-eaters' country is sweeter, while the wood in the Cyrenaica is better; and that the country of the Lotus-eaters is hotter; and that the root is much blacker than the wood, but of less close grain, and of use for fewer purposes; for they use it only for dagger-handles and tessellated work, while the wood is used for pipes and many other things.

In the part of Libya where no rain falls they say that, besides many other trees, there grow tall and fine date-palms; however they add, where the date-palm is found, the soil is salt and contains water, and that at no great depth, not more than three fathoms. They say also that the water is in some places quite sweet, but in others quite close by it is brackish; that where however other things grow, the soil is dry and waterless; and that in places even the wells are a hundred fathoms deep, so that they draw water by means of a windlass worked by beasts. Wherefore it is wonderful how at any time digging to such depths was carried out. Such, they say, is the special character of the water supply which feeds the date-palms in the district also of the temple of Zeus Ammon. Further it is said that in the land where no rain falls thyme is

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5 ἐπικολλήματα: lit. 'pieces glued on'; cf. Plin. l.c.
6 cf. Hdt. 3. 183.
7 Θοὺν Μασ. H.; Θάμνον ΜV Ald. cf. 6. 2. 3.
ἐνταῦθα, καὶ πτώκα καὶ δορκάδα καὶ στρουθον καὶ ἐτερα τῶν θηρίων. ἀλλὰ ταῦτα μὲν ἄδηλον εἰ ἑκτοπίζει τοὺς πιόμενα: (διὰ γὰρ τὸ τάχος δύναται μακρὰν τε καὶ ταχύν παραγενέσθαι), ἀλλως τε κεὶ δι᾽ ἡμερῶν τινῶν πίνουσι, καθάπερ καὶ τὰ ἡμερα παρὰ τρίτην ἡ τετάρτην ποτίζεται ταῦτα: τὸ δὲ τῶν ἄλλων ζώων, οἷον ὄφεων σαυρῶν καὶ τῶν τοιούτων, φαινέρον ὅτι ἀποτα. τοὺς δὲ Λίβνας λέγειν ὅτι τὸν ὄνον ἐσθίει ταῦτα δὲ καὶ παρ᾽ ἡμῖν γίνεται, πολύτουν τε καὶ μέλαν συσπείρωμεν εἰς ἑαυτὸ: τοῦτον δὲ πολὺν τε γίνεσθαι σφόδρα καὶ ὑψῶν τὴν φύσιν εἰναι.

7 Δρόσον δὲ ἂεὶ πίπτειν ἐν τῇ μη ὑμενή πολλήν, ὡστε δῆλον ὅτι τὸν μὲν φοίνικα καὶ εἰ τὸ ἄλλο φύεται ἐν ἄνυδροις τὸ τε ἐκ τῆς γῆς ἀνιὸν ἐκτρέφει καὶ πρὸς τοῦτο ἡ δρόσος. ἰκανή γὰρ ως κατὰ μεγέθη καὶ τὴν φύσιν αὐτῶν ξηρὰν οὕσαν καὶ ἐκ τοιούτων συνεστηκών. καὶ δένδρα μὲν ταῦτα πλείστα καὶ ἱδιώτατα. περὶ δὲ τοῦ σιλφίου λεκτέων ὑστερον ποιῶν τι τὴν φύσιν.

IV. 'Εν δὲ τῇ 'Ασίᾳ παρ᾽ εὐκάστοις ἓδη ἀττα τυγχάνει· τὰ μὲν γὰρ φέρουσιν αἱ χώραι τὰ δ᾽

2 ὡς κατὰ conj. Scal. from G; ὡστε τὰ Ἀλδ.Η.
abundant, and that there are various other peculiar plants there, and that there are found the hare\(^1\) gazelle ostrich and other animals. However it is uncertain whether these do not migrate in order to find drink somewhere, (for by reason of their fleetness they are able to appear at a distant place in a short space of time), especially if they can go for several days without drinking, even as these animals, when domesticated, are only given drink every third or fourth day. While as to other animals, such as snakes lizards and the like, it is plain that they go without drink. And we are told that according to the Libyans, these animals eat the wood-louse, which is of the same kind that is found also in our country, being black, with many feet, and rolling itself into a ball; this, they say, is extremely common and is juicy by nature.

They say also that dew always falls abundantly in the land in which no rain falls, so that it is plain that the date-palm, as well as anything else which grows in waterless places, is kept alive by the moisture which rises from the ground, and also by the dew. For the latter is sufficient, considering\(^2\) the size of such trees and their natural character, which is dry and formed of dry components. And trees of that character are most abundant in, and most specially belong to such country. The character of the silphium we must discuss later.

*Of the trees and herbs special to Asia.*

IV. In different parts of Asia also there are special trees, for the soil of the various regions produces some but not others. \(^3\) Thus they say that

\(^1\) Plin. 16. 144.
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οὐ φυσιῶν οἷον κιττὸν καὶ ἑλάνων οὐ φασίν εἶναι τῆς Ἀσίας ἐν τοῖς ἀνω τῆς Συρίας ἀπὸ θαλάττῃς πένθ᾽ ἥμερῶν. ἀλλ᾽ ἐν Ἰνδοῖς φανήραι κιττὸν ἐν τῷ ὀρεί τῷ Μηρῷ καλοῦμένῳ, οὗ εἴη καὶ τὸν Διόνυσον εἶναι μυθολογοῦσι. δὲ ὁ καὶ Ἀλέξανδρος ἀπ᾽ ἑξοδίας λέγεται ὕπιὸν ἐστεφανωμένους κιττῷ εἶναι καὶ αὐτὸς καὶ ἡ στρατιὰ τῶν δὲ ἄλλων ἐν Μηδία μόνον. περικλείειν γὰρ αὐτὴ δοκεῖ καὶ συνάπτειν πως τῷ Πόντῳ. καὶ τοῖς γε διεφηλητημῆθη Ἀρσαλὸς ἐν τοῖς παραδείσοις τοῖς περὶ Βαβυλῶνα φυτεύων τολλάκισ καὶ πραγματευόμενος, ἀλλ᾽ οὐδὲν ἐποίει πλέον ὁ γὰρ ἐδύνατο ζῆν ὡστε τάλλα τὰ ἐκ τῆς Ἐλλάδος. τοῦτο μὲν οὖν οὐ δέχεται ἡ χώρα διὰ τὴν τοῦ ἀέρος κράσιν ὀναγκαίως δὲ δέχεται καὶ πῦξον καὶ φίλυραν καὶ γὰρ περὶ ταῦτα πονοῦν γὲ ἐν τοῖς παραδείσοις. ἔτερα δὲ ὅδια φέρει καὶ δένδρα καὶ ἱλήματα καὶ ἔοικεν ὅλως ὁ τόπος ὁ πρὸς ἀνατολᾶς καὶ μεσημβρίαν ὡστε καὶ ξώα καὶ φυτὰ φέρειν ὅδια παρὰ τοὺς ἄλλους. οἶον ἢ τε Μηδία χώρα καὶ Περσίς ἀλλὰ τε ἔχει πλεῖον καὶ τὸ μήλον τὸ Μηδικὸν ἢ τὸ Περσικὸν καλοῦμενοι. ἔχει δὲ τὸ δένδρων τοῦτο φύλλων μὲν ὤμοιον καὶ σχεδὸν ἱσον τῷ τῆς ἀνδράχλης, ἀκάνθας δὲ οἰας ἀπιος ἢ ἄκυκακος, λείας δὲ καὶ ὄξειας σφόδρα καὶ ἵσχυρας τὸ δὲ μήλων οὐκ ἐσθίεται μὲν.

1 ἐλάνων conj. Spr.; ἑλάτην MSS. cf. Hdt. 1. 193; Xen. Anab. 4. 4. 13; Arr. Ind. 40.
2 κιττῶν conj. W., cf. Arr. Anab. 5. 1. 6; καὶ τὴν UMV; καὶ τῷ Ald.H. 3 λέγεται add. W.
3 ἑξοδίας UMVP; Ἐνδίας W. with Ald.
4 κιττῷ εἶναι conj. W.; ἑῖτα μεῖναι U; ἑῖτα μη εἶναι MVP Ald.
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ivy and olive do not grow in Asia in the parts of Syria which are five days' journey from the sea; but that in India ivy appears on the mountain called Meros, whence, according to the tale, Dionysus came. Wherefore it is said that Alexander, when he came back from an expedition, was crowned with ivy, himself and his army. But elsewhere in Asia it is said to grow only in Media, for that country seems in a way to surround and join on to the Euxine Sea. However, when Harpalus took great pains over and over again to plant it in the gardens of Babylon, and made a special point of it, he failed: since it could not live like the other things introduced from Hellas. The country then does not admit this plant on account of the climate, and it grudgingly admits the box and the lime; for even these give much trouble to those engaged in the gardens. It also produces some peculiar trees and shrubs. And in general the lands of the East and South appear to have peculiar plants, as they have peculiar animals; for instance, Media and Persia have, among many others, that which is called the 'Median' or 'Persian apple' (citron). This tree has a leaf like to and almost identical with that of the andrachne, but it has thorns like those of the pear or white-thorn, which however are smooth and very sharp and strong. The 'apple' is not

6 i.e. and so Greek plants may be expected to grow there. But the text is probably defective; cf. the citation of this passage, Plut. Quaest. Conv. 3. 2. 1.
7 Kairov ye. This sentence does not connect properly with the preceding.
8 ov add. Sch.
9 Plin. 12. 15 and 16; cited also Athen. 3. 26.
εύοσμον δὲ πάνυ καὶ τὸ φύλλον τοῦ δένδρου· κἂν εἰς ἱμάτια τεθῇ τὸ μῆλον ἀκοπα διατηρεῖ. χρήσιμον δὲ ἐπειδὰν τὺχῃ <τις> πεπωκῶς φάρμακον <θανάσιμον> δοθὲν γαρ ἐν οἷσι διακόπτει τὴν κοιλίαν καὶ ἐξάγει τὸ φάρμακον· καὶ πρὸς στόματος εὐωδίαν· ἐὰν γαρ τις ἕψηση ἐν ξωμῷ, ἢ ἐν ἄλλῳ τινὶ τὸ ἐσωθὲν τοῦ μῆλου ἐκπρέσῃ εἰς τὸ στόμα καὶ καταροῆσῃ, ποιεῖ τὴν ὀσμὴν ἥδειαν. 3 σπείρεται δὲ τοῦ ἄρος εἰς πρασίνας ἐξαιρεθέν τὸ σπέρμα διειργασμένας ἐπιμελῶς, εἰτα ἀρδεύεται διὰ τετάρτης ἤ πέμπτης ἡμέρας· ὅταν δὲ ἄδρον ἢ, διαφυτεύεται πάλιν τοῦ ἔαρος εἰς χωρίον μαλακὸν καὶ ἐφυδρον καὶ οὐ λίαν λεπτῶν· φίλει γαρ τὰ τοιαῦτα. φέρει δὲ τὰ μῆλα πᾶσαν ὧραν· τὰ μὲν γαρ ἀφήρηται τὰ δὲ ἀνθεὶ τὰ δὲ ἐκπέττει. τῶν δὲ ἄνθων ὅσα, ὦσπερ εἴπομεν, ἔχει καθάπερ ἡλικάτην ἐκ μέσου τιν' ἐξέχουσαν, ταῦτα ἐστὶ γόνιμα, ὅσα δὲ μὴ ἄγονα. σπείρεται δὲ καὶ εἰς ὠστρακα διατετρημένα, καθάπερ καὶ οἱ φοῖνικες. τούτο μὲν οὖν, ὦσπερ εἴρηται, περὶ τὴν Περσίδα καὶ τὴν Μηδίαν ἐστίν.

4 'Ἡ δὲ Ἰνδικὴ χώρα τὴν τε καλομέμνην ἔχει συκῆν, ἢ καθήσιν ἐκ τῶν κλάδων τὰς ρίζας ἀν ἐκαστὸν ἔτος, ὦσπερ εἴρηται πρότερον· ἀφίησι δὲ οὐκ ἐκ τῶν νέων ἄλλ' ἐκ τῶν ἐνων καὶ ἔτι παλαιοτέρων· αὐτὰ δὲ συνάπτουσα τῆ γῆ ποιοῦσιν ὦσπερ δρύφακτον κύκλω περὶ τὸ δένδρον, ὡστε γίνεσθαι καθάπερ σκηνῆν, οὐ δὴ καί

1 τις add. W. from Athen. l.c.; θανάσιμον . . . φάρμακον add. Sch. from Athen. l.c. 2 Plin. 11. 278; 12. 16. 3 ἄδρον ὢ W. from Athen. l.c., whence διαφυτεύεται W. etc. for διαφυτεύεται Ald. H. ἄδρον τι UMV Ald. 312
eaten, but it is very fragrant, as also is the leaf of the tree. And if the 'apple' is placed among clothes, it keeps them from being moth-eaten. It is also useful when one has drunk deadly poison; for being given in wine it upsets the stomach and brings up the poison; also for producing sweetness of breath; for, if one boils the inner part of the 'apple' in a sauce, or squeezes it into the mouth in some other medium, and then inhales it, it makes the breath sweet. The seed is taken from the fruit and sown in spring in carefully tilled beds, and is then watered every fourth or fifth day. And, when it is growing vigorously, it is transplanted, also in spring, to a soft well-watered place, where the soil is not too fine; for such places it loves. And it bears its 'apples' at all seasons; for when some have been gathered, the flower of others is on the tree and it is ripening others. Of the flowers, as we have said, those which have, as it were, a distaff projecting in the middle are fertile, while those that have it not are infertile. It is also sown, like date-palms, in pots with a hole in them. This tree, as has been said, grows in Persia and Media.

The Indian land has its so-called 'fig-tree' (banyan), which drops its roots from its branches every year, as has been said above; and it drops them, not from the new branches, but from those of last year or even from older ones; these take hold of the earth and make, as it were, a fence about the tree, so that it becomes like a tent, in

1. 13. 4. i.e. the pistil.
6 Plin. 12. 16, fictilibus in vasis, dato per cavernas radicibus spiramento: the object, as Plin. explains, was to export it for medical use.
7 Plin. 12. 22 and 23. 8 1. 7. 3.
εἴποι δὲ αἱ ῥίζαι φυόμεναι διάδηλοι πρὸς τοὺς βλαστούς· λευκότεραι γὰρ καὶ δασεῖαι καὶ σκολιαὶ καὶ ἀφυλλοι. ἔχει δὲ καὶ τὴν ἁνω κόμην πολλήν, καὶ τὸ ὅλον δένδρον εὐκυκλον καὶ τῷ μεγέθει μέγα σφόδρα· καὶ γὰρ ἐπὶ δύο στάδια ποιεῖν φασί τὴν σκιάν· καὶ τὸ πάχος τοῦ στελέχους ἕνα πλείονον ἢ ἐξήκοντα βημάτων, τὰ δὲ πολλὰ τετταράκοντα. τὸ δὲ γε φύλλου οὐκ ἔλαττον ἔχει πέλτης, καρπὸν δὲ σφόδρα μικρὸν ἡλίκου ἐρέβινθον ὁμοίων δὲ σύκων· διὸ ὁ καὶ ἐκάλουν αὐτὸ ὁ "Ἐλληνες συκῆς· ὀλίγον δὲ θαυμαστῶς τὸν καρπὸν οὐχ ὅτι κατὰ τὸ τοῦ δένδρου μέγεθος ἄλλα καὶ τὸ ὅλον. φύτευται δὲ καὶ τὸ δένδρον περὶ τὸν Ἀκεσίνην ποταμόν.

"Εστὶ δὲ καὶ έτερον δένδρον καὶ τῷ μεγέθει μέγα καὶ ἡδύκαρπον θαυμαστῶς καὶ μεγαλόκαρπον· καὶ χρώνται τροφῆ τῶν Ἰνδῶν οἱ σοφοί καὶ μὴ ἀμπεχόμενοι.

"Ετερον δὲ οὗ τὸ φύλλον τὴν μὲν μορφὴν πρόμηκες τοῖς τῶν στρουθῶν πτεροῖς ὁμοίων, ἀ παρατίθενται παρὰ τὰ κράνη, μῆκος δὲ ὡς διπηχυαίον.

"Αλλο τέ ἔστιν οὗ ὁ καρπὸς μακρὸς καὶ οὐκ εὐθὺς ἄλλα σκολιός ἐσθιόμενος δὲ γλυκύς. οὗτος ἐν τῇ κοιλίᾳ δημημον ἐμποιεῖ καὶ δυσεντερίαν, διὸ ἄλεξανδρὸς ἀπεικόρυξε μὴ ἐσθῖεν. ἔστι δὲ καὶ έτερον οὗ ὁ καρπὸς ὁμοίως τοῖς κρανέοις.

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1 οὗ conj. W.; aṣ UMV Ald.
2 ἀφυλλοι conj. Dalec.; δίφυλλοi UVAld.; so also MH., omitting καλ.
3 ἐξήκοντα... τετταράκοντα MSS.; ἔξ... τεττάρων conj. Salm. cf. Plin. l.c.; Strabo 15.1.21.

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which men sometimes even live. The roots as they grow are easily distinguished from the branches, being whiter hairy crooked and leafless. The foliage above is also abundant, and the whole tree is round and exceedingly large. They say that it extends its shade for as much as two furlongs; and the thickness of the stem is in some instances more than sixty paces, while many specimens are as much as forty paces through. The leaf is quite as large as a shield, but the fruit is very small, only as large as a chick-pea, and it resembles a fig. And this is why the Greeks named this tree a 'fig-tree.' The fruit is curiously scantly, not only relatively to the size of the tree, but absolutely. The tree also grows near the river Akesines.

There is also another tree which is very large and has wonderfully sweet and large fruit; it is used for food by the sages of India who wear no clothes.

There is another tree whose leaf is oblong in shape, like the feathers of the ostrich; this they fasten on to their helmets, and it is about two cubits long.

There is also another whose fruit is long and not straight, but crooked, and it is sweet to the taste. This causes griping in the stomach and dysentery; wherefore Alexander ordered that it should not be eaten. There is also another whose fruit is like the fruit of the cornelian cherry.

Καὶ ἄτερα δὲ πλεῦκαὶ διαφέροντα τῶν ἐν τοῖς "Ἐλλησίων ἄλλοι ἀνώνυμαι. θαυμαστῶν δὲ οὐδὲν τῆς ἴδιότητος· σχεδὸν γὰρ, ὡς γε δὴ τινὲς φασίν, οὐθὲν ὅλως τῶν δένδρων οὐδὲ τῶν ὕλη-μάτων οὐδὲ τῶν ποιωδῶν ὄμοιον ἐστὶ τοῖς ἐν τῇ Ἑλλάδι πλὴν ὀλίγων.

6 'Ἰδιοῦ δὲ καὶ ἡ ἐβένη τῆς χώρας ταύτης· ταύτης δὲ δύο γένη, τὸ μὲν εὐξύλων καὶ καλὸν τὸ δὲ φαύλων. ἑπάνιον δὲ τὸ καλὸν θάτερον δὲ πολύ. τὴν δὲ χρόαν οὐθεναύριζομένη θαμβάνει τὴν εὐχρούν ἀλλ’ εὐθὺς τῇ φύσει. ἐστὶ δὲ τὸ δένδρον θαμυώδες, ὥστερ δ’ ἐκτισσό.

7 Φασὶ δ’ εἶναι καὶ τέρμιθον, οἱ δ’ ὄμοιον τερμίνθω, ὁ τὸ μὲν φύλλον καὶ τοὺς κλὸνας καὶ τὰλλα πάντα ὄμοια ἔχει τῇ τερμίνθῳ τὸν δὲ καρπὸν διάφορον· ὄμοιον γὰρ ταῖς ἀμυγδαλαίς. εἶναι γὰρ καὶ ἐν Βάκτρωις τὴν τερμίνθον ταύτην καὶ κάρνα φέρειν ἡλίκα ἀμυγδαλα διὰ τὸ μὴ μεγάλα· καὶ τῇ ὅψει δὲ παρόμοια, πλὴν τὸ κέλυφος οὐ τραχύ, τῇ δ’ εὔστομία καὶ ἡδονῇ κρείττω τῶν ἀμυγδάλων. δ’ δ’ καὶ χρῆσθαι τοὺς ἐκεὶ μᾶλλον.

8 Ἔξ ὁν δὲ τὰ ἱμάτια ποιοῦσι τὸ μὲν φύλλον ὄμοιον ἔχει τῇ συκαμίνῳ, τὸ δὲ ὅλον φυτὸν τοὺς κυνορόδοις ὄμοιον. φυτεύουσι δὲ ἐν τοῖς πεδίοις αὐτὸ κατ’ ὀρχοὺς, δι’ ὃ καὶ πόρρωθεν ἀφορῶσι ἀμπελοὶ φαύνονται. ἔχει δὲ καὶ φοίνικας ἐνια

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1 Plin. 12. 25.

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There are also many more\(^1\) which are different to those found among the Hellenes, but they have no names. There is nothing surprising in the fact that these trees have so special a character; indeed, as some say, there is hardly a single tree or shrub or herbaceous plant, except quite a few, like those in Hellas.

The ebony\(^2\) is also peculiar to this country; of this there are two kinds, one with good handsome wood, the other inferior. The better sort is rare, but the inferior one is common. It does not acquire its good colour by being kept, but it is natural to it from the first. The tree is bushy, like laburnum.

Some say that a ‘terebinth’\(^3\) grows there also, others that it is a tree like the terebinth; this in leaf twigs and all other respects resembles that tree, but the fruit is different, being like almonds. In fact they say that this sort of terebinth grows also in Bactria and bears nuts only as big as almonds, inasmuch as they are not large for the size of the tree\(^4\); and they closely resemble almonds in appearance, except that the shell is not rough; and in palatableness and sweetness they are superior to almonds; wherefore the people of the country use them in preference to almonds.

The trees from which they make their clothes have a leaf like the mulberry, but the whole tree resembles the wild rose. They plant them in the plains in rows, wherefore, when seen from a distance, they look like vines. Some parts also have many

\(^{1}\) διὰ ... μέγαλα: Sch. omits these words, and W. considers them corrupt; but G seems to have had them in his text. The translation is tentative.

\(^{2}\) Cotton-plant. cf. 4. 7. 7 and 8. Plin. 12. 25.
μέρη πολλούς. καὶ ταῦτα μὲν ἐν δένδρων φύσει.

9 Φέρει δὲ καὶ σπέρματα ἱδία, τὰ μὲν τοῖς χεδροποίοις ὀμοιά τὰ δὲ τοῖς πυροῖς καὶ ταῖς κριθαίς. ἐρέβινθος μὲν γὰρ καὶ φακὸς καὶ τᾶλλα τὰ παρ’ ἤμιν οὐκ ἔστιν. ἔτερα δ’ ἔστιν ὡστε παραπλήσια ποιεῖν τὰ ἐψήματα καὶ μὴ διαγγελύσκειν, ὡς φασίν, ἂν μὴ τις ἀκούσῃ. κριθαί δὲ καὶ πυροὶ καὶ ἄλλο τί γένος ἀγρίων κριθῶν, εξ ὧν καὶ ἄρτοι ἧδεις καὶ χόνδρος καλὸς. ταῦτας οἱ ὑπ’ αὐτὸς ἐσθίοντες τὸ πρῶτον διεθέσθαι, κατὰ μικρὰν δὲ οὖν ἐθισθέντες ἐν ἁχύροις οὐδὲν ἐπασχοῦν.

10 Μάλιστα δὲ σπειροῦσι τὸ καλούμενον ὄρυξον, εξ οὗ τὸ ἐψήμα. τοῦτο δὲ ὀμοιὰν τῇ ἑοίη καὶ περιπτεισθέν ὀλὸν χόνδρος εὔπεπτον δὲ, τὴν ὀψιν πεφυκὸς ὀμοιὸν ταῖς αἵραις καὶ τὸν πολὺν χρόνον ἐν ὑδατι, ἀποχεῖται δὲ οὖν εἰς στάχυν ἄλλ’ ὀλὸν φόβην, ὡστερ ὁ κέγχρος καὶ ὁ ἔλυμος. ἄλλο δὲ ὁ ἐκάλουν οἱ Ἕλληνες φακόν τοῦτο δὲ ὀμοιῶν μὲν τῇ ὄψει καὶ τὸ βούκερας, θερίζεται δὲ περὶ Πλειάδος ὄνυσιν.

11 Διαφέρει δὲ καὶ αὕτη ἡ χώρα τῷ τὴν μὲν φέρειν ἐναι τὴν δὲ μὴ φέρειν· ἡ γὰρ ὀρεινῆ καὶ ἀμπελοῦν ἐχει καὶ ἐλάαιαν καὶ τὰ ἄλλα ἀκρόδρυα· πλῆν ἀκαρπῶν τὴν ἐλάαιαν, καὶ σχεδὸν καὶ τὴν φύσιν ὡσπερ μεταξὺ κοτίνου καὶ ἐλάαιας ἔστὶ καὶ

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1 cf. 8. 4. 2. whence it appears that the original text here contained a fuller account. Plin. 18. 71.
2 Sorghum halepense. 3 Sc. of Alexander.
4 The verb seems to have dropped out (W.).
date-palms. So much for what come under the heading of 'trees.'

These lands bear also peculiar grains, some like those of leguminous plants, some like wheat and barley. For the chick-pea lentil and other such plants found in our country do not occur; but there are others, so that they make similar mashes, and one cannot, they say, tell the difference, unless one has been told. They have however barley wheat and another kind of wild barley, which makes sweet bread and good porridge. When the horses ate this, at first it proved fatal to them, but by degrees they became accustomed to it mixed with bran and took no hurt.

But above all they sow the cereal called rice, of which they make their mash. This is like rice-wheat, and when bruised makes a sort of porridge, which is easily digested; in its appearance as it grows it is like darnel, and for most of its time of growth it is in water; however it shoots up not into an ear, but as it were into a plume, like the millet and Italian millet. There was another plant which the Hellenes called lentil; this is like in appearance to 'ox-horn' (fenugreek), but it is reaped about the setting of the Pleiad.

Moreover this country shews differences in that part of it bears certain things which another part does not; thus the mountain country has the vine and olive and the other fruit-trees; but the olive is barren, and in its character it is as if it were almost between a wild and a cultivated olive, and so it

5 ἀποχεῖται: cf. 8. 8. 1. 6 cf. 8. 3. 4.
7 P'hasolus Mungo; see Index App. (8).
8 i.e. of Alexander's expedition. 9 Plin. 12. 14.
τῇ ὄλῃ μορφῇ· καὶ τὸ φύλλον τοῦ μὲν πλατύτερον τοῦ δὲ στενότερον. ταύτα μὲν οὖν κατὰ τὴν Ἰνδίκην.

12 Ἔν δὲ τῇ Ἀρίδα χώρα καλουμένη ἀκανθά ἐστιν, ἐφ' ἣς γίνεται δάκρυν ὁμοιὸν τῇ σμύρνῃ καὶ τῇ ὤψει καὶ τῇ ὁμιῇ· τούτῳ δὲ ὅταν ἐπιλάμψῃ ὁ ἕλιος καταρρεῖ. πολλὰ δὲ καὶ ἄλλα παρὰ τὰ εὑταῦθα καὶ ἐν τῇ χώρᾳ καὶ ἐν τοῖς ποταμοῖς γίνεται. ἐν ἐτέροις καὶ τόποις ἐστὶν ἀκανθὰ λεικὴ τρίοξος, ἔξ ἣς καὶ σκυτάλια καὶ βακτηρίας ποιοῦσιν· ὀπώδης δὲ καὶ μανῆ ταύτην δὲ καλοῦσιν Ἡρακλέους.

'Ἀλλο δὲ ὑλημα μέγεθος μεν ἧλικὸν ράφανος, τὸ δὲ φύλλον ὁμοιὸν δάφνη καὶ τῷ μεγέθει καὶ τῇ μορφῇ· τούτῳ δ' εἰ τι φάγοι ἐναποθνήσκει. δ' οὐ καὶ ὅποι ὑπ'ποι τούτους ἐφύλαττον διὰ χειρῶν.

13 Ἔν δὲ τῇ Γεδρωσία χώρα πεφυκέναι φασὶν ἐν μὲν ὁμοιὸν τῇ δάφνῃ φύλλου ἔχουν, οὗ τὰ ὑποζύγια καὶ ὀστοὺν εἰ φάγοι μικρὸν ἐπισχόντα διεθθείροντο παραπλησίως διατιθέμενα καὶ σπώμενα ὁμοίως τοῖς ἐπιλήπτοις.

'Ετέρον δὲ ἀκανθὰν τινα ἐναι ταύτην δὲ φύλλον μὲν οὐδὲν ἐχειν πεφυκέναι δ' ἐκ μιᾶς ρίζης· ἐφ' ἐκάστῳ δὲ τῶν ὄξων ἀκανθὰν ἐχειν ὀξείαν σφόδρα, καὶ τούτων δὲ καταγινυμένων ἡ προστριβομένων ὅποι ἐκεῖν πολύν, ὃς ἀποτυφλοῖ

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1 καὶ σχέδν... μορφῇ conj. W.; σχέδν δὲ καὶ τὴν φύσιν ἔσπερ μετ. κοτ. καὶ ἐλ. ἐστὶ δὲ τῇ ὄλῃ μορφῇ καὶ τῷ φ. Ald.; so also U, omitting the first kal.

2 Balsamodendron Mukul; see Index App. (9). Plin. 12.33.
is also in its general appearance, and the leaf is broader than that of the one and narrower than that of the other. So much for the Indian land.

In the country called Aria there is a ‘thorn’ on which is found a gum resembling myrrh in appearance and smell, and this drops when the sun shines on it. There are also many other plants besides those of our land, both in the country and in its rivers. In other parts there is a white ‘thorn’ which branches in three, of which they make batons and sticks; its wood is sappy and of loose texture, and they call it the thorn ‘of Herakles.’

There is another shrub as large as a cabbage, whose leaf is like that of the bay in size and shape. And if any animal should eat this, it is certain to die of it. Wherefore, wherever there were horses, they kept them under control.

In Gedrosia they say that there grows one tree with a leaf like that of the bay, of which if the beasts or anything else ate, they very shortly died with the same convulsive symptoms as in epilepsy.

And they say that another tree there is a sort of ‘thorn’ (spurge), and that this has no leaf and grows from a single root; and on each of its branches it has a very sharp spine, and if these are broken or bruised a quantity of juice flows out, which blinds animals or

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3 σωβρνη conj. Sch. from 9. 1. 2; Plin. l.c.; τήν ἱλπρία Ald. H.
4 See Index.
5 Asafoetida; see Index App. (10). Plin. 12. 33.
6 i.e. in Alexander’s expedition. Probably a verb, such as δωρραίνωτα, has dropped out after ίπνοι (Sch.). Odore equos invitans Plin. l.c.
7 Nerium odorum; see Index App. (11). cf. 4. 4. 13; Strabo 15. 2. 7; Plin. l.c.
8 Plin. l.c.; Arrian, Anab. 6. 22. 7.
γάρ ἦν ὁ λόγος ἁγίας ἐπιστήμης καὶ τὸν ἀνθρώπον καὶ τύχη τοῦ προσφερόμενον ἰδίως. ἔν δὲ τούτοις τισὶ πεφυκέναι τυφλα καὶ ἠναπαύσατο, χρονὸς πρὸς τὸν μεγάλον πόλιμαν ἐν τῷ τελείωτατῳ.
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even a man, if any drops of it should fall on him. Also they say that in some parts grows a herb under which very small snakes lie coiled up, and that, if anyone treads on these and is bitten, he dies. They also say that, if anyone should eat of unripe dates, he chokes to death, and that this fact was not discovered at first. Now it may be that animals and plants have such properties elsewhere also.

Among the plants that grow in Arabia Syria and India the aromatic plants are somewhat exceptional and distinct from the plants of other lands; for instance, frankincense myrrh cassia balsam of Mecca cinnamon and all other such plants, about which we have spoken at greater length elsewhere. So in the parts towards the east and south there are these special plants and many others besides.

Of the plants special to northern regions.

V. In the northern regions it is not so, for nothing worthy of record is mentioned except the ordinary trees which love the cold and are found also in our country, as fir oak silver-fir box chestnut lime, as well as other similar trees. There is hardly any other besides these; but of shrubs there are some which for choice seek cold regions, as centaury and wormwood, and further those that have medicinal properties in their roots and juices, such as hellebore squirting cucumber scammony, and nearly all those whose roots are gathered.

Some of these grow in Pontus and Thrace, some

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2 I have moved μᾶλλον, which in the MSS. comes before τῶν ἀλλών.

3 i.e. which have medicinal uses.
Τὰ δὲ περὶ τὴν Οὐτήν καὶ τῶν Παρνασοῦν καὶ τὸ Πήλιον καὶ τὴν Ὅσσαν καὶ τὸ Τελέθριον· καὶ ἐν τούτοις δὲ τινὲς φασὶ πλεῖστον· πολλὰ δὲ καὶ ἐν τῇ Ἀρκαδίᾳ καὶ ἐν τῇ Δακωνικῇ· φαρμακώδεις γὰρ καὶ αὐτά. τῶν δὲ εὔωδῶν οὐδὲν ἐν ταύταις, πλὴν ἑρὶς ἐν τῇ Ἰλλυρίδι καὶ περὶ τῶν Ἀδρίαν· ταύτη γὰρ χρηστή καὶ πολὺ διαφέρουσα τῶν ἀλλων· ἄλλον ἐν τοῖς ἀλεεινοῖς καὶ τοῖς πρὸς μεσημβρίαις ὀσπερ ἀντικείμενα τὰ εὐώδη. ἔχουσι δὲ καὶ κυπάριστον οἱ ἀλεεινοὶ μᾶλλον, ὀσπέρ Κρήτη Λυκία Ῥόδος, κέδρον δὲ καὶ τὰ Θράκια ὅρη καὶ τὰ Φρύγια.

3. Τῶν δὲ ἡμερομεένων ἕκιστά φασὶν ἐν τοῖς ψυχροῖς ὑπομένειν δάφνην καὶ μυρρίνην, καὶ τούτων δὲ ἦττον ἐτί τὴν μυρρίνην· σημεῖον δὲ λέγουσιν ὅτι ἐν τῷ Ὀλύμπῳ δάφνη μὲν πολλή, μύρρινος δὲ ὅλως οὐκ ἐστὶν. ἐν δὲ τῷ Πόντῳ περὶ Παντικάπαιον ὀνὸν ἑτερον καὶ περὶ σπουδάζοντων καὶ πάντα μηχανωμένων πρὸς τὰς ἱεροσύνας· σουκαί δὲ πολλαὶ καὶ εὔμεγέθεις καὶ ροιαι δὲ περισκεπαζόμενα· ἀπιοι δὲ καὶ μηλέαι πλείσται καὶ παντοδαπώταται καὶ χρησταῖ· αὐταί δὲ ἐκαρίαι πλὴν εἰ ἀρα ὅψια τῆς δὲ ὄγρίας ὅλης ἐστὶ δρῦς πτελέα μελία καὶ ὁσα τοιαῦτα· πεύκη δὲ καὶ ἑλάτη καὶ πίτυς οὐκ ἐστὶν οὐδὲ ὅλως οὐδὲν ἐνδαδον· ὑγρὰ δὲ αὐτὴ καὶ χείρων πολύ τῆς Σιωπικῆς, ὡστε οὐδὲ πολὶ χρωνται αὐτὴ πλὴν πρὸς τὰ υπαίθρια.
about Oeta Parnassus Pelion Ossa and Telethrion, and in these parts some say that there is great abundance; so also is there in Arcadia and Laconia, for these districts too produce medicinal plants. But of the aromatic plants none grows in these lands, except the iris in Illyria on the shores of the Adriatic; for here it is excellent and far superior to that which grows elsewhere; but in hot places and those which face the south the fragrant plants grow, as if by contrast to the medicinal plants. And the warm places have also the cypress in greater abundance; for instance, Crete Lycia Rhodes, while the prickly cedar grows in the Thracian and the Phrygian mountains.

Of cultivated plants they say that those least able to thrive in cold regions are the bay and myrtle, especially the myrtle, and they give for proof that on Mount Olympus the bay is abundant, but the myrtle does not occur at all. In Pontus about Panticapaeum neither grows, though they are anxious to grow them and take special pains to do so for religious purposes. But there are many well grown fig-trees and pomegranates, which are given shelter; pears and apples are abundant in a great variety of forms and are excellent. These are spring-fruiting trees, except that they may fruit later here than elsewhere. Of wild trees there are oak elm manna-ash and the like (while there is no fir silver-fir nor Aleppo pine, nor indeed any resinous tree). But the wood of such trees in this country is damp and much inferior to that of Sinope, so that they do not much use it except for outdoor purposes. These

3 Plin. 16. 137.
4 Plin., l.c., says that Mithridates made this attempt.
5 i.e. oak, etc.
μὲν οὖν περὶ τὸν Πόντον ἢ ἐν τισὶ γε τοποῖς αὐτοῦ.

4 Ἔν δὲ τῇ Προποντίδι γίνεται καὶ μύρρινος καὶ δύφη πολλαχοῦ ἐν τοῖς ὀρέσιν. ἱσως δ' ἐνια καὶ τῶν τῶπων ἵδια θετέον· ἐκαστοῖ γὰρ ἔχουσι τὰ διαφέροντα, ὡσπερ εὐρηταί, κατὰ τὰς ὕλας οὐ μόνον τῷ βελτίῳ καὶ χείρῳ τῷ αὐτῆς ἔχειν ἄλλα καὶ τῷ φέρειν ἢ μὴ φέρειν· οἷον ὁ μὲν Τμώλος ἔχει καὶ ὁ Μύσιος Ὁλυμπὸς πολὺ τὸ κάρυνον καὶ τὴν διοσβάλανον, ἔτι δὲ ἀμπελοῦ καὶ μηλέαν καὶ ῥόαν· ἢ δὲ Ἰδη τὰ μὲν οὖν ἔχει τοῦτον τὰ δὲ σπάνια· περὶ δὲ Μακεδονίαν καὶ τὸν Πιερικὸν Ὁλυμπὸν τὰ μὲν ἐστὶ τὰ δ' οὖν ἐστὶ τοῦτον· ἐν δὲ τῇ Ἑὔβοιᾳ καὶ περὶ τὴν Μαγνησίαν τὰ μὲν Ἑὔβοικὰ πολλὰ τῶν δὲ ἄλλων οὐθέν· οὔδε δὴ περὶ τὸ Πέλιον οὔδε τὰ ἄλλα τὰ ἐνταῦθα ὦρη.

5 Βραχὺς δ' ἐστὶ τόπος ὅς ἔχει καὶ ὅλως τὴν ναυπηγήσμον ὕλην τῆς μὲν γὰρ Ἐὐρώπης δοκεῖ τὰ περὶ τὴν Μακεδονίαν καὶ ὅσα τῆς Θράκης καί περὶ Ἰταλίαν τῆς δὲ Ἀσίας τὰ τε ἐν Κιλικίᾳ καὶ τὰ ἐν Σινώπῃ καὶ Ἀμίσῳ, ἔτι δὲ ὁ Μύσιος Ὁλυμπὸς καὶ ἢ Ἰδη πλὴν οὖ πολλὴν· ἡ γὰρ Συρία κέδρον ἔχει καὶ τάυτη χρώνται πρὸς τὰς τριήρεις.

6 Ἀλλὰ καὶ τὰ φίλινδρα καὶ τὰ παραποτάμια ταῦθ' ὀμοῖως· ἐν μὲν γὰρ τῷ Ἀδρίᾳ πλάτανον οὐ φασίν εἶναι πλὴν περὶ τὸ Διομήδους ἱερὸν σπανίαν δὲ καὶ ἐν Ἰταλίᾳ πάσῃ καὶ τοιού πολλοὶ καὶ μεγάλοι ποταμοὶ παρ' ἄμφοιν· ἂλλ' οὖν

1 See Index.
2 καὶ ὅσα: text probably defective, but sense clear. ἐκεῖ καὶ τὰ περὶ Ἰ.
are the trees of Pontus, or at least of certain districts of that country.

In the land of Propontis myrtle and bay are found in many places on the mountains. Perhaps however some trees should be put down as special to particular places. For each district, as has been said, has different trees, differing not only in that the same trees occur but of variable quality, but also as to producing or not producing some particular tree. For instance, Tmolus and the Mysian Olympus have the hazel and chestnut\(^1\) in abundance, and also the vine apple and pomegranate; while Mount Ida has some of these not at all and others only in small quantity; and in Macedonia and on the Pierian Olympus some of these occur, but not others; and in Euboea and Magnesia the sweet chestnut\(^1\) is common, but none of the others is found; nor yet on Pelion or the other mountains of that region.

Again it is only a narrow extent of country which produces wood fit for shipbuilding at all, namely in Europe the Macedonian region, and certain parts\(^2\) of Thrace and Italy; in Asia Cilicia Sinope and Amisus, and also the Mysian Olympus, and Mount Ida; but in these parts it is not abundant. For Syria has Syrian cedar, and they use this for their galleys.

The like is true of trees which love water and the riverside; in the Adriatic region they say that the plane is not found, except near the Shrine of Diomedes,\(^3\) and that it is scarce throughout Italy\(^4\); yet there are many large rivers in both countries, in spite of which the localities do not seem to

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\(^1\) On one of the islands of Diomedes, off the coast of Apulia; now called Isole di Tremiti. \textit{cf.} Plin. 12. 6.

\(^2\) \textit{cf.} 2. 8. 1 n.
7 Ἑνιοί δὲ πλείστην ἐχοῦσι πλάτανον, οἱ δὲ πτελέαν καὶ ιτέαν, οἱ δὲ μυρίκην, ὅσπερ ὁ Λίμος. ὡστε τὰ μὲν τοιαύτα, καθάπερ ἐλέγχθη, τῶν τόπων ἵδια θετέων ὁμοίως ἐν τε τοῖς ἀγρίοις καὶ τοῖς ἡμέροις. οὐ μὴν ἀλλὰ τάξ’ ἀν εἰη καὶ τούτων ἐπὶ τινών ὡστε διακοσμηθέντων δύνασθαι τὴν χώραν φέρειν, ὅ καὶ νῦν ξυμβαίνον ὀρῶμεν καὶ ἐπὶ ξών ἐνίων καὶ φυτῶν.

VI. Μεγίστην δὲ διαφορὰν αὐτῆς τῆς φύσεως τῶν δένδρων καὶ ἀπλῶς τῶν ὑλημάτων ὑπολη-πτέον ἥν καὶ πρότερον εἴπομεν, ὅτι τὰ μὲν ἐγγαία τὰ δ’ ἐνυδρα τυγχάνει, καθάπερ τῶν ξώνων, καὶ τῶν φυτῶν· οὐ μόνον ἐν τοῖς ἔλεσι καὶ ταῖς λίμναις καὶ τοῖς ποταμοῖς γὰρ ἀλλὰ καὶ ἐν τῇ θαλάττῃ φύσει καὶ ὑλῆματα ἐνια ἐν τῇ ἕξω καὶ δένδρα· ἐν μὲν γὰρ τῇ περὶ ἡμᾶς μικρὰ πάντα τὰ φυόμενα, καὶ οὐδὲν ὑπερέχου ὡς εἰπεῖν τῆς θαλάττης· ἐν ἐκείνῃ δὲ καὶ τὰ τοιαύτα καὶ ὑπερέχοντα, καὶ ἐτερα δὲ μείζω δένδρα.

2 Τὰ μὲν οὖν περὶ ἡμᾶς ἐστὶ τάδε: φανερώτατα μὲν καὶ κοινότατα πᾶσιν τὸ τε φύκος καὶ τὸ βρύον καὶ ὁσα ἀλλα τοιαύτα· φανερώτατα δὲ καὶ

1 φιλοτιμηθεΐσαι: conj. St.; φιλοτιμηθέλει MSS; Plin. 12. 7.
2 θαλάττης: conj. Scal. from G; ἐλάττης Ald. H.
produce this tree. At any rate those which King Dionysius the Elder planted at Rheimium in the park, and which are now in the grounds of the wrestling school and are thought much of,\(^1\) have not been able to attain any size.

Some of these regions however have the plane in abundance, and others the elm and willow, others the tamarisk, such as the district of Mount Haemus. Wherefore such trees we must, as was said, take to be peculiar to their districts, whether they are wild or cultivated. However it might well be that the country should be able to produce some of these trees, if they were carefully cultivated: this we do in fact find to be the case with some plants, as with some animals.

Of the aquatic plants of the Mediterranean.

VI. However the greatest difference in the natural character itself of trees and of tree-like plants generally we must take to be that mentioned already, namely, that of plants, as of animals, some belong to the earth, some to water. Not only in swamps, lakes and rivers, but even in the sea there are some tree-like growths, and in the ocean there are even trees. In our own sea all the things that grow are small, and hardly any of them rise above the surface\(^2\); but in the ocean we find the same kinds rising above the surface, and also other larger trees.

Those found in our own waters are as follows: most conspicuous of those which are of general occurrence are seaweed\(^3\) oyster-green and the like; most obvious of those peculiar to certain parts are the

\(^1\) Plin. 13. 135.
THEOPHRASTUS

ιδιότατα κατὰ τοὺς τόπους ἐλάτη συκῆ δρῦς ἁμπελοὺς φοίνιξ. τοῦτων δὲ τὰ μὲν πρόσγεια τὰ ὄντων τὸν τόπων κοινὰ, καὶ τὰ μὲν πολυειδῆ, καθάπερ τὸ φῦκος, τὰ δὲ μίαν ἱδέαν ἔχοντα. τοῦ γὰρ φῦκους τὸ μέν ἐστι πλατύφυλλον ταινιοειδῆς χρώμα ποώδες ἔχου, ὃ δὴ καὶ πρασοῦν καλουσὶ τίνες, οἱ δὲ ξωστήρα-ρίζαν δὲ ἑχει δασείαν ἐξωθεν ἐνδοθεν δὲ λεπτυνόδη, μακρὰν δὲ ἐπιεικῶς καὶ εὔπαχῆ παρομοιὰν τοῖς κρομμυγητέοις.

3. Τὸ δὲ τριχόφυλλον, ὥσπερ τὸ μάραθον, οὐ ποώδες ἀλλ' ἐξωχρον οὔδε ἔχουν καυλὸν ἀλλ' ὀρθὸν πως ἐν αὐτῷ φύεται δὲ τοῦτο ἐπὶ τῶν ὀστράκων καὶ τῶν λίθων, οὐχ ὥσπερ θάτερον πρὸς τῇ γῇ πρόσγεια δ' ἀμφω, καὶ τὸ μὲν τριχόφυλλον πρὸς αὐτῇ τῇ γῇ, πολλάκις δὲ ὥσπερ ἐπικλύζεται μόνον ὑπὸ τῆς θαλάττης, θάτερον δὲ ἀνωτέρω.

4. Γίνεται δὲ ἐν μὲν τῇ ἐξῳ τῇ περὶ Ἡρακλεοῦς στήλας θαναμαστῶν τι τὸ μέγεθος, ὡς φασί, καὶ τὸ πλάτος μείζον ὡς παλαιστιαίων. φέρεται δὲ τοῦτο εἰς τὴν ἐσω θάλατταν ἀμα τῷ ῥῷ τῷ ἐξωθεν καὶ καλουσίν αὐτῷ πρῶσον ἐν ταύτῃ δ' ἐν τισὶ τῶποις ὅστ' ἐπάνω τοῦ ὀμφαλοῦ. λέγεται δὲ ἐπέτειον εἰναι καὶ φύεσθαι μὲν τοῦ ἄρτος λήγοντος, ἀκμάζειν δὲ τοῦ θέρους, τοῦ μετοπῶρου δὲ φθίνειν, κατὰ δὲ τὸν χειμὼν ἀπόλλυσθαί καὶ ἐκπιπτεῖν. ἀπαντα δὲ καὶ τάλλα τὰ φύομενα χείρῳ καὶ ἀμαυρότερα γίνεσθαι τοῦ χειμῶνος.

1 See Index: συκῆ, δρῦς, etc.
2 tainioeides conj. Dalec.; τετανοειδὲς UP., Ald. H.; τὰ τενοειδὲς MV.
3 cf. Diosc. 4. 99; Plin. 136.

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sea-plants called 'fir' 'fig' 'oak' 'vine' 'palm.'

Of these some are found close to land, others in the deep sea, others equally in both positions. And some have many forms, as seaweed, some but one. Thus of seaweed there is the broad-leaved kind, riband-like and green in colour, which some call 'green-weed' and others 'girdle-weed.' This has a root which on the outside is shaggy, but the inner part is made of several coats, and it is fairly long and stout, like kromyogeteion (a kind of onion).

Another kind has hair-like leaves like fennel, and is not green but pale yellow; nor has it a stalk, but it is, as it were, erect in itself; this grows on oyster-shells and stones, not, like the other, attached to the bottom; but both are plants of the shore, and the hair-leaved kind grows close to land, and sometimes is merely washed over by the sea; while the other is found further out.

Again in the ocean about the pillars of Heracles there is a kind of marvellous size, they say, which is larger, about a palmsbreadth. This is carried into the inner sea along with the current from the outer sea, and they call it 'sea-leek' (riband-weed); and in this sea in some parts it grows higher than a man's waist. It is said to be annual and to come up at the end of spring, and to be at its best in summer, and to wither in autumn, while in winter it perishes and is thrown up on shore. Also, they say, all the other plants of the sea become weaker and feebler in winter. These then are, one may say, the

4 i.e. grows above low water mark.
5 See Index: φυκος (2).
6 i.e. the 'leaf': the comparison is doubtless with τὸ πλατὺ, § 2; ὡς UMVAld.; ἢ W. after Sch.'s conj.
ταύτα μὲν οὖν οἶνον πρόσγεια περὶ γε τῇ θάλατταν. τὸ δὲ πόντιον φύκος ὃ οἱ σπογγιεῖς ἀνακολυμβῶσι πελάγιον.

5 Καὶ ἐν Κρήτῃ δὲ φύτευται πρὸς τῇ γῇ ἐπὶ τῶν πετρῶν πλείστον καὶ κάλλιστον ὃ βάπτουσιν οὐ μόνον τὰς ταινίας ἀλλὰ καὶ ἔρια καὶ ἰμάτια· καὶ ἕως ἄν ὑπὸ πρόσφατος ἢ βαφὴ, πολὺ καλλίων ἡ χρόνα τῆς πορφύρας· γίνεται δ' ἐν τῇ προσβόρρῳ καὶ πλείον καὶ κάλλιον, ὡσπερ αἱ σπογγιαὶ καὶ ἀλλὰ τοιαῦτα.

6 "Αλλο δὲ ἐστίν ὁμοίων τῇ ἀγρώστει· καὶ γὰρ τὸ φύλλον παραπλήσιον ἔχει καὶ τὴν ρίζαν γονατώδη καὶ μακρὰν καὶ πεφυκυῖαν πλαγίαν, ὡσπερ ἡ τῆς ἀγρώστιδος· ἔχει δὲ καὶ καυλὸν καλαμώδη, καθάπερ ἡ ἀγρώστις· μεγέθει δὲ ἐλαττον πολὺ τοῦ φύκους.

"Αλλο δὲ τὸ βρύον, ὃ φύλλον μὲν ἔχει ποώδες τῇ χρώᾳ, πλατύ δὲ καὶ οὐκ ἄνομοιον ταῖς θριακίναις, πληθὺν ῥυτιδώδεστερον καὶ ὡσπερ συνεσπασμένον. καυλὸν δὲ οὐκ ἔχει, ἀλλ' ἀπὸ μιᾶς ἄρχης πλείω τὰ τοιαῦτα καὶ πάλιν ἀπ' ἄλλης· φύτευται δὲ ἐπὶ τῶν λίθων τὰ τοιαῦτα πρὸς τῇ γῇ καὶ τῶν ὀστράκων. καὶ τὰ μὲν ἐλαττὸν σχεδὸν ταύτ' ἐστίν.

7 "Ἡ δὲ δρῦς καὶ ἡ ἐλάτη παράγειοι μὲν ἄμφω· φύνονται δ' ἐπὶ λίθοις καὶ ὀστράκοις ρίζας μὲν οὐκ ἔχουσι, προσπεφυκυῖαι δὲ ὡσπερ αἱ λεπίδες· ἀμφότεραι μὲν οἶνον σαρκόφυλλα· προμηκέστερον δὲ τὸ φύλλον πολὺ καὶ παχύτερον τῆς ἐλάτης

1 Plin. 13. 136, cf. 32. 22; Diosc. 4. 99.
2 litmus; see Index, φύκος (5).
3 Plin. l.c.; grass-wrack, see Index, φύκος (6).
sea-plants which are found near the shore. But the 'seaweed of ocean,' which is dived for by the sponge-fishers, belongs to the open sea.

In Crete there is an abundant and luxuriant growth on the rocks close to land, with which they dye not only their ribbons, but also wool and clothes. And, as long as the dye is fresh, the colour is far more beautiful than the purple dye; it occurs on the north coast in greater abundance and fairer, as do the sponges and other such things.

There is another kind like dog's-tooth grass; the leaf is very like, the root is jointed and long, and grows out sideways, like that of that plant; it has also a reedy stalk like the same plant, and in size it is much smaller than ordinary seaweed.

Another kind is the oyster-green, which has a leaf green in colour, but broad and not unlike lettuce leaves; but it is more wrinkled and as it were crumpled. It has no stalk, but from a single starting-point grow many of the kind, and again from another starting-point. These things grow on stones close to land and on oyster-shells. These are about all the smaller kinds.

The 'sea-oak' and 'sea-fir' both belong to the shore; they grow on stones and oyster-shells, having no roots, but being attached to them like limpets.

Both have more or less fleshy leaves; but the leaf of the 'fir' grows much longer and stouter, and is

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1 Plin. 13. 137; 27. 56; βρύνον conj. Scal. from G and Plin. l.c.; βότρυνον UAld.H.
2 ἐτίδωδεστερον conj. Scal. from G and Plin. l.c.; χρυσιωδέστερον Ald.; ρυσιωδέστερον mBas.
3 Plin. l.c.
4 οἰκόπαδες Ald.; ωπάδες W. with UMV.
5 προμηκέστερον . . . πέφυκε καὶ κοντῆς W.; προμ. δὲ τὸ φύλλον παχὺ καὶ παχύτερον τῆς ἐλάτης: πολὺ δὲ καὶ Ald.
πέφυκε καὶ οὐκ ἀνόμοιον τοῖς τῶν ὀσπρίων λοβοῖς, κόσλον δ’ ἐνδόθεν καὶ ούδὲν ἔχον ἐν αὐτοῖς. τὸ δὲ τῆς ὁπίως λεπτοῦ καὶ μυρυκώδεστερον χρώμα δ’ ἐπιπόρφυρον ἁμφοῖν. ἦ δὲ ὀλη μορφή τῆς μὲν ἐλάτης ὀρθή καὶ αὐτῆς καὶ τῶν ἀκρεμώνων, τῆς δὲ ὁπίως σκολιωτέρα καὶ μᾶλλον ἔχουσα πλάτος·

8 γινέται δὲ ἀμφώ καὶ πολύκαυλα καὶ <μονόκαυλα,> μονοκαυλότερον δὲ ἡ ἐλάτη· τὰς δὲ ἀκρεμονικὰς ἀποφύσεις ἡ μὲν ἐλάτη μακρὰς ἔχει καὶ εὐθείας καὶ μανάς, ἡ δὲ ὁπίως βραχυτέρας καὶ σκολιωτέρας καὶ πυκνοτέρας. τὸ δ’ ὁλον μέγεθος ἁμφοτέρων ὡς πνευμαίον ἡ μικρὸν ὑπεραίρου, μεῖζον δὲ ὡς ἀπλῶς εἰσεῖν τὸ τῆς ἐλάτης. χρήσιμον δὲ ἡ ὁπίς εἰς βαφὴν ἐρίων ταῖς γυναιξί. ἐπὶ μὲν τῶν ἀκρεμώνων προσηρτημένα τῶν ὀστρακοδέρμων κρών ἐνια· καὶ κάτω δὲ πρὸς αὐτῷ τῷ καυλῷ περιπεφυκότων τινῶν γ’ ὀλω, ἐν τούτως δεδυκότες ὀνίννον τε καὶ ἅλλ’ ἄττα καὶ τὸ ὁμοίων πολύποδι.

9 Ταῦτα μὲν οὖν πρόσεγεια καὶ ράδια θεωρηθῆναι· φασὶ δὲ τινες καὶ ἄλλην ὁπίν εἶναι ποντίαν ἢ καὶ καρπίν φέρει, καὶ ἡ βάλανος αὐτῆς χρησίμῃ· τοὺς δὲ σκινθοὺς καὶ κολυμβητάς λέγειν ὅτι καὶ ἐτεραι μεγάλαι τινὲς τοῖς μεγέθεσιν εὑρισκ. Ἡ δὲ ἀμπελος ἁμφοτέρως γίνεται· καὶ γὰρ πρὸς τῇ γῇ καὶ ποντία· μεῖζον δ’ ἔχει καὶ τὰ φύλλα καὶ τὰ κλῆματα καὶ τὸν καρπὸν ἡ ποντία.

Ἡ δὲ συκὴ ἀφυλλὸς μὲν τῷ δὲ μεγέθει οὖ μεγάλη, χρώμα δὲ τοῦ φλοιοῦ φοινικοῦν.

1 αὐτοῖς Ald. H.; αὔτῳ conj. W.
2 I have inserted μονόκαυλα.
not unlike the pods of pulses, but is hollow inside and contains nothing in the 'pods.' ¹ That of the 'oak' is slender and more like the tamarisk; the colour of both is purplish. The whole shape of the 'fir' is erect, both as to the stem and the branches, but that of the 'oak' is less straight and the plant is broader. Both are found both with many stems and with one,² but the 'fir' is more apt to have a single stem. The branchlike outgrowths in the 'fir' are long straight and spreading, while in the 'oak' they are shorter less straight and closer. The whole size of either is about a cubit or rather more, but in general that of the 'fir' is the longer. The 'oak' is useful to women for dyeing wool. To the branches are attached certain creatures with shells, and below they are also found attached to the stem itself, which in some cases they completely cover;³ and among these are found millepedes and other such creatures, including the one which resembles a cuttlefish.

These plants occur close to land and are easy to observe; but some report ⁴ that there is another 'sea oak' which even bears fruit and has a useful 'acorn,' and that the sponge fishers⁵ and divers told them that there were other large kinds.

⁶ The 'sea-vine' grows under both conditions, both close to land and in the deep sea; but the deep sea form has larger leaves branches and fruit.

⁷ The 'sea-fig' is leafless and not of large size, and the colour of the bark is red.

¹ τινῶν γ' ὀλφ conj. W.; τινῶν ὀλων Ald.; τινῶν γε ὀλων U; text uncertain: the next clause has no connecting particle.
⁴ Plin. 13. 137.
⁵ σκίθεους, a vox nihil: perhaps conceals a proper name, e.g. Σικελικούς; σπογγεῖς conj. St.
Ο δὲ φοίνιξ ἐστὶ μὲν ποντιον βραχυστέλεχες δὲ σφόδρα, καὶ σχεδὸν εὐθείαι αἱ ἐκφύσεις τῶν ράβδων· καὶ κάτωθεν οὐ κύκλῳ αὐταί, καθὰπερ τῶν ράβδων αἱ ἀκρεμώνες, ἀλλ’ ὅσάν ἐν πλάτει κατὰ μίαν συνεχείς, ὀλιγαχοῦ δὲ καὶ ἀπαλλάττουσαι. τῶν δὲ ράβδων ἢ τῶν ἀποφύσεων τούτων ὁμοία τρόπον τινὰ ἡ φύσις τοῖς τῶν ἄκανθῶν φύλλοις τῶν ἄκανθῶν, οἴον σόγκοι καὶ τοῖς τοιούτοις, πλὴν ὁρθαὶ καὶ ὡς, ὡσπερ ἐκεῖνα, περικεκλασμένα καὶ τὸ φύλλον ἔχουσαι διαβεβρωμένον ύπὸ τῆς ἁλμῆς· ἐπεὶ τὸ γε δὲ ὡλον ἥκειν τὸν μέσον γε καυλὸν καὶ ἡ ἅλλῃ ὁψις παραπλησία. τὸ δὲ χρώμα καὶ τούτων καὶ τῶν καυλῶν καὶ ὡλον τοῦ φυτοῦ ἔξερυθρον τε σφόδρα καὶ φοινικοῖν.

Καὶ τὰ μὲν ἐν τῇ ἑκτῇ θαλάττῃ τοσαῦτά ἐστιν. ἡ γὰρ σπογγιὰ καὶ αἱ ἀπλυσίαι καλοῦμεναι καὶ εἰ τὶ τοιοῦτον ἔτεραν ἔχει φύσιν.

VII. Ἐν δὲ τῇ ἐξομήνυσι Πολυκλέους στῦλας τῷ τε πράσον, ὡσπερ εἰρημένη, φύτας καὶ τὰ ἀπολιθουμένα ταῦτα, οἴον θύμα καὶ τὰ δαφνοειδῆ καὶ τὰ ἄλλα. τῆς δὲ ἐρυθρᾶς καλομένης ἐν τῇ Ἁραβίᾳ μικρὸν ἐπάνω Κόπτου ἐν μὲν τῇ γῇ

1 κάτωθεν... ἀπαλλάττουσαι probably beyond certain restoration: I have added καὶ before κάτωθεν (from G), altered κυκλῳ[π] to κύκλῳ, put a stop before καὶ κάτωθεν, and restored ἀπαλλάττουσαι (Ald.H.). 2 cf. 6. 4. 8; 7. 8. 3. 3 περικεκλασμένα, i.e. towards the ground. cf. Diosc. 3. 68 and 69, where Plin. (27. 13) renders (φύλλα) ὅποπερικλάταται ad terram infracta.
The 'sea-palm' is a deep-sea plant, but with a very short stem, and the branches which spring from it are almost straight; and these under water are not set all round the stem, like the twigs which grow from the branches, but extend, as it were, quite flat in one direction, and are uniform; though occasionally they are irregular. The character of these branches or outgrowths to some extent resembles the leaves of thistle-like spinous plants, such as the sow-thistles and the like, except that they are straight and not bent over like these, and have their leaves eaten away by the brine; in the fact that the central stalk at least runs through the whole, they resemble these, and so does the general appearance. The colour both of the branches and of the stalks and of the plant as a whole is a deep red or scarlet.

Such are the plants found in this sea. For sponges and what are called aplysiai and such-like growths are of a different character.

*If the aquatic plants of the 'outer sea' (i.e. Atlantic, Persian Gulf, etc.).

VII. In the outer sea near the pillars of Heracles grows the 'sea-leek,' as has been said; also the well known plants which turn to stone, as thyma, the plants like the bay and others. And in the sea called the Red Sea a little above Coptos

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4 i.e. midrib.
5 Some kind of sponge. ἀπλυσιαί conj. R. Const.; πλυσιαί UAld.; πλυσίαι M; πλυσίαι V. 6 4. 6. 4.
7 ταῦτα: cf. 3. 7. 3; 3. 18. 11.
8 Plin. 13. 139.
9 Κόπτου conj. Scal.; κόπου MV; κόπου UAld.; Capro G and Plin. l.c.
THEOPHRASTUS

1. Οι γράμματες φωτίζονται πλήρως τῆς ἀκάλυπτης τῆς
καλούμενης οπταιμίας· καὶ καὶ αὐτὴ δια τα

2. ὅτι τῇ ἀλαττῇ φύεται, καλοῦσις αὐτὰ

3. ἐν ἐν τῷ κόλπῳ τῷ καλούμενῳ Ἰρωνον, καὶ
καταβαίνοις οἱ εἴς Λιγύπτου, φύεται μὲν ἐδάφη

4. τὲ καὶ θυμον, οὐ μὴν χαρά τε ἁλλὰ

5. αὐτὰ ἁθειότητα ἥτα ὑπερέχουσα τῆς θαλάττης, ὁμοία ὑπὲρ
τοίς φυλλουσί καὶ τοῖς βλαστοῖσ τοῖς χωροῖσ, ἐν ἐν τῷ

6. τῷ θύμῳ καὶ τῷ τοῦ ἀνθίου, χρώμα εὐάγγελον

7. μήπω τελείως εὖμηθηκός. μικρῷ δὲ τῶν
cειρήνων ὅτον εἰς τρεῖς πηλεῖς.

8. Οἱ δὲ, ὅτε ἀνάπλουσιν ὑμῖν τῶν εἴς Ἰνδῶν ὑποστά-
cλιτων ὑπὸ Ἀλεξανδρῶν, τὰ ἐν τῇ ἰθαλάττῃ

9. συνημεία, μέχρι οὗ μὲν ἢ ἐν τῷ ὑγρῷ, χρώμα

10. θείων ὄμοιον τοῖς φυκίοις, ὁποτεν δὲ εἰς-


12. The name of a tree seems to have dropped out; I have

13. emended τῇ εὐα. cf. ταο εὐαν below. Brinton suggests δὲ

14. cf.
in Arabia there grows on the land no tree except that called the 'thirsty' acacia, and even this is scarce by reason of the heat and the lack of water; for it never rains except at intervals of four or five years, and then the rain comes down heavily and is soon over.

1 But there are plants in the sea, which they call 'bay' and 'olive' (white mangrove). In foliage the 'bay' is like the *aria* (holm-oak), the 'olive' like the real olive. The latter has a fruit like olives, and it also discharges a gum, from which the physicians compound a drug for stanching blood, which is extremely effective. And when there is more rain than usual, mushrooms grow in a certain place close to the sea, which are turned to stone by the sun. The sea is full of beasts, and produces sharks in great numbers, so that diving is impossible.

In the gulf called 'the Gulf of the Heroes,' to which the Egyptians go down, there grow a 'bay,' an 'olive,' and a 'thyme'; these however are not green, but like stones so far as they project above the sea, but in leaves and shoots they are like their green namesakes. In the 'thyme' the colour of the flower is also conspicuous, looking as though the flower had not yet completely developed. These treelike growths are about three cubits in height.

8 Now some, referring to the occasion when there was an expedition of those returning from India sent out by Alexander, report that the plants which grow in the sea, so long as they are kept damp, have a colour

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τηθι πρὸς τὸν ἠλί. φύεσθαι δὲ καὶ σχοίνους λιθίνους παρ’ αὐτήν τὴν θάλατταν, οὐς οὔδεις ἂν διαγνοίη τῇ ὁψεὶ πρὸς τοὺς ἀληθινούς. θαυμα-
σιώτερον δὲ τι τοῦτο λέγουσιν: φύεσθαι γὰρ δενδρύφι ἄττα τὸ μὲν χρῶμα ἔχοντα ὁμοίων κέρατι βοὸς τοῖς δὲ οἶοις τραχέα καὶ ἀπ’ ἄκρου πυρρᾶ’ ταῦτα δὲ θραύσθαι μὲν εἰ συγκλώῃ τις’ ἐκ δὲ τοῦτων πυρὶ ἐμβαλλόμενα, καθάπερ τὸν σίδηρον, διάπυρα γινόμενα πάλιν ὅταν ἀποψύ-
χοιτο καθίστασθαι καὶ τὴν αὐτήν χρώαν λαμβάνειν.

4 'Εν δὲ ταῖς νῆσοις ταῖς ὑπὸ τῆς πλημμυρίδος καταλαμβανομέναις δένδρα μεγάλα πεφυκέναι ἤλικαι πλάτανοι καὶ αὐξεῖροι αἰ μέγισται’ συμ-
βαίνειν δὲ, ὅ’ ἡ πλημμυρίς ἐπέλθω, τὰ μὲν ἄλλα κατακρύπτεσθαι ὀλά, τῶν δὲ μεγίστων ὑπερέχειν τοὺς κλάδους, ἔξ ὅν τὰ πρυμνησία ἀνάπτεεν, εἴθ’ ὅτε πάλιν ἄμπωτις γίνοιτο ἕκ τῶν ρίζων. ἔχειν δὲ τὸ δένδρον φύλλον μὲν ὁμοίων τῇ δάφνῃ, ἀνθός δὲ τοῖς οἶοι καὶ τῷ χρώματι καὶ τῇ ὅσμῇ, καρπὸν δὲ ἤλικον ἑλάκα καὶ τοῦτον εὐώδη σφόδρα’ καὶ τὰ μὲν φύλλα οὔκ ἀποβάλλειν, τὸ δὲ ἀνθός καὶ τὸν καρπὸν ἀμα τῷ φθινοπώρῳ γίνεσθαι, τοῦ δὲ ἐαρὸς ἀπορρέειν.

5 Ἡ Λλλα δ’ ἐν αὐτῇ τῇ θαλάττῃ πεφυκέναι, ἀεὶ-
φύλλα μὲν τὸν δὲ καρπὸν ὁμοίων ἔχειν τοῖς θέρμοις.

Περὶ δὲ τὴν Περσίδα τὴν κατὰ τὴν Καρμανίαν,
καθ’ ὅ’ ἡ πλημμυρίς γίνεται, δένδρα ἐστὶν εὐμεγέθη ὁμοία τῇ ἀνδράχλῃ καὶ τῇ μορφῇ καὶ τοῖς φύλλοις’
καρπὸν δὲ ἔχει πολὺν ὁμοίων τῷ χρώματι ταῖς
ENQUIRY INTO PLANTS, IV. vii. 3-5

like sea-weeds, but that when they are taken out and put in the sun, they shortly become like salt. They also say that rushes of stone grow close to the sea, which none could distinguish at sight from real rushes. They also report a more marvellous thing than this; they say that there are certain tree-like growths which in colour resemble an ox-horn, but whose branches are rough, and red at the tip; these break if they are doubled up, and some of them, if they are cast on a fire, become red-hot like iron, but recover when they cool and assume their original colour.

1 On the islands which get covered by the tide they say that great trees 2 grow, as big as planes or the tallest poplars, and that it came to pass that, when the tide 3 came up, while the other things were entirely buried, the branches of the biggest trees projected and they fastened the stern cables to them, and then, when the tide ebbed again, fastened them to the roots. And that the tree has a leaf like that of the bay, and a flower like gilliflowers in colour and smell, and a fruit the size of that of the olive, which is also very fragrant. And that it does not shed its leaves, and that the flower and the fruit form together in autumn and are shed in spring.

4 Also they say there are plants which actually grow in the sea, which are evergreen and have a fruit like lupins.

5 In Persia in the Carmanian district, where the tide is felt, there are trees 6 of fair size like the andrachne in shape and in leaves; and they bear much fruit like

1 Plin. 13. 141.
2 Mangroves. See Index App. (12).
4 Plin. l.c. Index App. (13).
5 Plin. 12. 37.
6 White mangroves. Index App. (14).
THEOPHRASTUS

άμυγδάλαις ἔξωθεν, τὸ δ' ἐντὸς συνελίττεται καθάπερ συνηρτημένον πάσιν. ὑποβέβρωται δὲ ταῦτα τὰ δένδρα πάντα κατὰ μέσον ὑπὸ τῆς θαλάττης καὶ ἐστηκεν ὑπὸ τῶν ρίζων, ὡσπερ πολύπους. ὅταν γὰρ ἡ ἀμπετις γένηται θεωρεῖν ἐστίν. ὑδωρ δὲ ὅλως οὐκ ἔστιν ἐν τῷ τόπῳ καταλείπονται δὲ τινες διώρυχες δι' ὧν διαπλέουσιν. ἀντάδ' εἰσὶν θαλάττης. ὡ καὶ δῆλον οἴονται τινες ὅτι τρέφονται ταῦτη καὶ οὐ τῷ ὑδατὶ, πλὴν εἰ τι ταῖς ρίζαις ἐκ τῆς γῆς ἐλκουσίν. εὐλογοῦν δὲ καὶ τοῦθ' ἀλμυρόν εἶναι καὶ γὰρ οὐδὲ κατὰ βάθους αἱ ρίζαι. τὸ δὲ ὅλον ἐν τῷ γένος εἶναι τῶν τ' ἐν τῇ θαλάττῃ φυομένων καὶ τῶν ἐν τῇ γῇ ὑπὸ τῆς πλημμυρίδος καταλαμβανομένων καὶ τὰ μὲν ἐν τῇ θαλάττῃ μικρὰ καὶ φυκόδη φαινόμενα, τὰ δ' ἐν τῇ γῇ μεγάλα καὶ χλωρά καὶ ἄνθος εὔσωμβον ἐχουτα, καρπὸν δὲ οἴον θέρμος.

Ἐν Τύλῳ δὲ τῇ νῆσῳ, κεῖται δ' αὐτῇ ἐν τῷ Ἀραβίῳ κόλπῳ, τὰ μὲν πρὸς ἐως τοσοῦτο πλῆθος εἶναι φασὶ δένδρων ὅτ' ἐκβαίνει ἡ πλημμυρὶς ωσ' ἀπωχυρώσθαι. πάντα δὲ ταῦτα μεγέθη μὲν ἔχειν ἡλίκα συκῆ, τὸ δὲ ἄνθος ὑπερβάλλον τῇ εὐσωμίᾳ, καρπὸν δὲ ἅβρωτον ὁμοίον τῇ ὁγεὶ τῷ θέρμῳ. φέρειν δὲ τὴν νῆσον καὶ τὰ δένδρα τὰ ἐρισφόρα πολλά. ταῦτα δὲ φύλλον μὲν ἔχειν παρόμοιον τῇ ἀμπέλῳ πλήν μικρόν, καρπὸν δὲ οὐδένα φέρειν. ἐν ὦ δὲ τὸ ἐριον ἡλίκον μῆλον ἐαρινὸν συμμεμυκός. ὅταν δὲ ὡραίον ἡ, ἐκπετάν-

1 Plin. l.c. Sicco litore radicibus nudis polyporum modo complexae steriles arenas aspectantur: he appears to have had a fuller text.

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in colour to almonds on the outside, but the inside is coiled up as though the kernels were all united. ¹ These trees are all eaten away up to the middle by the sea and are held up by their roots, so that they look like a cuttle-fish. For one may see this at ebb-tide. And there is no rain at all in the district, but certain channels are left, along which they sail, and which are part of the sea. Which, some think, makes it plain that the trees derive nourishment from the sea and not from fresh water, except what they draw up with their roots from the land. And it is reasonable to suppose that this too is brackish; for the roots do not run to any depth. In general they say that the trees which grow in the sea and those which grow on the land and are overtaken by the tide are of the same kind, and that those which grow in the sea are small and look like seaweed, while those that grow ² on land are large and green and have a fragrant flower and a fruit like a lupin.

In the island of Tylos,³ which is situated in the Arabian gulf,⁴ they say that on the east side there is such a number of trees when the tide goes out that they make a regular fence. All these are in size as large as a fig-tree, the flower is exceedingly fragrant, and the fruit, which is not edible, is like in appearance to the lupin. They say that the island also produces the 'wool-bearing' tree (cotton-plant) in abundance. This has a leaf like that of the vine, but small, and bears no fruit; but the vessel in which the 'wool' is contained is as large as a spring apple,

² φυκώδη φαινόμενα τὰ δ' ἕν conj. W.; φυκ. φυ. δ' ἕν MV Ald.; U has φερόμενα (?).
³ cf. 5. 4. 6; Plin. 12. 38 and 39; modern name Bahrein.
⁴ i.e. Persian Gulf.
νυσθαι καὶ εξείρειν τὸ ἔριον, ἐξ οὗ τὰς σινδόνας ὑφαίνουσι, τὰς μὲν εὐτελεῖς τὰς δὲ πολυτελε- στάτας.

8 Γίνεται δὲ τοῦτο καὶ ἐν Ἰνδοῖς, ὀσπερ ἐλέχθη, καὶ ἐν Ἄραβίᾳ. εἶναι δὲ ἄλλα δένδρα τὸ ἄνθος ἐχοντα ὀμοιον τῷ λευκοίῳ, πλὴν ἄδομον καὶ τῷ μεγέθει τετραπλάσιον τῶν ἰων. καὶ ἔτερον δὲ τὸ δένδρον πολύφυλλον ὀσπερ τὸ ῥόδου τοῦτο δὲ τὴν μὲν νῦκτα συμμέειν ἀμα δὲ τὸ ἡλίῳ ἀνίοντε διοίγνυσθαι, μεσημβρίας δὲ τελέως διεπτύχθαι, πάλιν δὲ τῆς δείλης συνάγεσθαι κατὰ μικρὸν καὶ τὴν νῦκτα συμμέειν λέγειν δὲ καὶ τοὺς ἐγχω- ρίους ὡς καθεύδει. γίνεσθαι δὲ καὶ φοίνικας ἐν τῇ νῆσῳ καὶ ἀμπέλους καὶ τάλλα ἀκρόδραμα καὶ συκάς οὐ φυλλορροούσας. ὑδρὸ δὲ οὐράνιον γίνε- σθαι μὲν, οὐ μὴν χρήσθαι γε πρὸς τοὺς καρποὺς. ἀλλ' εἶναι κρήμας ἐν τῇ νῆσῳ πολλάς, ἀφ' ὦν πάντα βρέχειν, ὡς καὶ συμφέρειν μᾶλλον τῷ ἱτῳ καὶ τοῖς δένδρεσιν. δ' ὡς καὶ ὅταν ἔσοδο τῇ ἐπί- αφίειαι καθαπερεῖ καταπλύνουτας ἐκεῖνο. καὶ τὰ μὲν ἐν τῷ ἐξω θαλάττη δένδρα τὰ γε νῦν τεθεωρημένα σχεδὸν τοσαύτα ἐστιν.

VIII. Τσπέρ δὲ τῶν ἐν τοῖς ποταμοῖς καὶ τοῖς ἔλεσι καὶ ταῖς λίμναις μετὰ ταῦτα λεκτέον. τρία δὲ ἐστιν εἰδὴ τῶν ἐν τούτοις, τὰ μὲν δένδρα τὰ δ'
and closed, but when it is ripe, it unfolds and puts forth 1 the 'wool,' of which they weave their fabrics, some of which are cheap and some very expensive.

This tree is also found, as was said, 2 in India as well as in Arabia. They say that there are other trees 3 with a flower like the gilliflower, but scentless 4 and in size 5 four times as large as that flower. And that there is another tree 6 with many leaves 7 like the rose, and that this closes at night, but opens at sunrise, and by noon is completely unfolded; and at evening again it closes by degrees and remains shut at night, and the natives say that it goes to sleep. Also that there are date-palms on the island and vines and other fruit-trees, including evergreen 8 figs. Also that there is water from heaven, but that they do not use it for the fruits, but that there are many springs on the island, from which they water everything, and that this is more beneficial 9 to the corn and the trees. Wherefore, even when it rains, they let this water over the fields, 10 as though they were washing away the rain water. Such are the trees as so far observed which grow in the outer sea.

Of the plants of rivers, marshes, and lakes, especially in Egypt.

VIII. Next we must speak of plants which live in rivers marshes and lakes. Of these there are three classes, trees, plants of 'herbaceous' 11 character, and

9 ὁ καὶ συμφέρειν conj. Sch.; καὶ συμφέρει Ald.; U has συμφέρειν.

10 cf. C. P. 2. 5. 5, where Androsothenes, one of Alexander's admirals, is given as the authority for this statement.

11 The term τὰ ποιότητα seems to be given here a narrower connotation than usual, in order that τὰ λαχμότητα may be distinguished.
ὁσπερ ποιώδη τὰ δὲ λοχμώδη. λέγω δὲ ποιώδη μὲν οἶνον τὸ σέλινον τὸ ἔλειον καὶ ὅσα ἄλλα τοι- αῦτα: λοχμώδη δὲ κάλαμον κύπειρον φλεῶ σχοῖ- νον βούτομον, ἀπερ σχεδον κοινὰ πάντων τῶν ποταμῶν καὶ τῶν τοιούτων τόπων.

Ἐνιαχοῦ δὲ καὶ βάτοι καὶ παλίουροι καὶ τὰ ἄλλα δεύδρα, καθάπερ ἵτεα λεύκη πλάτανος. τὰ μὲν οὖν μέχρι τοῦ κατακρύπτεσθαι, τὰ δὲ ὡστε μικρὸν ὑπερέχειν, τῶν δὲ αἱ μὲν ρίζαι καὶ μικρὸν τοῦ στελέχους ἐν τῷ υγρῷ, τὸ δὲ ἄλλο σῶμα πᾶν ἔξω. τούτῳ γὰρ καὶ ἱτέα καὶ κλήθρα καὶ πλατάνῳ καὶ φιλύρα καὶ πάσι τοῖς φιλύροις συμβαίνει.

2 Σχεδον δὲ καὶ ταύτα κοινὰ πάντων τῶν ποτα- μῶν ἔστιν ἐπει καὶ ἐν τῷ Νείλῳ πέφυκεν· οὐ μὴν πολλὴ γε ἡ πλάτανος, ἄλλα σπανιωτέρα ἐτη ταύτης ἡ λεύκη, πλείστη δὲ μελία καὶ βουμέλιος. τῶν γοῦν ἐν Αἰγύπτῳ φυομένων τὸ μὲν ὅλον πολὺ πλῆθος ἔστιν πρὸς τὸ ἀριθμήσασθαι καθ' ἐκαστὸν· οὐ μὴν ἄλλα ὡσ γε ἀπλῶς εἰπεῖν ἀπαντα ἐδώδιμα καὶ χυλοὺς ἔχουτα γλυκεῖς. διαφέρειν δὲ δοκεῖ τῇ γλυκύτητι καὶ τῷ τρόφῳ μάλιστα εἶναι τρία ταύτα, ο τε πάπυροι καὶ τὸ καλούμενον σάρι καὶ τρίτον ὁ μνάσιον καλοῦσι.

3 Φύεται δὲ ὁ πάπυρος οὐκ ἐν βάθει τοῦ ὑδατος ἄλλῳ ὡσον ἐν δύο πῆχεσιν, ἐνιαχοῦ δὲ καὶ ἐν ἐλάσσοι. πάχος μὲν οὖν τῆς ρίζης ἑλίκοιν καρ- πὸς χειρὸς ἀνδρός εὐρώστου, μήκος δὲ ὑπὲρ τε- τράπτηχυ: φύεται δὲ ὑπὲρ τῆς γῆς αὐτῆς, πλαγίας ρίζας εἰς τὸν πηλὸν καθιείσα λεπτᾶς καὶ πυκνᾶς, ἀνω δὲ τοὺς παπύρους καλούμενους τριγώνους,
plants growing in clumps. By 'herbaceous' I mean here such plants as the marsh celery and the like; by 'plants growing in clumps' I mean reeds galin-gale phleo rush sedge—which are common to almost all rivers and such situations.

And in some such places are found brambles Christ's thorn and other trees, such as willow abele plane. Some of these are water plants to the extent of being submerged, while some project a little from the water; of some again the roots and a small part of the stem are under water, but the rest of the body is altogether above it. This is the case with willow alder plane lime, and all water-loving trees.

These too are common to almost all rivers, for they grow even in the Nile. However the plane is not abundant by rivers, while the abele is even more scarce, and the manna-ash and ash are commonest. At any rate of those that grow in Egypt the list is too long to enumerate separately; however, to speak generally, they are all edible and have sweet flavours. But they differ in sweetness, and we may distinguish also three as the most useful for food, namely the papyrus, the plant called savi, and the plant which they call mnasion.

The papyrus does not grow in deep water, but only in a depth of about two cubits, and sometimes shallower. The thickness of the root is that of the wrist of a stalwart man, and the length above four cubits; it grows above the ground itself, throwing down slender matted roots into the mud, and producing above the stalks which give it its name 'papyrus'; these are three-cornered and about ten

2 Plin. 13. 71-73.
3 τετράπηχυ: δέκα πήχεις MSS. See next note.
μέγεθος ὃς δέκα πῆχεις, κόμην ἔχοντας ἄχρείον ἀσθενή καρπὸν δὲ ὁλὼς οὐδεία. τούτους δ᾽ ἀναδί-
δωσι κατὰ πολλὰ μέρη. χρῶνται δὲ ταῖς μὲν ῥίζαις ἀντὶ ξύλων οὐ μόνον τῷ κάειν ἀλλὰ καὶ τῷ
σκεῦι ἀλλὰ ποιεῖν εξ αὐτῶν παντοδαπά· πολὺ
γάρ ἔχει τὸ ξύλον καὶ καλὸν. αὐτὸς δὲ ὁ πά-
πυρος πρὸς πλείστα χρήσιμος· καὶ γὰρ πλοῖα
ποιοῦσιν εξ αὐτοῦ, καὶ ἐκ τῆς βιβλίας ἱστία τε
πλέκουσι καὶ ψιάθους καὶ ἐσθήτα τινα καὶ
στρώμας καὶ σχοινία τε καὶ ἔτερα πλεῖω. καὶ
ἐμφανέστατα δὴ τοῖς ἕξῳ τὰ βιβλία· μάλιστα δὲ
καὶ πλείστῃ βοήθεια πρὸς τὴν τροφὴν ἀπ᾽ αὐτοῦ
γίνεται. μασῶνται γὰρ ἅπαντες οἱ ἐν τῇ χώρᾳ
τὸν πάπυρον καὶ ὡμὸν καὶ ἐφθον καὶ ὀπτὸν· καὶ
τὸν μὲν χυλὸν καταπίνουσι, τὸ δὲ μάσημα ἐκβάλ-
λουσιν. οἱ μὲν οὖν πάπυρος πτοιοῦτος τε καὶ ταῦ-
tας παρέχεται τὰς χρείας. γίνεται δὲ καὶ ἐν
Συρία περὶ τὴν λίμνην ἐν ἥ καὶ ὁ κάλαμος ὁ
eὐώδης· ὅθεν καὶ Ἀντίγονος εἰς τὰς ναῦς ἐποιεῖτο
tὰ σχοινία.
5 Ὁ δὲ σάρι φύεται μὲν ἐν τῷ ὑδατὶ περὶ τὰ ἔλη
cαὶ τὰ πεδία, ἐπειδὰν ὁ ποταμὸς ὑπέλθῃ, ρίζαι
δὲ ἔχει σκληρῶν καὶ συνεστραμμένην, καὶ εξ αὐτῆς
φύεται τὰ σαρία καλούμενα· ταῦτα δὲ μήκος μὲν
ὡς δύο πῆχεις, πάχος δὲ ἧλικον ὁ δάκτυλος ὁ
mέγας τῆς χείρος· τρίγωνον δὲ καὶ τούτο, καθάπερ
ὁ πάπυρος, καὶ κομῆν ἔχον παραπλήσιον. μα-
σώμενοι δὲ ἐκβάλλουσι καὶ τούτο τὸ μάσημα, τῇ
ρίζῃ δὲ οἱ σιδηρουργοὶ χρῶνται· τὸν γὰρ ἀνθρακα
ποιεῖ χρήστον διὰ τὸ σκληρὸν εἶναι τὸ ξύλον.
6 Ὁ δὲ μνάσιον ποιῶν ἐστὶν, ὡστ᾽ οὐδεμίαν
παρέχεται χρείαν πλην τὴν εἰς τροφὴν.
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cubits long, having a plume which is useless and weak, and no fruit whatever; and these stalks the plant sends up at many points. They use the roots instead of wood, not only for burning, but also for making a great variety of articles; for the wood is abundant and good. The 'papyrus' itself is useful for many purposes; for they make boats from it, and from the rind they weave sails mats a kind of raiment coverlets ropes and many other things. Most familiar to foreigners are the papyrus-rolls made of it; but above all the plant also is of very great use in the way of food. For all the natives chew the papyrus both raw boiled and roasted; they swallow the juice and spit out the quid. Such is the papyrus and such its uses. It grows also in Syria about the lake in which grows also sweetflag; and Antigonus made of it the cables for his ships.

The sari grows in the water in marshes and plains, when the river has left them; it has a hard twisted root, and from it grow what they call the saria; these are about two cubits long and as thick as a man's thumb; this stalk too is three-cornered, like the papyrus, and has similar foliage. This also they chew, spitting out the quid; and smiths use the root, for it makes excellent charcoal, because the wood is hard.

Mnasion is herbaceous, so that it has no use except for food.

1 δέκα π' χεις: τετραπ' χεις MSS. The two numbers seem to have changed places (Bartels ap. Sch.). cf. Plin. l.c.
2 i.e. the stalk.
3 cf. Diod. 1. 80. 4 Plin. 13. 128.
5 i.e. stalks, like those of the papyrus.
Καὶ τὰ μὲν γλυκύτητι διαφέροντα ταῦτά ἐστι. φῦται δὲ καὶ ἔτερον ἐν τοῖς ἔλεσι καὶ ταῖς λίμναις ὁ οὐ συνάπτει τῇ γῇ, τῇ μὲν φύσιν ὁμοίοι τοῖς κρύσοις, πολυφυλλότερον δὲ καὶ παρ' ἄλληλα τὰ φύλλα καθάπερ ἐν διστοιχία: χρῶμα δὲ χλωρόν ἔχει σφόδρα. χρῶνται δὲ οἱ ιατροὶ πρὸς τένα γυναικεία αὐτῷ καὶ πρὸς τὰ κατάγματα.

7 [Ταῦτα δὲ γίνεται ἐν τῷ ποταμῷ εἰ μὴ ὁ ροῦς ἕξεφερέν. συμβαίνει δὲ ὡστε καὶ ἀποφέρεσθαι ἑτέρα δ' ἀπ' αὐτῶν πλεῖον.]

Ὁ δὲ κύαμος φῦται μὲν ἐν τοῖς ἔλεσι καὶ λίμναις, καυλὸς δὲ αὐτοῦ μῆκος μὲν ὁ μακρότατος εἰς τέτταρας πήχεις, πάχος δὲ δακτυλιαῖος, ὁμοίος δὲ καλάμῳ μαλακῷ ἀγονάτῳ. διαφύσεις δὲ ἐνδοθεν ἔχει δ' ὁλον διειλημμένας ὁμοίας τοῖς κηρίοις. ἐπὶ τούτῳ δὲ ἡ κωδύα, παρομοία σφηκίῳ περιφερεῖ, καὶ ἐν ἐκάστῳ τῶν κυττάρων κύαμος μικρὸν ὑπεραίρον, αὐτής, πλῆθος δὲ οἱ πλείστοι τριάκοντα. τὸ δὲ ἀνθοῦς διπλάσιον ἡ μῆκωνος, χρῶμα δὲ ὁμοίον ρόδῳ κατακορές· ἐπάνω δὲ τῷ υδατος ἡ κωδύα. παραφύτει αὐτὸς φύλλα μεγάλα παρ' ἐκαστον τῶν κυάμων, ὡν ὥστε τὰ μεγέθη πετάσῳ Θετταλικῇ τῶν αὐτῶν ἥχουτα καυλὸν τῷ τῶν κυάμων. συντρίψαντι δ' ἐκαστον τῶν κυάμων φανερόν ἐστι τὸ πικρὸν συνεστραμμένον, ἐξ

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1 Ottelia alismoeides. See Index App. (18).
2 ταῦτα . . . πλεῖω conj. W. after Sch.; I have also transposed the two sentences, after Sch. The whole passage in [ ] (which is omitted by G) is apparently either an interpolation or defective. σημαίνει δὲ ὥσπερ καὶ ἀποφέρεσθαι ἑτέρα δὲ ἀπ' αὐτῶν τὰ πλεία ταῦτα δὲ γίνεται ἐν τῷ ποταμῷ eι μὴ ὁ ροῦς ἕξεφερεν Ald.; so also U, but αὐτῶν πλεῖω.
Such are the plants which excel in sweetness of taste. There is also another plant which grows in the marshes and lakes, but which does not take hold of the ground; in character it is like a lily, but it is more leafy, and has its leaves opposite to one another, as it were in a double row; the colour is a deep green. Physicians use it for the complaints of women and for fractures.

Now these plants grow in the river, unless the stream has thrown them up on land; it sometimes happens that they are borne down the stream, and that then other plants grow from them.  

But the ‘Egyptian bean’ grows in the marshes and lakes; the length of its stalk at longest is four cubits, it is as thick as a man’s finger, and resembles a reed without joints. Inside it has tubes which run distinct from one another right through, like a honey-comb: on this is set the ‘head,’ which is like a round wasps’ nest, and in each of the cells is a ‘bean,’ which slightly projects from it; at most there are thirty of these. The flower is twice as large as a poppy’s, and the colour is like a rose, of a deep shade; the ‘head’ is above the water. Large leaves grow at the side of each plant, equal in size to a Thessalian hat; these have a stalk exactly like that of the plant. If one of the ‘beans’ is crushed, you find the bitter substance coiled up, of which the

3 Plin. 18. 121 and 122.
4 μαλακφ Ald. H. G Plin. l.c. Athen. 3. 2 cites the passage with μακρφ.
5 ησα conj. W.; και Ald.
6 πετάσφ conj. Sch. from Diosc. 2. 106; πίλφ Ald. H.; οι πέτασου are mentioned below (§ 9) without explanation. The comparison is omitted by G and Plin. l.c.
7 i.e. that which carries the κωδύα.
8 οὐ γίνεται ὁ πῖλος. τὰ μὲν οὖν περὶ τὸν καρπὸν τοιαύτα. ἡ δὲ ῥίζα παχυτέρα τοῦ καλάμου τοῦ παχυτάτου καὶ διαφύσεως ὤμοιος ἔχουσα τῷ καυλῷ. ἔσθιονει δ' αὐτὴν καὶ ὑμὴν καὶ ἐφθήν καὶ ὅπτην, καὶ οἱ περὶ τὰ ἔλη τούτῳ σίτῳ χρύν- ται. φύεται μὲν οὖν ὁ πολὺς αὐτόματος· οὐ μὴν ἁλλὰ καὶ καταβάλλοντι ἐν πηλῷ ἄχυρωσαντες εὖ μᾶλα πρὸς τὸ κατενεχθῆναι τε καὶ μείναι καὶ μὴ διαφθαρῆναι καὶ οὕτω κατασκευάζουσι τοὺς κυαμώνας· ἀν δ' ἀπαξ ἀντιλάβηται, μένει διὰ τέλους. ἰσχυρὰ γὰρ ἡ ῥίζα καὶ οὐ πόροι τῆς τῶν καλάμων πλην ἔπακαθίζουσα· δι' ὁ καὶ ὁ κροκόδειλος φεύγει μὴ προσκόψῃ τῷ ὄφθαλμῷ τῷ μῆ ὡξὶ καθορᾶν· γίνεται δὲ οὖτος καὶ ἐν Συρίᾳ καὶ κατὰ Κιλικίαν, ἀλλ' οὐκ ἐκπέττουσιν αἱ χώραι· καὶ περὶ Τορώνῃ τῆς Χαλκιδικῆς ἐν λίμνῃ τινὶ μετρίᾳ τῷ μεγέθει· καὶ αὐτοῦ πέττεται τελέως καὶ τελεσκαρπεῖ.

9 Ὁ δὲ λωτὸς καλούμενος φύεται μὲν ὁ πλεῖστος ἐν τοῖς πεδίοις, ὅταν ἡ χώρα κατακλυσθῇ. τοῦτο δὲ ἡ μὲν τοῦ καυλοῦ φύσις ὄμοια τῇ τοῦ κνάμου, καὶ οἱ πέτασοι δὲ ὡσαύτως, πλην ἐλάτ- τους καὶ λεπτότερους. ἐπιφύεται δὲ ὄμοιος ὁ καρπὸς τῷ τοῦ κνάμου. τὸ ἀνθὸς αὐτοῦ λευκὸν ἐμφερεῖς τῇ στενότητι τῶν φύλλων τοῖς τοῦ κρίνοιν, πολλὰ δὲ καὶ πυκνὰ ἐπ' ἀλλήλους φύεται. ταύτα δὲ ὅταν μὲν ὁ ἠλιός δὴν συμμύκει καὶ συμ- καλύπτει τὴν κωδύαν, ἀμα δὲ τῇ ἀνατολῇ διόι-
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pilos\(^1\) is made. So much for the fruit. The root is thicker than the thickest reed, and is made up of distinct tubes, like the stalk. \(^2\) They eat it both raw boiled and roasted, and the people of the marshes make this their food. It mostly grows of its own accord; however they also sow\(^3\) it in the mud, having first well mixed the seed with chaff, so that it may be carried down and remain in the ground without being rotted; and so they prepare the 'bean' fields, and if the plant once takes hold it is permanent. For the root is strong and not unlike that of reeds, except that it is prickly on the surface. Wherefore the crocodile avoids it, lest he may strike his eye on it, since he has not sharp sight. This plant also grows in Syria and in parts of Cilicia, but these countries cannot ripen it; also about Torone in Chalcidice in a certain lake of small size; and this lake ripens it perfectly and matures its fruit.

\(^4\) The plant called the lotos (Nile water-lily) grows chiefly in the plains when the land is inundated. The character of the stalk of this plant is like that of the 'Egyptian bean,' and so are the 'hat-like' leaves,\(^5\) except that they are smaller and slenderer. And the fruit\(^6\) grows on the stalk in the same way as that of the 'bean.' The flower is white, resembling in the narrowness of its petals those of the lily,\(^7\) but there are many petals growing close one upon another. When the sun sets, these close\(^8\) and cover up the 'head,' but with sunrise they open and

\(^5\) cf. 4. 8. 7.
\(^6\) καρπός conj. W.; λωτός MSS. Possibly the fruit was specially called λωτός.
\(^7\) cf. Hdt. 2. 92; Diosc. 4. 113.
\(^8\) δύ, συμμυίει conj. St.; συμμυίει MV; συμμύη U; συμμύη (omitting καί) Ald.H.
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γεται καὶ ὑπὲρ τοῦ ὑδατος γίνεται. τοῦτο δὲ ποιεῖ μέχρι ἣ ἡ κωδύα ἐκτελεσθῇ καὶ τὰ ἀνθῆ 10 περιρρυῇ. τῆς δὲ κωδύας τὸ μέγεθος ἡλίκον μῆκωνος τῆς μεγίστης, καὶ διέξωσται ταῖς κατα- 
τομαῖς τὸν αὐτὸν τρόπον τῇ μῆκων: πλὴν πυκνο- 
tερος ἐν ταύταις ὁ καρπός. ἔστι δὲ παρόμοιος 
τῷ κένχρῳ. ἐν δὲ τῷ Εὐφράτῃ τὴν κωδύαν φασὶ 
καὶ τὰ ἀνθῆ δύνειν καὶ ὑποκαταβαίνειν τῆς ὤψιας 
μέχρι μεσῶν νυκτῶν καὶ τῷ βάθει πόρρω οὖν 
ἀφαὶ καθόντα τὴν χειρὰ λαβεῖν εἶναι. μετὰ δὲ 
ταῦτα ὅταν ὄρθρος ἡ πάλιν ἔπαινεναι καὶ πρὸς 
ἡμέραν ἐπὶ μᾶλλον, ἀμα τῷ ἡλίῳ φανερὸν <ἀν> 
ὑπὲρ τοῦ ὑδατος καὶ ἀνοίγειν τὸ ἀνθὸς, ἀνοιχθέν- 
tος δὲ ἔτι ἀναβαίνειν: συχνὸν δὲ τὸ ὑπεραῖρον 
11 εἶναι τὸ ὕδωρ. τὰς δὲ κωδύας ταῦτας οἱ Ἐγγύ- 
πτιοι συνθέντες εἰς τὸ αὐτὸ σήμουσιν: ἐπάν δὲ 
σατή τὸ κέλυφος, ἐν τῷ ποταμῷ κλύζοντες ἕξαι- 
ροῦσι τὸν καρπὸν, ξηράνα τε καὶ πτίσαντες 
ἀρτοὺς ποιούσι καὶ τοῦτο χρῶνται σιτίῳ. ἡ δὲ 
ῥίζα τοῦ λωτοῦ καλεῖται μὲν κόρσιον, ἐστὶ δὲ 
στρογγύλῃ, τὸ μέγεθος ἡλίκον μῆλου Κυδώνιου: 
φλοίος δὲ περικεῖται περί αὐτὴν μέλας ἐμφερῆς 
τῷ κασταναῖκῳ καρύῳ: τὸ δὲ ἐντὸς λευκοῦ, ἐψι- 
μενον δὲ καὶ ὀπτώμενον γίνεται λεκιθῶδες, ἠδυ δὲ 
ἐν τῇ προσφορᾷ: ἐσθίεται δὲ καὶ ψιθ., ἀρίστη 
δὲ ἐν τῷ προσφορᾷ: εἶ στιν δὲ καὶ ὡμη, ἀρίστη 
καὶ τὰ μὲν 
12 ἐν τοῖς ὑδασιν σχεδὸν ταύτα ἐστιν.

3 ὤψιας conj. W. from Plin. l.c.; ὤψιας ἡρᾶς.
4 <ἀν> add. W.
5 κέλυφος i.e. fruit: καρπὸν i.e. seeds.

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appear above the water. This the plant does until the 'head' is matured and the flowers have fallen off. 1 The size of the 'head' is that of the largest poppy, and it has grooves all round it in the same way as the poppy, but the fruit is set closer in these. This is like millet. 2 In the Euphrates they say that the 'head' and the flowers sink and go under water in the evening 3 till midnight, and sink to a considerable depth; for one can not even reach them by plunging one's hand in; and that after this, when dawn comes round, they rise and go on rising towards day-break, being 4 visible above the water when the sun appears; and that then the plant opens its flower, and, after it is open, it still rises; and that it is a considerable part which projects above the water. These 'heads' the Egyptians heap together and leave to decay, and when the 'pod' 5 has decayed, they wash the 'head' in the river and take out the 'fruit,' 5 and, having dried and pounded 6 it, they make loaves of it, which they use for food. The root of the lotos is called korsion, 7 and it is round and about the size of a quince; it is enclosed in a black 'bark,' like the shell of a chestnut. The inside is white; but when it is boiled or roasted, it becomes of the colour of the yolk of an egg and is sweet to taste. The root is also eaten raw, though it is best when boiled in water or roasted. 8 Such are the plants found in water.

In sandy places which are not 9 far from the river

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1 Pliny, Natural History 35.88.
2 A reference to the plant Nymphoides peltata, commonly known as water poppy.
3 Daytime.
4 In the morning.
5 Euphrates River.
6 Dried and pounded.
7 A kind of millet.
8 Root of lotus.
9 Apparently not mentioned in Pliny's text.
THEOPHRASTUS

toū potamōv, φύεται κατὰ γῆς ὃ καλεῖται μαλιν-αθάλλη, στρογγύλου τῷ σχῆματι μέγεθος δὲ ἕλικον μέσπιλον ἀπύρηνον δὲ ἀφλοιον. φύλλα δὲ ἀφύσιν ἀπ’ αὐτοῦ ὁμοια κυπέιρῳ ταῦτα συνάγοντες οἱ κατὰ τὴν χώραν ἔψουσιν ἐν βρυτῷ τῷ ἀπὸ τῶν κριθῶν καὶ γίνεται γλυκέα σφόδρα. χρώνται δὲ πάντες ὀσπερ τραγήμασι.

13 'Εστι δὲ καὶ ἄλλο παραφύσεων αὐτόματον ἐν τῷ σίτῳ. τοῦτο δὲ, ὅταν ὁ σῖτος ἢ καθαρός, ὑποτίσαντες καταβάλλουσι τοῦ χειμῶνος ὑγράν εἰς γην βλαστήσαντος δὲ τεμόντες καὶ ἐξηράννες παρέχουσι καὶ τοῦτο βουσάται καὶ ὑποτεὶς καὶ τοῖς ὑποξυγίοις σὺν τῷ καρπῷ τῷ ἐπιγυμνέων ὃ δὲ καρπὸς μέγεθος μὲν ἕλικον στή-σαμον, στρογγύλον δὲ καὶ τῷ χρώματι χλωρός, ἀγάθος δὲ διαφερόντως. ἐν Ἀιγύπτῳ μὲν οὖν τα περιττὰ σχεδον ταῦτα ἀν τὼσ λάβοι.

IX. Ἐκαστοὶ δὲ τῶν ποταμῶν ἐοίκασιν ἰδίων τί φέρειν, ὀσπερ καὶ τῶν χερσάιων. ἐπεὶ οὔδὲ ὁ τρίβολος ἐν ἀπασίν οὔδὲ πανταχοῦ φύεται, ἀλλ’ ἐν τοῖς ἐλώδεσι τῶν ποταμῶν ἐν μεγίστῳ δὲ βάθει πενταπήχει ἡ μικρὸς μείζων, καθάπερ

1 Plin. l.c. anthalium, whence Salm. conj. ἀνθάλλιον.
2 Saccharum biflorum. See Index App. (19).
3 ἐν σίτον ἄλλο conj. W.; έσιτοῦντα Ald.
there grows under ground the thing called malinathalle\(^1\); this is round in shape and as large as a medlar, but has no stone and no bark. It sends out leaves like those of galangale. These the people of the country collect and boil in beer made from barley, and they become extremely sweet, and all men use them as sweetmeats.

All the things that grow in such places may be eaten by oxen and sheep, but there is one kind of plant\(^2\) which grows in the lakes and marshes which is specially good for food: they graze their cattle on it when it is green, and also dry it and give it in the winter to the oxen after their work; and these keep in good condition when they have no other\(^3\) kind of food.

There is also another plant\(^4\) which comes up of its own accord among the corn; this, when the harvest is cleared, they crush slightly\(^5\) and lay during the winter on\(^6\) moist ground; when it shoots, they cut and dry it and give this also to the cattle and horses and beasts of burden with the fruit which forms on it. The fruit in size is as large as sesame, but round and green in colour, and exceedingly good. Such one might take to be specially remarkable plants of Egypt.

IX. Every river seems to bear some peculiar plant, just as does each part of the dry land.\(^7\) For not even the water-chestnut grows in all rivers nor everywhere, but only in marshy rivers, and only in those whose depth is not more or not much more than five cubits,

\(^1\) Corchorus trilocularis. See Index App. (20).
\(^2\) G seems to have read ὑποπτίσαντες (leviter pinsentes); ὑποπτήσαντες W. with Ald.H.
\(^3\) eis conj. W.; τὴν Ald.
\(^4\) Plin. 21. 98; Diosc. 4. 15.
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περὶ τῶν Στρυμώνα: σχεδὸν δὲ ἐν τοσούτω καὶ ὁ κάλαμος καὶ τὰ ἄλλα. ὑπερέχει δὲ οὐθὲν αὐτοῦ πλῆν αὐτὰ τὰ φύλλα ὡσπερ ἐπινεύοντα καὶ κρύπτοντα τὸν τρίβολον, ὁ δὲ τρίβολος αὐτὸς ἐν τῷ ὑδατὶ νεύον εἰς βυθὸν. τὸ δὲ φύλλον ἐστὶ πλατὺ προσεμφερές τῷ τῆς πτέλεας, μέσχων δὲ ἐχει σφόδρα μακρὸν· ὁ δὲ καυλὸς ἐξ ἄκρου παχύτατος, οὗτος τὰ φύλλα καὶ ὁ καρπὸς, τὰ δὲ κάτω λεπτότερος ἅπει μέχρι τῆς ρίζης· ἔχει δὲ ἄποπεφυκότα ἀπ’ αὐτοῦ τριχώδη τὰ μὲν πλείστα παράλληλα τὰ δὲ καὶ παραλλάττοντα, κάτωθεν ἀπὸ τῆς ρίζης μεγάλα τὰ δὲ ἀνω ἢ ἐλάττων προϊόνσιν, ὡστε τὰ τελευταία μικρὰ πάμπαν εἶναι καὶ τὴν διαφορὰν μεγάλην τὴν ἀπὸ τῆς ρίζης πρὸς τὸν καρπὸν. ἔχει δὲ ἐκ τοῦ ἔνοδον καυλοῦ καὶ παραβλαστήματα πλείω· καὶ γὰρ τρία καὶ τέταρτα, μεγιστὸν δὲ αἰεὶ τὸ πλησιαίτέρον τῆς ρίζης, εἶτα τὸ μετὰ τοῦτο καὶ τὰ ἄλλα κατὰ λόγον. τὸ δὲ παραβλαστήμα ἐστὶν ὡσπερ καυλὸς ἄλλος λεπτότερος μὲν τοῦ πρώτου, τὰ δὲ φύλλα καὶ τὸν καρπὸν ἔχων ὁμοίως. ὁ δὲ καρπὸς μέλας καὶ σκληρὸς σφόδρα. ρίζαν δὲ ἡλίκην καὶ ποῖαιν ἔχει σκεπτέον. ἢ μὲν οὖν φύσις τοιαύτη. φύεται μὲν ἀπὸ τοῦ καρποῦ τοῦ πίπτοντος καὶ ἀφίησι βλαστῶν τοῦ ἱροῦ·

3 φασί δὲ οἱ μὲν εἶναι ἐπέτειον οἴ δὲ διαμένειν τὴν μὲν ρίζαν εἰς χρόνον, ἐξ ἦς καὶ τῆς βλάστησιν εἶναι τοῦ καυλοῦ. τούτῳ μὲν οὖν σκεπτέον. ἵδιον δὲ παρὰ τάλλα τὸν παραφυσμένων ἐκ τοῦ καυλοῦ τριχώδων· οὔτε γὰρ φύλλα ταύτα οὔτε καυλὸς· ἐπεὶ τὸ γε τῆς παραβλαστήσεως κοινὸν καλάμου καὶ ἄλλων.

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as the Strymon. (In rivers of such a depth grow also reeds and other plants.) No part of it projects from the water except just the leaves; these float as it were and conceal the ‘chestnut,’ which is itself under water and bends down towards the bottom. The leaf is broad, like that of the elm, and has a very long stalk. The stem is thickest at the top, whence spring the leaves and the fruit; below it gets thinner down to the root. It has springing from it hair-like growths, most of which are parallel to each other, but some are irregular; below, starting from the root, they are large, but, as one gets higher up the plant, they become smaller, so that those at the top are quite small and there is a great contrast between the root and the top where the fruit grows. The plant also has on the same stalk several side-growths; of these there are three or four, and the largest is always that which is nearer to the root, the next largest is the one next above it, and so on in proportion: this sidegrowth is like another stalk, but slenderer than the original one, though like that it has leaves and fruit. The fruit is black and extremely hard. The size and character of the root are matter for further enquiry. Such is the character of this plant. It grows from the fruit which falls, and begins to grow in spring. Some say that it is annual, others that the root persists for a time, and that from it grows the new stalk. This then is matter for enquiry. However quite peculiar to this plant is the hair-like character of the growths which spring from the stalk; for these are neither leaves nor stalk; though reeds and other things have also sidegrowths.
X. Τὰ μὲν οὖν ἵδια θεωρητέον ἰδίως δῆλον ὅτι, τὰ δὲ κοινὰ κοινῶς. διαιρεὶν δὲ χρῆ καὶ ταῦτα κατὰ τοὺς τόπους, οἶον εἰ τὰ μὲν ἔλεεα τὰ δὲ λιμναία τὰ δὲ ποτάμια μᾶλλον ἢ καὶ κοινὰ πάντων τῶν τόπων· διαιρεῖν δὲ καὶ ποία ταῦτα ἐν τῷ ὕγρῳ καὶ τῷ ἕρῳ φύεται, καὶ ποία ἐν τῷ ὕγρῳ μόνου, ὡς ἀπλῶς εἰπεῖν πρὸς τὰ κοινότατα εἰρήμενα πρότερον.

Ἐν δ' οὖν τῇ λίμνῃ τῇ περὶ Ὀρχομενοῦ ταῦτ' ἐστὶ τὰ φυόμενα δενδρα καὶ ὑλήματα, ἵτεα ἐλαιαγνος σίδη κάλαμος ὁ τε αὐλητικός καὶ ὁ ἐτερος κύπειρον φλεῶς τύφη, ἔτι γε μὴνανθὸς ἵκμη καὶ τὸ καλούμενον ὕπνοι. ὁ γὰρ προσαγορεῦσαι λέμμα τοῦτο τὰ πλεῖώ καθ' ὑδατὸς ἐστὶ.

Τοῦτων δὲ τὰ μὲν ἄλλα γνώριμα· ὃ δὲ ἐλαιαγνος καὶ ἵ τείδη καὶ ἡ μὴνανθὸς καὶ ἡ ἴκμη καὶ τὸ ὕπνοι ἵσως μὲν φύεται καὶ ἐτέρωθι, προσαγορεύεται δὲ ἄλλοις όνόμασι· λεκτεῖον δὲ περὶ αὐτῶν. ἐστὶ δὲ ὃ μὲν ἐλαιαγνος φύεται μὲν θαμυνῶδες καὶ παρόμοιον τοῖς ἄγγοις, φύλλον δὲ ἔχει τῷ μὲν σχήματι παραπλήσιον μαλακὸν δὲ, ὥστε περι αἱ μηλέαι καὶ χνοῦδες. ἀνθός δὲ τῷ τῆς λεύκης ὄμοιον ἐλαττόν· καρπὸν δὲ οὐδένα φέρει. φύεται δὲ ὁ πλεῖστος μὲν ἐπὶ τῶν πλοάδων νῆσων· εἰσὶ γὰρ τινες καὶ ἐνταῦθα πλοάδες, ὥστε περὶ Ἀιγύπτω

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1 τὰ δὲ κοινὰ κοινῶς conj. Sch. from G; τὰ δὲ κοινῶς Ald.H.
2 ταῦτα conj. Sch.: ταῦτα Ald.
3 πρὸς τὰ κοιν. ὃ. ὃ. πρ. conj. W. supported by G; κοινότατα προσεισθήμενα πρότερον Ald.H.

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ENQUIRY INTO PLANTS, IV. x. 1-2

Of the plants peculiar to the lake of Orchomenos (Lake Copaïs), especially its reeds; and of reeds in general.

X. Plants peculiar to particular places must be considered separately, while a general account may be given of those which are generally distributed. But even the latter must be classified according to locality; thus some belong to marshes, others to lakes, others to rivers, or again others may be common to all kinds of locality: we must also distinguish which occur alike in wet and in dry ground, and which only in wet ground, marking these off in a general way from those mentioned above as being most impartial.

Now in the lake near Orchomenos grow the following trees and woody plants: willow goat-willow water-lily reeds (both that used for making pipes and the other kind) galingale phleos bulrush; and also 'moon-flower' duckweed and the plant called marestail: as for the plant called water-chickweed the greater part of it grows under water.

Now of these most are familiar: the goat-willow water-lily 'moon-flower' duckweed and marestail probably grow also elsewhere, but are called by different names. Of these we must speak. The goat-willow is of shrubby habit and like the chaste-tree: its leaf resembles that leaf in shape, but it is soft like that of the apple, and downy. The bloom is like that of the abele, but smaller, and it bears no fruit. It grows chiefly on the floating islands; (for here too there are floating islands, as in the marshes

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4 τούτου τὰ πλείω καθ’ ὄδ. conj. Sch.; τούτο πλείω τὸ καθ’ ὄδ. UM; τούτο πλείον τὸ καθ’ ὄδ. Ald.
5 μηλέαι perhaps here = quince (μηλέα Κυδωνία).
6 ἀνθός here = catkin.
περὶ τὰ ἔλη καὶ ἐν Θεσπρωτίδι καὶ ἐν ἄλλαις λίμναις. ἐλάττων δὲ καθ’ ὦδατος. ὁ μὲν οὖν ἐλαίαγνος τοιοῦτον.

3 'Ἡ δὲ σίδη την μὲν μορφὴν ἐστίν ὁμοία τῇ μῆκων· καὶ γὰρ τὸ ἀνώ κυτινώδες τοιοῦτον ἔχει, πλὴν μεῖζον ως κατὰ λόγον μεγέθει δὲ ὅλος ὁ ὁγκὸς ἡλίκον μήλου ἐστὶ δὲ ὦ γυμμόν, ἄλλα ὑμένες περὶ αὐτὴν λευκοὶ, καὶ ἐπὶ τούτοις ἔξωθεν φύλλα ποώδη παραπλῆσια τοῖς τῶν ῥόδων ὅταν ἐν κάλυξιν ὄςι, τέτταρα τὸν ἄριθμὸν. ἀνοιξθεῖσα δὲ τοὺς κόκκους ἑρυθροὺς μὲν ἔχει τῷ σχῆματι δὲ οὐχ ὁμοίους ταῖς ρῶις ἄλλα περιφερεῖς μικροὺς δὲ καὶ οὐ πολλῷ μεῖζους κένχρου· τὸν δὲ χυλὸν ὦδατώδη τυνά, καθάπερ ὁ τῶν πυρῶν. ἀδρύνεται δὲ τοῦ θέρους, μύσχον δὲ ἔχει μακρόν. τὸ δὲ ἀνθός ὁμοίου ρόδου κάλυκι, μεῖζον δὲ καὶ σχεδὸν διπλάσιον τῷ μεγέθει. τοῦτο μὲν οὖν καὶ τὸ φύλλον ἐπὶ τοῦ ὦδατος· μετὰ δὲ ταῦτα, ὅταν ἀπανθήσῃ καὶ συστῇ τὸ περικάρπιον, κατακλίνεσθαι φασίν εἰς τὸ ὑδωρ μᾶλλον, τέλος δὲ συνάπτειν τῇ γῆ καὶ τοῦ καρπῶν ἐκχεῖν.

4 Καρποφορεῖν δὲ τῶν ἐν τῇ λίμνῃ τοῦτο καὶ τὸ βούτομον καὶ τὸν φλεών. εἶναι δὲ τοῦ βουτόμου μέλανα, τῶ δὲ μεγέθει παραπλῆσιον τῷ τῆς σίδης. τοῦ δὲ φλεώ τῆς καλομένην ἀνθῆλην,

1 ἐλάττων . . . ὦδατος: sense doubtful. G. seems to render a different reading.
2 i.e. the flower-head, which, as well as the plant, was called σίδη.
3 μῆκων can hardly be right: suspected by H.
4 cf. Athen. 14. 64.
5 i.e. petals.

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of Egypt, in Thesprotia, and in other lakes). When it grows under water, it is smaller. Such is the goat-willow.

The water-lily is in shape like the poppy. For the top of it has this character, being shaped like the pomegranate flower, but it is longer in proportion to the size of the plant. Its size in fact as a whole is that of an apple; but it is not bare, having round it white membranes, and attached to these on the outside are grass-green 'leaves,' like those of roses when they are still in bud, and of these there are four; when it is opened it shews its seeds, which are red; in shape however they are not like pomegranate seeds, but round small and not much longer than millet seeds; the taste is insipid, like that of wheat-grains. It ripens in summer and has a long stalk. The flower is like a rose-bud, but larger, almost twice as large. Now this and the leaf float on the water; but later, when the bloom is over and the fruit-case has formed, they say that it sinks deeper into the water, and finally reaches the bottom and sheds its fruit.

Of the plants of the lake they say that water-lily sedge and phleos bear fruit, and that that of the sedge is black, and in size like that of the water-lily. The fruit of phleos is what is called the 'plume,'

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6 i.e. sepals.
7 ἰδαίς conj. Bod. from Nic. Ther. 887 and Schol.; ἰδαῖς UMVAld. H.
8 περικάρπιον conj. W.; κατακάρπιον MSS. κατα- probably due to κατακλύσθαι.
9 cf. Diosc. 3. 118. ἄνθηλην, sc. καρπὸν εἶναι. But Sch. suggests that further description of the fruit has dropped out, and that the clause &c. . . . κοιναῖς does not refer to the fruit.
§ χρώνται πρὸς τὰς κονίας. τοῦτο δ' ἐστὶν οίον πλακουντώδες τι μαλακὸν ἐπίπυρρον. ἐτὶ δὲ καὶ τοῦ φλεῶ καὶ τοῦ βουτόμου τὸ μὲν θῆλν ἀκαρπὸν, χρῆσιμὸν δὲ πρὸς τὰ πλόκανα, τὸ δὲ ἄρρεν ἀχρείον.

Περὶ δὲ τῆς ἱκμῆς καὶ μημάνθους καὶ τοῦ ἱπποῦ σκεπτέον.

5 Ἡ ἰδιώτατον δὲ τοῦτον ἐστὶν ἡ τύφη καὶ τῷ ἀφυλλόν εἶναι καὶ τῷ μή πολύρριζον τοῖς ἀλλοις ὁμοίως· ἐπεὶ τᾶλα οὐχ ἠτότοι εἰς τὰ κάτω τῆν ὀρμήν ἔχει καὶ τὴν δύναμιν μάλιστα δὲ τὸ κυπείρου, ὥσπερ καὶ ἡ ἀγρωστίς, δι' ὅ καὶ δυσώ- λεθρα καὶ ταύτα καὶ ὅλως ἀπαν τὸ γένος τὸ τοιού- τον. ἡ δὲ ρίζα τοῦ κυπείρου πολύ τι τῶν ἀλλών παραλλάττει τῇ ἀνωμαλίᾳ, τῷ τὸ μὲν εἶναι παχὺ τι καὶ σαρκώδες αὐτῆς τὸ δὲ λεπτὸν καὶ εὐλώδες· καὶ τῇ βλαστήσει καὶ τῇ γενέσει φύεται γὰρ ἀπὸ τοῦ πρεμνῶδος ἐτέρα λεπτή κατὰ πλάγιον, εἰτ' ἐν ταύτῃ συνίσταται πάλιν τὸ σαρκώδες, ἐν ὧ καὶ ὁ βλαστῶς ἄφ' οὐ̣ ὁ καυλός· ἀφίησι δὲ καὶ εἰς βάθος τὸν αὐτὸν τρόπον ρίζας, δι' ὅ καὶ πάντων μάλιστα δυσώλεθρον καὶ ἔργον ἔξελεῖν.

6 (Σχεδὸν δὲ παραπλησίως φύεται ἡ ἀγρωστίς ἐκ τῶν γονάτων· αἱ γὰρ ρίζαι γονατώδεις, εξ ἐκά- στοιν δ' ἀφίησιν ἀνω βλαστῶν καὶ κάτωθεν ρίζαν. ὡσαύτως δὲ καὶ ἡ ἀκανθα ἡ ἀκανόδης, ἀλλ' οὐ καλαμώδης οὔδε γονατώδης ἡ ρίζα ταύ-

1 κονίας: ? κονιάσεις (plastering), a conjecture mentioned by Sch.
and it is used as a soap-powder. It is something like a cake, soft and reddish. Moreover the 'female' plant both of phleos and sedge is barren, but useful for basket-work, while the 'male' is useless.

Duckweed 'moon-flower' and marestail require further investigation.

Most peculiar of these plants is the bulrush, both in being leafless and in not having so many roots as the others; for the others tend downwards quite as much as upwards, and shew their strength in that direction; and especially is this true of galingale, and also of dog's-tooth grass; wherefore these plants too and all others like them are hard to destroy. The root of galingale exceeds all the others in the diversity of characters which it shews, in that part of it is stout and fleshy, part slender and woody. So also is this plant peculiar in its way of shooting and originating; for from the trunk-like stock grows another slender root sideways, and on this again forms the fleshy part which contains the shoot from which the stalk springs. In like manner it also sends out roots downwards; wherefore of all plants it is hardest to kill, and troublesome to get rid of.

(Dog's-tooth grass grows in almost the same way from the joints; for the roots are jointed, and from each joint it sends a shoot upwards and a root downwards. The growth of the spinous plant called corn-thistle is similar, but it is not reedy and its

\[ \text{ENQUIRY INTO PLANTS, IV. x. 4-6} \]
THEOPHRASTUS

της. ταῦτα μὲν οὖν ἐπὶ πλεῖου διὰ τὴν ὁμοιότητα εἰρηται.)

Φύεται δ' ἐν ἀμφοῖν καὶ ἐν τῇ γῇ καὶ ἐν
tῷ ὕδατι ὑτέα κάλαμος, πλὴν τοῦ ἀνθρώπου,
κύπερον τύφη φλεὼς βούτομος: ἐν δὲ τῷ ὕδατι
μόνον σίδη. περὶ γὰρ τῆς τύφης ἀμφισβητοῦσι.
καλλίω δὲ καὶ μείζω τῶν ἐν ἀμφοῖν φυομένων
αἰεὶ τὰ ἐν τῷ ὕδατι γίνεσθαι φασὶ. φύεσθαι δ',
ἐνια τούτων καὶ ἐπὶ τῶν πλούδων, οἷον τὸ κύ-
περον καὶ τὸ βούτομον καὶ τὸν φλεὼν, ὡστε πάντα
tὰ μέρη ταῦτα κατέχειν.

7 Ἐδόδμημα δ' ἐστὶ τῶν ἐν τῇ λίμνῃ τάδε: ἡ μὲν
σίδη καὶ αὐτή καὶ τὰ φύλλα τοῖς προβάτοις, οὸ
δὲ βλαστῶς τοῖς ύσιν, οὸ δὲ καρπὸς τοῖς ἀνθρώποις.
tοῦ δὲ φλεῶ καὶ τῆς τύφης καὶ τοῦ βουτομοῦ τὸ
πρὸς ταῖς ῥίζαις ἀπαλῶν, ὁ μάλιστα ἐσθίει τὰ
παιδία. ῥίζα δ' ἐδόδμημος ἡ τοῦ φλεῶ μόνη τοῖς
βοσκήμασιν. ὅταν δ' αὐχμὸς ἦ καὶ μὴ γένηται
τὸ κατὰ κεφαλὴν ὕδωρ, ἀπαντά αὐχμεῖ τὰ ἐν τῇ
λίμνῃ, μάλιστα δὲ ὁ κάλαμος, ὑπὲρ οὗ καὶ λοιπὸν
ἐπεῖν. ὑπὲρ γὰρ τῶν ἄλλων σχέδον εἰρηται.

XI. Τοῦ δὴ καλάμου δύο φασίν εἶναι γένη, τὸν
τε αὐθητικὸν καὶ τὸν ἐτέρον ἐν γὰρ εἶναι τὸ
γένος τοῦ ἐτέρου, διαφέρειν δὲ ἄλληλων ἵσχυι
<καὶ παχύτητι> καὶ λεπτότητι καὶ ἀσθενείας;
καλοῦσθι δὲ τὸν μὲν ἴσχυρὸν καὶ παχύν χαρακίαν
τὸν δ' ἐτέρον πλόκιμον: καὶ φύεσθαι τὸν μὲν

1 i.e. we have gone beyond the list of typical plants of
Orchomenus given 4. 10. 1, because we have found others of
which much the same may be said.
2 cf. 4. 10. 2.
3 αὐτή: cf. 4. 10. 3 n.

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root is not jointed. We have enlarged on these matters because of the resemblance.)

The willow and the reed (not however the reed used for pipes) galingale bulrush phleos sedge grow both on land and in the water, water-lily only in the water. (As to bulrush indeed there is a difference of opinion.) However they say that those plants which grow in the water are always finer and larger than those that grow in both positions; also that some of these plants grow also on the floating islands, for instance galingale sedge and phleos; thus all parts of the lake contain these plants.

Of the plants of the lake the parts good for food are as follows: of the water-lily both the flower and the leaves are good for sheep, the young shoots for pigs, and the fruit for men. Of phleos galingale and sedge the part next the roots is tender, and is mostly eaten by children. The root of phleos is the only part which is edible by cattle. When there is a drought and there is no water from overhead, all the plants of the lake are dried up, but especially the reed; of this it remains to speak, since we have said almost enough about the rest.

XI. Of the reed there are said to be two kinds, the one used for making pipes and the other kind. For that of the latter there is only one kind, though individual plants differ in being strong and stout, or on the other hand slender and weak. The strong stout one they call the 'stake-reed,' the other the 'weaving reed.' The latter they say grows on the

4 κεφαλη UMV Ald.; for the case cf. Xen. Hell. 7. 2. 8 and 11; κεφαλης conj. W.
6 Plin. 16. 168 and 169.

καὶ παχύττι add. Dalec. from G.
THEOPHRASTUS

πλόκιμον ἐπὶ τῶν πλοάδων τὸν δὲ χαρακίαν ἐπὶ τοὺς κώμυσι· κώμυθας δὲ καλοῦσι οὐ ἂν ἦν συνηθροισμένοι κάλαμοι καὶ συμπεπλεγμένοι ταῖς ρίζαις· τούτῳ δὲ γίνεται καθ’ οὓς ἄν τόπους τῆς λύμνης εὑρεῖον ἢ χωρίων· γίνεσθαι δὲ ποτὲ τὸν χαρακίαν καὶ οὐ ὁ αὐλητικὸς, μακρότερον μὲν τοῦ ἄλλου χαρακίου σκοληκόβρωτον δὲ τούτου μὲν οὖν ταύτας λέγουσι τὰς διαφορὰς.

2 Περὶ δὲ τοῦ αὐλητικοῦ τὸ μὲν φύεσθαι δι’ ἐννεατηρίδος, ὡστερ τινές φασί, καὶ ταύτην εἶναι τὴν τάξιν οὐκ ἄλλης, ἀλλὰ τὸ μὲν ὅλον αὐξηθείσης γίνεται τῆς λύμνης· ὅτι δὲ τούτ’ ἐδόκει συμβαίνειν ἐν τοῖς πρότερον χρόνοις μᾶλλον δι’ ἐννεατηρίδος, καὶ τὴν γένεσιν τοῦ καλάμου ταύτην ἐποίουν τὸ συμβεβηκὸς ὡς τάξιν λαμβάνοντες. γίνεται δὲ ὅταν ἐπομβρίας γενομένης ἐμμένη τὸ ύδωρ δ’ ἐτη τοιλάχιστον, ἃν δὲ πλεῖον καὶ καλλίων τούτου δὲ μᾶλλον μιμομοεύουσι γεγονότος τῶν ύστερον χρόνων ὅτε συνέβη τὰ περὶ Χαιρώνειαν· πρὸ τούτων γὰρ ἐφασαν ἐτη πλεῖον βαθυνθῆναι τὴν λύμνην· μετὰ δὲ ταύτα ύστερον, ὡς ὁ λοιμὸς ἐγένετο σφοδρός, πλησθῆναι μὲν αὐτήν, οὐ μείναντος δὲ τοῦ ύδατος ἀλλ’ ἐκλιπόντος χειμῶνος οὐ γενέσθαι τῶν κάλαμον· φασὶ γὰρ καὶ δοκεῖ βαθυνομένης τῆς λύμνης αὐξάνεσθαι τὸν κάλαμον εἰς μῆκος, μείναντα δὲ τὸν ἐπιόντα ἐμπαυτὸν ἀδρύνεσθαι· καὶ γίνεσθαι τὸν μὲν ἄδρυθέντα ζευγίτην, ὡ δ’ ἂν μὴ συμπαραμείνη τὸ

1 κώμυσι: lit 'bundles.'
2 δ’ ἐτη conj. W.; διετῇ UMV Ald.
3 b.c. 338.
ENQUIRY INTO PLANTS, IV. xi. 1-3

floating islands, the stout form in the 'reed-beds';
this name they give to the places where there is a
thick mass of reed with its roots entangled together.
This occurs in any part of the lake where there is
rich soil. It is said that the 'stake-reed' is also
sometimes found in the same places as the reed used
for pipes, in which places it is longer than the 'stake-
reed' found elsewhere, but gets worm-eaten. These
then are the differences in reeds of which they tell.

As to the reed used for pipes, it is not true, as some
say, that it only grows once in nine years and that
this is its regular rule of growth; it grows in general
whenever the lake is full: but, because in former
days this was supposed to happen generally once in
nine years, they made the growth of the reed to
correspond, taking what was really an accident to be
a regular principle. As a matter of fact it grows
whenever after a rainy season the water remains in
the lake for at least two years, and it is finer if the
water remains longer; this is specially remembered
to have happened in recent times at the time of the
battle of Chaeronea. For before that period they
told me that the lake was for several years deep;
and, at a time later than that, when there was a
severe visitation of the plague, it filled up; but, as
the water did not remain but failed in winter, the
reed did not grow; for they say, apparently with
good reason, that, when the lake is deep, the reed
increases in height, and, persisting for the next year,
matures its growth; and that the reed which thus
matures is suitable for making a reed mouthpiece,
while that for which the water has not remained is

4 ἐτη πλειῶ conj. Scal. from G; ἐτι πλεῖω UMV; ἐτι πλεῖον Ald.
5 See n. on τὸ στόμα τῶν γάλαττῶν, § 4.
υδωρ βομβυκίαν. τὴν μὲν ἀν γένεσιν εἶναι τοιαύτην.

4 Διαφέρειν δὲ τῶν ἄλλων καλάμων ὡς καθ’ ὅλου λαβεῖν ἑυτροφία τινὶ τῆς φύσεως· εὐπληθέστερον γὰρ εἶναι καὶ εὐσαρκότερον καὶ ὅλως δὲ θῆλυν τῇ προσώψει. καὶ γὰρ τὸ φύλλον πλατύτερον ἔχειν καὶ λευκότερον τὴν δὲ ἀνθήλην ἐλάττω τῶν ἄλλων, τινὰς δὲ ὅλως οὐκ ἔχειν, οὐς καὶ προσ- αγορεύουσιν εὐνοχίας· εξ ὣν ἀριστα μὲν φασὶ τινὲς γίνεσθαι τὰ ζεύγη, κατορθοῦν δὲ ὅλιγα παρὰ τὴν ἐργασίαν.

Τὴν δὲ τομὴν ὀραίαν εἶναι πρὸ Ἀντιγενίδου μὲν, ἦνίκ’ ἡφλουν ἀπλάστως, ὑπ’ Ἀρκτουρον Βοι- δρομίδον μηνός· τὸν γὰρ οὕτω τριθέντα συχνοίς μὲν ἔτεσιν ὑστερον γίνεσθαι χρῆσιμον καὶ προ- καταλήσεως δεῖσθαι πολλῆς, συμμύσων δὲ τοῦ στῶμα τῶν γλωττῶν, ὅ πρὸς τὴν διακτηρίαν εἶναι χρῆσιμον. ἔπει δὲ εἰς τὴν πλάσιν μετέβησαν, καὶ ἡ τομὴ μετεκινήθη· τέμνουσι γὰρ δὴ γιὰ τοῦ Σκιρροφορίδον καὶ Ἐκατομβαίδον ὡσπερ πρὸ τροπῶν μικρὸν ὃ ὑπὸ τροπᾶς. γίνεσθαι δὲ φασὶ τριενὸν τε χρῆσιμον καὶ καταλήσεως βραχείας

1 βομβυκίαν. In one kind of pipe the performer blew, not directly on to the ‘reed,’ but into a cap in which it was enclosed; this cap, from the resemblance in shape to a cocoon, was called βομβυξ.
2 εἶναι add. W.
3 Plin. 16. 169-172. 4 September.
5 i.e. between the free end of the vibrating ‘tongue’ and
suitable for making a 'cap.' Such then, it is said, is the reed's way of growth.

Also it is said to differ from other reeds, to speak generally, in a certain luxuriance of growth, being of a fuller and more fleshy character, and, one may say, 'female' in appearance. For it is said that even the leaf is broader and whiter, though the plume is smaller than that of other reeds, and some have no plume at all; these they call 'eunuch-reeds.' From these they say that the best mouthpieces are made, though many are spoiled in the making.

Till the time of Antigenidas, before which men played the pipe in the simple style, they say that the proper season for cutting the reeds was the month Boëdromion about the rising of Arcturus; for, although the reed so cut did not become fit for use for many years after and needed a great deal of preliminary playing upon, yet the opening of the reed-tongues is well closed, which is a good thing for the purpose of accompaniment. But when a change was made to the more elaborate style of playing, the time of cutting the reeds was also altered; for in our own time they cut them in the months Skirrophorion or Hekatombaion about the solstice or a little earlier. And they say that the reed becomes fit for use in three years and needs but little preliminary playing upon, and that the reed-tongues

the body or 'lay' of the reed mouthpiece: the instrument implied throughout is apparently one with a single vibrating 'tongue' (reed) like the modern clarinet.

διακτηριάν UMV; διακτορίαν Ald. πρὸς τὸ ἀκρωστήριον, 'for the concert-room'; quod erat illis theatrorum moribus utilius Plin. l.c.

June. 8 July.

ωσερ conj. W.; ωσεπει UH.; ὁς περ Ald.
THEOPHRASTUS

dείσθαι καὶ κατασπάσματα τὰς γλώττας ἵσχειν·
tούτο δὲ ἀναγκαίον τοῖς μετὰ πλάσματος αὐ-
λούσι. τοῦ μὲν οὖν ξενύγτου ταύτας εἶναι τὰς
ώρας τῆς τομῆς.

6 Ἡ δ' ἑργασία γίνεται τούτων τῶν τρόπων ὅταν
συλλέξωσι τιθέασιν ὑπαίθριον τοῦ χειμῶνος ἐν
tῷ λέμματι τοῦ δ' ἦρος περικαθάραντες καὶ
ἐκτρίψαντες εἰς τὸν ἡλιον ἔθεσαι. τοῦ θέρους δὲ
μετὰ ταύτα συντερμόντες εἰς τὰ μεσογονάτα πάλιν
ὑπαίθριοι τιθέασι χρόνον τίνα. προσλείπουσι
δὲ τῶν μεσογονατίων τὸ πρὸς τοὺς βλαστοὺς γονυ-
tὰ δὲ μήκη τὰ τούτων οὐ γίνεται διπαλαίστων
ἐλάττω. βέλτιστα μὲν οὖν εἶναι τῶν μεσογο-
νατίων πρὸς τὴν ξενυγμοίαν ὅλου τοῦ καλάμου τὰ
μέσα· μαλακῶτατα δὲ ἵσχειν ξεύγη τὰ πρὸς τοὺς
7 βλαστοὺς, σκληρότατα δὲ τὰ πρὸς τῇ ῥίζῃ· συμ-
φωνεῖν δὲ τὰς γλώττας τὰς ἐκ τοῦ αὐτοῦ μεσο-
γονατίου, τὰς δὲ ἄλλας οὐ συμφωνεῖν· καὶ τὴν μὲν
πρὸς τῇ ῥίζῃ ἀριστερὰν εἶναι, τὴν δὲ πρὸς τοὺς
βλαστούς δεξιὰν. τυχεῖντος δὲ δίχα τοῦ μεσο-
γονατίου τὸ στόμα τῆς γλώττης ἑκατέρας γίνε-
σθαι κατὰ τὴν τοῦ καλάμου τομὴν· ἐὰν δὲ ἄλλου
τρόπον ἑργασθῶσιν αἱ γλώτται, ταύτας οὐ πάνυ
συμφωνεῖν· ἡ μὲν οὖν ἑργασία τοιαύτη.

1 κατασπάσματα: lit. ‘convulsions’; i.e. the strong vibra-
tions of a ‘tongue,’ the free end of which is kept away from
the body or ‘lay’ of the mouthpiece. Such a ‘reed’ would
have the effect of giving to the pipes a fuller and louder tone.
2 i.e. so as to make a closed end.

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have ample vibration, which is essential for those who play in the elaborate style. Such, they tell us, are the proper seasons for cutting the reed used for the reed mouthpiece.

The manufacture is carried out in the following manner. Having collected the reed-stems they lay them in the open air during the winter, leaving on the rind; in the spring they strip this off; and, having rubbed the reeds thoroughly, put them in the sun. Later on, in the summer, they cut the sections from knot to knot into lengths and again put them for some time in the open air. They leave the upper knot on this internodal section; and the lengths thus obtained are not less than two palmsbreadths long. Now they say that for making mouthpieces the best lengths are those of the middle of the reed, whereas the lengths towards the upper growths make very soft mouthpieces and those next to the root very hard ones. They say too that the reed-tongues made out of the same length are of the same quality, while those made from different lengths are not; also that the one from the length next to the root forms a left-hand reed-tongue, and that from the length towards the upper growths a right-hand reed-tongue. Moreover, when the length is slit, the opening of the reed-tongues in either case is made towards the point at which the reed was cut; and, if the reed-tongues are made in any other manner, they are not quite of the same quality. Such then is the method of manufacture.

3 i.e. the vibrating 'tongues' (reeds) for the left-hand and the right-hand pipe of the Double Pipe respectively.

4 i.e. not at the closed end, but at the end which was 'lower' when the cane was growing: cf. §6, προσλειποντι δε κ.τ.λ.
THEOPHRASTUS

8 Φύεται δὲ πλείστος μὲν μεταξὺ τοῦ Κηφισοῦ καὶ τοῦ Μέλανος· οὕτως δὲ ο ὁ τόπος προσαγο- 

ρευται μὲν Πελεκανία· τούτοι δὲ ἐστὶν ἀττα 

Χύτρου καλούμενοι βαθύσματα τῆς λίμνης, ἐν οἷς 

cάλλιστον φασὶ γίνεσθαι: <γίνεσθαι> δὲ καὶ καθ' 

ὁ Ἡ Προβατία καλούμενη καταφέρεται· τούτο δὲ 

ἐστὶν ποταμὸς ἐκ Λεβαδείας. κάλλιστος δὲ 

dοκεῖ πάντων γίνεσθαι περὶ τὴν 'Οξείαν καλο- 

μένην Καμπῆν· ὁ δὲ τόπος οὕτως ἐστὶν ἐμβολῇ 

tοῦ Κηφισοῦ. γειτνιὰ δ' αὐτῷ πεδίον εὐγειον, δ' 

προσαγορεύουσιν ἰππίαν. πρόσβορρος δὲ τόπος 

ἀλλος τῆς 'Οξείας Καμπῆς ἐστὶν, ἐν καλοῦσι 

Βοηδρίαν· φύεσθαι δὲ φασὶ καὶ κατὰ ταύτην 

eὐγείνη τῶν κάλαμων. τὸ δὲ ὅλον, οὐ ἂν ἢ 

βαθύσ- 

γειον καὶ εὐγειον χωρίον καὶ ἱλυδῶδες καὶ ὁ 

Κηφισὸς ἀναμίσχεται καὶ πρὸς τούτους βάθυσμα 

τῆς λίμνης, κάλλιστον γίνεσθαι κάλαμον. περὶ 

gαρ τὴν 'Οξείαν Καμπῆν καὶ τὴν Βοηδρίαν πάντα 

tαῦτα ὑπάρχειν. ὅτι δὲ ὁ Κηφισὸς μεγάλην ἔχει 

ῥοπὴν εἰς τὸ ποιεῖν καλὸν τῶν κάλαμων σημεῖον 

ἐχουσιν· καθ' ὁ γὰρ τόπον ὁ Μέλας καλούμενος 

ἐμβάλλει βαθείας οὔσης τῆς λίμνης καὶ τοῦ 

eδάφους εὐγείον καὶ ἱλυδῶδος, ἡ ὀλος μὴ γίνεσθαι 

ἡ 

φαύλον. ἡ μὲν οὖν γένεσις καὶ φύσις τοῦ 

αὐλητικοῦ καὶ ἡ κατεργασία καὶ τίνας ἔχει δια- 


dιαφοράς πρὸς τοὺς ἄλλους ἰκανῶς εἰρήσθω.

10 Γένη δὲ οὐ ταῦτα μόνον ἕλλα πλείω τοῦ καλά- 

μου τυγχάνει φανερῶς ἔχουσα τῇ αἰσθήσει δια-


dιαφοράς· ὁ μὲν γὰρ πυκνὸς καὶ τῇ σαρκὶ καὶ τοῖς

2 i.e. the so-called 'Lake' Copaïs.
3 καὶ add. W.
This reed grows in greatest abundance between the Kephisos and the Black River; this district is called Pelekania, and in it are certain 'pots,' as they are called, which are deep holes in the marsh, and in these holes they say that it grows fairest; it is also said to be found where the river called the 'Sheep River' comes down, which is a stream that flows from Lebadeia. But it appears to grow fairest of all near the Sharp Bend; this place is the mouth of the Kephisos; near it is a rich plain called Hippias. There is another region north of the Sharp Bend called Boedrias; and here too they say that the reed grows fine, and in general that it is fairest wherever there is a piece of land with deep rich alluvial soil, where also Kephisos mingles his waters with the soil, and where there is further a deep hole in the marsh; for that about the Sharp Bend and Boedrias all these conditions are found. As proof that the Kephisos has a great effect in producing the reed of good quality they have the fact that, where the river called the 'Black River' flows into the marsh, though the marsh is there deep and the bottom of good alluvial soil, it either does not grow at all or at best but of poor quality. Let this suffice for an account of the growth and character of the reed used for pipes, of the manufacture, and of its distinctive features as compared with other reeds.

But these are not the only kinds of reed; there are several others with distinctive characters which are easily recognised; there is one that is of compact growth in flesh and has its joints close together;

4 γίνεσθαι add. Sch.; φασι γίνεσθαι δὲ καθ' ὄ ΟΜίΠ; so Ald., but καθ' ὄν.
6 Plin. 16. 164-167; Diosc. 1. 85.

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γόνασιν, ο̐ δὲ μανὸς καὶ ὁλιγογόνατος· καὶ ὁ μὲν κοίλος, ὅν καλοῦσι τινες συριγγήαν, οὐδὲν γὰρ ὡς εἰπεῖν ἔχει ξύλου καὶ σαρκός· ο̐ δὲ στερεὸς καὶ συμπλήρης μικροῦ. καὶ ὁ μὲν βραχύς, ο̐ δὲ εὐανείς καὶ ύψηλὸς καὶ παχύς. ο̐ δὲ λεπτὸς καὶ πολύφυλλος, ο̐ δὲ ὁλιγόφυλλος καὶ μονόφυλλος. ὦλως δὲ πολλαί τινές εἰσὶ διαφορά χατά τὰς χρείας· ἐκατός γὰρ πρὸς ἐκαστα χρήσιμος.

11 Ὅνομασί δὲ ἀλλοι ἀλλοις προσαγορεύουσιν κοινότατον δὲ πως ὁ δόναξ, ὅν καὶ λοχμωδέστατον γέ φασιν εἶναι καὶ μάλιστα φύσθαι παρὰ τοὺς ποταμοὺς καὶ τὰς λίμνας. διαφέρειν δὲ ὁμοὶς παντὸς καλάμου πολύ τόν τε ἐν τῷ ἕιροθ καὶ τῶν ἐν τοῖς ύδασι φυόμενον. ἰδιοὶ δὲ καὶ τοξικοῖς, ὅν δὴ Κρυτικὸν τινες καλοῦσιν ὁλιγογόνατος μὲν σαρκωδέστερος δὲ πάντων καὶ μάλιστα κάμψιν δεχόμενος, καὶ ὦλως ἀγεσθαι δυνάμενος ὡς ἄν θέλῃ τις θερμαίνομενος.

12 Ἐχουσί δὲ, ὡσπερ ἐπέχθη, καὶ κατὰ τὰ φύλλα μεγάλας διαφορᾶς οὐ πληθεὶ καὶ μεγέθει μόνον ἄλλα καὶ χροία, ποικίλος γὰρ ὁ Δακωνικὸς καλούμενος. ἔτι δὲ τῇ θέσει καὶ προσφύγει κάτωθεν γὰρ ἐνιὸ πλείστα φέρουσι τῶν φύλλων, αὐτὸς δὲ ὡσπερ ἐκ θάμνου πέφυκε. σχεδὸν δὲ τινές φασί καὶ τῶν λιμναίων ταύτῃ εἶναι τῇ διαφοράν, τὸ πολύφυλλον καὶ παρόμοιον ἐχειν τρόπον τινὰ τὸ φύλλον τῷ τοῦ κυπείρου καὶ
another that is of open growth, with few joints; there is the hollow reed called by some the 'tube-reed,'\(^1\) inasmuch as it has hardly any wood or flesh; there is another which is solid and almost entirely filled with substance; there is another which is short, and another which is of strong growth tall and stout; there is one which is slender and has many leaves, another which has few leaves or only one. And in general there are many differences in natural character and in usefulness, each kind being useful for some particular purpose.

Some distinguish the various kinds by different names; commonest perhaps is the pole-reed, which is said to be of very bushy habit, and to grow chiefly by rivers and lakes. And it is said that there is a wide difference in reeds in general between those that grow on dry land and those that grow in the water. Quite distinct again is the 'archer's' reed, which some call the 'Cretan': this has few joints and is fleshier than any of the others; it can also be most freely bent, and in general, when warmed, may be turned about as one pleases.

The various kinds have also, as was said, great differences in the leaves, not only in number and size, but also in colour. That called the 'Laconian' reed is parti-coloured. They also differ in the position and attachment of the leaves; some have most of their leaves low down, and the reed itself grows out of a sort of a bush. Indeed some say that this may be taken as the distinctive character of those which grow in lakes, namely, that these have many leaves, and that their foliage in a manner

\(^1\) συριγγίαν conj. Sch. from Plin. l.c., syringiam; cf. Diosc. l.c., Geop. 2. 6. 23. συρίγγι U; σύριγγι ΜV; σύριγγα Ald.H.
φλεῶ καὶ θρύνο καὶ βούτόμοιν· σκέψασθαι δὲ
dὲ τοῦτο.

13  Γένος δὲ τι καλάμου φύεται καὶ ἐπίγειον, ὁ οὖκ
ὲις ὀρθὸν ἀλλ' ἐπὶ γῆς ἀφίησι τὸν καυλόν, ὥσπερ
ἡ ἀγρωστίνη, καὶ οὕτως ποιεῖται τὴν αὐξήσιν.
ἐστι δὲ ὁ μὲν ἀρρην στερεός, καλεῖται δὲ ὑπὸ
tινον εἰλετίας... .

'Ὁ δὲ Ἰνδικὸς ἐν μεγίστῃ διαφορᾷ καὶ ὥσπερ
ἐπερον ὅλως τὸ γένος· ἔστι δὲ ὁ μὲν ἀρρην στερεός,
ὁ δὲ θήλυς κοῖλος· διαιροῦσι γὰρ καὶ τούτον τῷ
ἀρρενι καὶ θήλει. φύονται δ' ἐξ ἐνὸς πυθμένου
πολλοὺ καὶ οὐ λοχιμῶδεις· τὸ δὲ φύλλον οὐ μακροῦν ἄλλα ὁμοιον τῇ ἴτεα· τῷ δὲ μεγέθει μεγάλοι
καὶ εὐπαγεῖς, ὥστε ἀκούτιοι χρῆσθαι. φύονται
δὲ οὕτω περὶ τὸν 'Ακεσίνην ποταμόν. ἀπασ δὲ
κάλαμος εὐξώς καὶ τεμνόμενος καὶ ἐπικαιομενὸς
καλλίων βλαστάνει· ἔτι δὲ παχύρριξος καὶ πο-
λύρριξος, δ' ο καὶ δυσώλεθρος. ἡ δὲ ρίζα γονα-
τώδης, ὥσπερ ἡ τῆς ἀγρωστίδος, πλην οὐ παντὸς
ὁμοίως. άλλα περὶ μὲν καλάμων ἵκαιῶς εἰρήσθω.

XII. Κατάλοιπον δὲ εἰπεῖν ὡςάν ἐκ τοῦ γένους
τοῦτο περὶ σχοίνου· καὶ γὰρ καὶ τούτο τῶν
ἐνύδρων θετέον. ἔστι δὲ αὐτοῦ τρία εἶδη, καθάπερ
τινὲς διαιροῦσιν, ὁ τε ὃξυς καὶ ἄκραπτος, ὁ δὲ
καλοῦσιν ἄρρενα, καὶ ὁ κάρπιμος, ὁν μελαγκρανίν

1 θρύνο, a kind of grass (see Index; cf. Hom. Il. 21. 351),
conj. Sch.; θρύνο MSS. ; however Plut. Nat. Quaest. 2 gives
θρύνο along with τύφη and φλεῶ in a list of marsh plants.
2 δὲ δὲ τοῦτο conj. W.; δὲ τοῦτο UMVAld.
ENQUIRY INTO PLANTS, IV. XI. 12-XII. 1

resembles that of galangale phleos thryon\(^1\) and sedge; but this needs\(^2\) further enquiry.

There is also a kind of reed (bush-grass) which grows on land, and which is not erect, but sends out its stem over the ground, like the dog’s-tooth grass, and so makes its growth. The ‘male’ reed is solid: some call it eiletias. . . . .\(^3\)

The Indian reed (bamboo) is very distinct, and as it were a totally different kind; the ‘male’ is solid and the ‘female’ hollow (for in this kind too they distinguish a ‘male’ and a ‘female’ form); a number of reeds of this kind grow from one base and they do not form a bush; the leaf is not long, but resembles the willow leaf; these reeds are of great size and of good substance, so that they are used for javelins. They grow by the river Akesines.\(^4\) All reeds are tenacious of life, and, if cut or burnt down, grow up again more vigorously; also their roots are stout and numerous, so that the plant is hard to destroy. The root is jointed, like that of the dog’s-tooth grass, but this is not equally so in all kinds. However let this suffice for an account of reeds.

Of rushes.

XII. It remains to speak of the rush,\(^5\) as though it belonged to this class of plants, inasmuch as we must reckon this also among water plants. Of this there are three kinds\(^6\) as some distinguish, the ‘sharp’ rush, which is barren and is called the ‘male’; the ‘fruiting’ kind which we call the ‘black-

\(^1\) Sch. marks a lacuna; there is nothing to correspond to δ μεν ἄρρην.  
\(^2\) Chenab.  
\(^3\) cf. 1. 5. 3; 1. 8. 1; Plin. 21. 112-115; Diosc. 4. 52.  
\(^4\) See Index.
καλούμεν διὰ τὸ μέλανα τὸν καρπὸν ἔχειν, παχύτερος δὲ οὕτος καὶ σαρκωδέστερος: καὶ τρίτος τῶν μεγέθει καὶ τῇ παχύτητι καὶ εύσαρκίᾳ διαφέρων ὁ καλούμενος ὀλόσχοινος.

2 Ἡ μὲν οὖν μελαγκρανίς αὐτὸς τις καθ’ αὐτὸν· ὁ δ’ ὀξὺς καὶ ὀλόσχοινος ἐκ τοῦ αὐτοῦ φύονται· δ’ καὶ ἄτοπον φαίνεται, καὶ θαυμαστὸν γὰρ ἢν ἰδεῖν ὅλης κομισθείσης τῆς σχοινίας· οἱ πολλοὶ γὰρ ἴσαν ἀκαρποὶ πεφυκότες ἐκ τοῦ αὐτοῦ, κάρπιμοι δὲ ὑλίγοι. τούτο μὲν οὖν ἐπίςκεπτέον. ἐλάττους δὲ ὠλος οἱ κάρπιμοι· πρὸς γὰρ τὰ πλέγματα χρησιμώτερος ὁ ὀλόσχοινος διὰ τὸ σαρκώδες καὶ μαλακόν. κορυναὶ δ’ ὠλος ὁ κάρπιμος ἐξ αὐτοῦ τοῦ γραμμώδους ἐξοδήσας, κάπετα ἐκτίκτει καθάπερ ὁμ. πρὸς μιᾷ γὰρ ἀρχῆ γραμμώδει ἔχει τοὺς περισταχυῶδεις μίσχους, εφ’ ὅν ἀκρων παραπλαγίους τὰς τῶν ἀγγείων ἔχει στρογγυλότητας ὑποχασκούσας· ἐν τούτοις δὲ τὸ σπερμάτιον ἀκιδώδες ἐστὶ μέλαν ἐκάστῳ προσεμφέρεις.

3 τῷ τοῦ ἀστερίσκου πλὴν ἀμενήνοτερον. ρίζαν δὲ ἔχει μακρὰν καὶ παχυτέραν πολὺ τοῦ σχοίνου· αὐτὴ δ’ ἀναίνεται καθ’ ἐκαστὸν ἐνιαυτοῦ, εἴτ’ ἐτέρα πάλιν ἀπὸ τῆς κεφαλῆς τοῦ σχοίνου καθίεται· τούτο δὲ καὶ ἐν τῇ ὅψει φανερὸν ἰδεῖν τὰς μὲν αὔας τὰς δὲ χλωρᾶς καθεμένας· ἡ δὲ κεφαλὴ ὀμοίᾳ τῇ τῶν κρομμῶν καὶ τῇ τῶν γητεῖων, συμβολῆς ἀποτελοῦσαν τοῖς ἀκαμάμεσοις· ἔχειν δὲ τὸ ἀμπελόν τοῦ σχοίνου τοῦ καρποῦ τοῦ αὐτοῦ· ἐν ἑκατέρῳ Ἒλληνὶ ἀναίνεται καθ’ ἐκαστὸν ἐνιαυτοῦ· ἔχειν δὲ τῷ ἀκρωτῆρι τοῦ σχοίνου τοῦ αὐτοῦ· ἐν ἑκατέρῳ Ἒλληνὶ ἀναίνεται καθ’ ἐκαστὸν ἐνιαυτοῦ.
head' because it has black fruit; this is stouter and fleshier: and third the 'entire rush,' as it is called, which is distinguished by its size stoutness and fleshiness.

Now the 'black-head' grows by itself, but the 'sharp' rush and the 'entire' rush grow from the same stock, which seems extraordinary, and indeed it was strange to see it\(^1\) when the whole clump of rushes was brought before me; for from the same stock there were growing 'barren' rushes, which were the most numerous, and also a few 'fruiting' ones. This then is a matter for further enquiry. The 'fruiting'\(^2\) ones are in general scarcer, for\(^3\) the 'entire rush' is more useful for wicker-work because of its fleshiness and pliancy. The 'fruiting' rush in general produces a club-like\(^4\) head which swells straight from the wiry stem, and then bears egg-like bodies; for attached to a single wiry\(^5\) base it has its very spike-like\(^6\) branches all round it, and on the ends of these it has its round vessels borne laterally and gaping\(^7\); in each of these is the small seed, which is pointed and black, and like that of the Michaelmas daisy, except that it is less solid. It has a long root, which is stouter than that of the ordinary rush; this withers every year, and then another strikes down again from the 'head'\(^8\) of the plant. And it is easy to observe that some of the roots as they are let down are withered, some green. The 'head' is like that of an onion or long onion,

\(^6\) \(\text{περισταχυώδεις}\) seems an impossible word; \(\text{? \πέρι αὐτῶν τοὺς σταχυώδεις}\).

\(^7\) \(\text{ὑποχασκόυσας}\) conj. Sch.; \(\text{ἐπισαχασκόυσας}\) Ald. H.

\(^8\) i.e. the part above ground; cf. Plin. l.c. Sch. has disposed of the idea that \(\text{κεφαλή}\) is here a 'bulbous' root.
πεφυκώνα πως ἐκ πλεώνων εἰς ταύτῳ καὶ πλατείᾳ κάτωθεν ἔχουσα κελύφη ὑπέρυθρα. συμβαίνει δὴ οὖν ἰδίον ἐπὶ τῶν ρύξων εἰ αὐτοῦ καὶ τοῦ ἂνοθεν πάλιν ἡ γένεσις. τῶν μὲν οὖν σχοίνων τοιαύτη τις φύσις.

Εἰ δὲ καὶ ὁ βάτος καὶ ὁ παλίουρος ἑνύδρα πώς ἐστὶν ἡ πάρυδρα, καθάπερ ἐνιαχοῦ, φανερὰ σχεδὸν καὶ αἱ τούτων διαφορά: περὶ ἄμφοιν γὰρ εἰρηται πρότερον.

[Τῶν δὲ νήσων τῶν πλοάδων τῶν ἐν Ὁρχομενῷ τὰ μὲν μεγέθη παντοδαπὰ τυχάνει, τὰ δὲ μέγιστα αὐτῶν ἐστὶν ὅσων τριῶν στάδιων τήν περίμετρον. ἐν Αἰγυπτῷ δὲ μάλιστα μεγάλα σφόδρα συνίσταται, ὡστε καὶ ὡς ἐν αὐταῖς ἐγγίνεσθαι πολλοὺς, οὕς καὶ κυνηγητούσι διαβαίνοντες.] καὶ περὶ μὲν ἑνύδρων ταύτ᾽ εἰρήσθω.

XIII. Περὶ δὲ βραχυβιότητος φυτῶν καὶ δενδρῶν τῶν ἑνύδρων ἐπὶ τοσοῦτον ἔχομεν ός ἄν καθ᾽ ὅλου λέγοντες, ὅτι βραχυβιώτερα τῶν χερσαίων ἐστὶ, καθάπερ καὶ τὰ ξώα. τοὺς δὲ καθ᾽ ἐκαστὸν βίους ἰστορήσαι δεῖ τῶν χερσαίων. τὰ μὲν οὖν ἀγριὰ φασιν οὐδεμιάν ἔχειν ός εἰπεῖν οἱ ὀρεστύποι διαφόραν, ἀλλὰ πάντα εἶναι μακρόβια καὶ οὐθέν βραχύβιον ἀυτὸ μὲν τούτο ἵσως ἀληθὲς λέγοντες. ἀπαντὰ γὰρ ὑπερτεῖνε πολὺ τὴν τῶν ἀλλῶν ξωήν. οὐ μὴν ἀλλ᾽ ὅμως ἐστὶ τὰ μὲν μᾶλλον τὰ δ᾽ ἦττον μακρόβια, καθάπερ ἐν τοῖς ἠμέροις τοίς

1 3. 18. 3 and 4; 4. 8. 1.
being, as it were, made up of several united together: it is broad, and underneath it has reddish scales. Now it is a peculiar fact about the roots of this plant that they wither every year and that the fresh growth of roots comes from the part of the plant which is above ground. Such is the character of rushes.

Bramble and Christ’s thorn may be considered to some extent plants of the water or the waterside, as they are in some districts; but the distinctive characters of these plants are fairly clear, for we have spoken of both already.¹

The floating islands of Orchomenos² are of various sizes, the largest being about three furlongs in circumference. But in Egypt very large ones form, so that even a number of boars are found in them, and men go across to the islands to hunt them. Let this account of water-plants suffice.

Of the length or shortness of the life of plants, and the causes.

XIII. As to the comparative shortness of life of plants and trees of the water we may say thus much as a general account, that, like the water-animals, they are shorter-lived than those of the dry land. But we must enquire into the lives of those of the dry land severally. Now the woodmen say that the wild kinds are almost without exception long-lived, and none of them is short-lived: so far they may be speaking the truth; all such plants do live far longer than others. However, just as in the case of cultivated plants, some are longer-lived than others,

¹ cf. 4. 10. 2, to which § this note perhaps belongs.
² ὡς εἰπεῖν conj. Sch.: ὡς εἰπεῖ U; ὡς εἰπεῖ MV; ὡς ἄν εἰπον εἰπον εἰπον Ald.H.
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2. Τὴν δὲ μακροβίοτητα μαρτυροῦσιν ἐπὶ γέ τινων καὶ ἡμέρων καὶ ἄγριων καὶ αἰ παραδεδομέναι φῆμα παρὰ τῶν μυθολόγων· ἐλάλαν μὲν γὰρ λέγοντι τὴν Ἀθήνησι, φοίνικα δὲ τὸν ἐν Δήλῳ, κότινον δὲ τὸν ἐν Ὀλυμπίᾳ, ἄφ᾽ οὖν ὁ στέφανος· φηγοὺς δὲ τὰς ἐν Ἰλίῳ τὰς ἐπὶ τοῦ Ἰλίου μνῆματος· τινὲς δὲ φασὶ καὶ τὴν ἐν Δελφοῖς πλάτανον Ἀγαμέμνονα φυτεύσαι καὶ τὴν ἐν Καφὺαις τῆς Ἀρκαδίας. ταύτα μὲν οὖν ὅπως ἔχει τὰχ᾽ ἀν ἐτερος εἶν ἱστος· ὅτι δὲ ἐστὶ μεγάλη διαφορὰ τῶν δενδρῶν φανερὸν· μακρόβια μὲν γὰρ τὰ τε προειρημένα καὶ ἑτέρα πλείω· βραχύβια δὲ καὶ τὰ τοιαύτα ὀμολογουμένως, οἷον ροιὰ συκῆ μηλέα, καὶ τούτων ἡ ἱρίνη μάλλον καὶ ἡ γλυκεῖα τῆς ὁξείας, ὡσπερ τῶν ροῶν ἡ ἀπύρηνος. βραχύβια δὲ καὶ ἀμπέλων ἑνὶ γένῃ καὶ μᾶλιστα τὰ πολύκαρπα· δοκεῖ δὲ καὶ τὰ πάρυδρα βραχυβιώτερα

1 καὶ τὰ ἀντ. conj. W.; κατὰ ἀντ. UMV; τὰ ἀντ. Ald. H.
2 περικαρπίαις: cf. C. P. 1. 17. 5.

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and we must consider which these are. Cultivated plants plainly differ as to the length of their lives, but, to speak generally, wild plants are longer-lived than cultivated ones, both taken as classes, and also when one compares the wild and cultivated forms of particular plants: thus the wild olive pear and fig are longer-lived than the corresponding cultivated trees; for the wild forms of these are stronger and of closer growth, and they do not produce such well-developed fruit-pulp.

To the long-lived character of some plants, both cultivated and wild, witness is borne also by the tales handed down in mythology, as of the olive at Athens, the palm in Delos, and the wild olive at Olympia, from which the wreaths for the games are made; or again of the Valonia oaks at Ilium, planted on the tomb of Ilos. Again some say that Agamemnon planted the plane at Delphi, and the one at Kaphyai in Arcadia. Now how this is may perhaps be another story, but anyhow it is plain that there is a great difference between trees in this respect; the kinds that have been mentioned, and many others besides, are long-lived, while the following are admittedly short-lived—pomegranate fig apple: and among apples the 'spring' sort and the 'sweet' apple are shorter-lived than the 'sour' apple, even as the 'stoneless' pomegranate is shorter-lived than the other kinds. Also some kinds of vine are shorter-lived, especially those which bear much fruit; and it appears that trees which grow by water are shorter-

4 Under which Leto gave birth to Artemis and Apollo: cf. Paus. 8. 48. 3; Cic. de Leg. 1. 1.; Plin. 16. 238.
5 Its planting is ascribed to Menelaus by Paus. 8. 23. 3.
καὶ σήμεραν ταχέως, παραβλαστάνει δὲ πάλιν ἐκ τῶν αὐτῶν, ὥσπερ αἱ δάφναι καὶ αἱ μηλέαι τε καὶ αἱ ρόαι καὶ τῶν φιλύδρων τὰ πολλά· περὶ δὲν καὶ σκέψαται ἣν τις πότερα ταύτα δεῖ λέγειν ἢ ἑτέρα· καθάπερ εἰ τις τὸ στέλεχος ἀποκόψας, ὥσπερ ποιοῦσιν οἱ γεωργοὶ, πάλιν ἀναθεραπεύοι τοὺς βλαστούς, ἡ εἰ καὶ ὅλως ἐκκόψειν ἄχρι τῶν ρίζῶν καὶ ἑπικαύσειν· καὶ γάρ ταύτα ποιοῦσιν, ὅτε δὲ καὶ ἀπὸ τοῦ αὐτομάτου συμβαίνει· πότερα δὴ τοῦτο ταύτῳ δεῖ λέγειν ἢ ἑτέρου; ἡ μὲν γάρ ἄει τὰ μέρη ταῖς αὐξήσεις καὶ φθίσεις φαίνεται παραλλάσσοντα καὶ ἐτί τὰς διακαθάρσεις τὰς ὑπ' αὐτῶν, ταύτῃ μὲν ἀν δόξει ταύτον εἰναι· τί γάρ ἀν ἐπὶ τούτων ἡ ἑκείνων διαφέροι; ἡ δ' ὥσπερ οὐσία καὶ φύσις τοῦ δένδρου μάλιστ' ἀν φαίνοιτο τὸ στέλεχος, ὅταν μεταλλάττῃ τοῦτο, κἂν τὸ ὅλον ἑτερον ὑπολάβοι τις, εἰ μὴ ἀρα διὰ τὸ ἀπὸ τῶν αὐτῶν ἄρχων εἰναι ταύτῳ θεή· καίτοι πολλάκις συμβαίνει καὶ τὰς ρίζας ἑτέρας εἰναι καὶ μεταβάλλειν τῶν μὲν σηπομένων τῶν δ' ἐξ ἄρχης βλαστανουσῶν. ἐπεί, ἐὰν ἀληθῆς ἡ, ὥς γέ τινές φασί, τὰς ἀμπέλους μακρο-

1 cf. C. P. 2. 11. 5.
2 ἀναθεραπεύοι conj. W.; ἀναθεραπεύει Ald.
3 ἡ εἰ καὶ ὅλως conj. W.; ἡ εἰ καὶ καλῶς U; ἡ εἰ καὶ καλῶς MV; καὶ εἰ καλῶς Ald. H.
4 Sc. and then encourage new growth.
lived than those which live in dry places: this is true of willow, abele, elder and black poplar.

Some trees, though they grow old and decay quickly, shoot up again from the same stock, as bay apple, pomegranate and most of the water-loving trees. About these one might enquire whether one should call the new growth the same tree or a new one; to take a similar case, if, after cutting down the trunk, one should, as the husbandmen do, encourage\(^\text{2}\) the new shoots to grow again, or if\(^\text{3}\) one should cut the tree right down to the roots and burn the stump,\(^\text{4}\) (for these things are commonly done, and they also sometimes occur naturally); are we then here too, to call the new growth the same tree, or another one? In so far as it is always the parts of the tree which appear to alternate their periods of growth and decay and also the prunings which they themselves thus make, so far the new and the old growth might seem to be the same tree; for what difference can there be in the one as compared with the other?\(^\text{5}\) On the other hand, in so far as the trunk would seem to be above all the essential part of the tree, which gives it its special character, when this changes, one might suppose that the whole tree becomes something different—unless indeed one should lay down that to have the same starting-point constitutes identity; whereas it often\(^\text{6}\) happens that the roots too are different and undergo a change, since some decay and others grow afresh.\(^\text{7}\) For if it be true, as some assert, that the reason why the vine is the longest

\(^5\) \text{i.e. how can the substitution of one set of 'parts' for another destroy the identity of the tree as a whole?}

\(^6\) \text{τολαλάκις conj. Sch. from G; πολλὰ καὶ Ald.H.}

\(^7\) \text{And so the 'starting-point' too is not constant.}
biωτάτας εἶναι τῷ μή φύειν ἐτέρας ἀλλ' ἐξ αὐτῶν ἀεὶ συναναπληροῦσθαι, γελοῖον ἄν ὅσως δοκοὶ τοι- αύτη σύγκρισις έάν <μή> μένη τό στέλεχος· αὐτή γὰρ οἷον ὑπόθεσις καὶ φύσις δένδρων. τούτο μὲν οὖν ὅπωτερως ποτὲ λεκτέον οὐθὲν ἄν διενέγκαι πρὸς τὰ νῦν. τάχα δ' ἀν εἶη μακροβιώτατον τό πάντως δυνάμενον ἀνταρκεῖν, ὥσπερ ἡ ἔλαια καὶ τῷ στέλεχει καὶ τῇ παραβλαστήσει καὶ τῷ δυσωλέθρους ἔχειν τὰς βίζας. δοκεῖ δὲ ὁ βίος τῆς γε μιᾶς εἶναι, καθ' ὄν τό στέλεχος δεῖ τὴν ἀρχὴν τιθέντα μέτρον ἀναμετρεῖν τὸν χρόνον, μάλιστα περὶ ἑτη διακόσια. εἰ δ' ὅπερ ἐπὶ τῶν ἀμπέλων λέγουσι τινες, ὡς παραιρουμένων τῶν βίζων κατὰ μέρος δύναται διαμίνειν τὸ στέλεχος, καὶ ἡ ὅλη φύσις ὁμοὶα καὶ ὀμοιοφόρος ὄπτοσονοι χρόνου, μακροβιώτατον ἀν εἶη πάντων. φασὶ δὲ δεῖν οὐτῶς ποιεῖν ὅταν ἡδὴ δοκῇ καταφέρεσθαι· κλήματά τε ἐπιβάλλειν καὶ καρποῦσθαι τὸν ἐνιαυτόν· μετὰ δὲ ταῦτα κατασκάψαντα ἐπὶ θάτερα τῆς ἀμπέλου περικαθάραι πάσας τὰς βίζας, εἰτ' ἐμπλήσαι φρυγάνων καὶ ἐπαρμήσασθαι 6 τὴν γην' τούτῳ μὲν οὖν τῷ ἐτεί κακῶς θέρειν σφόδρα, τῷ δ' ύστερῳ βέλτιον, τῷ δὲ τρίτῳ καὶ

1 ἐξ αὐτῶν Ald., sc. τῶν βίζων; ἐκ τῶν αὐτῶν conj. W.
2 i.e. such an argument practically assumes the permanence of the trunk, which in the case of the vine can hardly be considered apart from the root. δοκοὴ τοιαύτη σύγκρισις I conj. from G; δικαιοτάτη σύγκρισις MV Ald.; δικαιοτάτη συγκρίσεις U; δοκοὴ εἶναι ἡ σύγκρισις conj. Sch.; so W. in his earlier edition; in his later editions he emends wildly.

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lived of trees, is that, instead of producing new roots, it always renews itself from the existing ones, such an illustration must surely lead to an absurd conclusion, unless we assume that the stock persists, as it must do, since it is, as it were, the fundamental and essential part of a tree. However it cannot matter much for our present purpose which account is the right one. Perhaps we may say that the longest-lived tree is that which in all ways is able to persist, as does the olive by its trunk, by its power of developing sidegrowth, and by the fact that its roots are so hard to destroy. It appears that the life of the individual olive (in regard to which one should make the trunk the essential part and standard in estimating the time), lasts for about two hundred years. But if it is true of the vine, as some say, that, if the roots are partly removed, the trunk is able to survive, and the whole character of the tree remains the same and produces like fruits for any period, however long, then the vine will be the longest-lived of all trees. They say that, when the vine seems to be deteriorating, this is what one should do:—one should encourage the growth of branches and gather the fruit that year; and after that one should dig on one side of the vine and prune away all the roots on that side, and then fill the hole with brushwood and heap up the soil. In that year, they say, the vine bears very badly, but better in the next, while in the

3 I have inserted μη, which G seems to have read.
4 αὐταρκεῖν U, cf. Ar. Eq. 540; αὐταρκεῖν Ald.
5 καθ’ ὅν τὸ στελέχος δεῖ τὴν ἀρχὴν τιθέντα I conj. ; so G; καθ’ ὅν στελέχος ἦδη τὴν ἀρχὴν τιθέντα μέτρον Ald.H.; ei δεῖ for ἦδη U; καθ’ ὅ τοῦ στελέχους δεῖ τὴν ὑγκον τιθέντα μέτρον conj. W.; καθ’ ὅν τὸ στ. ἦδη ἀρχὴν καὶ μέτρον χρη conj. Sch. cf. end of § 4.
6 Plin. 16. 241.
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tetάρτω καθίστασθαι καὶ φέρειν πολλοὺς καὶ καλοὺς, ὡστε μηδὲν διαφέρειν ἢ ὅτε ἥκμαξεν· ἐπειδὰν δὲ πάλιν ἀποπληγῇ, θάτερον μέρος παρα-
σκάπτειν καὶ θεραπεύειν ὁμοίως, καὶ οὕτως αἰεὶ διαμένειν· ποιεῖν δὲ τούτο μάλιστα δι' ἐτῶν δέκα-
δὲ ο καὶ κόπτειν οὐδέποτε τουσ τούτο ποιοῦντας,
αὕλ' ἐπὶ γενεὰς πολλὰς ταῦτα τὰ στελέχη δια-
μένειν, ὡστε μηδὲ μεμνήσθαι τουσ φυτεύσαντας·
tοῦτο μὲν οὖν ἵσως τῶν πεπειραμένων ἀκούοντα
δεῖ πιστεύειν. τὰ δὲ μακρόβια καὶ βραχύβια
diὰ τῶν εἰρημένων θεωρητέον.

XIV. Νοσήματα δὲ τοῖς μὲν ἀγρίοις οὐ φασί
ξυμβαίνειν ύστ' οὖν ἀναιροῦνται, φαύλως δὲ δια-
τίθεσθαι καὶ μάλιστα ἐπιδήλως ὅταν χαλαζοκο-
πηθῆ ἢ βλαστάνειν μέλλουτα ἢ ἀρχόμενα ἢ ἀνθοῦντα, καὶ ὅταν ἢ πνεύμα ψυχρόν ἢ θερμὸν ἐπιγένηται κατὰ τούτους τοὺς καιροὺς. ὑπὸ δὲ
tῶν οραίων χειμώνων οὔδὲ ἄν ὑπερβάλλοντες
ωσιν οὔδὲν πᾶσχειν, ἀλλὰ καὶ ξυμφέρειν πᾶσι
χειμασθῆναι: μὴ χειμασθέντα γὰρ κακοβλαστό-
2 τερὰ γίνεσθαι. τοῖς δὲ ἡμέροις ἐστὶ πλείω νοσή-
ματα, καὶ τὰ μὲν ὄσπερ κοινὰ πᾶσιν ἢ τοῖς
πλείστοις τὰ δ' ἱδια κατὰ γένη. κοινὰ δὴ τὸ τε
σκωληκοῦσθαι καὶ ἀστροβολεῖσθαι καὶ ὁ σφα-
κελισμός. ἀπαντά γὰρ ὡς εἰπεῖν καὶ σκώληκας

1 ἀποπληγῇ : ἀπολήγῃ conj. Sch.
2 Plin. 17. 216. 3 cf. C.P. 5. 8. 3.
4 κατὰ γένη conj. W.; καὶ τὰ γένη UMV; καὶ κατὰ γένη Ald.
third and fourth it becomes normal again and bears many fair clusters, so that it is quite as good as when it was in its prime. And when it goes off again, they say one should dig on the other side and apply the same treatment; and that so treated the tree lasts for ever; and this should be done at intervals of about ten years. And this is why those who adopt this treatment never cut down the vine, but the same stems remain for many generations, so that even those who planted the trees cannot remember doing so. However perhaps one should enquire of those who have had experience before accepting this statement. These examples may serve for considering which trees are long-lived and which short-lived.

*Of diseases and injuries done by weather conditions.*

XIV. As to diseases—they say that wild trees are not liable to diseases which destroy them, but that they get into poor condition, and that most obviously when they are smitten with hail when either they are about to bud or are just budding or are in bloom; also when either a cold or a hot wind comes at such seasons: but that from seasonable storms, even if they be violent, they take no hurt, but rather that it is good for them all to be exposed to weather: for, unless they are, they do not grow so well. Cultivated kinds however, they say, are subject to various diseases, some of which are, one may say, common to all or to most, while others are special to particular kinds. General diseases are those of being worm-eaten, of being sun-scorched, and rot. All trees, it may be said,
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ισχει πλὴν τα μὲν ἐλάττους τα δὲ πλείους, καθάπερ συκῆ μηλέα καὶ ἄπιος. ὡς δὲ ἀπλῶς εἰπτεῖν ἥκιστα σκωληκοῦνται τα δρμία καὶ ὀπώδη, καὶ ἀστροβολεῖται ὁσαύτως· μᾶλλον δὲ τοῖς νέοις ἡ τοῖς ἐν ἀκμῇ τούτῳ συμβαίνει, πάντων δὲ μάλιστα τῇ τε συκῆ καὶ τῇ ἀμπήλῳ.

3 Ἡ δ’ ἑλάα πρὸς τῷ τοὺς σκωληκας ἵσχεων, οἳ δὴ καὶ τὴν συκῆν διαφθείροντις ὑντικτοντες, φύει καὶ ἤλον· οἳ δὲ μῦκητα καλοῦσιν, ἐνιοὶ δὲ λοπάδα· τούτο δ’ ἐστὶν οἶνον ἡλίου καυσίς. διαφθείρονται δ’ ἐνίοτε καὶ αἱ νέαι ἑλάες διὰ τὴν ὑπερβολὴν τῆς πολυκαρπίας. ἡ δὲ ψωρὰ καὶ οἱ προσφυόμενοι κοχλίαι συκῆς εἰσιν’ οὐ πανταχοῦ δὲ τούτῳ συμβαίνει ταῖς συκαῖς, ἄλλ’ ἐοικε καὶ τὰ νοσήματα γίνεσθαι κατὰ τοὺς τόπους, ὡσπερ τοῖς ξώοις· ἐπεὶ παρ’ ἐνίοις οὐ ψωριῶσι, καθάπερ οὐδὲ περὶ τὴν Αἰνείαν.

4 Ἀλίσκεται δὲ συκῆ μάλιστα καὶ σφακελισμῷ καὶ κράδῳ. καλεῖται δὲ σφακελισμός μὲν ὅταν αἱ ρίζαι μελανθῶσι, κράδοις δ’ ὅταν οἱ κλάδοι καὶ γαρ καλοῦσιν τινες κράδους, οἶχεν καὶ τοῦνομα τῇ νόσῳ· ο δ’ ἐρινεως οὔτε κραδά οὔτε σφακελίζει οὔτε ψωρὰ οὔτε σκωληκοῦται ταῖς ρίζαις ὀμοίως· οὐδὲ δὴ τὰ ἑρινὰ τινες ἀποβάλλουσιν οὔτ’ ἐὰν ἐμφυτευθῶσιν εἰς συκῆν.

1 ὀπώδη UMVAld.; εὐώδη H., evidently from Plin. 17. 221. cf. C.P. 5. 9. 4 and 5.
2 λοπάδα: Plin. 17. 223, patella. The ἤλος is an abortive bud, called in Italian novolo.
3 ἤλοια καυσίς conj. Scal. from Plin. l.c. veluti solis exustio: so also G; ἤλοιαυτῶν U; ἤλοι αὐτῶν V; ἤλοι αὐτῶν M; ἤλοι αὐτῶν Ald. which W. prints provisionally.

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have worms, but some less, as fig and apple, some more, as pear. Speaking generally, those least liable to be worm-eaten are those which have a bitter acrid\(^1\) juice, and these are also less liable to sun-scorch. Moreover this occurs more commonly in young trees than in those which have come to their strength, and most of all it occurs in the fig and the vine.

The olive, in addition to having worms (which destroy the fig too by breeding in it), produces also a 'knot' (which some call a fungus, others a bark-blist\(^2\)), and it resembles the effect of sun-scorch.\(^3\) Also sometimes young olives are destroyed by excessive fruitfulness. The fig is also liable to scab, and to snails which cling to it. However this does not happen to figs everywhere, but it appears that, as with animals, diseases are dependent on local conditions; for in some parts, as about Aineia,\(^4\) the figs do not get scab.

The fig is also often a victim to rot and to \textit{krados}. It is called rot when the roots turn black, it is called \textit{krados} when the branches do so; for some call the branches \textit{kradoi}\(^5\) (instead of \textit{kladoi}), whence the name is transferred to the disease. The wild fig does not suffer from \textit{krados} rot or scab, nor does it get so worm-eaten in its roots\(^6\) as the cultivated tree; indeed some wild figs do not even shed their early fruit—not even if they are grafted\(^7\) into a cultivated tree.

\(^1\) Evidently a dialectic form.
\(^2\) PLd.; \textit{vuka}s W. after conj. of Sch.
\(^3\) \textit{emvut}um\(\wedge\)n conj. Sch.; \textit{evi} \textit{fut}. UMV; \textit{evia} \textit{fut}. Ald. Apparently the object of such grafting was the 'caprification' of the cultivated tree (cf. 2. 8. 3); but grafting for this purpose does not seem to be mentioned elsewhere.
5 Ἡ δὲ ψώρα μάλιστα γίνεται όταν ύδωρ ἐπὶ Πλειάδει γένηται μὴ πολύ· εὰν δὲ πολύ, ἀποκλύζεται· συμβαίνει δὲ τότε καὶ τὰ ἐρινὰ ἀπορρεῖν καὶ τοὺς ολύνθους. τῶν δὲ σκωλήκων τῶν ἐν ταῖς συκαῖς οἱ μὲν ἕξ αὐτῆς γίνονται οἱ δὲ ἐντίκτονται ὑπὸ τοῦ καλουμένου κεράστου· πάντες δὲ εἰς κεράστην ἀποκαθίστανται· φθέγγονται δὲ οἶνον τριγμόν. νοσεῖ δὲ συκῆ καὶ ἐὰν ἐπομβρία γένηται· τά τε γὰρ πρὸς τὴν ρίζαν καὶ αὐτῇ ἡ ρίζα ὤσπερ μαδὰ· τούτῳ δὲ καλοῦσι λοσᾶν.

6 ἢ δ’ ἀμπελος τραγᾶ· τούτῳ δὲ μάλιστα αὐτῆς ἐστὶ πρὸς τῷ ἀστροβολεῖσθαι, ἢ ὅταν ὑπὸ πνευμάτων βλαστοκοπηθῆ ἢ ὅταν τῇ ἐργασίᾳ συμπᾶθη ἢ τρίτου ὑπτία τμῆθη.

Ῥυαὶ δὲ γίνεται, δ’ καλοῦσι τινες ψίνεσθαι, ὅταν ἐπινυφῆς κατὰ τὴν ἀπάνθησιν ἢ ὅταν κρειττωθῇ· τὸ δὲ πάθος ἐστὶν ὡστε ἀπορρεῖν τὰς ρῶγας καὶ τὰς ἐπιμενοῦσας εἶναι μικρᾶς. ἔνια δὲ καὶ ρυγώσαντα νοσεῖ, καθάπερ ἢ ἀμπελος· ἀμβλούνται γὰρ οἱ ὀφθαλμοὶ τῆς πρωτοτόμου· καὶ πάλιν ὑπερθερμανθέντα· ξητεῖ γὰρ καὶ τούτων τὴν συμμετρίαν ὤσπερ καὶ τῆς τροφῆς. ὀλως δὲ πάν τὸ παρὰ φύσιν ἐπικάνδυνον.

1 cf. C.P. 5. 9. 10; Col. 5. 9. 15.
2 cf. 5. 4. 5; C.P. 5. 10. 5; Plin. 17. 221.
3 αὐτὴ ἢ ῥίζα I conj.; αὐτὴν τὴν ῥίζαν U; om. Ald.
4 cf. C.P. 5. 9. 12; Plin. 17. 225.
5 i.e. shedding of the ‘bark’ of the roots. λοσᾶν conj. Sch., cf. C.P. 5. 9. 9; λοσᾶδα Ald.H., cf. 4. 14. 3; but the word here points to a different disease.
6 ὑπτία τομῆ seems to be a technical term for pruning in such a way that the growth of the new wood is encouraged.
Scab\(^1\) chiefly occurs when there is not much rain after the rising of the Pleiad; if rain is abundant, the scab is washed off, and at such times it comes to pass that both the spring and the winter figs drop off. Of the worms found in fig-trees some have their origin in the tree, some are produced in it by the creature called the ‘horned worm’; but they all turn into the ‘horned worm’;\(^2\) and they make a shrill noise. The fig also becomes diseased if there is heavy rain; for then the parts towards the root and the root itself\(^3\) become, as it were, sodden,\(^4\) and this they call ‘bark-shedding.’\(^5\) The vine suffers from over-luxuriance; this, as well as sun-scorch, specially happens to it either when the young shoots are cut by winds, or when it has suffered from bad cultivation, or, thirdly, when it has been pruned upwards.\(^6\)

The vine becomes a ‘shedder,’\(^7\) a condition which some call ‘casting of the fruit,’ if the tree is snowed upon at the time when the blossom falls, or else when it becomes over lusty;\(^8\) what happens is that the unripe grapes drop off, and those that remain on the tree are small. Some trees also contract disease from frost, for instance the vine; for then the eyes of the vine that was pruned early become abortive; and this also happens from excessive heat, for the vine seeks regularity in these conditions too, as in its nourishment. And in general anything is dangerous which is contrary to the normal course of things.

and so there is less fruit: exact sense obscure; ? ‘from below’ (i.e. with the blade of the knife pointing upwards). cf. C.P. l.c.; Col. 4. 24. 15; Plin. l.c., in supinum excisis.

\(^7\) cf. C.P. 5. 9. 13.

\(^8\) κρείττωθη: i.e. the growth is over-luxuriant. The word occurs elsewhere only in the parallel passage C.P. l.c., where occurs also the subst. κρείττωσις, evidently a technical term.
7 Μεγάλα δὲ ξυμβάλλεται καὶ τὰ τραύματα καὶ αἱ πληγαὶ τῶν περισκαπτόντων εἰς τὸ μὴ φέρειν τὰς μεταβολάς ἢ καυμάτων ἢ χειμώνων· ἀσθενεῖς γὰρ ὃν διὰ τὴν ἐλκωσιν καὶ τὸν πόνον εὐχειρωτάτων ἐστὶ ταῖς ὑπερβολαῖς. σχεδὸν δὲ, ὡς τινες οἶνονται, τὰ πλείστα τῶν νοσημάτων ἀπὸ πληγῆς γίνεται· καὶ γὰρ τὰ ἀστρόβλητα καλούμενα καὶ τὰ σφακεῖζοντα διὰ τὸ ἀπὸ ταύτης εἶναι τῶν ὀιζῶν τὸν πόνον. οἶνονται δὲ καὶ δύο ταύτας εἶναι μόνας νόσους· οὐ μὴν ἀλλὰ τοῦτό γ' οὐκ ἀγαν ὁμολογούμενον ἐστι.

[Πάντων δ' ἀσθενεστάτων ἡ μηλέα ἡ ἱρινή καὶ τούτων ἡ γλυκεία.]

8 "Ἐνιαὶ δὲ πηρώσεις οὐκ εἰς φθορὰν γίνονται ὅλων ἄλλες εἰς ἀκαρπίαν· οἶνον εάν τις τῆς πίτυος ὀφέλη τὸ ἀκρον ἢ τοῦ φοίνικος, ἀκαρπα γίνεσθαι ἀμφότεροι, καὶ οὐχ ὅλως ἀναιρεῖσθαι.

Γίνονται δὲ νόσοι καὶ τῶν καρπῶν αὐτῶν, εάν μὴ κατὰ καιρὸν τὰ πνεῦμα καὶ τά οὐράνια γένηται· συμβαίνει γὰρ ότε μὲν ἀποβάλλειν γενομένων ἢ μὴ γενομένων ὑδάτων, οἶνον τὰς συκᾶς, ὀτὲ δὲ χείρονος γίνεσθαι σηπομένους καὶ καταπυγομένους ἢ τάλιν ἀναξηραινομένους παρὰ τὸ δέον· χείριστον δὲ εάν ἀπανθοῦσι τισιν ἐφύσῃ, καθάπερ έλαία καὶ ἀμπέλω· συναπορεῖ γὰρ ὁ καρπὸς δι' ἀσθένειαν.

1 Plin. 17. 227.
2 εὐχειρωτάτων conj. W. after Lobeck; εὐχειρώτατον Ald.
3 πόνον conj. H. from G; τόπον UV Ald.
4 This sentence is clearly out of place: the plural τοῦτων has nothing to refer to. cf. 4. 13. 2. It is represented however by Plin. l.c.
Moreover the wounds and blows inflicted by men who dig about the vines render them less able to bear the alternations of heat and cold; for then the tree is weak owing to the wounding and to the strain put upon it, and falls an easy prey to excess of heat and cold. Indeed, as some think, most diseases may be said to be due to a blow; for that even the diseases known as 'sun-scorch' and 'rot' occur because the roots have suffered in this way. In fact they think that there are only these two diseases; but there is not general agreement on this point.

The 'spring apple' and especially the sweet form of it, has the weakest constitution.

Some mutilations however do not cause destruction of the whole tree, but only produce barrenness; for instance, if one takes away the top of the Aleppo pine or the date-palm, the tree in both cases appears to become barren, but not to be altogether destroyed.

There are also diseases of the fruits themselves, which occur if the winds and rains do not come in due season. For it comes to pass that sometimes trees, figs, for example, shed their fruit when rain does or does not come, and sometimes the fruit is spoilt by being rotted and so choked off, or again by being unduly dried up. It is worst of all for some trees, as olive and vine, if rain falls on them as they are dropping their blossom; for then the fruit, having no strength, drops also.

1 Plin. 17. 228 and 229.
3 cf. C.P. 5. 10. 5.
4 ἅκῳν add. Sch.
5 cf. C.P. l.c.
6 τινὼν conj. Sch. from G and Plin. l.c.; ἅπανθοῦσι Ald.H.
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9 'Εν Μιλήτω δὲ τὰς ἐλάς, ὅταν ὀσι περὶ τὸ ἀνθεὶν, κάμπταν κατεσθίονσιν, αἱ μὲν τὰ φύλλα αἱ δὲ τὰ ἀνθῆ, ἐτεραὶ τῷ γένει, καὶ ψιλοῦσι τὰ δένδρα· γίνονται δὲ ἐὰν ἥ νοτία καὶ εὔδεινα· ἐὰν δὲ ἐπιλάβη καύματα ῥήγυνναι.

Περὶ δὲ Τάραντα προφαίνουσι μὲν ἂεὶ πολὺν καρπὸν, ὑπὸ δὲ τὴν ἀπάνθησιν τὰ πολλ' ἀπόλλυται. τὰ μὲν οὖν τοιαῦτα τῶν τόπων ἰδια.

10 Γίνεται δὲ καὶ ἀλλο νόσημα περὶ τὰς ἐλάς ἀράχνιοι καλούμενοι· φύτευται γὰρ τοῦτο καὶ διαφθείρει τὸν καρπὸν. ἐπικάει δὲ καὶ καύματα τῶν καὶ ἐλάς καὶ βότρυν καὶ ἄλλους καρποὺς. οἱ δὲ καρποὶ σκωληκοῦνται τινων, ὅλοιν ἐλάς ἀπίστως μηλέας μεστὶν ῥόας. καὶ ὡς τῆς ἐλᾶς σκάλπης ἐὰν μὲν ὑπὸ τὸ δέρμα γένηται διαφθείρει τὸν καρπὸν, ἐὰν δὲ τὸν πυρῆνα διαφάγῃ ὥφελει. κωλύονται δὲ ὑπὸ τῶν ἀμματίων εἶναι ὑδάτως ἐπ᾽ Ἀρκτούρῳ γενομένου. γίνονται δὲ καὶ ἐν ταῖς δρυπτεπέσι σκώληκος, αὕτερ καὶ χείρους εἰς τὴν ῥύσιν ὅλως δὲ καὶ δοκοῦσιν εἶναι σαπραί· δι᾽ ὃ καὶ γίνονται τοῖς νοτίοις καὶ μᾶλλον ἐν τοῖς ἐφύδροις. ἐγγίνονται δὲ καὶ κνίττες ἐν τισὶ τῶν δένδρων, ὁσπερ ἐν τῇ δρυὶ καὶ τῇ συκῇ καὶ δοκοῦσιν ἐκ τῆς ύγρότητος συνίστασθαι τῆς ὑπὸ τὸν φλοίον συνισταμένης· αὕτη δὲ ἐστὶ γλυκεῖα γευσμένοις. γίνονται δὲ καὶ ἐν λαχάνοις τισίν,
In Miletus the vines at the time of flowering are eaten by caterpillars, some of which devour the flowers, others, a different kind, the leaves; and they strip the tree; these appear if there is a south wind and sunny weather; if the heat overtakes them, the trees split.

About Taras the olives always shew much fruit, but most of it perishes at the time when the blossom falls. Such are the drawbacks special to particular regions.

There is also another disease incident to the olive, which is called cobweb; for this forms on the tree and destroys the fruit. Certain hot winds also scorch both olive vine-cluster and other fruits. And the fruits of some get worm-eaten, as olive pear apple medlar pomegranate. Now the worm which infests the olive, if it appears below the skin, destroys the fruit; but if it devours the stone it is beneficial. And it is prevented from appearing under the skin if there is rain after the rising of Arcturus. Worms also occur in the fruit which ripens on the tree, and these are more harmful as affecting the yield of oil. Indeed these worms seem to be altogether rotten; wherefore they appear when there is a south wind and particularly in damp places. The knips also occurs in certain trees, as the oak and fig, and it appears that it forms from the moisture which collects under the bark, which is sweet to the taste. Worms also occur in some

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11 Καὶ τὰ μὲν νοσήματα σχεδὸν ταῦτα καὶ ἐν τούτοις ἐστίν. ἐνιαὶ δὲ πάθη τῶν κατὰ τὰς ὥρας καὶ τῶν κατὰ τοὺς τόπους γινομένων ἀναίρειν πέφυκεν, ἃ οὐκ ἂν τις εἴποι νόσους, οἷον λέγω τὴν ἐκπηγὴν καὶ ὁ καλοῦσι τινὲς καυθμόν. ἀλλὰ δὲ παρ’ ἑκάστοις πέφυκε πνεύματα ἀπολλυναὶ καὶ ἀποκάειν, οἷον ἐν Χαλκίδι τῆς Εὔβοιας Ὀλυμπίας ὅταν πνεύσῃ μικρὸν πρὸ τροπῶν ἢ μετὰ τροπὰς χειμερινὰς ψυχρῶν· ἀποκάει γὰρ τὰ δένδρα καὶ οὕτως αἱ ἄγιοι καὶ ἕηρα ὡς οὐδ’ ἀν ψῆλον καὶ χρόνων πολλοῦ γένοιτ’ ἀν, δ’ ὁ καὶ καλοῦσι καυθμόν· ἐγένετο δὲ πρότερον πολλάκις ἕδη καὶ ἔπ’ Αρχίσπου δ’ ἐτῶν τετταράκοντα σφοδρὸς.

12 Ποιοῦσι δὲ μάλιστα τῶν τῶν ποτῶν οἱ κοίλοι καὶ οἱ αὐλόνες καὶ ὁσοὶ περὶ τοὺς ποταμοὺς καὶ ἀπλῶς οἱ αἵματότατοι τῶν δένδρων δὲ μάλιστα συκῆ, δεύτερον δὲ ἐλάᾳ. ἐλάᾳς δὲ μᾶλλον ὁ κοτίνος ἐπόνησεν ἵππουρότερος ὅν, ὁ καὶ θαυμαστὸν ἦν’ αἱ δὲ ἀμυγδαλία τὸ πάμπαν ἀπαθεῖς· ἀπαθεῖς δὲ καὶ αἱ μηλέαι καὶ αἱ ἀπιοί καὶ αἱ ρόις ἐγένοντο· δ’ ὁ καὶ τοῦτο ἦν θαυμαστὸν. ἀποκάεται δὲ εὔθυς ἐκ τοῦ στελέχους, καὶ ὅλως δὲ μᾶλλον καὶ πρότερον ὡς εἰτεῖν ἀπτεταὶ <τὰ ἀνω> τῶν κάτω. φανερὰ δὲ γίνεται τὰ μὲν ἄμα περὶ τὴν βλάστησιν,
pot-herbs, as also do caterpillars, though the origin of these is of course different.

Such are in general the diseases, and the plants in which they occur. Moreover there are certain affections due to season or situation which are likely to destroy the plant, but which one would not call diseases: I mean such affections as freezing and what some call ‘scorching.’ Also there are winds which blow in particular districts that are likely to destroy or scorch; for instance the ‘Olympian’ wind of Chalcis in Euboea, when it blows cold a little before or after the winter solstice; for this wind scorches up the trees and makes them more dry and withered than they would become from the sun’s heat even in a long period; wherefore its effect is called ‘scorching.’ In old times it occurred very frequently, and it recurred with great violence in the time of Archippus, after an interval of forty years.

The places which suffer most in this way are hollow places, valleys, the ground near rivers, and, in general, places which are least open to wind; the tree which suffers most is the fig, and next to that the olive. The wild olive, being stronger, suffered more than the cultivated tree, which was surprising. But the almonds were altogether unscathed, as also were the apples pears and pomegranates; wherefore this too was a surprising fact. The tree gets scorched by this wind right down to the trunk, and in general the upper are caught more and earlier than the lower parts. The effects are seen partly at the actual

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5 cf. C.P. 5. 12. 7; Plin. 17. 232 and 233.
6 κάτω UMVP; ἀνω W. after Sch.’s conj.: text probably defective; I have added τὰ ἀνω. cf. C.P. 5. 12. 5.
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... (transcribed text)

1 Plin. 17. 233.
2 ἐκπαγέντα conj. Sch.; ἐκπλαγέντα U; ἐκπληγέντα Ald.
3 ἐάν γε conj. Sch.; ἐάν δὲ U; ἐάν π. χ. δ. γε Ald.
time of budding, but in the olive, because it is evergreen, they do not appear till later; those trees therefore which have shed their leaves come to life again, but those that have not done so are completely destroyed. In some places trees have been known, after being thus scorched and after their leaves have withered, to shoot again without shedding their leaves, and the leaves have come to life again. Indeed in some places, as at Philippi, this happens several times.

1 Trees which have been frost-bitten, when they are not completely destroyed, soon shoot again, so that the vine immediately bears fruit, for instance in Thessaly. In Pontus near Panticapaeum the frost-bite occurs in two ways, either just from cold, if the season is wintry, or from long spells of frost; in either case this generally occurs in the forty days after the winter solstice. The frosts occur in fine weather, but the cold spells, which cause the frost-bite, chiefly when in fine weather the 'flakes' fall; these are like filings, but broader, and can be seen as they fall, but when they have fallen, they disappear—though in Thrace they freeze solid.

Let this suffice for consideration of the diseases, their number and nature, including the fatal effects of excessive cold and heat or of cold or hot winds. And it may well be that certain of these also affect wild trees, producing entire destruction of the tree and still more that of the fruit. Indeed we see this actually happen; for wild trees also often fail to

4 περὶ conj. Sch., cf. C.P. 5. 12. 4; μετὰ UMVAld.
5 λεπίδες conj. Scal. from G (squammulae); λεπίδες Ald. cf. Hdt. 4. 31.
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γὰρ οὖν ἐκεῖνα πολλάκις, ἀλλ' οὐχ ὁμοίως οἴμαι παρατετήρηται.

XV. Λοιπὸν δ' εἰπεῖν ὅσα παραιρομένων τινῶν μορίων ἀπόλλυται. κοινῇ μὲν δὴ πᾶσι φθορὰ τοῦ φλοιοῦ περιαιρεθέντος κύκλῳ· πάν γὰρ ως εἰπεῖν οὕτως ἀπόλλυσθαι δοκεῖ πλὴν ἀνδράχλη· καὶ αὕτη δὲ ἐὰν τις τὴν σάρκα σφόδρα πιέσῃ καὶ τὸν μέλλοντα βλαστῶν διακόψῃ· πλὴν εἰ ἄρα φελλοῦ· τούτον γάρ φασι καὶ εὐσθενεῖν μᾶλλον περιαιρομένου δῆλον ὅτι τοῦ ἔξω καὶ τοῦ κάτω πρὸς τῇ σαρκὶ, καθάπερ καὶ τῆς ἀνδράχλης. ἔπει καὶ τοῦ κεράσου περιαιρεῖται καὶ τῆς ἀμπέλου καὶ τῆς φιλύρας, ἐξ οὗ τὰ σχοινία, καὶ μαλάχχης τῶν ἑλαττῶν, ἀλλ' οὖν ὁ κύριος οὐδ' ὁ πρῶτος, ἀλλ' ὁ ἐπιπολῆς, ὅσ καὶ αὐτόματος ἐνίοτε ἀποπίπτει διὰ τὴν ὑπόφυσιν θατέρου.

2 Καὶ γὰρ φλοιορραγή ἐνια τῶν δένδρων ἐστίν, ὅσπερ καὶ ἡ ἀνδράχλη καὶ ἡ πλάτανος. ως δὲ τινὲς οὖνται, πάλιν ὑποφύεται νέος, δ' ἐξωθεν ἀποξηραίνεται καὶ βήγνυται καὶ αὐτόματος ἀποπίπτει πολλῶν, ἀλλ' οὖν ὁμοίως ἐπίδηλος. φθείρονται μὲν οὖν, ὃς οὖνται, πάντα περιαιρομένου, διαφέρει δὲ τῷ θάττον καὶ βραδύτερου καὶ

1 Plin. 17. 234; cf. C.P. 5. 15. 1.
2 cf. 1. 5. 2.
3 βλαστῶν conj. Sch. from G; καρπῶν UAld.H.
4 Plin. 17. 234–236.

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produce a good crop of fruit; but, I imagine, they have not been so well observed.

Of the effects on trees of removing bark, head, heart-wood, roots, etc.; of various causes of death.

XV. 1 Next we must mention what trees perish when certain parts are removed. All perish alike, if the bark is stripped off all round; one may say that every tree, except the andrachne,² perishes under these circumstances; and this tree does so also, if one does violence to the flesh, and so breaks off the new growth ³ which is forming. However one should perhaps except the cork-oak; for this, they say, is all the stronger if its bark is stripped off; that is, the outer bark and also that which lies below it next the flesh—as with the andrachne. For the bark is also stripped from the bird-cherry the vine and the lime (and from this the ropes are made), and, among smaller plants, from the mallow; but in these cases it is not the real nor the first bark which is taken, but that which grows above that, which even of its own accord sometimes falls off because fresh bark is forming underneath.

4 In fact some trees, as andrachne and plane, have a bark which cracks.⁵ As some think, in many cases a new bark forms ⁶ underneath, while the outer bark withers and cracks and in many cases falls off of its own accord; but the process is not so obvious as it is in the above mentioned cases. Wherefore, as they think, all trees are destroyed by stripping the bark, though the destruction is not in all cases equally

⁵ cf. C.P. 3. 18. 3. φλοιοφραγῆ ἐνια conj. Mold.; φλοιοφραγία μία UMV; φυλαφραγία μία Ald.
⁶ ὑποφύεται conj. W.; ὑποφύει Ald.H.
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μᾶλλον καὶ ἢττον. ἔνια γὰρ πλείω χρόνον δια-
μένει, καθάπερ συκῆ καὶ φίλυρα καὶ δρῦς· οἱ δὲ
cαὶ ξῆν φασὶ ταῦτα, ξῆν δὲ καὶ πτελέαν καὶ
φοίνικα· τῆς δὲ φίλυρας καὶ συμφύεσθαι τὸν
φλοίον πλὴν μικροῦ· τῶν δὲ ἄλλων οἶνον πωροῦ-
σθαι καὶ ἵδιαν τινὰ φύσιν ἕχειν. Βοηθεῖν δὲ
πειράνται διαπλάττοντες πῆλῳ καὶ περιδοῦντες
φλοίοις καὶ καλάμοις καὶ τοῖς τοιοῦτοις, ὅπως μὴ
ψύχηται μηδ' ἀποξηραῖνται. καὶ ἣδη φασὶ ποιν
ἄναφυναι, καθάπερ καὶ ἐν Ἦρακλείᾳ τῇ Ῥαχινίᾳ,
tὰς συκᾶς. δεὶ δὲ ἀμα τῇ τῆς χώρας ὄρετῇ καὶ
tῇ τοῦ ἀέρος κράσει καὶ τὰ ἐπίγειον μενεί τοιαῦτα
εἶναι· χειμώνων γὰρ ἡ καυμάτων ἐπιγειομένων
σφόδρων εὐθὺς ἀπόλλυνται· διαφέρουσι δὲ καὶ
αἱ ὦται· περὶ γὰρ τὴν βλάστησιν ἐλάτης ἡ
πεύκης, ὅτε καὶ λοπώσι, τοῦ Θαργηλίδους ἡ
Σκιρροφορίδους ἃν τις περιέλη, παραχρῆμα ἀπ-
όλλυνται. τοῦ δὲ χειμώνως πλείω χρόνον ἀντ-
έχει καὶ ἔτι μᾶλλον τὰ ἱσχυρότατα, καθάπερ πρί-
νος καὶ δρῦς· χροινιστέρα γὰρ ἡ τούτων φθορά.

dεὶ δὲ καὶ τὴν περιαίρεσιν ἔχειν τι πλάτος,
pάντων μὲν μάλιστα δὲ τῶν ἵσχυροτάτων· ἐπεὶ
ἀν τις μικρὰν παντελῶς ποιήσῃ, οὐθέν ἀτοποὺν τὸ
μὴ ἀπόλλυσθαι· καίτοι φασί γέ τινες, ἕαν ὀπ-
οσονόν, συμφθείρεσθαι πάντως· ἀλλ' ἐπὶ τῶν
ἀσθενεστέρων τούτ' εἰκός. ἐνια γὰρ καὶ μὴ
κύκλῳ περιαίρεθ' φθείρεσθαι φασίν, ἃ καὶ

1 καὶ add. W. (text defective in MSS. except U).
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rapid or complete. Some in fact, as fig lime and oak, survive for some time; indeed some say that these recover, and also the elm and date-palm, and that the bark even of the lime almost entirely closes up again, while in other trees it forms as it were a callus and acquires a peculiar new character. Men try to help the tree by plastering it with mud and tying pieces of bark reeds or something of the kind about it, so that it may not take cold nor become dried up. And they say that the bark has been known to grow again; for instance that that of the fig-trees at the Trachinian Heraclea did so. However this does not only depend on the quality of the soil and on the climate; the other circumstances which ensue must also be favourable; for, if great cold or heat ensues, the tree perishes at once. The season also makes a difference. For if one strips the bark of a silver-fir or fir at the time when the buds are shooting during Thargelion or Skirrophorion, at which season it is separable, the tree dies at once. If it is done however in winter, the tree holds out longer; and this is especially true of the strongest trees, such as kermes-oak and oak; these it takes longer to kill. However the piece stripped off must be of a certain breadth to cause the death of the tree, especially in the case of the strongest trees; for, if one does it only a little, it is not surprising that the tree should not be killed; though some indeed say that, if it is done at all, the tree certainly dies; this however is probably true only of the weaker kinds. For some, they say, if they are in bad barren

2 ἀναφύναι conj. Scal. from G; φύναι Ald.H.
3 May–June.
4 δισοσονοῦν conj. Sch. from G; ὀποσοῦν Ald.
λυπρὰν ἔχει χῶραν καὶ ἄτροφον. αὕτη μὲν ὁ, καθάπερ εἰρηται, κοινὴ φθορὰ πάντων.

XVI. “Ἡν δὲ καλοῦσιν ἐπικοπῆν τῶν δένδρων, μόνον πεύκης ἐλάτης πίτυνος φοινίκος, οἱ δὲ καὶ κέδρου καὶ κυπαρίσσου φασί. ταῦτα γὰρ, ἐὰν περιαιρεθῇ τὴν κόμην ἀνωθεν καὶ ἐπικοπῇ τὸ ἄκρον, φθείρεται πάντα καὶ οὐ βλαστάνει, καθάπερ οὐδ’ ἐπικαυθέντα ἢ πάντα ἢ ἐνια. τὰ δ’ ἀλλὰ πάντα καὶ περικαυθέντα βλαστάνει, καὶ ἐνια γε καλλώς γίνεται, καθάπερ ἢ ἐλάα. διαφθείρεται δὲ τὰ πολλὰ καὶ σχισθῇ τὸ στέλεχος: οὐδὲν γὰρ ὑπομένειν δοκεῖ πλὴν ἀμπέλου καὶ συκῆς καὶ ρόας καὶ μηλέας: ἐνια δὲ καὶ ἐλκωθῆ καὶ μεῖζον καὶ βαθύτερον ὀπόλλυται. τὰ δ’ οὐδὲν πᾶσχει, καθάπερ ἡ πεύκη δαδουργουμένη, καὶ ἐξ δὴ τὰς ρήτινας συλλέγονσιν, οἴον ἐλάτης τερμίνθου καὶ γὰρ δὴ τούτων εἰς βάθος ἡ τρώσις καὶ ἐλκωσις. καὶ γὰρ ἐξ ἀφόρων φοράδες γίνονται καὶ εξ ὀλιγοφόρων πολυφόρου.

2 Τὰ δὲ καὶ πελέκησιν ὑπομένει καὶ ὀρθὰ καὶ πεσόντα ὑπὸ πνεύματος, ὥστε πάλιν ἀνίστασθαί καὶ ζῆν καὶ βλαστάνειν, οἴον ιτέα καὶ πλάτανος. ὀπερ συννέβη καὶ ἐν Ἀντάνδρῳ καὶ ἐν Φιλίπποις· ἐκπεσοῦσιν γὰρ ὦς ἀπέκοψαν τοὺς ἀκρεμόνας καὶ ἐπελέκησαν, ἀνεφύ υύκτωρ ἡ πλάτανος κονφισθεῖσα τοῦ βάρους καὶ ἀνεβίω καὶ ὁ φλοιός περίεφυ πάλιν. παραπεπελεκημένη δ’ ἐτύγχανεν ἐκ τῶν δύο μερῶν ᾳν δὲ τὸ δένδρον μέγα μῆκος

1 Plin. 17. 236; cf. 3. 7. 2; C.P. 5. 17. 3.
2 cf. 3. 9. 5.
3 ἀνωθεν καὶ conj. W.; καὶ ἀνωθεν Ald.
4 cf. 1. 3. 3; 1. 14. 2.

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soil, die even if the bark is not stripped all round. This then, as has been said, is a universal cause of death.

XVI. 1 The process which is called topping of trees is fatal only to fir silver-fir Aleppo pine 2 and date-palm, though some add prickly cedar and cypress. These, if they are stripped of their foliage at the top 3 and the crown is cut off, perish wholly and do not shoot again, as is the case with some, if not with all, if they are burnt. But all other trees shoot again after being lopped, and some, such as the olive, 4 become all the fairer. However most trees perish if the stem is split; 5 for no tree seems able to stand this, except vine fig pomegranate and apple; and some perish even if they are wounded severely and deeply. Some however take no harm 6 from this, as the fir when it is cut for tar, and those trees from which the resins are collected, as silver-fir and terebinth; though these trees are in fact then deeply wounded and mangled. Indeed they actually become fruitful 7 instead of barren, or are made to bear plentifully instead of scantily.

Some trees again submit to being hewn both when they are standing and when they have been blown down, so that they rise up again and live and shoot, for instance the willow and the plane. 8 This was known to happen in Antandros and at Philippi; a plane in Antandros having fallen and had its boughs lopped off and the axe applied to its trunk, grew again in the night when thus relieved of the weight, and the bark grew about it again. It happened that it had been hewn two thirds of the way round; it

5 cf. C.P. 5. 16. 4; Plin. 17. 238. 6 cf. C.P. 5. 16. 2. 7 φοράδες conj. Sch.; φορίδες Ald. 8 Plin. 16. 133.
μὲν μεῖζον ἡ δεκάπτηχν, πάχος δ' ὀστε ὑπ' ῥαδίως
3 ἄν περιλαβεῖν τέτταρας ἀνδρας. ἡ δὲ ἐν Φιλίπ-
ποις ἵτεα περιεκόπτη μὲν τοὺς ἀκρεμόνας, οὐ μὴν
παρεπελεκήθη. μάντις δὲ τις ἐπεισεν αὐτοὺς
θυσίαν τε ποιεῖσθαι καὶ τηρεῖν τὸ δένδρον ὡς
σημειῶν ἀγαθὸν γεγονός. ἀνέστη δὲ καὶ ἐν
Σταγείρωι ἐν τῷ μουσείῳ λευκή τις ἐκπεσοῦσα.
4 Τῆς δὲ μήτρας ἐξαιρομένης οὐθὲν ὡς εἰπεῖν
φθείρεται δένδρον. σημειῶν δὲ ὥστι πολλὰ κοιλά
tῶν μέγεθος ἔχοντων δένδρων ἑστὶν. οἱ δὲ περὶ
Ἀρκαδίαν φασὶ μέχρι τινὸς μὲν ξῆν τὸ δένδρον,
tελέως δὲ ἐξ ἅπαντος ἐξαιρεθείσης καὶ πεύκην
φθείρεσθαι καὶ ἔλατην καὶ ἀλλο πᾶν.
5 Κοινῇ δὲ φθορᾷ πάντων καὶ αἱ βίζαι περι-
κοπῶσιν ὡς πᾶσαι ὧστε πλεῖσται καὶ μέγισται
καὶ κυριώταται τοῦ ξῆν. αὐταὶ μὲν οὖν ἐξ
ἀφαιρέσεως.
'Ἡ δ' ὑπὸ τοῦ ἐλαιοῦ προσθέσει τινὶ μάλλον ἡ
ἀφαιρέσεως: πολέμιον γὰρ δὴ καὶ τοῦτο πᾶσιν καὶ
ἐλαιον ἐπιχέουσι τοῖς ὑπολείμμασι τῶν βίζῶν.
ἰσχύει δὲ μάλλον τὸ ἐλαιον ἐν τοῖς νέοις καὶ ἅρτι
φυομένοις: ἄσθενέστερα γὰρ, δὲ ἣ καὶ ἀπτεσθαι
κωλύουσι.
Φθοραὶ δὲ καὶ ὑπὲ ἀλλήλων εἰσὶ τῷ παραι-
ρεῖσθαι τὰς τροφὰς καὶ ἐν τοῖς ἀλλοις ἐμποδίζειν.
χαλεπὸς δὲ καὶ ὁ κιττὸς παραφύομενος, χαλεπὸς
δὲ καὶ ὁ κύτισος: ἀπόλλυσι γὰρ πάνθε ὡς εἰπεῖν.

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1 τινὸς μὲν ξῆν τὸ δ. conj. W.; τινὸς ἐὰν (corrected) τοῦ δένδρου
U; τινὸς ἐξηρέθη τοῦ δ. MVAld.
2 cf. Plin. 17. 234; C.P. 5. 15. 6.
3 πᾶσιν καὶ ἐλαιον ἐπιχέουσι conj. Sch.; πᾶσιν ἐλαιον ἐπιχεύ-
ουσιν UMPAld.

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was a large tree, more than ten cubits high, and of such girth that four men could not easily have encircled it. The willow at Philippi which grew again had had its branches lopped off, but the trunk had not been hewn. A certain seer persuaded the people to offer sacrifice and take care of the tree, since what had occurred was a good omen. Also at Stageira an alele in the school gardens which had fallen got up again.

Hardly any tree is destroyed by taking out the core; a proof of which is the fact that many large trees are hollow. The people of Arcadia say that the tree under these circumstances lives for a time, but that, if the tree is entirely deprived of its core, fir or silver-fir or any other tree perishes.

All trees alike are destroyed when the roots are cut off, whether all or most of them, if those removed are the largest and the most essential to life. Such then are the causes of death which come from the removal of a part of the tree.

On the other hand the destruction which oil causes is due rather to a kind of addition than to removal; for oil is hostile to all trees, and so men pour it over what remains of the roots. However oil is more potent with young trees which are just growing; for then they are weaker; wherefore men do not allow them to be touched at that time.

Again trees may destroy one another, by robbing them of nourishment and hindering them in other ways. Again an overgrowth of ivy is dangerous, and so is tree-medick, for this destroys almost any-

\[\text{i.e. to complete the destruction of a tree. cf. Plut. Quaest. Conv. 2. 6. 2.}\]

\[\text{Plin. 17. 239 and 240.}\]

\[\text{cf. C. P. 5. 15. 4.}\]

\[\text{cf. O.P. 5. 15. 4.}\]
ἰς χυρότερον δὲ τούτου τὸ ἀλίμον τὰς ἀπόλλυσε γὰρ τῶν κύτισσων.

6 Ἔνια δὲ οὐ φθείρει μὲν χεῖρῳ δὲ ποιεῖ ταῖς δυνάμεσι τῶν χυλῶν καὶ τῶν ὁσμῶν, οἰον ἡ ῥάφανος καὶ ἡ δάφνη τὴν ἀμπελοῦν. ὀσφραίνεσθαι γὰρ φασί καὶ ἐλκεῖν. δι' ὁ καὶ ὅταν ὁ βλαστὸς πλησίον γένηται πάλιν ἀναστρέφειν καὶ ἀφορᾶν ὡς πολεμίας οὕσης τῆς ὁσμῆς. Ἀνδροκύδης δὲ καὶ παραδείγματι τούτῳ κατεχρήσατο πρὸς τήν βοήθειαν τήν ἀπὸ τῆς ῥαφάνου γενομένην πρὸς τῶν οἴνων, ὡς ἐξελαύνουσαν τὴν μέθην· φεύγειν γὰρ δὴ καὶ ξώσαν τὴν ἀμπελοῦ τῆς ὁσμῆς. αἱ μὲν οὖν φθοραὶ πῶς τε γίνονται καὶ πόσαι καὶ ποσαχῶς φανερὸν ἐκ τῶν προειρημένων.

1 ἐλκεῖ: ἐπιθ. 'draws it in'; cf. ἐλκεῖν ἄερα, μέθυ, etc.
2 cf. C. P. 2. 18. 4. δ βλαστὸς πλησίον conj. Dalec. from G; δ πλησίον βλαστός Ald. H.
thing. But halimon is more potent even than this, for it destroys tree-medick.

Again some things, though they do not cause death, enfeeble the tree as to the production of flavours and scents; thus cabbage and sweet bay have this effect on the vine. For they say that the vine scents the cabbage and is infected\(^1\) by it. Wherefore the vine-shoot,\(^2\) whenever it comes near this plant, turns back and looks away,\(^3\) as though the smell were hostile to it. Indeed Androkydes\(^4\) used this fact as an example to demonstrate the use of cabbage against wine, to expel the fumes of drunkenness for,\(^5\) said he, even when it is alive, the vine avoids the smell. It is now clear from what has been said how the death of a tree may be caused, how many are the causes of death, and in what several ways they operate.

\(^3\) àφορᾶν conj. Sch.; εὐφορεῖν U; ἀφορεῖν Ald.; avermi G; recedere Plin. l.c.; εκχωρεῖν conj. W.


\(^5\) γὰρ δὴ καὶ conj. Dalec. from G; γὰρ δὲι καὶ Ald.
Ε

I. Περὶ δὲ τῆς ὑλῆς, ποία τέ ἐστιν ἐκάστη, καὶ πόθε ὠραία τέμνεσθαι, καὶ πρὸς ποία τῶν ἔργων χρησίμη, καὶ ποία δύσεργος ἢ εὐεργος, καὶ εἰ τι ἄλλο τῆς τοιαύτης ἱστορίας ἔχεται, πειρατέον ὁμοίως εἰπεῖν.

'Ωραία δὴ τέμνεσθαι τῶν ξύλων τὰ μὲν οὖν στρογγύλα καὶ ὁσα πρὸς φλοίσμον ὅταν βλαστάνῃ τότε γὰρ εὐπεριαίρετος ὁ φλοιός, ὁ δὲ καλοῦσι λοπᾶν, διὰ τὴν ὑγρότητα τὴν ὑπογινομένην αὐτῷ. μετὰ δὲ ταῦτα δυσπεριαίρετοι καὶ τὸ ξύλον μέλαν γίνεται καὶ δυσείδες. τὰ δὲ τετράγωνα μετὰ τὸν λοπητὸν ἀφαιρεῖται γὰρ ἡ πελέκησις τὴν δυσείδειαν. ὅλως πάν πρὸς ἠσχύν ὠραιότατον οὐ μόνον πεπαυμένον τῆς βλαστήσεως ἀλλὰ ἤτι μᾶλλον ἐκπεπάναν τὸν καρπὸν. ἀλλὰ διὰ τὸν φλοίσμον ἂν ὁδοὶ οὐσίων ὠραίοις συμβαίνει γίνεσθαι τοῖς στρογγύλοις, ὥστε ἐναντίαι αἱ ὁραί κατὰ συμβεβηκός. εὐ-

1 Plin. 16. 188. 2 cf. 3. 5. 1. 3 δυσπεριαίρετος conj. Sch.; δυσπερικάθαρτος Ald.
BOOK V

OF THE TIMBER OF VARIOUS TREES AND ITS USES.

I. In like manner we must endeavour to speak of timber, saying of what nature is that of each tree, what is the right season for cutting it, which kinds are hard or easy to work, and anything else that belongs to such an enquiry.

Of the seasons of cutting.

^Now these are the right seasons for cutting timber:—for 'round' timber and that whose bark is to be stripped the time is when the tree is coming into leaf. For then the bark is easily stripped (which process they call 'peeling') because of the moisture which forms beneath it. At a later time it is hard to strip, and the timber obtained is black and uncomely. However square logs can be cut after the time of peeling, since trimming with the axe removes the uncomeliness. In general any wood is at the best season as to strength when it has not merely ceased coming into leaf, but has even ripened its fruit; however on account of the bark-stripping it comes to pass that 'round' timber is in season when it is cut before it is ripe, so that, as it happens, the seasons are here reversed. Moreover the wood

\[4\] i.e. in practice the timber is cut before the ideally proper time.
THEOPHRASTUS

χρούστερα δὲ τὰ ἑλάτινα γίνεται κατὰ τὸν πρῶτον λοπητὸν.

2 Ἐπεὶ δὲ μάλιστ' ἢ μόνον περιαιροῦσι τὸν φλοιὸν ἑλάτης πεύκης πίτυν, ταῦτα μὲν τέμνεται τοῦ ἱροῦ· τότε γὰρ ἡ βλάστησις· τὰ δὲ ἄλλα ὅτε μὲν μετὰ πυροτομίαν, ὅτε δὲ μετὰ τρυγητῶν καὶ Ἀρκτοῦρον, οἶνον ἄριστα πτελέα σφένδαμνος μελία ζυγία οξύα φίλυρα φηγός τε καὶ ὀλως οὐσα κατορύττεται· δρύς δὲ ὁψιαίτατα κατὰ χειμώνα μετὰ τὸ μετόπωρον· εἶν δὲ ὑπὸ τὸν λοπητὸν τμηθῇ, σήπτεται τάχιστα ὡς εἰπεῖν, εάν τε ἐμ- φλοιος εάν τε ἀφλοιος· καὶ μάλιστα μὲν τὰ ἐν τῷ πρῶτῳ λοπητῷ, δεύτερα δὲ τὰ ἐν τῷ δευτέρῳ, τρίτα δὲ καὶ ἥκιστα τὰ ἐν τῷ τρίτῳ· τὰ δὲ μετὰ τὴν πέτασιν τῶν καρπῶν ἅβρωτα διαμένει, κἂν ἀλόπιστα ἢ πλῆν ὑπὸ τὸν φλοιὸν ὑποδύ- μενοι σκόληκες ἐπιπολῆς ἐγγράφουσι τὸ στέλεχος, οὐς καὶ σφραγίζει χρώνται τινες· ὥραιον δὲ τμη- θεῖν τὸ δρύινον ἁσάπες τε καὶ ἀθριπηδεστάτου γίνεται καὶ σκληρὸν καὶ πυκνὸν ὅσπερ κέρας· πάν γὰρ ὁμοίον ἐστιν ἐγκαρδίῳ· πλῆν τὸ γε τῆς ἀλφλοίου καὶ τότε φαιλοῦν.

3 Συμβαίνει δὲ καὶ τούτῳ ὑπεναντίον, ὅταν τε κατὰ τὴν βλάστησιν τέμνωνται καὶ ὅταν μετά τοὺς καρποὺς· τότε μὲν γὰρ ἀναξηραίνεται τὰ στελέχη καὶ οὐ βλαστάνει τὰ δένδρα· μετὰ δὲ τοὺς καρποὺς παραβλαστάνει. δυστομώτερα δὲ

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1 cf. 3. 5. 1. 2 ἢ add. Sch.
3 φηγός τε conj. Scal.; πηγός τε U; πηγόσιν τε V; πηγόσιν τε MAlld.
4 κατορύττεται conj. Sch. from G; ὄροπτεται Ald. cf. 5. 4. 3; 5. 7. 5. 5 Plin. 16. 189.

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of the silver-fir is of a better colour at the time\(^1\) of the first peeling.

But since they strip the bark of\(^2\) hardly any trees except silver-fir fir and pine, these trees are cut in the spring; for then is the time of coming into leaf. Other trees are cut sometimes after wheat-harvest, sometimes after the vintage and the rising of Arcturus, as \textit{aria} (holm-oak) elm maple manna-ash \textit{zygia} beech lime Valonia oak,\(^3\) and in general all those whose timber is for underground use.\(^4\)

The oak is cut latest of all, in early winter at the end of autumn.\(^5\) If it is cut at the time of peeling, it rots almost more quickly than at any other time, whether it has the bark on or not. This is especially so if it is cut during the first peeling, less so during the second, and least during the third. What is cut after the ripening of the fruit remains untouched by worms, even if it has not peeled: however worms get in under the bark and mark the surface of the stem, and such marked pieces of wood some use as seals.\(^6\)

Oak-wood if cut in the right season does not rot and is remarkably free from worms, and its texture is hard and close like horn; for it is like the heart of a tree throughout, except that that of the kind called sea-bark oak is even at that time of poor quality.\(^7\)

Again, if the trees are cut at the time of coming into leaf, the result is the opposite of that which follows when they are cut after fruiting: for in the former case the trunks dry up and the trees do not sprout into leaf,\(^8\) whereas after the time of fruiting they sprout at the sides. At this season however

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\(^{1}\) cf. \textit{Ar. The sm.} 427: \textit{θριππήσετα σφραγίδα.}

\(^{2}\) cf. 3. 8. 5.

\(^{3}\) \textit{βλαστάνει Μ; παραβλαστάνει W. with Ald.}

\(^{4}\) cf. 3. 8. 5.

\(^{5}\) \textit{βλαστάνει Μ; παραβλαστάνει W. with Ald.}
διὰ τὴν σκληρότητα κατὰ ταύτην τὴν ὠραν. κελεύουσι δὲ καὶ δεδυκυίας τῆς σελήνης τέμνειν ὡς σκληροτέρων καὶ ἄσαπεστέρων γινομένων. ἐπεὶ δὲ αἱ πέψεις τῶν καρπῶν παραλλάττουσι, δῆλον ὅτι καὶ αἱ ἀκμαὶ πρὸς τὴν τομὴν παραλλάττουσιν ἀεὶ γὰρ ψυχαίτεραι αἱ τῶν ψυχικα-ποτέρων. δ' ὃ καὶ πειρόνται τινες ὀρίζειν καθ' ἐκάστην· οἷν πεύκην μὲν καὶ ἐλάτην ὅταν υπο-λοπώσιν· έτι δὲ ὄξυαν καὶ φίλυραν καὶ σφέν-δαμνον καὶ ζυγίαν τής ὅπωρας· δρῦν δὲ, ὡσπερ εἰρηταί, μετὰ τὸ φθινόπωρον. φασὶ δὲ τινές πεύκην ὦραίαν εἶναι τοῦ ἱροῦ, ὅταν γε ἔχῃ τὴν καλομένην κάχρυν, καὶ τὴν πίτιν ὅταν ὁ βότρυς αὐτῆς ἀνθῆ· ποία μὲν οὖν ὦραία καθ' ἐκαστὸν χρόνον οὕτω διαιροῦνται. πάντων δὲ δῆλον ὅτι βελτίω τὰ τῶν ἀκμαξόντων δένδρων ἢ τῶν νέων κομιδῆ καὶ γεγηρακότων· τὰ μὲν γὰρ ὑδατώδη, τὰ δὲ γεώδη.

Πλείστας δὲ χρείας καὶ μεγίστας ἡ ἐλάτη καὶ ἡ πεύκη παρέχονται, καὶ ταύτα κάλλιστα καὶ μέγιστα τῶν ξύλων ἐστί· διαφέρουσι δὲ ἄλληλοιν ἐν πολλοῖς· ἡ μὲν γὰρ πεύκη σαρκωδεστέρα τε καὶ ὀλιγόινος· ἡ δ' ἐλάτη καὶ πολύινος καὶ ἀσαρκος, ὡστε ἐναντίως ἐκάτερον ἔχειν τῶν μερῶν, τὰς μὲν ἰνας ἰσχυρὰς τὴν δὲ σάρκα

1 αἱ add. Sch.
2 ὑπολοπώσιν conj. Sch.; εἴ πέλειν εἰσὶ U; ὑπελεινεισιν MV; ὑπελινώσιν Ald.
3 ταύτην conj. St.; καί τὴν Ald. H.
they are harder to cut because the wood is tougher. It is also recommended to do the cutting when the moon has set, since then the wood is harder and less likely to rot. But, since the times when the fruit ripens are different for different trees, it is clear that the right moment for cutting also differs, being later for those trees which fruit later. Wherefore some try to define the time for the cutting of each tree; for instance for fir and silver-fir the time is, they say, when they begin to peel: for beech lime maple and sygía in autumn; for oak, as has been said, when autumn is past. Some however say that the fir is ripe for cutting in spring, when it has on it the thing called ‘catkin,’ and the pine when its ‘cluster’ is in bloom. Thus they distinguish which trees are ripe for cutting at various times; however it is clear that in all cases the wood is better when the tree is in its prime than when it is quite young or has grown old, the wood of quite young trees being too succulent, and that of old ones too full of mineral matter.

Of the wood of silver-fir and fir.

Silver-fir and fir are the most useful trees and in the greatest variety of ways, and their timber is the fairest and largest. Yet they differ from one another in many respects; the fir is fleshier and has few fibres, while the silver-fir has many fibres and is not fleshy, so that in respect of each component it is the reverse of the other, having stout fibres but soft

4 cf. 1. 1. 2 n.; 3. 5. 5.
5 i.e. the male inflorescence.
6 ταύτα conj. Sch. from G; avtà Ald.H.
7 cf. 3. 9. 7; Plin. 16. 184.
ΤΟΙΟΥΤΟΝ Η ὍΛΗ. δι' ὁ καὶ τὰς κόπτας ἄνωτες ἀφαιρεῖν προώνται καθ' ἑνα καὶ ὦμαλώσ. ἕνα γὰρ ὀφθαλμὸς ἀφαιρέσθω, ἰσχυρὸς ὁ κωπεῖν, ἕαυ δὲ παραλλάξωσι καὶ μὴ καταστράφωσι σῶμα, ἀσθενής: πληγῇ γὰρ ὀφθαλμὸς, ἐκεῖνος δὲ ἀφαίρεσι. ἑστὶ δὲ καὶ μακρότατον ἡ ἐλάτη καὶ ὀρθοφυστάτων. δι' ὁ καὶ τὰς κεραίας καὶ τοὺς Ἰστοὺς ἐκ ταύτης ποιούσιν. ἑστὶ δὲ καὶ τὰς φλέβας καὶ τὰς ἱνας ἐμφανεστάτας πάντων. αὐξάνεται δὲ πρῶτον εἰς μῆκος, ἀλλ' ὁ δὴ ἐφικταὶ τοῦ ἐλέον· καὶ ὦτε ὄζεις ὀφθαλμὸς ὀφθ. παραβλάστησις ὀφθ. πάχος γίνεται. μετὰ δὲ ταύτα εἰς βάθος καὶ πάχος· ὀφθαλμὸς καὶ τῶν ὄζων ἑκφύσεις καὶ παραβλάστησεις.

1 τὸ μὲν γὰρ ἐνδ. conj. St. from G; ἐνδ. γὰρ Ald.
2 cf. 3. 9. 7.
3 cf. 3. 9. 7, μοῦνον ὃ διαφανεῖς, whence it appears that the epithet refers to colour.
4 Plin. 16. 195. 6 i.e. the annual rings. cf. 1. 5. 2; 5. 5. 3.
7 καταστράφωσι conj. W.; κατὰ πάσιν UMV; κατὰ πάντα Ald.
8 cf. Plin. l.c.
9 cf. 1. 2. 1.
10 ἐμφανεστάτας conj. W.; εἰγενεστάτας Ald.
11 δὲ conj. Sch.; καὶ UAld. H.
flesh of open texture. Wherefore the timber of the one is heavy, of the other light, the one being resinous, the other without resin; wherefore also it is whiter. Moreover the fir has more branches, but those of the silver-fir are much tougher, or rather they are tougher than those of any other tree; the branches of both however are of close texture, horny, and in colour brown and like resin-glutted wood. When the branches of either tree are cut, sap streams from them for a considerable time, but especially from those of the silver-fir. Moreover the wood of the silver-fir has many layers, like an onion: there is always another beneath that which is visible, and the wood is composed of such layers throughout. Wherefore, when men are shaving this wood to make oars, they endeavour to take off the several coats one by one evenly: for, if they do this, they get a strong spar, while if they do the work irregularly and do not strip off the coats evenly, they get a weak one; for the process in this case is hacking instead of stripping. The silver-fir also gives timber of the greatest lengths and of the straightest growth; wherefore yard-arms and masts are made from it. Also the vessels and fibre are more clearly seen in it than in any other tree. At first it grows in height only, until it has reached the sunshine; and so far there is no branch nor sidegrowth nor density of habit; but after that the tree proceeds to increase in bulk and density of habit, as the outgrowing branches and sidegrowths develop.

\[\text{ENQUIRY INTO PLANTS, V. i. 5–8}\]

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9 Ταύτα μὲν οὖν ἵδια τῆς ἐλάτης, τὰ δὲ κοινὰ καὶ πεύκης καὶ ἐλάτης καὶ τῶν ἄλλων. ἔστι γὰρ ἢ μὲν τετράξοις ἢ δὲ δίξοις. καλοῦσι δὲ τετραξόους μὲν ὅσας ἐφ' ἐκάτερα τῆς ἐντεριώνης δύο κτη-
δόνες εἰςιν ἐναντίαν ἔχουσαι τὴν φύσιν· ἔπειτα καθ' ἐκατέραν τὴν κτηδόνα ποιοῦνται τὴν πελέ-
κησιν ἐναντίας τὰς πληγάς κατὰ κτηδόνα φέρον-
tες, ὅταν ἐφ' ἐκάτερα τῆς ἐντεριώνης ἢ πελέκησις ἀναστρέφῃ. τούτο γὰρ ἕξ ἀνάγκης συμβαίνει διὰ τὴν φύσιν τῶν κτηδόνων. τὰς δὲ τοιαύτας ἐλάτας καὶ πεύκας τετραξόους καλοῦσι. εἰσὶ δὲ καὶ πρὸς τὰς ἐργασίας αὐταί κάλλισται· πυκνό-
tατα γὰρ ἔχουσι τὰ ξύλα καὶ τὰς αἰγίδας αὐταί
φύουσι. αἱ δίξοι δὲ κτηδόνα μὲν ἔχουσι μιᾶν ἐφ' ἐκάτερα τῆς ἐντεριώνης, ταύτας δὲ ἐναντίας ἄλληλαις, ὅστε καὶ τὴν πελέκησιν εἶναι διπλῆν, μίαν καθ' ἐκατέραν κτηδόνα ταῖς πληγαῖς ἐναν-
tίας· ἀπαλώτατα μὲν οὖν ταύτα φασίν ἔχειν τὰ ξύλα, χειρίστα δὲ πρὸς τὰς ἐργασίας· δια-
στρέφεται γὰρ μάλιστα. μονοξόους δὲ καλοῦσι τὰς ἐχούσας μίαν μόνον κτηδόνα· τὴν δὲ πελέ-
κησιν αὐτῶν γίνεσθαι τὴν αὐτὴν ἐφ' ἐκάτερα τῆς ἐντεριώνης· φασὶ δὲ μανότατα μὲν ἔχειν τῇ
φύσι τὰ ξύλα ταύτα πρὸς δὲ τὰς διαστροφὰς ἀσφαλέστατα.

10 Διαφορὰς δὲ ἔχουσι τοῖς φλοιοῖς, καθ' ἃς γνωρίζουσιν ἵδοντες εὕθυς τὸ δένδρον πεφυκὸς

1 Plin. l.c.
2 The meaning of 'four-cleft' etc. seems to be this:

4-Cleft. 2-Cleft: 1-Cleft.

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These are the characteristics peculiar to the silver-fir. Others it shares with the fir and the other trees of this class. 1 For instance, sometimes a tree is 'four-cleft,' sometimes 'two-cleft'; it is called 'four-cleft' when on either side of the heart-wood there are two distinct and diverse lines of fissure: in that case the blows of the axe follow these lines in cases where the hewing is stopped short on either side of the heart-wood. 2 For the nature of the lines of fissure compels the hewing to take this course. Silver-firs or firs thus formed are said to be 'four-cleft.' And these are also the fairest trees for carpentry, their wood being the closest and possessing the aigis. 3 Those which are 'two-cleft' have one single line of fissure on either side of the heart-wood, and the lines of fissure do not correspond to each other, so that the hewing also is performed by cuts which follow the two lines of fissure, so as to reach the two sides of the heart-wood at different angles. Now such wood, they say, is the softest, but the worst for carpentry, as it warps most easily. Those trees which have only a single 4 continuous line of fissure are said to be 'one-cleft,' though here too the cutting is done from either side of the heart-wood: and such wood has, they say, an open 5 texture, and yet 6 it is not at all apt to warp.

There are also differences in the bark, by observation of which they can tell at once what the

1 cf. 3. 9. 3.  
2 μισαν conj. W.; μαναν δὲ P2Ald.  
3 μανάτας conj. W.; μανάτητα Ald.  
4 τὰ γιλά . . . τὰς conj. Sch.; τὰ γιλαί ταῦτα δὲ πρὸς τὰς Ald. H.  
5 Plin. 16. 195 and 196.
ποίον τί ἔστιν τῶν μὲν γὰρ εὐκτηδόνων καὶ ἀστραβῶν καὶ ὁ φλοιὸς λείος καὶ ὀρθός, τῶν δὲ ἐναυτῶν τραχύς τε καὶ διεστραμμένος ὁμοίως δὲ καὶ ἐπὶ τῶν λοιπῶν. ἀλλ' ἐστὶν τετράξοια μὲν ὀλίγα μονόξοα δὲ πλεῖω τῶν ἄλλων. ἀπασα δὲ ἡ ὕλη μεῖζων καὶ ὀρθοτέρα καὶ ἀστραβεστέρα καὶ στιφροτέρα καὶ ὠλος καλλιός καὶ πλειῶν ἡ ἐν τοῖς προσβορεῖοις, ὡσπερ καὶ πρῶτοιν ἐλέχθη καὶ αὐτοῦ τοῦ ἰδίου δὲ τὰ πρὸς βορρᾶν πυκνότερα καὶ νεανικώτερα. ὡστε δὲ ὑποπαράβορρα καὶ ἐν περὶπως, ταύτα στρέφει καὶ παραλλάττει παρὰ μικρῶν ὁ βορέας, ὡστε εἶναι παρεστραμμένην αὐτῶν τὴν μὴ τραγ καὶ οὐ κατ' ὀρθόν. ἔστι δὲ ὀλα μὲν τὰ τοιαύτα ἱσχυρὰ τιμηθέντα δὲ ἀσθενῆ διὰ τὸ πολλὰς ἔχειν παραλλαγάς. καλοῦσι δὲ οἱ τέκτονες ἐπίτομα ταύτα διὰ τὸ πρὸς τὴν χρείαν οὔτω τέμνειν. ὠλος δὲ χεῖρος τὰ ἐκ τῶν ἐφύγρων καὶ ἐυδεινῶν καὶ παλισκών καὶ συνηρεῖσκοι καὶ πρὸς τὴν τεκτονικήν χρείαν καὶ πρὸς τὴν πυρευτικήν. αἱ μὲν οὖν τοιαύται διαφορᾶν πρὸς τοὺς τόπους εἰσὶν αὐτῶν τῶν ὀμογενῶν ὡς γε ἀπλῶς εἰπεῖν.

II. Διαιροῦσι γὰρ τινὲς κατὰ τὰς χώρας, καὶ φασίν ἀρίστην μὲν εἶναι τῆς ὕλης πρὸς τὴν τεκτονικὴν χρείαν τῆς εἰς τὴν Ἐλλάδα παραγινομένης τὴν Μακεδονικῆν λεία τε γὰρ ἐστι καὶ ἀστραβής καὶ ἐχούσα θύμον. δεύτεραν δὲ τὴν Ποντικῆν, τρίτην δὲ τὴν ἀπὸ τοῦ Ἐρυδάκου,
timber of the tree is like as it stands. For if the timber has straight and not crooked lines of fissure, the bark also is smooth and regular, while if the timber has the opposite character, the bark is rough and twisted; and so too is it with other points. However few trees are 'four-cleft,' and most of those which are not are 'one-cleft.' All wood, as was said before, which grows in a position facing north, is bigger, more erect, of straighter grain, tougher, and in general fairer and more abundant. Moreover of an individual tree the wood on the northward side is closer and more vigorous. But if a tree stands sideways to the north with a draught round it, the north wind by degrees twists and contorts it, so that its core becomes twisted instead of running straight. The timber of such a tree while still in one piece is strong, but, when cut, it is weak, because the grain slants across the several pieces. Carpenters call such wood 'short lengths,' because they thus cut it up for use. Again in general wood which comes from a moist, sheltered, shady or confined position is inferior both for carpentry and for fuel. Such are the differences, generally speaking, between trees of the same kind as they are affected by situation.

Of the effects on timber of climate.

II. Some indeed make a distinction between regions and say that the best of the timber which comes into Hellas for the carpenter's purposes is the Macedonian, for it is smooth and of straight grain, and it contains resin: second best is that from Pontus, third that

4 γε conj. Sch.; δε Ald. 5 Plin. 16. 197
A river which flows into the Propontis on the Asiatic side.

Near Mount Oeta. 

A river which flows into the Propontis on the Asiatic side.
ENQUIRY INTO PLANTS, V. ii. 1–3

from the Rhyndakos,\(^1\) fourth that of the country of the Ainianes,\(^2\) worst is that of Parnassus and that of Euboea, for it is full of knots and rough and quickly rots. As to Arcadian timber the case is doubtful.

\textit{Of knots and ‘coiling’ in timber.}

The strongest wood is that which is without knots and smooth, and it is also the fairest in appearance.\(^3\) Wood becomes knotty when it has been ill nourished and has suffered severely whether from winter or some such cause; for in general a knotty habit is supposed to indicate lack of nourishment. When however, after being ill nourished, the tree recovers and becomes vigorous, the result is that the knots are absorbed\(^4\) by the growth which now covers them; for the tree, being now well fed and growing vigorously, recovers, and often the wood is smooth outside, though when split it is seen to have knots. And this is why they examine the core of wood that has been split; for, if this contains knots, the outward\(^5\) parts will also be knotty, and these knots are harder to deal with than the outer ones, and are easily recognised.

\textit{‘Coiling’ of the wood is also due to winter or ill nourishment.} Wood is said to ‘coil’ when there is in it closer twisting\(^7\) than usual, made up of an unusual number of rings: this is not quite like a knot, nor is it like the ordinary curling of the wood, which runs right through it and is uniform. ‘Coiling’ is much more troublesome and difficult to deal with than knots; it seems to correspond to the so-called

\(^1\) \textit{καταπίνεσθαι: i.e.} outward in regard to the core. \textit{καταλαμβάνεσθαι. cf. below, § 3.}

\(^2\) \textit{i.e.} outwards.

\(^3\) \textit{Plin. 16. 198.}

\(^4\) \textit{συσπυρμος} conj. Scal.; \textit{ευχρυμφος} U; \textit{ευτραφῆ} Ald. etc.

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τὰ καλούμενα κέντρα. ὅτι δ' ἡ περιφύσεις καταλαμβάνει τοὺς ὦζους φανερώτατον ἐξ αὐτῆς τῆς αἰσθήσεως, οὐ μὴν ἀλλὰ καὶ ἐκ τῶν ἄλλων τῶν ὁμοίων πολλάκις γὰρ αὐτοῦ τοῦ δένδρου μέρος τι συνελήφθη ὑπὸ θατέρου συμφυόν τε γενομένου καὶ εἶν τις ἐκγελύψας θῇ λίθον εἰς τὸ δένδρον ἢ καὶ ἄλλο τι τοιούτων, κατακρύπτεται περιληφθέν ὑπὸ τῆς περιφύσεως· ὀπερ καὶ περὶ τῶν κότινων συνεβη τῶν ἐν Μεγάροις τὸν ἐν τῇ ἁγορᾷ οὗ καὶ ἐκκοπέντος λόγιον ἦν ἄλωναι καὶ διαρπασθῆναι τὴν πόλιν· ὀπερ ἐγένετο . . . .

Δημήτριος. ἐν τούτῳ γὰρ διασχιζομένῳ κυνμίδες εὑρέθησαν καὶ ἄλλῳ ἀττα τῆς Ἀττικῆς ἐργασίας κρεμαστά, τοῦ κοτίνου οὔ ἀνετέθη τὸ πρῶτον ἐγκοιλαυθέντος. τοῦτου δ' ἐτι μικρον τὸ λοιπὸν. πολλαχοῦ δὲ καὶ ἄλλοθι γίνεται πλείονα τοιαύτα. καὶ ταύτα μέν, ὦσπερ εὑρηταί κοινὰ πλείωνων.

III. Κατὰ δὲ τὰς ἱδίας ἐκάστου φύσεις αἰ τοιαύται εἰσὶ διαφοραί, οἶον πυκνότης μανότης βαρύτης κονφότης σκληρότης μαλακότης, ὁσαύτως δὲ καὶ εἰ τις ἄλλη τοιαύτη· κοιναί δὲ ὁμοίως αὐταί καὶ τῶν ἡμέρων καὶ τῶν ἀγρίων, ὡστε περὶ πάντων λεκτέων.

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1 ὅτι δ' ἡ conj. W.; ὅτι δὴ UMV; ὅτι δὲ Ald.
2 cf. καταπίνεσθαι, above, § 2.
3 Plin. 16. 198 and 199.
4 ἐκγελύψας θῇ conj. W.; ἐκλύψας θῇ U; ἐκλυθασθῇ Ald.H.
5 Text defective.
6 i.e. the bark had grown over these. cf. Plin. l.c.
'centres' which occur in marbles. That vigorous growth covers up the knots is plain from simple observation of the fact and also from other similar instances. For often some part of the tree itself is absorbed by the rest of the tree which has grown into it; and again, if one makes a hole in a tree and puts a stone into it or some other such thing, it becomes buried, being completely enveloped by the wood which grows all round it: this happened with the wild olive in the market-place at Megara; there was an oracle that, if this were cut open, the city would be taken and plundered, which came to pass when Demetrius took it. For, when this tree was split open, there were found greaves and certain other things of Attic workmanship hanging there, the hole in the tree having been made at the place where the things were originally hung on it as offerings. Of this tree a small part still exists, and in many other places further instances have occurred. Moreover, as has been said, such occurrences happen also with various other trees.

Of differences in the texture of different woods.

III. Corresponding to the individual characters of the several trees we have the following kinds of differences in the wood:—it differs in closeness, heaviness, hardness or their opposites, and in other similar ways; and these differences are common to cultivated and wild trees. So that we may speak of all trees without distinction.

Plin. 16. 204–207.
Πυκνότατα μὲν οὖν δοκεῖ καλ βαρύτατα πῦξος εἶναι καὶ ἐβένοι. οὔτε γὰρ οὖδ' ἐπὶ τοῦ ὑδατος ταῦτ' ἐπινεῖ. καὶ ἣ μὲν πῦξος ὀλη, τῆς δὲ ἐβένου ἡ μῆτρα, ἐν ἣ καὶ ἡ τοῦ χρώματός ἐστι μελανία. τῶν δ' ἄλλων ὁ λωτός. πυκνὸν δὲ καὶ ἡ τῆς δρυὸς μῆτρα, ἢν καλοῦσι μελανδρυον καὶ ἐτι μάλλον ἡ τοῦ κυτίσου παρομοία γὰρ αὕτη δοκεῖ τῇ ἐβένῳ εἶναι.

2 Μέλαν δὲ σφόδρα καὶ πυκνὸν το τῆς τερ- μίνθου. περὶ γοῦν Συρίαν μελάντερον φασίν εἶναι τῆς ἐβένου. καὶ ἐκ τούτου γὰρ καὶ τὰς λαβάς τῶν ἐγχειριδίων ποιεῖσθαι, τορνεύεσθαι δὲ ἐξ αὐτῶν καὶ κύλικας Θηρικλείους, ὡστε μηδένα ἄν διαγνώσαι πρὸς τὰς κεραμέας. λαμ- βάνειν δὲ τὸ ἐγκάρδιον. δεῖν δὲ ἀλείφιν τὸ ἄνοικον οὔτῳ γὰρ γίνεσθαι καὶ κάλλιον καὶ μελάντερον.

Εἶναι δὲ καὶ ἄλλο τι δένδρον, ὁ ἀμα τῇ μελανία καὶ ποικιλίαν τινὰ ἔχει ὑπέρνθρον, ὡστε εἶναι τὴν ὅψιν ὡσάν ἐβένου ποικιλὴς. ποιεῖσθαι δέ ἐξ αὐτῶν καὶ κλίνας καὶ δίφρους καὶ τὰ ἄλλα τὰ σπουδαζόμενα. τὸ <δὲ> δένδρον μέγα σφόδρα καὶ καλόφυλλον εἶναι ὑμοῖον ταῖς ἀπίδοις.

3 Ταῦτα μὲν οὖν ἀμα τῇ μελανία καὶ πυκνο- τητα ἔχει. πυκνὸν δὲ καὶ ἡ σφένδαμνος καὶ ἡ ξυγία καὶ ὠλῶς πάντα τὰ οὐλα. καὶ ἡ ἐλάα δὲ καὶ ὁ κότινος, ἄλλα κραύρα. μανά δὲ τῶν μὲν ἀγρίων καὶ ἐρεσίμων τὰ ἐλάτινα μάλιστα,

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1 cf. Arist. Meteor. 4. 7 ad fin.
2 cf. 1. 6. 1. 3 cf. 3. 15. 3.
4 Probably so called from their resemblance in shape and
Box and ebony seem to have the closest and heaviest wood; for their wood does not even float on water. This applies to the box-tree as a whole, and to the core of the ebony, which contains the black pigment.\(^1\) The nettle-tree also is very close and heavy, and so is the core of the oak, which is called ‘heart of oak,’ and to a still greater degree this is true of the core of laburnum\(^2\); for this seems to resemble the ebony.

The wood of the terebinth is also very black and close-grained; at least in Syria\(^3\) they say that it is blacker than ebony, that in fact they use it for making their dagger handles; and by means of the lathe-chisel they also make of it ‘Theriklean’ cups,\(^4\) so that no one could\(^5\) distinguish these from cups made of pottery; for this purpose they use, it is said, the heart-wood, but the wood has to be oiled, for then it becomes comelier and blacker.

There is also, they say, another tree\(^6\) which, as well as the black colour, has a sort of reddish variegation, so that it looks like variegated ebony, and of it are made beds and couches and other things of superior quality. This tree is very large and has handsome leaves and is like the pear.

These trees then, as well as the black colour, have close wood; so also have maple zygia and in general all those that are of compact growth; so also have the olive and the wild olive, but their wood is brittle.\(^7\) Of wild trees which are used for roof-limbers the wood of the silver-fir is the least com-

\(^1\) ENQUIRY INTO PLANTS, V. III. I–3

\(^2\) \(\text{\textit{μηδένα άν}}\) \textit{conj. W.}; \(\text{\textit{μηδ' άν}}\) \textit{\textit{ένα Ald.}}

\(^3\) \(\text{\textit{μηδένα άν}}\) \textit{conj. W.}; \(\text{\textit{μηδ' άν}}\) \textit{\textit{ένα Ald.}}

\(^4\) \(\text{\textit{μηδένα άν}}\) \textit{conj. W.}; \(\text{\textit{μηδ' άν}}\) \textit{\textit{ένα Ald.}}

\(^5\) \(\text{\textit{μηδένα άν}}\) \textit{conj. W.}; \(\text{\textit{μηδ' άν}}\) \textit{\textit{ένα Ald.}}

\(^6\) \(\text{\textit{μηδένα άν}}\) \textit{conj. W.}; \(\text{\textit{μηδ' άν}}\) \textit{\textit{ένα Ald.}}

\(^7\) \(\text{\textit{μηδένα άν}}\) \textit{conj. W.}; \(\text{\textit{μηδ' άν}}\) \textit{\textit{ένα Ald.}}
τῶν δ' ἄλλων τά ἀκτίνα καὶ τά σύκινα καὶ τά τῆς μιλέας καὶ τά τῆς δάφνης. σκληρότατα δὲ τὰ δρῦινα καὶ τὰ ἄριστα καὶ γὰρ ὑποβρέχουσι ταύτα πρὸς τὴν τρύπησιν μαλάξεως χάριν. μαλακὰ δὲ καθ' ὅλου μὲν τὰ μανὰ καὶ χαῦνα: τῶν δὲ σαρκωδῶν μάλιστα φίλυρα. δοκεῖ δὲ καὶ θερμότατον εἶναι τούτου σημεῖον δὲ ὅτι μάλιστα ἀμβλύνει τὰ σιδήρια: τὴν γὰρ βαφὴν ἀνύησι διὰ τὴν θερμότητα.

4 Θερμὸν δὲ καὶ κιττὸς καὶ δάφνη καὶ ὀλως ἐξ ὅν τὰ πυρεῖα γίνεται. Μενέστωρ δὲ φησι καὶ συκάμινον. ψυχρότατα δὲ τὰ ἐνυδρα καὶ ύδατώδη, καὶ γλύσχρα δὲ τὰ ἵπτεινα καὶ ἀμπέλινα, δι' ὅ καὶ τὰς ἀσπίδας ἐκ τούτων ποιοῦσι: συμμύει γὰρ πληγέων: κοιφότερον δὲ τὸ τῆς ἵπτεας, μανότερον γάρ, δι' ὅ καὶ τούτῳ μᾶλλον χρώματι. τὸ δὲ τῆς πλατάνου γλύσχρότητα μὲν ἔχει, φύσει δὲ υγρότερον τούτο καὶ τὸ τῆς πτελέας. σημεῖον δὲ ἔστω, μετὰ τὴν τομὴν ὀρθῶν ὅταν σταθῇ, πολὺ ύδωρ ἀφίησι. τὸ δὲ τῆς συκαμίνου πυκνῶν ἀμα καὶ γλύσχρον.

5 Ἐστὶ δὲ καὶ ἀστραβέστατον τὸ τῆς πτελεάς, δι' ὅ καὶ τοὺς στροφεῖς τῶν θυρῶν ποιοῦσι πτελείνους: εάν γὰρ οὕτωι μένωσι, καὶ αἱ θύραι μένουσι ἀστραβεῖς, εἰ δὲ μή, διαστρέφονται: ποιοῦσι δ' αὐτοῖς ἐμπαλιν τιθέντες τὰ ἔνα τὸ τε ἀπὸ τῆς βίξις καὶ τὸ ἀπὸ τοῦ φύλλου.

1 ὑποβρέχουσι conj. Harduin from Plin. 16. 207; ἀποβρίδουσι Ald. H.; ἀποβρέχουσι mBas.
2 cf. 5. 5. 1, which, referring to this passage, hardly agrees with it as now read.
ENQUIRY INTO PLANTS, V III. 3-5

pact, and among others that of the elder fig apple and bay. The hardest woods are those of the oak zygia and aria (holm-oak); in fact men wet 1 these to soften them for boring holes. In general, woods which are of open porous texture are soft, and of those of fleshy texture the softest is the lime. The last-named seems also to be the hottest; the proof of which is that it blunts iron tools more than any other; for they lose their edge 2 by reason of its heat.

Ivy and bay are also hot woods, and so in general are those used for making fire-sticks; and Menestor 3 adds the wood of the mulberry. 4 The coldest woods are those which grow in water and are of succulent character. The wood again of willow and vine is tough; wherefore men make their shields of these woods; for they close up again after a blow; but that of the willow is lighter, since it is of less compact texture; wherefore they use this for choice. The wood of the plane is fairly tough, but it is moister in character, as also is that of the elm. A proof of this is that, if it is set upright 5 after being cut, it discharges much water. 6 The wood of the mulberry is at once of close grain and tough.

7 The wood of the elm is the least likely to warp; wherefore they make the 'hinges' 8 of doors out of elm wood; for, if these hold, the doors also keep in place; otherwise they get wrenched out of place. They make the 'hinges' by putting wood from the root above 9 and wood 'from the foliage' below, 9 thus

3 cf. 1. 2. 3 n. 4 Plin. 16. 209. 5 ὀπθᾶν ἐταν conj. W.: so G; ὀπθᾶς ἐταν MV; ἐταν ὀπθᾶ Ald. 6 cf. 5. 1. 6. 7 Plin. 16. 210. 8 Sc. an arrangement of cylindrical pivot and socket. 9 i.e. as socket and pivot respectively; cf. 5. 5. 4.

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καλοῦσι δὲ οἱ τέκτονες τὸ ἀπὸ τοῦ φύλλου τὸ ἄνω· ἐναρμοσθέντα γὰρ ἀλλήλοις ἐκάτερον κω-λύει πρὸς τὴν ὁρμὴν ἐναντίως ἔχον. εἰ δὲ ἐκεῖτο κατὰ φύσιν, οὔπερ ἡ ῥοπὴ ἐνταῦθα πάντων ἀν ἦν ἡ φορά.

Τὰς δὲ θύρας οὐκ εὐθὺς συντελοῦσιν, ἀλλὰ πῆξαντες ἐφιστᾶσι, κἀπεῖτα ύστερῳ οἱ δὲ τὸ τρίτῳ ἔτει συνετέλεσαν ἐὰν μᾶλλον σπουδάζονται τοῦ μὲν γὰρ θέρους ἀναξιραινομένων διϊστανται, τοῦ δὲ χειμῶνος συμμόσιωσιν. αὕτιον δ' ὅτι τῆς ἐλάτης τὰ μανὰ καὶ σαρκώδη ἔλκει τὸν ἄερα ἐνικοῦν ὑντα.

6 Ὅ δὲ φοίνιξ κούφος καὶ εὐεργος καὶ μαλακός, ὡσπερ ὁ φελλός, βελτίων δὲ τοῦ φελλοῦ ὡτὶ γλί-σχρος· ἐκείνῳ δὲ θραυστόν. διὰ τούτῳ τὰ εἰδωλα νῦν ἐκ τοῦ τῶν φοινίκων ποιοῦσι, τὸν δὲ φελλὸν παρῆκασι. τὰς ἱνας δὲ οὗ δι' ὅλου ἔχει οὐδ' ἐπὶ πολὺ καὶ μακρὰς οὐδ' ὤσαυτῶς τῇ θέσει ἐγκειμένας πάσας ἀλλὰ παντοδαπῶς. ἀναξιραινεῖται δὲ καὶ λεαινόμενον καὶ πριόμενον τὸ ξύλον.

7 Τὸ δὲ θύον, οἱ δὲ θύαν καλοῦσι, παρ' Ἀμμωνι τε γίνεται καὶ ἐν τῇ Κυρηναίᾳ, τὴν μὲν μορφὴν ὅμοιον κυπαρίττω καὶ τοῖς κλάδοις καὶ τοῖς φύλ- λοις καὶ τῷ στελέχει καὶ τῷ καρπῷ, μᾶλλον δ' ὡσπερ κυπάριττος ἄγριὰ· πολὺ μὲν καὶ ὅπων

1 κωλύει : Sch. adds θάτερον from G.
2 ἐκεῖον conj. W.; ἐκεῖνο Ald.
3 i.e. the 'upper' wood in the upper position.
4 πάντων MSS. (?) ; πάντως conj. W.
5 i.e. there would be no resistance. ἦν after ἦν add. Sch.
reversing the natural position: (by wood 'from the foliage' joiners mean the upper wood). For, when these are fitted the one into the other, each counter-acts the other, as they naturally tend in opposite directions: whereas, if the wood were set as it grows, all the parts would give where the strain came.

(They do not finish off the doors at once; but, when they have put them together, stand them up, and then finish them off the next year, or sometimes the next year but one, if they are doing specially good work. For in summer, as the wood dries, the work comes apart, but it closes in winter. The reason is that the open fleshy texture of the wood of the silver-fir drinks in the air, which is full of moisture.)

Palm-wood is light easily worked and soft like cork-oak, but is superior to that wood, as it is tough, while the other is brittle. Wherefore men now make their images of palm-wood and have given up the wood of cork-oak. However the fibres do not run throughout the wood, nor do they run to a good length, nor are they all set symmetrically, but run in every direction. The wood dries while it is being planed and sawn.

Thyon (thyme wood), which some call thya, grows near the temple of Zeus Ammon and in the district of Cyrene. In appearance the tree is like the cypress alike in its branches, its leaves, its stem, and its fruit; or rather it is like a wild cypress. There

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7 Of which the door itself is made.
8 Plin. 16. 211. 9 Plin. 13. 100-102.
10 κυπάριττος ἄγρα θυγ. Sch.; κυπάρισσον ἄγραν MALd.
νῦν ἡ πόλις ἐστὶ, καὶ ἐτί διαμνημονεύουσιν ὄροφάς τινας τῶν ἀρχαίων οὐσιας. ἀσαπές γὰρ ὅλως τὸ ξύλον οὐλότατον δέ τὴν ρίζαν ἔστι· καὶ ἐκ ταύτῃς τὰ σπουδαῖότατα ποιεῖται τῶν ἔργων. τὰ δὲ ἀγάλματα γλύφουσιν ἐκ τῶνδε, κέδρων κυπαρίσσιον λωτοῦ πῦξον· τὰ δὲ ἐλάττω καὶ ἐκ τῶν ἐλαιῶν ρίζῶν ἀρραγεῖς γὰρ αὐταί καὶ ὀμαλῶς πως σαρκώδεις. ταύτα μὲν οὖν ἰδιότητά τινα τόπων καὶ φύσεως καὶ χρείας ἀποδηλοῖ.

IV. Βαρέα δὲ καὶ κούφα δῆλον ὡς τῇ πυκνώτητι καὶ μανότητι καὶ ὑγρότητι καὶ ξηρότητι καὶ τῷ γλυκῶδει καὶ σκληρότητι καὶ μαλακότητι ληπτέον. ἦνια μὲν οὖν ἡμα σκληρὰ καὶ Βαρέα, καθάπερ πῦξος καὶ ὅρυς· ὅσα δὲ κραυρὰ καὶ τῇ ξηρότητι σκληρότατα, ταύτ' οὐκ ἔχει βάρος. ἄπαντα δὲ τὰ ἄγρια τῶν ἡμέρων καὶ τὰ ἄρρητα τῶν θηλείων πυκνότερα τε καὶ σκληρότερα καὶ βαρύτερα καὶ τὸ ὅλον ἱσχυρότερα, καθάπερ καὶ πρότερον εἴπομεν. ὡς δ' ἔτι τὸ πᾶν καὶ τὰ ἀκαρπότερα τῶν καρπίμων καὶ τὰ χείρω τῶν καλλικαρπότερων· εἰ μή ποιν καρπιμώτερον τὸ ἄρρητον, ὦστερ ἄλλα τέ φασι καὶ τὴν κυπάρισσον καὶ τὴν κράνειαν. ἀλλὰ τῶν δὲ ἀμφέλων φαινέτωσι δὴ ὀλυγοκαρπότεραι καὶ πυκνοφιλόμοτεραι καὶ στερεώτεραι· καὶ μηλεῶν δὲ καὶ τῶν ἄλλων ἡμέρων.
is abundance of it where now the city stands, and men can still recall that some of the roofs in ancient times were made of it. For the wood is absolutely proof against decay, and the root is of very compact texture, and they make of it the most valuable articles. Images are carved from these woods, prickly cedar cypress nettle-tree box, and the small ones also from the roots of the olive, which are unbreakable and of a more or less uniformly fleshy character. The above facts illustrate certain special features of position, natural character and use.

Of differences in timber as to hardness and heaviness.

IV. Difference in weight is clearly to be determined by closeness or openeness of texture, dampness or dryness, degree of glutinousness, hardness or softness. Now some woods are both hard and heavy, as box and oak, while those that are brittle and hardest owing to their dryness, are not heavy. ¹ All wood of wild trees, as we have said before, is closer harder heavier, and in general stronger than that of the cultivated forms, and there is the same difference between the wood of ‘male’ and of ‘female’ trees, and in general between trees which bear no fruit and those which have fruit, and between those which bear inferior fruit and those whose fruit is better; on the other hand occasionally the ‘male’ tree is the more fruitful, for instance, it is said, the cypress the cornelian cherry and others. However of vines it is clear that those which bear less fruit have also more frequent knots and are more solid,² and so too with apples and other cultivated trees.

¹ Plin. 16. 211. ² cf. C. P. 3. 11. 1.
2 Ἀσαπὴ δὲ φύσει κυπάριττος κέδρος ἐβενος λωτὸς πῦξις ἐλάα κότινος πεύκη ἐνδάδοις ἀρία δρῦς καρύα Εὐβοϊκή. τούτων δὲ χρονιώτατα δοκεῖ τὰ κυπαρίττινα εἶναι: τὰ γοῦν ἐν Ἐφέσῳ, εἴ δὲν αἱ θύραι τοῦ νεωστὶ νεό, τεθησαυρισμένα τέτταρας έκειτο γενεάς. μόνα δὲ καὶ στιλβηδόνα δέχεται, δι᾽ ὅ καὶ τὰ σπουδαζόμενα τῶν ἔργων ἐκ τούτων ποιοῦσι. τῶν δὲ ἄλλων ἁσαπέστατον μετὰ τὰ κυπαρίττινα καὶ τὰ θυώδη τὴν συκά- μινον εἶναι φασί, καὶ ἰσχυρὸν ἄμα καὶ εὐεργὸν τὸ ξύλον γίνεται δὲ τὸ ξύλον [καὶ] παλαιούμενοι μέλαν, ὡσπερ λωτὸς.


4 Δοκεῖ δὲ καὶ ἡ ὀξὺ πρὸς τὸ ὕδωρ ἁσαπῆς εἶναι καὶ βελτίων γίνεσθαι βρεχομένη. καὶ ἡ καρύα δὲ ἡ Εὐβοϊκὴ ἁσαπῆς. φασὶ δὲ καὶ τὴν πεύκην ἐλάτης μᾶλλον ὑπὸ τερηδόνων ἐσθλεσθαι τὴν μὲν γὰρ εἶναι ξηρὰν, τὴν δὲ πεύκην ἐχειν γλυκύτητα, καὶ ὅσῳ ἐνδαδωτέρα, μᾶλλον πάντα

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1 Plin. 16. 213.
2 τεθησαυρισμένα... ἐκείτο conj. Bentley; τεθησαυρισμένα... ἐκείντο Ald.H.; P has ἐκείτο
ENQUIRY INTO PLANTS, V. iv. 2–4

Of differences in the keeping quality of timber.

1 Naturally proof against decay are cypress prickly cedar ebony nettle-tree box olive wild olive resinous fir aria (holm-oak) oak sweet chestnut. Of these the wood of the cypress seems to last longest; at least the cypress-wood at Ephesus, of which the doors of the modern temple were made, lay stored up for four generations. And this is the only wood which takes a fine polish, wherefore they make of it valuable articles. Of the others the least liable to decay after the wood of the cypress and thyine-wood is, they say, that of the mulberry, which is also strong and easily worked: when it becomes old, this wood turns black like that of the nettle-tree.

3 Again whether a given wood is not liable to decay may depend on the purpose to which it is put and the conditions to which it is subjected: thus the elm does not decay if exposed to the air, nor the oak if it is buried or soaked in water; for it appears to be entirely proof against decay: wherefore they build vessels of it for use on rivers and on lakes, but in sea-water it rots, though other woods last all the better; which is natural, as they become seasoned with the brine.

4 The beech also seems to be proof against decay in water and to be improved by being soaked. The sweet chestnut under like treatment is also proof against decay. They say that the wood of the fir is more liable to be eaten by the teredon than that of the silver-fir; for that the latter is dry, while the fir has a sweet taste, and that this is more so, the more the wood is soaked with resin; they go on to

5 cf. 3. 9. 4.
δ' ἐσθίεσθαι τερηδόνι πλήν κοτίνου καὶ ἐλάσσων ὑπὸ τῆς θαλάττης σηπόμενα ὑπὸ τερηδόνως, τὰ δ' ἐν τῇ γῇ ὑπὸ σκωλήκων καὶ ὑπὸ θριπών· οὐ γαρ γίνεται τερηδόνι ἀλλ' ἦ ἐν τῇ θαλάττῃ. ἔστι δὲ ἡ τερηδῶν τῷ μὲν μεγέθει μικρὸν, κεφαλὴν δ' ἔχει 5 μεγάλην καὶ ὄδόντας· οἱ δὲ θρίπες ὀμοίοι τοῖς σκωλήξιν, ὑφ' ὑπὸ τιτραίνεται κατὰ μικρὸν τὰ ξύλα. καὶ ἔστι ταύτα εὐίστα: πιττοκοπηθέντα γὰρ ὅταν εἰς τὴν θαλατταν ἐλκυσθὴ στέγει· τὰ δὲ ὑπὸ τῶν τερηδόνων ἀνίστατα. τῶν δὲ σκωλήκων τῶν ἐν τοῖς ξύλοις οἱ μὲν εἰσὶν ἐκ τῆς οἰκείας σήψεως, οἱ δ' ἐνυικτότων ἐτέρων ἐνυκτίκτει γὰρ, ὡσπερ καὶ τοῖς δενδροῖς, οἱ κεράστης καλούμενος, ὅταν τιτράνη καὶ κοιλάνη περιστραφεῖς ὡσπερεὶ μυοδόχον. φεύγει δὲ τὰ τε ὀσμῶδη καὶ πικρὰ καὶ σκληρὰ διὰ τὸ μὴ δύνασθαι τιτράναι, καθάπερ τὴν πῦξον. φασὶ δὲ καὶ τὴν ἐλάτην φλοισθείσαν ὑπὸ τὴν βλάστησιν ἄσαπτη διαμέεναν ἐν τῷ ὑδατί· φανερὸν δὲ γενέσθαι ἐν Φενεω τῆς Ἀρκαδίας, ὅτε αὐτῶς ἐλιμνώθη τὸ πεδίον φραχθέντος τοῖς βερέθροι· τότε γὰρ τὰς γεφύρας ποιοῦντες ἐλατίνας καὶ, ὅταν ἐπαναβαίνῃ τὸ ὕδωρ, ἀλλήν καὶ ἀλλήν ἐφιστάντες, ὡς ἐρράγη καὶ ἀπῆλθε, πάντα εὑρεθήναι τὰ ξύλα ἄσαπτην. τοῦτο μὲν οὖν ἐκ συμπτώματος.

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1 Plin. 16. 220 and 221.
2 τιτραίνεται conj. Scal. from G; τιτρευεται UVo.; πεπαίνεται MV Ald.
3 cf 4. 14. 5.
4 ὡσπερ μυοδόχον conj. W.; ὡσπερ οἱ μυόχοδοι MSS.; G omits. The word μυοδόχος does not occur elsewhere as a subst.

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ENQUIRY INTO PLANTS, V. iv. 4–6

say that all woods are eaten by the *teredon* except the olive, wild or cultivated, and that these woods escape because of their bitter taste. ¹ Now woods which decay in sea-water are eaten by the *teredon*, those which decay on land by the *skolex* and *thrips*; for the *teredon* does not occur except in the sea. It is a creature small in size, but has a large head and teeth; the *thrips* resembles the *skolex*, and these creatures gradually bore through ² timber. The harm that these do is easy to remedy; for, if the wood is smeared with pitch, it does not let in water when it is dragged down into the sea; but the harm done by the *teredon* cannot be undone. Of the *skolekes* which occur in wood some come from the decay of the wood itself, some from other *skolekes* which engender therein. For these produce their young in timber, as the worm called the 'horned worm' ³ does in trees, having bored and scooped out a sort of mouse-hole ⁴ by turning round and round. But it avoids wood which has a strong smell or is bitter or hard, such as boxwood, since it is unable to bore through it. They say too that the wood of the silver-fir, if barked just before the time of budding, remains in water without decaying, and that this was clearly seen at Pheneos in Arcadia, when their plain was turned into a lake since the outlet was blocked up.⁵ For at that time they made ⁶ their bridges of this wood, and, as the water rose, they placed more and more atop of them, and, when the water burst its way through and disappeared, all the wood was found to be undecayed. This fact then became known by means of an accident.

⁵ cf. 3. 1. 2. φραχέντος conj. Sch.; βραχέντος Ald. H.
⁶ ποιούντες, ἐφιστάντες nom. pendens.
ΤΟΥΛΩ ΦΕΤΗ ΝΗΣΟ ΦΗ ΠΕΡΙ ΤΗΝ ΑΡΑΒΙΑΝ
ΕΙΝΑΙ ΤΗ ΦΑΣΙ ΞΥΛΟΝ ΕΧ ΜΕΝ ΤΗ ΘΑΛΑΣΣΗ ΣΧΕΔΟΝ ΑΣΗΠΤΟΝ
ΕΙΝΑΙ ΔΙΑΜΕΝΕΙ ΓΑΡ ΕΤΗ ΠΛΕΙΩ Η ΔΙΑΚΟΣΙΑ ΚΑΤΑ-
ΒΥΘΙΖΟΜΕΝΟΝ ΕΑΝ ΔΕ ΕΞΩ, ΧΡΟΝΙΟΝ ΜΕΝ ΘΑΤΤΟΝ ΔΕ
ΣΗΠΕΤΑΙ. (ΘΑΥΜΑΣΤΟΝ ΔΕ ΚΑΙ ΕΤΕΡΟΝ ΛΕΓΟΥΣΙ, ΟΥΔΕΝ ΔΕ ΠΡΟΣ ΤΗΝ ΣΗΨΙΝ. ΕΙΝΑΙ ΓΑΡ ΤΙ ΔΕΝΔΡΟΝ
ΕΧ ΟΥ ΤΑΣ ΒΑΚΤΕΡΙΑΣ ΤΕΜΝΕΣΘΑΙ, ΚΑΙ ΓΙΝΕΣΘΑΙ
ΚΑΛΑΣ ΣΦΟΔΡΑ ΠΟΙΚΙΛΙΑΝ ΤΙΝΑ ΕΧΟΥΣΑΣ ΟΜΟΙΑΝ ΤΟΥ
ΤΟΥ ΤΥΤΡΙΟΥ ΔΕΡΜΑΤΙ ΒΑΡΥ ΔΕ ΣΦΟΔΡΑ ΤΟ ΞΥΛΟΝ
ΤΟΥΤΟ ΟΤΑΝ ΔΕ ΤΙΣ ΡΙΨΗ ΠΡΟΣ ΣΤΕΡΕΩΤΕΡΟΝ ΤΟΠΟΥΝ,
ΚΑΤΑΓΝΥΣΘΑΙ ΚΑΘΑΠΕΡ ΤΑ ΚΕΡΑΜΙΑ.)

ΚΑΙ ΤΟΤΗΣ ΜΥΡΙΚΗΣ ΔΕ ΞΥΛΟΝ ΟΥΧ ΩΣΠΕΡ
ΕΝΤΑΘΑ ΆΣΘΕΝΕΣ, ΑΛΛ' ΙΣΧΥΡΟΝ ΩΣΠΕΡ ΠΡΩΤΙΝΟΝ Η
ΚΑΙ ΆΛΛΟ ΤΟΥΝ ΙΣΧΥΡΩΝ. ΤΟΥΤΟ ΜΕΝ ΟΥΝ ΑΜΑ
ΜΗΝΥΕΙ ΧΩΡΑΣ ΤΕ ΚΑΙ ΆΕΡΟΣ ΔΙΑΦΟΡΑΣ ΚΑΙ ΔΥΝΑΜΕΙΣ.
ΤΟΥΝ ΔΕ ΟΜΟΓΕΝΩΝ ΞΥΛΩΝ, ΟΙΝΟΝ ΔΡΥΙΝΩΝ ΠΕΝΚΙΝΩΝ,
ΟΤΑΝ ΤΑΡΙΧΕΥΟΝΤΑΙ—ΤΑΡΙΧΕΥΟΥΣΙ ΓΑΡ ΟΥΚ ΕΝ ΗΣΩ
ΒΑΘΕΙ ΠΑΝΤΑ ΔΥΟΝΤΕΣ ΤΗΣ ΘΑΛΑΣΣΗΣ, ΑΛΛΑ ΤΑ ΜΕΝ
ΠΡΟΣ ΑΥΤΗ ΤΗ ΓΥ, ΤΑ ΔΕ ΜΙΚΡΩΝ ΑΝΩΤΕΡΩ, ΤΑ Θ' ΕΝ
ΠΛΕΙΟΝ ΒΑΘΕΙ ΠΑΝΤΩΝ ΔΕ ΤΑ ΠΡΟΣ ΤΗΝ ΡΙΞΑΝ
ΘΑΤΤΟΝ ΔΥΣΚΑΙ ΚΑΘ' ΥΔΑΤΟΣ, ΚΑΝ ΕΠΙΝΗ ΜΑΛΛΟΙ
ΡΕΠΕΙ ΚΑΤΩ.

'Εστι δε τα μεν ευεργα των ξυλων, τα δε
dyserega: euerega men tα μαλακά, και πάντων

1 Plin. 16. 221; cf. 4. 7. 7.
2 Teak. See Index App. (22).
3 Calamander-wood, See Index App. (23).
In the island of Tylos off the Arabian coast they say that there is a kind of wood of which they build their ships, and that in sea-water this is almost proof against decay; for it lasts more than 200 years if it is kept under water, while, if it is kept out of water, it decays sooner, though not for some time. They also tell of another strange thing, though it has nothing to do with the question of decay: they say that there is a certain tree, of which they cut their staves, and that these are very handsome, having a variegated appearance like the tiger's skin; and that this wood is exceedingly heavy, yet when one throws it down on hard ground it breaks in pieces like pottery.

Moreover, the wood of the tamarisk is not weak there, as it is in our country, but is as strong as kermes-oak or any other strong wood. Now this illustrates also the difference in properties caused by country and climate. Moreover when wood, such as that of oak or fir, is soaked in brine—not all being soaked at the same depth in the sea, but some of it close to shore, some rather further out, and some at a still greater depth—in all cases the parts of the tree nearest the root (whichever tree it is) sink quicker under water, and even if they float, have a greater tendency to sink.

Which kinds of wood are easy and which hard to work. Of the core and its effects.

V. Some wood is easy to work, some difficult. Those woods which are soft are easy, and especially

\[\text{πρὸς οὐσίαν τόπων} \text{ can hardly be sound: 'on something harder than itself.'}\]

See Index, *μυρίκη* (2).
THEOPHRASTUS

μαλιστα φίλυρα: δύσεργα δέ καὶ τὰ σκληρὰ καὶ
tὰ ὁξύδη καὶ οὐλας ἔχοντα συστροφᾶς: δύσεργό-
tατα δέ ἡρία καὶ ὅρις, ως δέ κατὰ μέρος ὦ τής
πεύκης ὅς καὶ τής ἐλάτης. ἀεὶ δὲ τῶν ὄμογενῶν
tὸ μαλακώτερον τοῦ σκληροτέρου κρείττον·
σαρκωδέστερον γάρ· καὶ εὐθὺ σκοποῦνται τὰς
σαινίδας οἱ τέκτονες οὖτως. τὰ δὲ μοχθηρᾶ
σιδήρια δύναται τέμνειν τὰ σκληρὰ μᾶλλον τῶν
μαλακῶν: ἀνύησι γὰρ ἐν τοῖς μαλακοῖς, ὅσπερ
ἐλέχθη περὶ τῆς φιλύρας, παρακούδε μᾶλιστα
tὰ σκληρά· δὴ δὲ καὶ οἱ σκυτοτόμοι ποιοῦνται
τοὺς πίνακας ἀχράδος.

2 Μήτραν δὲ πάντα μὲν ἐχειν φασὶν οἱ τέκτονες
φανερὰν δὲ εἶναι μάλιστα εν τῇ ἐλάτῃ: φαίνεσθαι
γάρ οἶλον φλοιόδη τινὰ τὴν σύνθεσιν αὐτῆς τῶν
κύκλων. εν ἑλᾶα δὲ καὶ πύξῳ καὶ τοῖς τοιούτοις
οὐχ ὁμοίως: δὲ ὁ καὶ οὐ φασὶν τινὲς ἐχειν τῇ
dυνάμει πύξων καὶ ἑλᾶαν· ἥκιστα γὰρ ἐλκεσθαι
ταῦτα τῶν ξύλων. ἔστι δὲ τὸ ἐλκεσθαι τὸ συμ-
περίστασθαι κινομένης τῆς μήτρας. εὖ γὰρ
ὡς ἐοικεν ἐπὶ χρόνον πολὺν· δι' ὁ πανταχόθεν
μὲν ἀμα μάλιστα δ' ἐκ τῶν θυρωμάτων ἔξαιρο-
σιν, ὅπως ἀστραβῇ γ' καὶ διὰ τοῦτο σχίζουσιν.

3 Ἀτοπον δ' ἂν δοξείειν ὅτι ἐν μὲν τοῖς ξύλοις
τοῖς στρογγύλοις ἀλυπος ἡ μήτρα καὶ ἀκίνητος,
ἐν δὲ τοῖς παρακινηθεῖσιν, ἐὰν μὴ ὅλως ἔξαιρεθη,

1 5. 3. 3.
2 τὰ σκληρὰ conj. Sch, from G (?); ταύτα P2 Ald.H.
3 ἐχειν conj. Sch.; ἐχεὶ ἧ Ald.H.
4 ἑλᾶαν conj. Scal. from G; ἑλᾶην Ald.H.
5 i.e. and this happens less in woods which have little
core.
6 ἁμα (? = ὄμοιως) MSS.; αὐτῆν conj. W.

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that of the lime; those are difficult which are hard and have many knots and a compact and twisted grain. The most difficult woods are those of *aria* (holm-oak) and oak, and the knotty parts of the fir and silver-fir. The softer part of any given tree is always better than the harder, since it is fleshier: and carpenters can thus at once mark the parts suitable for planks. Inferior iron tools can cut hard wood better than soft: for on soft wood tools lose their edge, as was said ¹ in speaking of the lime, while hard woods ² actually sharpen it: wherefore cobblers make their strops of wild pear.

Carpenters say that all woods have ³ a core, but that it is most plainly seen in the silver-fir, in which one can detect a sort of bark-like character in the rings. In olive box and such woods this is not so obvious; wherefore they say that box and olive ⁴ lack this tendency; for that these woods are less apt to 'draw' than any others. 'Drawing' is the closing in of the wood as the core is disturbed.⁵ For since the core remains alive, it appears, for a long time, it is always removed from any article whatever made of this wood,⁶ but especially from doors,⁷ so that they may not warp ⁸: and that is why the wood is split.⁹

It might seem strange that in 'round' ¹⁰ timber the core does no harm and so is left undisturbed, while in wood whose texture has been interfered with,¹¹ unless it is taken out altogether, it causes

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¹ Plin. 16. 225, *abietem valvarum paginis aptissimam.*
² *ἀστραβῆ* conj. Dalec.; *ἀστραβῇ* UMV Ald.
³ *ἀπακινῆσι, i.e. by splitting or sawing.* *πελεκηθεῖσι* conj. W.
⁴ See below, § 5.
⁵ cf. 4. 1. 2; Plin. 16. 225, *abietem valvarum paginis aptissimam.*
⁶ *ἀπακινῆσι, i.e. by splitting or sawing.* *πελεκηθεῖσι* conj. W.
⁷ *ἀπακινῆσι, i.e. by splitting or sawing.* *πελεκηθεῖσι* conj. W.
⁸ *ἀπακινῆσι, i.e. by splitting or sawing.* *πελεκηθεῖσι* conj. W.
⁹ *ἀπακινῆσι, i.e. by splitting or sawing.* *πελεκηθεῖσι* conj. W.
¹⁰ *ἀπακινῆσι, i.e. by splitting or sawing.* *πελεκηθεῖσι* conj. W.
¹¹ *ἀπακινῆσι, i.e. by splitting or sawing.* *πελεκηθεῖσι* conj. W.
kinei kai parastréfei: mållon gar eíkos gummor-
theiçan úpothnìskêin. òmos de ói ge ìstoi kai
ai keraiai eìaíretheiçhì ìkheìoi. touto de kata
sumbebhìûs, òti xitònwas êxhei plèious, ìsgour-
tatou de kai lephtòtatóu de tôn ìsochatov, ìnìróta-
tov gar, kai toûs álloûs ánà lógon. òtan óyn
schiðhì, periaieîtai tà ìnìróta. eî ð' ì mìtrra
diâ tà ìnìro sêkpetêon. diasteírfei ðe èlkomènì
tà ìála kai èn toûs schiôtoûs kai prìstoûs, òtan
ì ths deì prìwosì deì gar òrbìùn thìn prìsìn ìñnai
kai ìh plagìan. òion ouûsìs thìs mìtras èf' ìn
tà a, ìh parà thìn bù têmìneì, ìlla parà thìn
ßð. ìthièrësthai gar ouûv fasìn, èkèinòs ðe ìnìv.
òti ðe pàn ìála êxheì mìtrar ìk toûtòs ìñnìvai:
faneròn gar èstì kai tà ìh dokoûnta pàntì êcheìv,
òion ðùxìv lòvtoû prìnov. ìnìmeìv ðe: toûs gar
stropògygas thòn ìvÒv thòn polútelòv ìnoûsì
ìv ìk toûtòv, sìngraphountai ðe ðì ìrîhitéktones
ouûv <ìÌ> ìk mìtrar. taÙtò ðe touto ìnìmeìv
kai òti pàsa mìtrar èlketai, kai ai toûn sklihro-
tátov, ìs ðì tîves kardìass kalouûsi. pàntos ðì

1 And so cause no trouble.
2 cf. 5. 1. 6. plèious conj. Sch. from G; álloûs Ald.H.
3 Text probably defective; ? insert ènìróthì after ènìrov.
4 The figure would seem to be

\[
\begin{array}{c|c}
A & A \hline
\end{array}
\]

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disturbance and warping: it were rather to be expected that it would die\textsuperscript{1} when exposed. Yet it is a fact that masts and yard-arms are useless, if it has been removed from the wood of which they are made. This is however an accidental exception, because the wood in question has several coats,\textsuperscript{2} of which the strongest and also thinnest is the outermost, since this is the driest, while the other coats are strong and thin in proportion to their nearness to the outermost. If therefore the wood be split, the driest parts are necessarily stripped off. Whether however in the other case the object of removing the core is to secure dryness is matter for enquiry.\textsuperscript{3} However, when the core 'draws,' it twists the wood, whether it has been split or sawn, if the sawing is improperly performed: the saw-cut should be made straight and not slantwise. \textsuperscript{4} Thus, if the core be represented by the line $A$, the cut must be made along the line $BD$, and not along the line $BC$: for in that case, they say, the core will be destroyed, while, if cut in the other way, it will live. For this reason men think that every wood has a core: for it is clear that those which do not seem to possess one nevertheless have it, as box nettle-tree kermes-oak: a proof of this is the fact that men make of these woods the pivots \textsuperscript{5} of expensive doors, and accordingly\textsuperscript{6} the headcraftsmen specify that wood with a core shall not\textsuperscript{7} be used. This is also a proof that any core 'draws,' even those of the hardest woods, which some call the heart. In almost every wood, even

\textsuperscript{5} cf. 5. 3. 5. $\sigma \tau \rho \phi \iota \gamma$: here at least probably means 'pivot and socket.'
\textsuperscript{6} οὐτὸς Ald. H.; αὐτός conj. W. \textsuperscript{7} μή add. W.
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ὡς εἰπεῖν ξύλου σκληροτάτη καὶ μανοτάτη ἢ μῆτρα, καὶ αὐτῆς τῆς ἐλάτης· μανοτάτη μὲν οὖν, ὅτι τὰς ἓνας ἔχει καὶ διὰ πολλοῦ καὶ τὸ σαρκώδες τὸ ἀνὰ μέσον πολὺ· σκληροτάτη δὲ, ὅτι καὶ αἱ ἑνες σκληροταιται καὶ τὸ σαρκώδες· δι' ὅ καὶ οἱ ἀρχιτέκτονες συνγράφονται παραιτεῖν τὰ πρὸς τὴν μῆτραν, ὅπως λάβωσι τοῦ ξύλου τὸ πυκνότατον καὶ μαλακῶτατον.

6 Τῶν δὲ ξύλων τὰ μὲν σχιστὰ τὰ δὲ πελεκητά τὰ δὲ στρογγύλα· σχιστὰ μὲν, ὅσα διαφοροῦντες κατὰ τὸ μέσον πρίζοσι· πελεκητὰ δὲ, ὅσων ἀποπελεκώσι τὰ ἑξῶ· στρογγύλα δὲ δῆλον ὅτι τὰ ὀλως ἀψαυστα. τούτων δὲ τὰ σχιστὰ μὲν ὀλως ἀρραγῇ διὰ τὸ γυμνωθεῖσαν τὴν μῆτραν ἕξηραίνεσθαι καὶ ἀποθνήσκειν· τὰ δὲ πελεκητὰ καὶ τὰ στρογγύλα ρήγμυται· μᾶλλον δء πολὺ τὰ στρογγύλα διὰ τὸ ἑναπειλήφθαι τὴν μῆτραν· οὐδὲν γὰρ ὅτι τῶν ἁπάντων οὐ ρήγμυται. τοῖς δὲ λωτίνοις καὶ τοῖς ἄλλοις οἷς εἰς τοὺς στροφιγγας χρώνται πρὸς τὸ μῆ ρήγμυσθαι βόλβιτον περιπλάττουσιν, ὅπως ἀναξηρανθῇ καὶ διαπνευσθῇ κατὰ μικρὸν ἢ ἐκ τῆς μῆτρας ψυχρότης. ἢ μὲν οὖν μῆτρα τοιαύτην ἔχει δύναμιν.

VI. Βάρος δὲ ἐνεγκεῖν ἰσχυρὰ καὶ ἡ ἐλάτη καὶ ἡ πεύκη πλάγιαι τιθέμεναι· οὐδὲν γὰρ ἐν-

1 ξύλου σκληροτάτη conj. Sch. from G; ξύλου σκληροτατον UMV: so Ald. omitting kal.
2 ἀποπελεκώσι conj. Sch.; ἀποπλέκωσί UM; ἀποπλέκουσι Ald.; ἀποπελέκουσι mBas. 3 cf. C.P. 5. 17. 2.

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in that of the silver-fir, the core is the hardest part, and the part which has the least fibrous texture—it is least fibrous because the fibres are far apart and there is a good deal of fleshy matter between them, while it is the hardest part because the fibres and the fleshy substance are the hardest parts. Wherefore the headcraftsmen specify that the core and the parts next it are to be removed, that they may secure the closest and softest part of the wood.

Timber is either 'cleft,' 'hewn,' or 'round': it is called 'cleft,' when in making division they saw it down the middle, 'hewn' when they hew off the outer parts, while 'round' clearly signifies wood which has not been touched at all. Of these, 'cleft' wood is not at all liable to split, because the core when exposed dries and dies: but 'hewn' and 'round' wood are apt to split, and especially 'round' wood, because the core is included in it: no kind of timber indeed is altogether incapable of splitting. The wood of the nettle-tree and other kinds which are used for making pivots for doors are smeared with cow-dung to prevent their splitting: the object being that the moisture due to the core may be gradually dried up and evaporated. Such are the natural properties of the core.

Which woods can best support weight.

VI. For bearing weight silver-fir and fir are strong woods, when set slantwise: for they do not give like

4 περιπλάττουσι conj. Sch. from G; περιπλάττουσιν Ald.H. Plin. 16. 222. 5 αναξηρανθή conj. Sch.; αναξηρανθή Ald.H. Plin. 16. 222-224. 6 e.g. as a strut. πλάγιαι conj. Sch. from Plin. l.c.; ἀπαλαλ Ald.H.
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διδόασιν, ὃσπερ ἡ δρύς καὶ τὰ γεώδη, ἀλλ' ἀντωθοῦσιν σημεῖον δὲ ὅτι οὐδέποτε ῥήγνυνται, καθάπερ ἐλάα καὶ δρύς, ἀλλὰ πρότερον σήπονται καὶ ἄλλως ἀπανδώσιν. ἵσχυρὸν δὲ καὶ ὁ φοινιξ ἀνάπαλεν γὰρ ἡ κάμψις ἡ τοῖς ἄλλοις γίνεται τὰ μὲν γὰρ εἰς τὰ κάτω καμπτεῖται, ὁ δὲ φοινιξ εἰς τὰ ἀνω. φασὶ δὲ καὶ τὴν πεύκην καὶ τὴν ἐλάτην ἀντωθεῖν. τὸ δὲ τῆς Ἑὔβοικῆς καρύας, γίνεται γὰρ μέγα καὶ χρώνυται πρὸς τὴν ἐρέψιν, ὅταν μέλλῃ ῥήγνυσθαι ψοφεῖν ὡστε προαισθάνεθαί πρότερον. ὁπερ καὶ ἐν 'Αντάνδρῳ συνεπεσεν ἐν τῷ βαλανέῳ καὶ πάντες ἐξεπτύδησαν. ἵσχυρὸν δὲ καὶ τὸ τῆς συκῆς πλῆν εἰς ὅρθον.

2 Ἡ δὲ ἔλατη μάλιστα ὡς εἰπεῖν ἵσχυρὸν. πρὸς δὲ τὰς τῶν τεκτόνων χρείας ἐχέκολλον μὲν μάλιστα ἡ πεύκη διὰ τὴν μανότητα καὶ τὴν εὐθυπορίαν οὕτω γὰρ ὅλως οὕτω ῥήγνυσθαι φασιν ἑαυτοῦ κολληθῇ. εὐτροφοῖτων δὲ φιλίκη, καὶ ἡ λευκότης ὃσπερ ἡ τοῦ κηλάστρου. τῶν δὲ ἄλλων ἡ φίλυρα· τὸ γὰρ ὅλον εὑρέαν, ὃσπερ ἐλέχθη, διὰ μαλακότητα. εὐκαμπτα δὲ ὡς μὲν ἀπλῶς εἰπεῖν ὡς γλίσχα. διαφέρειν δὲ δοκεῖ συκάμινος καὶ ἐρινεός, διὸ καὶ τὰ ἱκρια καὶ τὰς στεφάνας καὶ ὅλως ὡς περὶ τὸν κόσμον ἐκ τούτων ποιοῦσιν.

3 Εὐπριστα δὲ καὶ εὐσχιστὰ τὰ ἐνικμοτερὰ τῶν

1 i.e. the strut becomes concave or convex respectively. cf. Xen. Cyr. 7. 5. 11.
2 i.e. it cannot be used as a strut, or it would 'buckle,' though it will stand a vertical strain.
3 Plin. 16. 225.
4 cf. C.P. 5. 17. 3. ἐὐθυποράτατα: ἐὐθυποριάν.

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oak and other woods which contain mineral matter, but make good resistance. A proof of this is that they never split like olive and oak, but decay first or fail in some other way. Palm-wood is also strong, for it bends the opposite way to other woods: they bend downwards, palm-wood upwards. It is said that fir and silver-fir also have an upward thrust. As to the sweet chestnut, which grows tall and is used for roofing, it is said that when it is about to split, it makes a noise, so that men are forewarned: this occurred once at Antandros at the baths, and all those present rushed out. Fig-wood is also strong, but only when set upright.

Of the woods best suited for the carpenter’s various purposes.

The wood of the silver-fir may be called the strongest of all. But for the carpenter’s purposes fir best takes glue because of its open texture and the straightness of its pores; for they say that it never by any chance comes apart when it is glued. Alaternus is the easiest wood for turning, and its whiteness is like that of the holly. Of the rest lime is the easiest, the whole tree, as was said, being easy to work because of the softness of the wood. In general those woods which are tough are easy to bend. The mulberry and the wild fig seem to be specially so; wherefore they make of these theatre-seats, the hoops of garlands, and, in general, things for ornament.

Woods which have a fair amount of moisture in them are easier to saw or split than those which

\(^{5}\) \text{cf. 5. 7. 7.}

\(^{6}\) Rendering doubtful. \text{ικρια} has probably here some unknown meaning, on which the sense of \text{κβσμου} depends.

\(^{7}\) Plin. 16. 227.

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πάμπαιν ξηρῶν: τὰ μὲν γὰρ παύονται, τὰ δὲ ἵστανται: τὰ δὲ χλωρά λίαν συμμύκει καὶ ἐνέχε-
tαι ἐν τοῖς ὄδονσι τὰ πρόσματα καὶ ἐμπλάττει, διὸ καὶ παραλλάττουσιν ἀλλήλων τοὺς ὄδοντας
ίνα ἔξαγγηται. ἔστι δὲ καὶ δυστρυπητότερα τὰ
λίαν χλωρά: βραδέως γὰρ ἀναφέρεται τὰ ἐκτρυ-
πήματα διὰ τὸ βαρεά εἶναι τῶν δὲ ξηρῶν ταχέως
καὶ εὐθὺς ὁ ἄρη ἀναθερμαινόμενος ἀναδίδοσιν
πάλιν δὲ τὰ λίαν ξηρὰ διὰ τὴν σκληρότητα
δύσπριστα: καθάπερ γὰρ ὀστρακον συμβαίνει
πρέειν, διὸ καὶ τρυπώντες ἐπιβρέχουσιν.

4 Εὐπελεκητότερα δὲ καὶ εὐτορνύτερα καὶ εὐξο-
ὡτερα τὰ χλωρά: προσκάθηται τε γὰρ τὸ τορνευ-
tήριον μᾶλλον καὶ οὐκ ἀποτηθᾶ. καὶ ἡ πελέκησις
τῶν μαλακωτέρων ράων, καὶ ἡ ἔσσεις δὲ ὁμοίως καὶ
ἐτὶ λειστέρα. ἰσχυρότατον δὲ καὶ ἡ κράνεια, τῶν
dὲ ἄλλων οὐχ ἥκιστα ἡ πτελέα, διὸ καὶ τοὺς
στροφέας, ὅσπερ ἐλέχθη, ταῖς θύραις πτελείνους
ποιούσιν. ὑγρότατον δὲ μελία καὶ ὀξύς καὶ γὰρ
τὰ κλινάρια τὰ ἐνδιδόντα ἐκ τούτων.

VII."Ολως δὲ πρὸς ποία τῆς ἁλῆς ἐκάστη
χρησίμη καὶ ποία ναυπηγήσιμος καὶ οἰκοδομική,
πλεῖστη γὰρ αὕτη ἡ χρεία καὶ ἐν μεγίστοις,
πειρατέοις εἰπεῖν, ἀφορίζοντα καθ' έκαστον τὸ
χρήσιμον.

Ἐλάτη μὲν οὖν καὶ πεύκη καὶ κέδρος ὡς ἀπλώς

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1 παύονται can hardly be right: Plin. l.c. seems to have
had a fuller text.
2 ἐμπλάττει: cf. de Sens. 66.

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are altogether dry: for the latter give,\(^1\) while the former resist. Wood which is too green closes up again when sawn, and the sawdust catches in the saw’s teeth and clogs\(^2\) them; wherefore the teeth of the saw are set alternate ways, to get rid of the sawdust. Wood which is too green is also harder to bore holes in; for the auger’s dust is only brought up slowly, because it is heavy; while, if the wood is dry, the air gets warmed by the boring and brings it up readily and at once. On the other hand, wood which is over dry\(^3\) is hard to saw because of its hardness: for it is like sawing through earthenware; wherefore they wet the auger when using it.

However green wood is easier to work with the axe the chisel or the plane; for the chisel gets a better hold and does not slip off. Again softer woods are easier for the axe and for smoothing,\(^4\) and also a better polished surface is obtained. The cornelian cherry is also a very strong wood, and among the rest elm-wood is the strongest; wherefore, as was said,\(^5\) they make the ‘hinges’ for doors of elm-wood. Manna-ash and beech have very moist wood, for of these they make elastic bedsteads.

**Of the woods used in ship-building.**

VII. Next we must endeavour to say in a general way, distinguishing the several uses, for which purposes each kind of timber is serviceable, which is of use for ship-building, which for house-building: for these uses extend far and are important.

Now silver-fir, fir and Syrian cedar\(^6\) are, generally

\(^{1}\) τὰ λίαν ηρᾶ conj. St.; λεῖα καὶ ηρᾶ Ald. H.  
\(^{2}\) Sc. with the carpenter’s axe.  
\(^{3}\) 5. 3. 5.  
\(^{4}\) See Index.
εἰπεῖν ναυπηγήσιμα· τὰς μὲν γὰρ τριήρεις καὶ τὰ μακρὰ πλοῖα ἑλάτινα ποιούσι διὰ κουφότητα, τὰ δὲ στρογγύλα πεύκινα διὰ τὸ ἀσαπές· ἐνιοὶ δὲ καὶ τὰς τριήρεις διὰ τὸ μὴ εὑπορεῖν ἑλάτης. οἱ δὲ κατὰ Συρίαν καὶ Φοινίκην ἐκ κέδρου· σπανίζουσι γὰρ καὶ πεύκης. οἱ δ' ἐν Κύπρῳ πίτυος· ταύτην γὰρ ἡ νήσος ἔχει καὶ δοκεῖ κρείττων εἶναι τῆς 
2 πεύκης. καὶ τὰ μὲν ἄλλα ἐκ τούτων· τὴν δὲ τρόπιν τριήρει μὲν δρυίνην, ἵνα ἀντέχῃ πρὸς τὰς νεωλκίας, ταῖς δὲ ὀλκάσι πευκίνην· ὑποτιθέασι δ' ἐτι καὶ δρυίνην ἐπὰν νεωλκώσι, ταῖς δ' ἐλάττοσιν δεξινήν· καὶ ὅλως ἐκ τούτου τὸ χέλυσμα.

Οὐχ ἀπτεται δὲ οὐδὲ κατὰ τὴν κόλλησιν ὰμολὼς τὸ δρυίνον τῶν πευκίνων καὶ ἑλατίνων· τὰ μὲν γὰρ πυκνὰ τὰ δὲ μανά, καὶ τὰ μὲν ὀμοία τὰ δ' οὕ. δεὶ δὲ ὀμοιοπαθὴ εἶναι τὰ μέλλοντα συμφύεσθαι καὶ μὴ ἐναντία, καθαπερανελ λίθον καὶ ξύλον.

3 'Η δὲ τορνεῖα τοῖς μὲν πλοίοις γίνεται συκαμίνου μελίας πτελέας πλατάνου· γλυσχρότητα γὰρ ἔχειν δεὶ καὶ ἱσχύν. χειρίστη δὲ ἡ τῆς πλατάνου· ταχὺ γὰρ σήπεται. ταῖς δὲ τριήρεσιν ἐνιοὶ καὶ πιτυίνας ποιούσι διὰ τὸ ἐλαφρόν. τὸ δὲ στερέωμα, πρὸς ὦ τὸ χέλυσμα, καὶ τὰς ἐπωτίδας, μελίας καὶ συκαμίνου καὶ πτελέας· ἱσχυρά

1 τριήρει conj. W.; τριήρη U; τριήρης MV; τριήρει Ald.
3 χέλυσμα, a temporary covering for the bottom: so Poll. and Hesych. explain.
ENQUIRY INTO PLANTS, V. vii. 1-3

speaking, useful for ship-building; for triremes and long ships are made of silver-fir, because of its lightness, and merchant ships of fir, because it does not decay; while some make triremes of it also because they are ill provided with silver-fir. The people of Syria and Phoenicia use Syrian cedar, since they cannot obtain much fir either; while the people of Cyprus use Aleppo pine, since their island provides this and it seems to be superior to their fir. Most parts are made of these woods; but the keel for a trireme is made of oak, that it may stand the hauling; and for merchantmen it is made of fir. However they put an oaken keel under this when they are hauling, or for smaller vessels a keel of beech; and the sheathing is made entirely of this wood.

(However oak-wood does not join well with glue on to fir or silver-fir; for the one is of close, the other of open grain, the one is uniform, the other not so; whereas things which are to be made into one piece should be of similar character, and not of opposite character, like wood and stone.)

The work of bentwood for vessels is made of mulberry manna-ash elm or plane; for it must be tough and strong. That made of plane-wood is the worst, since it soon decays. For triremes some make such parts of Aleppo pine because of its lightness. The cutwater, to which the sheathing is attached, and the catheads are made of manna-ash mulberry

4 This sentence is out of place; its right place is perhaps at the end of § 4.

5 τορνεία; but the word is perhaps corrupt: one would expect the name of some part of the vessel.

6 στερέωμα: apparently the fore part of the keel; = στείρα.

7 πρός ὃ τὸ χέλυσμα conj. W. after Scal.; πρόσω· τὸ σχέλυσμα Ald. (σχέλυσμα M, χέλυσμα U) πρόσω· τὸ δὲ χέλυσμα mBas.
γὰρ δεῖ ταῦτ' εἶναι. ναυπηγήσιμος μὲν οὐν ὑλὴ σχεδὸν αὐτή.

1 Οἰκοδομικὴ δὲ πολλῷ πλείων, ἐλάτη τε καὶ πεῦκη καὶ κέδρος, ἔτι κυπάριστος δρῦς καὶ ἀρ-κευθὸς: ὡς δὲ ἄπλῶς εἰπεῖν πᾶσα χρησίμη πλήν εἰ τις ἀσθενής πάμπαν· οὐκ εἰς ταῦτο γὰρ πᾶσαι, καθάπερ οὐδὲ ἐπὶ τῆς ναυπηγίας. αἱ δὲ ἄλλαι πρὸς τὰ ἔδια τῶν τεχνῶν, οἶκον σκεύη καὶ ὄργανα καὶ εἰ τι τοιοῦτον ἔτερον. πρὸς πλείστα δὲ σχεδὸν ἢ ἐλάτη παρέχεται χρείαι· καὶ γὰρ πρὸς τοὺς πίνακας τοὺς γραφομένους. τεκτονικὴ μὲν οὖν ἢ παλαιοτάτη κρατίστῃ, ἕαν ἢ ἀσαπίης: εὐθετεῖ γὰρ ὡς εἰπεῖν πᾶσι χρῆσθαι· ναυπηγικὴ δὲ διὰ τὴν κάμψιν ἐνικμοτέρα ἀναγκαῖον· ἔπει πρὸς γε τὴν κόλλησιν ἢ ξηροτέρα συμφέρει. ίσταται γὰρ καὶνά τὰ ναυπηγούμενα καὶ ὅταν συμπαγὴ καθ-ελκυσθέντα συμμύει καὶ στέγει, πλὴν ἕαν μὴ παντάπασιν ἐξικμασθῆ: τότε δὲ οὐ δέχεται κόλ-λησιν ἢ οὐχ ὀμοίως.

5 Δεῖ δὲ καὶ καθ' ἐκαστὸν λαμβάνειν εἰς ποιὰ χρῆσιμὸς ἑστιν. ἐλάτη μὲν οὖν καὶ πεῦκῃ, καθάπερ εἰρηται, καὶ πρὸς ναυπηγίαι καὶ πρὸς

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1 ἐλάτη... ἄρκευθος conj. W.; ἐλάτη τε καὶ πεῦκῃ καὶ κέδρος ἔτι κυπάριστος δρῦς πεῦκῃ καὶ κέδρος ἄρκευθος U; ἐλάτη τε καὶ πεῦκῃ καὶ κέδρος καὶ ἄρκευθος Ald.H.; so also MV, omitting καὶ before ἄρκ.
2 ὡς δ' ἄπλῶς conj. Sch.; ἄπλως δ' ὡς Ald.
3 καὶνὰ conj. Sch.; καὶ νῦν Ald.
4 συμπαγὴ conj. W., which he renders 'when it has been glued together'; συμπίν Ald. G's reading was evidently different.
and elm; for these parts must be strong. Such then is the timber used in ship-building.

Of the woods used in house-building.

For house-building a much greater variety is used, silver-fir fir and prickly cedar; also cypress oak and Phoenician cedar. In fact, to speak generally, any wood is here of service, unless it is altogether weak: for there are various purposes for which different woods are serviceable, just as there are in ship-building. While other woods are serviceable for special articles belonging to various crafts, such as furniture tools and the like, the wood of silver-fir is of use for almost more purposes than any other wood; for it is even used for painters' tablets. For carpentry the oldest wood is the best, provided that it has not decayed; for it is convenient for almost anyone to use. But for ship-building, where bending is necessary, one must use wood which contains more moisture (though, where glue is to be used, drier wood is convenient). For timber-work for ships is set to stand when it is newly made: then, when it has become firmly united, it is dragged down to the water, and then it closes up and becomes watertight,—unless all the moisture has been dried out of it, in which case it will not take the glue, or will not take it so well.

Of the uses of the wood of particular trees.

But we must consider for what purposes each several wood is serviceable. Silver-fir and fir, as has been said, are suitable both for ship-building house-

5 πλην ἐὰν μὴ conj. W.; π. ἐὰν τὲ M.; π. ἐὰν γε Ald.
6 i.e. apart from ship-building and house-building, in which several woods are used.
οἰκοδομίαν καὶ ἐτι πρὸς ἄλλα τῶν ἔργων, εἰς πλεῖω δὲ ἡ ἐλάτη. πίτυι δὲ χρῶνται μὲν εἰς ἀμφω καὶ σὺχ ὅττον εἰς ναυπηγίαν, οὐ μὴν ἄλλα ταχὺ διασήτεται. δρῦς δὲ πρὸς οἰκοδομίαν καὶ πρὸς ναυπηγίαν ἐτε τῇ πρὸς τὰ κατὰ γῆς κατορυτ-τόμενα. φίλυρα δὲ πρὸς τὰ σανιδώματα τῶν μακρῶν πλοίων καὶ πρὸς κιβώτια καὶ πρὸς τὴν τῶν μέτρων κατασκευήν. ἔξει δὲ καὶ τὸν φλοιὸν χρήσιμον πρὸς τε τὰ σχοινία καὶ πρὸς τὰς κίστας: ποιεῖσθαι γὰρ ἐξ αὐτῆς.

6 Σφένδαμνός τε καὶ ξυγία πρὸς κλωνηγίαν καὶ πρὸς τὰ ξυγά τῶν λοφούρων. μίλος δὲ εἰς παρακολλήματα κιβώτων καὶ ύποβάθρους καὶ ὅλως τοῖς τοιούτοις. πρίνος δὲ πρὸς ἄξονας ταῖς μυσσοστρόφοις ἀμάξαις καὶ εἰς ξυγά λύραις καὶ σαλτηρίοις. ὁξύπερ δὲ πρὸς ἀμαξοπηγίαν καὶ διφροπηγίαν τὴν εὑτελή. πτελέα δὲ πρὸς θυρο-πηγίαν καὶ γαλεάγρας: χρῶνται δὲ καὶ εἰς τὰ ἀμάξικα μετρίως. πηδὸς δὲ εἰς ἄξονας τε ταῖς ἀμάξαις καὶ εἰς ἐλκηθρα τοῖς ἄροτροις. ἀνδράχλη δὲ ταῖς γυναικῶν εἰς τὰ περὶ τοὺς ἱστοὺς. ἀρ-κευθος δὲ εἰς τεκτονίας καὶ εἰς τὰ ὑπαίθρια καὶ εἰς τὰ κατορυττόμενα κατὰ γῆς διὰ τὸ ἀσαπὲς.

7 ὥσαύτως δὲ καὶ ἦ Εὐβοῖκη καρπὰ, καὶ πρὸς γε τὴν κατόρυξιν ἐτε μᾶλλον ἀσαπῆς. πῦξος δὲ χρῶνται μὲν πρὸς ἐνία, οὐ μὴν ἄλλ' ἦ γε ἐν τῷ Ὀλύμπῳ γυμνομένῃ διὰ τὸ βραχεία τε εἶναι καὶ ὁξώδης ἀχρεῖος. τερμίνθῳ δὲ οὐδέν χρῶνται

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1 κίστας : cf. 3. 13. 1; perhaps 'hampers,' cf. 5. 7. 7.
2 παρακολλήματα : lit. 'things glued on.'
3 Plin. 16. 229.
4 ταῖς μυσσοστρόφοις ἀμάξαις : or, perhaps, 'the wheels of
building and also for other kinds of work, but silver-

fir is of use for more purposes than fir. Aleppo pine

is used for both kinds of building, but especially for

ship-building, yet it soon rots. Oak is used for

house-building, for ship-building, and also for under-
ground work; lime for the deck-planks of long ships,

for boxes, and for the manufacture of measures; its

bark is also useful for ropes and writing-cases, for

these are sometimes made of it.

Maple and zygia are used for making beds

and the yokes of beasts of burden: yew for the

ornamental work attached to chests and footstools

and the like: kermes-oak for the axles of wheel-

barrows and the cross-bars of lyres and psaltery:

beech for making waggons and cheap carts: elm

for making doors and weasel-traps, and to some

extent it is also used for waggon work; pedos for

waggon-axles and the stocks of ploughs: andrachne

is used for women for parts of the loom: Phoenician

cedar for carpenters’ work and for work which is

either to be exposed to the air or buried underground,

because it does not decay. Similarly the sweet

chestnut is used, and it is even less likely to decay

if it is used for underground work. Box is used for

some purposes; however that which grows on

Mount Olympus is useless, because only short pieces

can be obtained and the wood is full of knots. Terebinth

is not used, except the fruit and the resin.

carts with solid wheels.’ taìs conj. Sch.; te kal UMV; te kal

μουστρόφους ἀμάξας Ald.

5 πηδός (with varying accent) MSS.: probably = πάδος, 4. 1

3 ; πόξος Ald., but see § 7.

6 τεκτονικάς can hardly be right. 7 cf. 3. 15. 5.

8 cf. 1. 8. 2, of box in general; Plin. 16. 71.

9 Inconsistent with 5. 3. 2.
πλὴν τῶν καρπῶν καὶ τῆς ῥήτινης. οὐδὲ φιλυκὴ πλὴν τοῖς προβάτοις· ἀλὰ γὰρ ἐστὶ δασεία. τῇ δὲ ἀφάρκη ἐς χάρακάς τε καὶ τὸ καίειν. κη-
λάστρῳ δὲ καὶ σημύδα πρὸς βακτηρίας. ἔνιοι δὲ καὶ δάφυς· τὰς γὰρ γεροντικάς καὶ κούφας ταύτης ποιοῦσιν. ἤτεα δὲ πρὸς τε τὰς ἀσπίδας καὶ
τὰς κύστις καὶ τὰ κανά καὶ τᾶλλα. προσανα-
λαβεῖν δὲ ἐστὶ καὶ τῶν ἄλλων ἐκαστὸν ὁμοίως.

8 Διήρηται δὲ καὶ πρὸς τὰ τεκτοικά τῶν ὄργα-


νῶν ἐκαστὰ κατὰ τὴν χρείαν· οἷον σφυρίου μὲν
καὶ τερέτριον ἀρίστα μὲν γίνεται κοτίνου· χρώνται
dὲ καὶ πυξίνους καὶ πτελείους καὶ μελείους· τὰς
dὲ μεγάλας σφύρας πιτύνας ποιοῦσιν. ὁμοίως
dὲ καὶ τῶν ἄλλων ἐκαστὸν ἐχεῖ τινὰ τάξιν. καὶ
tαῦτα μὲν αἱ χρεῖαι διαιροῦσιν.

VIII. Ἐκάστη δὲ τῆς ὕλης, ὀσπερ καὶ πρῶτον
ἐλέκθη, διαφέρει κατὰ τοὺς τόπους· ἐνθα μὲν γὰρ
λωτὸς ἐνθα δὲ κέδρος γίνεται θαυμαστὴ, καθάπερ
καὶ περὶ Συρίαν· ἐν Συρίᾳ γὰρ ἐν τε τοῖς ὀρεσι
dιαφέροντα γίνεται τὰ δένδρα τῆς κέδρον καὶ τῷ
ὕψει καὶ τῷ πάχει· τηλικάυτα γὰρ ἐστὶν ὡστ’
ἐνα μὲν μὴ δύνασθαι τρεῖς ἀνδρᾶς περιλαμβάνειν·
ἐν τε τοῖς παραδείσοις ἔτι μείζῳ καὶ καλλίω.
φαίνεται δὲ καὶ ἐὰν τις ἔδω καὶ μὴ τέμνῃ τόπου
οἴκειον ἐκαστὸν ἐχον γίνεσθαι θαυμαστὸν τῷ
μῆκει καὶ πάχει. ἐν Κύπρῳ γούν οὔκ ἔτεμνον οἱ
βασιλεῖς, ἀμά μὲν τηροῦντες καὶ ταμιεύομενοι, ἀμα

1 Inconsistent with 5. 6. 2. φιλυκὴ conj. Sch.
2 καὶ σημύδα conj. Sch.; καὶ μνία U; καὶ μνά Ald. cf. 3. 14. 4.

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1 Alaternus is only useful for feeding sheep; for it is always leafy. Hybrid arbutus is used for making stakes and for burning: holly and Judas-tree for walking-sticks: some also use bay for these; for of this they make light sticks and sticks for old men. Willow is used for shields hampers baskets and the like. We might in like manner add the several uses of the other woods.

4 Distinction is also made between woods according as they are serviceable for one or other of the carpenter’s tools: thus hammers and gimlets are best made of wild olive, but box elm and manna-ash are also used, while large mallets are made of Aleppo pine. In like manner there is a regular practice about each of the other tools. Such are the differences as to the uses of various woods.

Of the localities in which the best timber grows.

VIII. Each kind of timber, as was said before, differs according to the place where it grows; in one place nettle-tree, in another the cedar is remarkably fine, for instance in Syria; for in Syria and on its mountains the cedars grow to a surpassing height and thickness: they are sometimes so large that three men cannot embrace the tree. And in the parks they are even larger and finer. It appears that any tree, if it is left alone in its natural position and not cut down, grows to a remarkable height and thickness. For instance in Cyprus the kings used not to cut the trees, both because they took great care of them and hus-

3 ταύτης conj. Η.; ταύτας UMVAld.
4 Plin. 16. 230.
5 τόπους conj. Scal. from G; πόδας Ald.
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δὲ καὶ διὰ τὸ δυσκόμιστον εἶναι. μὴκος μὲν ἦν τῶν εἰς τὴν ἐνδεκήρη τὴν Δημητρίου τριθέντων τρισκαίδεκαόργυιον, αὕτα δὲ τὰ ξύλα τῷ μήκει θαυμαστὰ καὶ ἀοξα καὶ λεία. μέγιστα δὲ καὶ παρὰ πολὺ τὰ ἐν τῇ Κύρνῳ φασὶν εἶναι τῶν γάρ ἐν τῇ Λατίνῃ καλῶν γινομένων ὑπερβολῇ καὶ τῶν ἐπιίτων καὶ τῶν πευκῶν—μείζω γὰρ ταῦτα καὶ καλλίω τῶν Ἰταλικῶν—οὐδὲν εἶναι

2 πρὸς τὰ ἐν τῇ Κύρνῳ. πλεύσαι γὰρ ποτε τοὺς Ῥωμαίους βουλομένους κατασκευάσασθαι πόλιν ἐν τῇ νῆσῳ πέντε καὶ εἴκοσι ναυσί, καὶ τηλικοῦτον εἶναι τὸ μέγεθος τῶν δένδρων ὥστε εἰσπλέοντας εἰς κόλπους τινὰς καὶ λιμένας διασχισθεῖσι τοὺς ἱστοῖς ἐπικινδυνεύσαι. καὶ ὅλως δὲ πᾶσαν τὴν νῆσον δασεῖαν καὶ ὅσπερ ἡγρωμένην τῇ ὕλῃ· δεὶ δ καὶ ἀποστήματι τὴν πόλιν οἰκίζειν· διαβάντας δὲ τινὰς ἀποτεμέσθαι πάμπολυ πλήθος ἐκ τοῦ ποὺ βραχέος, ὦστε τηλικαύτην ποιῆσαι σχεδίαν ἢ ἔχρησατο πεντήκοντα ἱστίοις· οὐ μήν ἀλλὰ διαπεσεῖν αὐτὴν ἐν τῷ πελάγει. Κύρνος μὲν οὖν εἰτε διὰ τὴν ἀνεσίν εἰτε καὶ τὸ ἔδαφος καὶ τὸν ἀέρα πολὺ διαφέρει τῶν ἄλλων.

3 Ἡ δὲ τῶν Λατίνων ἐφύρος πᾶσα· καὶ ἢ μὲν πεδεινή δάφνην ἔχει καὶ μυρρίνους καὶ ὀξύθην θαυμαστὴν· τηλικαύτα γὰρ τὰ μῆκη τέμνουσι ὥστε εἶναι διανεκός τῶν Τυρρηνίδων ὑπὸ τὴν τρόπιν· ἡ δὲ ὀρεινὴ πεύκη καὶ ἑλάτην. τὸ δὲ

1 Demetrius Poliorcetes. cf. Plut. Demetr. 43; Plin. 16. 203.
2 ἐπικινδυνεύσαι conj. W.; ἐπὶ τῶν πῦκνων Ald.; so U, but πῦκνον.
3 i.e. against the overhanging trees. ἵστοις, to which διασχ. is more appropriate.

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banded them, and also because the transport of the timber was difficult. The timbers cut for Demetrius' ship of eleven banks of oars were thirteen fathoms long, and the timbers themselves were without knots and smooth, as well as of marvellous length. But largest of all, they say, are the trees of Corsica; for whereas silver-fir and fir grow in Latium to a very great size, and are taller and finer than the silver-firs and firs of South Italy, these are said to be nothing to the trees of Corsica. For it is told how the Romans once made an expedition to that island with twenty-five ships, wishing to found a city there; and so great was the size of the trees that, as they sailed into certain bays and creeks, they got into difficulties through breaking their masts. And in general it is said that the whole island is thickly wooded and, as it were, one wild forest; wherefore the Romans gave up the idea of founding their city: however some of them made an excursion into the island and cleared away a large quantity of trees from a small area, enough to make a raft with fifty sails; but this broke up in the open sea. Corsica then, whether because of its uncultivated condition or because of its soil and climate, is very superior in trees to other countries.

The country of the Latins is all well watered; the lowland part contains bay, myrtle, and wonderful beech: they cut timbers of it of such a size that they will run the whole length of the keel of a Tyrrhenian vessel. The hill country produces fir and silver-fir. The district called by Circe's name is, it

4 διαθάντας δέ τινας conj. St. from G; διαθάντα δέ τινα Ald. H.
5 ἡ ἐχρῆσατο πεντ. ἵστ. conj. Sch.; ἡ ἐχρῆσαντο οἱ Ald. H.
6 διανεκώς conj. Sch.; διὰ νεῶς Ald.
Κιρκαίον καλούμενον εἶναι μὲν ἀκραν ψηλῆν, δασείαν δὲ σφόδρα καὶ ἔχειν ὑδῶν καὶ ἀφυνὴν πολλῆν καὶ μυρρίνους. λέγειν δὲ τοὺς ἐγχώριους ὡς ἐνταῦθα ἢ Κίρκη κατῴκει καὶ δεικνύει τὸν τοῦ Ἐλπήνορος τάφον, ἐξ οὗ φύσσονται μυρρίναι καθὰ- περ αἱ στεφανώτιδες τῶν ἄλλων οὖντων μεγάλων μυρρίνων. τὸν δὲ τόπον εἶναι καὶ τούτων νέων πρόσθεσιν, καὶ πρότερον μὲν οὖν νήσου εἶναι τὸ Κιρκαίον, νῦν δὲ ὑπὸ ποταμῶν τινῶν προσκεχώσθαι καὶ εἶναι ἦδονα. τῆς δὲ νήσου τὸ μέγεθος περὶ ὑγδοκοντα σταδίους, καὶ τὰ μὲν τῶν τόπων ῥίδια πολλῆν ἔχει διαφοράν, ὥσπερ εἰρηταὶ πολλάκις.

IX. Τὸ δὲ καὶ πρὸς τὴν πῦρωσιν πῶς ἐκάστη τῆς ὕλης ἔχει λεκτέων ὄμοιως καὶ πειρατέων λαβεῖν. ἄνθρακες μὲν οὖν ἄριστοι γίνονται τῶν πυκνοτάτων, οἷον ἄριας ὑδῶν κομάρου· στερεωτατοί γάρ, ὅστε πλείστων χρόνον ἀντέχουσι καὶ μάλιστα ἵσχύουσιν· δὲ δὲ καὶ ἐν τοῖς ἀργυρείοις τούτων χρῶνται πρὸς τὴν πρώτην τούτων ἐφησιν. χειριστοὶ δὲ τοῦτων οἱ ὑδών· γεωδέστατοι γάρ· χείρους δὲ καὶ οἱ τῶν πρεσβυτέρων τῶν νεῶν, καὶ μάλιστα οἱ τῶν γερανδρύων διὰ ταυτό· ἄνευτοι γάρ, δὲν δὲ καὶ πηδῶσι καιόμενοι· δεῖ δὲ ἔνικμον εἶναι.

Βέλτιστοι δὲ οἱ τῶν ἐν ἀκμῇ καὶ μάλιστα οἱ

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¹ cf. Hom. Od. 10. 552 foll., 11. 51-80, 12. 8-15; Plin. 15. 119.
² νέαν πρόσθεσιν conj. Sch.; eis ἀνδρὸς θέσιν Ald.

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is said, a lofty promontory, but very thickly wooded, producing oak, bay in abundance, and myrtle. There, according to the natives, dwelt Circe, and they shew Elpenor’s tomb,¹ on which grow myrtles like those used for garlands, though other kinds of myrtle are large trees. Further it is said that the district is a recent addition² to the land, and that once this piece of land was an island, but now the sea has been silted up by certain streams and it has become united to the coast, and the size of the ‘island’³ is about eighty furlongs in circumference. There is⁴ then much difference in trees, as has been said repeatedly, which is due to the individual character of particular districts.

Of the uses of various woods in making fire: charcoal, fuel, fire-sticks.

IX. Next we must state in like manner and endeavour to determine the properties of each kind of timber in relation to making fire. The best charcoal is made from the closest wood, such as aria (holm-oak) oak arbutus; for these are the most solid, so that they last longest and are the strongest; wherefore these are used in silver-mines for the first smelting of the ore. Worst of the woods mentioned is oak, since it contains most mineral matter,⁵ and the wood of older trees is inferior to that of the younger, and for the same reason that of really old trees⁶ is specially bad. For it is very dry, wherefore it sputters as it burns; whereas wood for charcoal should contain sap.

The best charcoal comes from trees in their prime.

¹ cf. Plin. 3. 57. ⁴ ἐξεῖ conj. Sch.; ἐίναι Ald.
⁵ i.e. and so makes much ash. ⁶ cf. 2. 7. 2.
τῶν κολοβῶν· συμμέτρως γὰρ ἔχουσι τῷ πυκνῷ καὶ γεώδει καὶ τῷ ύγρῷ. βελτίως δὲ καὶ ἐκ τῶν εὐείλων καὶ ξηρῶν καὶ προσβόρρων ἢ ἐκ τῶν παλισκίων καὶ ύγρῶν καὶ πρὸς νότον καὶ εἰ ἑνικμοτέρας ὑλῆς, πυκνής· ύγρότερα γὰρ ἢ πυκνή. καὶ ὅλως, ὅσα ἢ φύσει ἢ διὰ [τὸν] τόπον ξηρότερου πυκνότερα, εἶ ἀπάντων βελτίω διὰ τὴν αὐτήν αἰτίαν. Χρεία δὲ ἄλλων ἄλλη· πρὸς ἕνα γὰρ ξητοῦσι τοὺς μαλακούς, οἶνον ἐν τοῖς σιδηρείοις τοὺς τῆς καρύας τῆς Εὐβοικῆς, ὅταν ἢ ἡ κεκαυμένος ἢ, καὶ ἐν τοῖς ἀργυρείοις τοὺς πιτυίνους.

3 χρώνυται δὲ καὶ αἱ τέχναι τοῦτοι. ξητοῦσι δὲ καὶ οἱ χαλκεῖς τοὺς πευκίνους μᾶλλον ἢ δρυίνους· καίτοι ἄσθενέστεροι ἄλλ' εἰς τὴν φύσησιν ἀμείνους ὡς ἦσον καταμαραίνομενοι· ἐστὶ δὲ ἡ φλὸξ ὑγρότερα τοῦτων. τὸ δὲ ὅλον ὑγρότερα φλὸξ καὶ ἢ τούτων καὶ ἢ τῶν χαλκεῶν τῶν μανδών καὶ κούφων καὶ ἢ τῶν αὐων· ἢ δ' ἐκ τῶν πυκνῶν καὶ χλωρῶν νωθεστέρα καὶ παχυτέρα· πασῶν δὲ ὑγρότατη ἢ ἐκ τῶν υλημάτων ἀνθρακὲς δὲ ὅλως οὐ γίνονται διὰ τὸ μὴ ἔχειν τὸ σωματόδες.

4 Τέμνουσι δὲ καὶ ξητοῦσι εἰς τὰς ἄνθρακιάς τὰ

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1 κολοβῶν conj. Palm.; κολάβων U; κολάβων Ald.
2 δὲ καὶ ἐκ τῶν conj. W.; δὲ καὶ οἱ τῶν UMVP; δὲ οἱ τῶν Ald.H.
3 καὶ εἰ ἑνικμοτέρας conj. W.; καὶ οἱ ἑνικμοτέρας U; καὶ ἢ ἐν ἀκμητέρας MV; καὶ οἱ ἐν ἀκμητέρας Ald.Bas.Cam. The sense seems to require ὑγρότερα for ἑνικμοτέραs and ἑνικμοτέρα for ὑγρότερα. G seems to have had a fuller text.
4 i.e. from growing in a damper place. cf. 5. 9. 4.

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and especially from trees which have been topped\(^1\): for these contain in the right proportion the qualities of closeness admixture of mineral matter and moisture. Again better charcoal comes from trees\(^2\) in a sunny dry position with a north aspect than from those grown in a shady damp position facing south. Or, if the wood\(^3\) used contains a good deal of moisture,\(^4\) it should be of close texture; for such wood contains more sap.\(^5\) And, for the same reason, that which is of closer texture either from its own natural character or because it was grown in a drier spot,\(^6\) is, whatever the kind of tree, better.\(^7\) But different kinds of charcoal are used for different purposes: for some uses men require it to be soft; thus in iron-mines they use that which is made of sweet chestnut when the iron has been already smelted, and in silver-mines they use charcoal of pine-wood: and these kinds are also used by the crafts. Smiths\(^8\) require charcoal of fir rather than of oak: it is indeed not so strong, but it blows up better into a flame, as it is less apt to smoulder: and the flame from these woods is fiercer. In general the flame is fiercer not only from these but from any wood which is of open texture and light, or which is dry: while that from wood which is of close texture or green is more sluggish and dull. The fiercest flame of all is given by brushwood; but charcoal cannot be made from it at all, since it has not the necessary substance.

They cut and require for the charcoal-heap straight

\(^1\) cf. § 1 ad fin.
\(^2\) ξηρότερον conj. W.; ξηρότερα UMV; πυκνότερα ξηρότερα Ald. I have bracketed τὸν.
\(^3\) βελτίω conj. Sch.; βελτίων UM; βέλτιον Ald.H.
\(^4\) cf. Plin. 16. 23.
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eυθέα καὶ τὰ λεία. δεῖ γὰρ ὡς πυκνότατα συνθείναι πρὸς τὴν κατάπνιξιν. ὅταν δὲ περι-


Δύσκαπνα δὲ τῷ γένει μὲν Ὀλως τὰ ὑγρά καὶ τὰ χλωρᾶ διὰ τοῦτο δύσκαπνα. Λέγω δὲ τὰ ὑγρά τὰ ἔλειαν, οἷον πλάτανον ίτέαν λεύκην αἰγείρον ἐπεὶ καὶ ἡ ἀμπελος ὅτε ὑγρα δύσκαπνος. ἐκ δὲ τῆς ἱδίας φύσεως ὁ φοίνιξ, ὃν δὴ καὶ μάλιστα τινές ὑπελήφασι δύσκαπνον· ὅθεν καὶ Χαιρήμων ἐποίησε "τού τε δύσκαπνοτάτου φοίνικος ἡ γῆς ρεῖοφοιτήτους φλέβας." δριμύτατος δὲ ὁ καπνὸς συκῆς καὶ ἐρίνεοι καὶ εἰ τι ἄλλο ὀπῶδες· αἰτία δὲ ἡ ὑγρότης: φλοίοσθέντα δὲ καὶ ἀποβρεχθέντα ἐν ὑδατι ἐπιρρύτῳ καὶ μετὰ ταῦτα ἔσπαυθέντα πάντων ἀκαπνοτάτα καὶ φλόγα μαλακωτάτην ἀνίησιν, ἀτε καὶ τῆς οἰκείας ὑγρότητος ἔξηριμενής. δριμεία δὲ καὶ ἡ τέφρα καὶ ἡ κονία ἡ ἀπ' αὐτῶν. μάλιστα δὲ φασὶ τὴν ἀπὸ τῆς ἀμυγδαλῆς.

5 Πρὸς δὴ τὰς καμινίας καὶ τὰς ἄλλας τέχνας ἅλλη ἄλλοις χρησίμη. ἐμπυρεύθεσθαι δὲ ἄριστα συκῆ καὶ ἐλάτες· συκῆ μὲν, ὅτι γλύσχρον τε καὶ μανόν, ὡστε ἐλκεῖ τε καὶ ὄν δίεισιν ἑλάδα δέ, ὤτι πυκνὸν καὶ λιπαρόν.

1 λεία conj. Scal. from G; vēa Ald.
2 With sods. cf. Plin., l.c., who seems to have had a fuller text.
3 An Athenian tragic poet. Scal. restores the quotation
smooth billets: for they must be laid as close as possible for the smouldering process. When they have covered the kiln, they kindle the heap by degrees, stirring it with poles. Such is the wood required for the charcoal-heap.

In general damp wood makes an evil smoke, and for this reason green wood does so: I mean the damp woods which grow in marshy ground, such as plane willow abelie black poplar: for even vine-wood, when it is damp, gives an evil smoke. So does palm-wood of its own nature, and some have supposed it to give the most evil smoke of all: whence Chaeremon speaks of "Veins issuing underground from roots of palm with its malodorous smoke." Most pungent is the smoke of fig-wood, whether wild or cultivated, and of any tree which has a curdling juice; the reason lies in the sap; when such wood has been barked and soaked in running water and then dried, it gives as little smoke as any other, and sends up a very soft flame, since its natural moisture also has been removed. The cinders and ashes of such wood are also pungent, and especially, they say, those of almond-wood.

For the crafts requiring a furnace and for other crafts various woods are serviceable according to circumstances. For kindling fig and olive are best: fig, because it is tough and of open texture, so that it easily catches fire and does not let it through, olive, because it is of close texture and oily.

thus: τοῦ τε δυσκαπνωτάτου | φοίνικος ἐκ γῆς ρίζοφοιτήτους φλέβας (ρίζοφοιτήτους conj. Schneidewin).

*i.e. not sputtering.*

*kai... χρησίμη conj. W.; τεχναὶ ἀλλήλως χρησίμη U; τ. ἀλλήλας χρ. MV; τέχνη ἀληθή ἐστι χρ. P; τ. ἀλλήλως ἐστι χρησίμη Ald.*

*i.e. burn out quickly.*
Πυρεία δὲ γίνεται μὲν ἐκ πολλῶν, ἀριστα δὲ, ὡς φησι Μενέστωρ, ἐκ κιττοῦ· τάχιστα γὰρ καὶ πλείστον ἀναπνεῖ. πυρείον δὲ φασιν ἀριστοῦ μὲν ἐκ τῆς ἀθραγένης καλουμένης ὑπὸ τινῶν τοῦτο δ᾽ ἐστὶ δένδρου ὁμοίων τῇ ἀμπέλῳ καὶ τῇ οἰνάνθῃ τῇ ἀγρίᾳ: ὥσπερ ἐκείνα καὶ τοῦτο ἀνα· 7 βαίνει πρὸς τὰ δένδρα. δεὶ δὲ τὴν ἐσχάραν ἐκ τούτων ποιεῖν τὸ δὲ τρύπανον ἐκ δάφνης· οὐ γὰρ ἐκ ταῦτο τὸ ποιοῦν καὶ πᾶσχον, ἀλλ᾽ ἐτερον εὐθὺ δεῖ κατὰ φύσιν, καὶ τὸ μὲν δεὶ παθητικὸν εἶναι τὸ δὲ ποιητικὸν. οὐ μὴν ἀλλὰ καὶ ἐκ τοῦ αὐτοῦ γίνεται καὶ, ὡς γέ τινες ὑπολαμβάνουσιν, οὐδὲν διαφέρει. γίνεται γὰρ ἐκ βάμνου καὶ πρίνου καὶ φιλύρας καὶ σχέδου ἐκ τῶν πλείστων πλὴν ἔλαιας· ὃ καὶ δοκεῖ ἄτοπον εἶναι· καὶ γὰρ σκηνρότερον καὶ λιπαρὸν ἢ ἔλαια· τούτο μὲν οὖν ἀσύμμετρον ἔχει δὴλον ὅτι τὴν ὑγρότητα πρὸς τὴν πῦρσιν. ἀγαθὰ δὲ τὰ ἐκ βάμνου· ποιεῖ δὲ τοῦτο καὶ τὴν ἐσχάραν χρηστὴν πρὸς γὰρ τὸ ἔδραν καὶ ἄχυμον εἶναι δεῖ καὶ μανοτέραν, ἵν' ἡ τρίψις ἀσχύνῃ, τὸ δὲ τρύπανον ἀπαθέστερον δι᾽ ὃ τὸ τῆς δάφνης ἀριστοῦ· ἀπαθές γὰρ ὅν ἐργάζεται τῇ δριμύτητι. πάντα δὲ τὰ πυρεία βορείως μὲν θάττον καὶ μᾶλλον ἔξωπτεται, νοτίως δὲ ἥττον· καὶ ἐν μὲν τοῖς μετεώροις μᾶλλον, ἐν δὲ τοῖς κοῖλοις ἥττον.

8 Ἀνίει δὲ τῶν ξύλων τὰ κέδρινα καὶ ἀπλῶς ὅμων

1 π. δὲ γίνεται μὲν conj. Sch.; π. μὲν γίνεται δὲ UMV Ald.
2 cf. 1. 2. 3 n.
3 κιττοῦ conj. Bod. from de igne 64, Plin. 16. 208; καρύου Ald.
4 πυρείον conj. Salm.; πυρὸι UMV Ald.

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Fire-sticks are made from many kinds of wood, but best, according to Menestor, from ivy: for that flares up most quickly and freely. They say also that a very good fire-stick is made of the wood which some call traveller's joy; this is a tree like the vine or the 'wild vine,' which, like these, climbs up trees. The stationary piece should be made of one of these, the drill of bay; for the active and passive parts of the apparatus should not be of the same wood, but different in their natural properties to start with, one being of active, the other of passive character. Nevertheless they are sometimes made of the same wood, and some suppose that it makes no difference. They are made in fact of buckthorn kermes-oak lime and almost any wood except olive; which seems surprising, as olive-wood is rather hard and oily; however it is plainly its moisture which makes it less suitable for kindling. The wood of the buckthorn is also good, and it makes a satisfactory stationary piece; for, besides being dry and free from sap it is necessary that this should also be of rather open texture, that the friction may be effectual; while the drill should be one which gets little worn by use. And that is why one made of bay is best; for, as it is not worn by use, it is effective through its biting quality. All fire-sticks take fire quicker and better in a north than in a south wind, and better in an exposed spot than in one which is shut in.

Some woods, such as prickly cedar, exude moisture, and, generally speaking, so do those

5 i.e. the piece of wood to be bored. cf. de igne, l.c.
6 àrle. ?àrle.
THEOPHRASTUS

ἐλαιώδης ἡ ύγρότης: δι' ὁ καὶ τὰ ἀγάλματά
φασιν ἴδειει ἐνίοτε: ποιοῦσι γὰρ ἐκ τοῦτων. ὁ
δὲ καλοῦσιν οἱ μάντεις Εἰλειθύιας ἄφεδρον, ὑπὲρ
οὗ καὶ ἐκθύονται, πρὸς τοὺς ἐλατίνους γίνεται
συνισταμένης τινὸς ύγρότητος, τῷ σχήματι μὲν
στρογγύλου μέγεθος δὲ ἴλικον ἄπιον ἢ καὶ μικρὸς
μεῖζον ἢ ἐλαττον. ἐκβλαστάνει δὲ μάλιστα τὰ
ἐλαίινα καὶ ἄργα κείμενα καὶ εἰργασμένα πολλά-
κις, ἐὰν ἱκμάδα λαμβάνῃ καὶ ἐχὴ τοῦτον νοτερόν
ώσπερ ἢδη τις στροφεῖς τῆς θύρας ἐβλάστησε, καὶ
eing κυλίκιον πλύνθιον τεθείσα κώπη ἐν πήλῳ.

1 cf. C. P. 5. 4. 4. οἱ μάντεις ... ἐλατίνους conj. Lobeck.: οἱ λείαν ... τοῖς ἐκατίνους U; οἰλείαν ... τοὺς ἐκματίνους V; οἱ λείαν τῆς εἰληθῆς ... τοῖς ἐκματίνους M; οἱ λείαν τῆς ἄλθυλιας ἑφαίδρον ... τοὺς ἐκατίνους P2; ἰλείαν τῆς εἰληθύιας ἑφυδρο ... τοὺς ἐκατίνους Ald.
ENQUIRY INTO PLANTS, V. ix. 8

whose sap is of an oily character; and this is why statues are sometimes said to ‘sweat’; for they are made of such woods. That which seers call the menses of Eileithuia,1 and for the appearance of which they make atonement,2 forms on the wood of the silver-sir when some moisture gathers on it: the formation is round3 in shape, and in size about as large as a pear, or a little larger or smaller. Olive-wood is more apt than other woods to produce shoots even when lying idle or made into manufactured articles; this it often does, if it obtains moisture and lies in a damp place; thus the socket of a door-‘hinge’4 has been known to shoot, and also an oar which was standing in damp earth in an earthenware vessel.5

2 i.e. as a portent. cf. Char. 16. 2.
3 στρόγγυλον conj. Sch.; στρογγύλης UMVP2Ald.
4 cf. 5. 6. 4; Plin. 16. 230.
5 πλίνθ. τεθ. κώπη ἐν πήλῳ conj. Spr.; πλίνθινον τεθεὶς τῇ κώπῃ πηλὸς P2Ald. H.
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