

LIBER I

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¹ alias *add. Jan.*

BOOK I

TABLE OF CONTENTS AND AUTHORITIES

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² diurna *Detlefsen*: dierum (dierum<modo> *Mayhoff*).

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Ex auctoribus: M. Varrone, Sulpicio Gallo, Tito Caesare imperatore, Q. Tuberone, Tullio Tirone, L. Pisone, T. Livio, Cornelio Nepote, Seboso, Caelio Antipatro, Fabiano, Antiante, Muciano, Caecina qui de Etrusca disciplina, Tarquitiio qui item, Iulio Aquila qui item, Sergio Paulo. Externis: Hipparcho, Timaeo, Sosigene, Petosiri, Nechepso Pythagoricis, Posidonio, Anaximandro, Epigene, Eudoxo, Democrito, Critodemo, Thrasylo, Serapione gnomonico, Euclide, Coerano philosopho, Dicaearcho, Archimede, Onesicrito, Eratosthene, Pythea, Herodoto, Aristotele, Ctesia, Artemidoro Ephesio, Isidoro Characeno, Theopompo.

Libro III. continentur situs, gentes, maria, oppida, portus, montes, flumina, mensurae, populi qui sunt aut qui fuerunt (iii) Baeticae, (iv) Hispaniae citerioris, (v) Narbonensis provinciae, (vi-x) Italiae usque

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Authorities: Marcus Varro, Sulpicius Gallus, the Emperor Titus Caesar, Quintus Tubero, Tullius Tiro, Lucius Piso, Titus Livy, Cornelius Nepos, Sebosus, Caelius Antipater, Fabianus, Antias, Mucianus, Caecina *On the Tuscan System*, Tarquitiio *ditto*, Julius Aquila *ditto*, Sergius Paullus. Foreign authorities; the Pythagorean writers, Hipparchus, Timaeus, Sosigenes, Petosiris, Nechepsus, Posidonius, Anaximander, Epigenes, Eudoxus, Democritus, Critodemus, Thrasyllus, Serapion *On Sun-dials*, Euclid, Coeranus the philosopher, Dicaearchus, Archimedes, Onesicritus, Eratosthenes, Pytheas, Herodotus, Aristotle, Ctesias, Artemidorus of Ephesus, Isidore of Charax, Theopompos.

Book III. Contents: sites, races, seas, towns, harbours, mountains, rivers, dimensions, present and past populations of (iii) Baetica, (iv) North-east Spain, (v) Province of Narbonne, (vi-x) Italy to the

Locros (ix Tiberis, Roma), (xi-xiv) insularum LXIV (in his Balarium, Corsicae, Sardiniae, Siciliae), (xv-xxii) Italiae a Locris usque Ravennam; (de Pado), Italiae trans Padum, (xxiii) Histriae, (xxiv) Alpium et gentium Alpinarum, (xxv-xxx) Illyrici, Liburniae, Dalmatiae, Noricorum, Pannoniae, Moesiae, insularum Ionii et Hadriatici. Summa: oppida et gentes . . . Summa: flumina clara . . . Summa: montes clari . . . Summa: insulae . . . Summa: quae interciderunt oppida aut gentes . . . Summa: res et historiae et observationes. . . .

Ex auctoribus: Turranio Gracile, Cornelio Nepote, T. Livio, Catone censorio, M. Agrippa, M. Varrone, divo Augusto, Varrone Atacino, Antiato, Hygino, L. Vetere, Pomponio Mela, Curione patre, Caelio, Arruntio, Sebosus, Licinio Muciano, Fabricio Tusco, L. Ateio, Ateio Capitone, Verrio Flacco, L. Pisone, Gelliano, Valeriano. Externis: Artemidoro, Alexandro Polyhistore, Thucydide, Theophrasto, Isidoro, Theopompo, Metrodoro Scepsio, Callistrate, Xenophonte Lampsaceno, Diodoro Syracusano, Nymphodoro, Calliphane, Timagene.

Libro IV. continentur situs, gentes, maria, oppida, portus, montes, flumina, mensurae, populi qui sunt aut qui fuerunt (i-iv) Epiri, (v-x) Achaiae, (xi-xiii) Graeciae, (xiv-xviii) Thessaliae, Magnesia, Macedonia, Thraciae, (xix-xxiii) insularum ante eas terras (inter quas, Creta, Euboea, Cyclades, Sporades), (xxiv) Hellesponti, Ponti, Maeotidis, (xxv f.) Daciae, Sarmatiae, Scythiae, (xxvii) insularum Ponti, (xxviii f.) Germaniae, (xxx) insularum in Gallico oceano XCVI, quas inter Britannia, (xxxii-iii) Belgicae Galliae, Lugdunensis Galliae, Aquitanicae Galliae, (xxxiv) citerioris Hispaniae ab oceano,

southernmost point, (ix the Tiber, Rome), (xi-xiv) 64 islands (including the Balearics, Corsica, Sardinia, Sicily), (xv-xxii) Italy from the south to Ravenna (the Po), Transpadane Italy, (xxiii) Istria, (xxiv) the Alps and Alpine races, (xxv-xxx) Illyria, Liburnia, Dalmatia, Noricum, Pannonia, Moesia, Ionian and Adriatic islands. Totals: ^a . . . famous rivers; . . . famous mountains; . . . islands; . . . extinct towns or races; . . . facts, researches and observations.

Authorities: Turranus Gracilis, Cornelius Nepos, Livy, Cato the Censor, Marcus Agrippa, Marcus Varro, His Late Majesty Augustus, Varro of Atax, Antias, Hyginus, Lucius Vetus, Pomponius Mela, the elder Curio, Caelius, Arruntius, Sebosus, Licinius Mucianus, Fabricius Tuscus, Lucius Ateius, Ateius Capito, Verrius Flaccus, Lucius Piso, Gellianus, Valerian. Foreign authorities: Artemidorus, Alexander the Learned, Thucydides, Theophrastus, Isidorus, Theopompus, Metrodorus of Scepsis, Callistrates, Xenophon of Lampsacus, Diodorus of Syracuse, Nymphodorus, Calliphanes, Timagenes.

Book IV. Contents: sites, races, seas, towns, harbours, mountains, rivers, dimensions, present and past populations of (i-iv) Epirus, (v-x) Achaia, (xi-xiii) Greece, (xiv-xviii) Thessaly, Magnesia, Macedonia, Thrace, (xix-xxiii) islands off these coasts, including Crete, Euboea, the Cyclades, the Sporades, (xxiv) Dardanelles, Black Sea, Sea of Azov, (xxv f.) Dacia, Sarmatia, Scythia, (xxvii) Islands of Black Sea, (xxviii f.) Germany, (xxx) North Sea islands, 96 including Britain, (xxxii-xxxiii) Belgium, Lyonnaise, Aquitaine, (xxxiv) North-eastern Spain,

^a Figures lost here.

PLINY: NATURAL HISTORY

(xxxv) Lusitaniae, (xxxvi) insularum in mari Atlantico. (xxxvii) Universae Europae mensura. Summa: oppida et gentes . . . Summa: flumina clara . . . Summa: montium clari . . . Summa: insulae . . . Summa: quae interciderere oppida aut gentes . . . Summa: res, historiae et observationes . . .

Ex auctoribus: Catone censorio, M. Varrone, M. Agrippa, divo Augusto, Varrone Atacino, Cornelio Nepote, Hygino, L. Vetere, Mela Pomponio, Licinio Muciano, Fabricio Tusco, Ateio Capitone, Ateio philologo. Externis: Polybio, Hecataeo, Hellanico, Damaste, Eudoxo, Dicaearcho, Timosthene, Eratosthene, Ephoro, Cratete grammatico, Serapione Antiochense, Callimacho, Artemidoro, Apollodoro, Agathocle, Timaeo Siculo, Myrsilo, Alexandro Polyhistore, Thucydide, Dosiade, Anaximandro, Philistide Mallote, Dionysio, Aristide, Callidemo, Menaechmo, Aglaosthene, Anticlidae, Heraclide, Philemone, Xenophonte, Pythea, Isidoro, Philonide, Xenagora, Astynomo, Staphylo, Aristocrito, Metrodoro, Cleobulo, Posidonio.

Libro V. continentur situs, gentes, maria, oppida, portus, montes, flumina, mensurae, populi qui sunt aut qui fuerunt (i-viii) Mauritaniarum, Numidiae, Africae, Syrtium, Cyrenaicae, insularum circa Africam, aversorum Africae, (ix-xi) Aegypti, Chora, Thebaidis, Nili, (xii) Arabiae quae est ad mare Aegyptium, (xiii-xix) Idumaeae, Syriae, Palaestines, Samariae, Iudaeae, Phoenices, Syriae Coeles, Syriae Antiochiae, (xx-xxxiii) Euphratis, Ciliciae et iunctarum gentium, Isauricae, Omanadum, Pisidiae, Lycaoniae, Pamphyliae, Tauri montis, Lyciae, Cariae, Ioniae, Aeolidis, Troadis et iunctarum gentium, (xxxiv-ix) insularum ante Asiam CCXII (in iis. Cypri,

BOOK I

(xxxv) Western Spain and Portugal. (xxxvi) Atlantic islands. (xxxvii) Dimensions of the whole of Europe. —Totals: . . . towns and races; . . . famous rivers; . . . famous mountains; . . . islands; . . . extinct towns or races; . . . facts, investigations and observations.

Authorities: Cato the Censor, Marcus Varro, Marcus Agrippa, His Late Majesty Augustus, Varro of Atax, Cornelius Nepos, Hyginus, Lucius Vetus, Pomponius Mela, Licinius Mucianus, Fabricius Tuscus, Ateius Capito, Ateius the scholar. Foreign authorities: Polybius, Hecataeus, Hellanicus, Damaestes, Eudoxus, Dicaearchus, Timosthenes, Eratosthenes, Ephorus, Crates the philologist, Serapion of Antioch, Callimachus, Artemidorus, Apollodorus, Agathocles, Timaeus of Sicily, Myrsilus, Alexander the Learned, Thucydides, Dosiades, Anaximander, Philistides of Mallus, Dionysius, Aristides, Callidemus, Menaechmus, Aglaosthenes, Anticlides, Heraclides, Philemon, Xenophon, Pytheas, Isidore, Philonides, Xenagoras, Astynomus, Staphylus, Aristocritus, Metrodorus, Cleobulus, Posidonius.

Book V. Contents:—sites, races, seas, towns, harbours, mountains, rivers, dimensions, present and past populations of (i-viii) the Mauritians, Numidia, Africa, the Syrtes, Cyrenaica, African islands, remote parts of Africa, (ix-xi) Egypt—Chora, Thebaid, Nile, (xii) Arabian coast of Egyptian Sea, (xiii-xix) Idumea, Syria, Palestine, Samaria, Judaea, Phoenicia, Hollow Syria, Syria of Antioch, (xx-xxxiii) Euphrates, Cilicia and adjoining races, Isaurica, Omanades, Pisidia, Lycaonia, Pamphylia, Taurus Mountain, Lycia, Caria, Ionia, Aeolid, Troad and adjoining races, (xxxiv-ix) Islands on Asiatic coast (212)

PLINY: NATURAL HISTORY

Rhodi, Coi, Sami, Chii, Lesbi), (xl-xliii) Hellespontus, Mysia, Phrygia, Galatia et iunctae gentes, Bithynia. Summa: oppida et gentes . . . Summa: flumina clara . . . Summa: montium clari . . . Summa: insulae CXVIII. Summa: quae intercidere oppida aut gentes . . . Summa: res et historiae et observationes . . .

Ex auctoribus: Agrippa, Suetonio Paulino, M. Varrone, Varrone Atacino, Cornelio Nepote, Hygino, L. Vetere, Mela, Domitio Corbulone, Licinio Muciano, Claudio Caesare, Arruntio, Livio filio, Seboso, actis triumphorum. Externis: Iuba rege, Hecataeo, Hellanico, Damaste, Dicaearcho, Baetone, Timosthene, Philonide, Xenagora, Astynomo, Staphylo, Dionysio, Aristotele, Aristocrito, Ephoro, Eratosthene, Hipparcho, Panaetio, Serapione Antiocheno, Callimacho, Agathocle, Polybio, Timaeo mathematico, Herodoto, Myrsilo, Alexandro polyhistore, Metrodoro, Posidonio qui *περίπλους* aut *περιήγησις*, Sotade, Pindaro, Aristarcho Sicyonio, Eudoxo, Antigene, Callicrate, Xenophonte Lampsaceno, Diodoro Syracusano, Hannone, Himilcone, Nymphodoro, Calliphane, Artemidoro, Megasthene, Isidoro, Cleobulo, Aristocreonte.

Libro VI. continentur situs, gentes, maria, oppida, portus, montes, flumina, mensurae, populi qui sunt aut qui fuerunt (i) Ponti, Mariandynorum, (ii) Paphlagonum, (iii, viii) Cappadocum. (iv) Themiscyrena regio et in ea gentes, Heniochi, (v) regio Colica et gentes, Achaeorum gentes, ceterae eodem tractu gentes, (vi-xii) Bosphorus Cimmerius, Maeotis, gentes circa Maeotim, Armenia minor, Armenia maior, Cyrus fluvius, Araxes fluvius, Albania, Iberia et iunctae portae Caesariae, (xiii) insulae in Ponto,

BOOK I

including Cyprus, Rhodes, Cos, Samos, Chios, Lesbos, (xl-xliii) Dardanelles, Mysia, Phrygia, Galatia and adjoining races, Bithynia. Totals: . . . towns and races; . . . famous rivers; . . . famous mountains; 118 islands; . . . extinct towns and races; . . . facts, investigations and observations.

Authorities: Agrippa, Suetonius Paulinus, Marcus Varro, Varro of Atax, Cornelius Nepos, Hyginus, Lucius Vetus, Mela, Domitius Corbulo, Licinius Mucianus, Claudius Caesar, Arruntius, Livy junior, Sebosus, *Triumphs*—*Official records*. Foreign authorities: King Juba, Hecataeus, Hellanicus, Damastes, Dicaearchus, Baeto, Timosthenes, Philonides, Xenagoras, Astynomus, Staphylus, Dionysius, Aristotle, Aristocritus, Ephorus, Eratosthenes, Hipparchus, Panaetius, Serapio of Antioch, Callimachus, Agathocles, Polybius, Timaeus the mathematician, Herodotus, Myrsilus, Alexander the Learned, Metrodorus, Posidonius's *Circumnavigation* or *Round Guide*, Sotades, Pindar, Aristarchus of Sicyon, Eudoxus, Antigene, Callicrates, Xenophon of Lampsacus, Diodorus of Syracuse, Hanno, Himilco, Nymphodorus, Calliphanes, Artemidorus, Megasthenes, Isidore, Cleobulus, Aristocreon.

Book VI. Contents:—sites, races, seas, towns, harbours, mountains, rivers, dimensions, present and past populations of (i) Pontus, Mariandyni, (ii) Paphlagonia, (iii, viii) Cappadocia, (iv) region of Themiscyra and its races, Heniochi, (v) Colic region and races, Achaean races, other races in the same area, (vi-xii) Cimmerian Bosphorus, Maeotis and adjacent races, Lesser Armenia, Greater Armenia, River Cyrus, River Araxes, Albania, Iberia and adjoining Gates of Caesaria, (xiii) Black Sea Islands,

(xiv) gentes a Scythico oceano, (xv-xix) Caspium et Hyrcanum mare, Adiabene, Media, portae Caspiae, gentes circa Hyrcanum mare, Scytharum gentes, (xx-xxxvi) situs ab oceano Eoo, Seres, Indi (Ganges, Indus), Taprobane, Ariani et iunctae gentes, navigationes in Indiam, Carmania, sinus Persicus, Parthorum regna, Mesopotamia, Tigris, Arabia, sinus maris rubri, Trogodytice, Aethiopia, insulae Aethiopici maris. (xxxvii) De insulis fortunatis. (xxxviii f.) Terrae per mensuras comparatae, digestio terrarum in parallelos et umbras pares. Summa: oppida MCXCV. Summa: gentes DLXXVI. Summa: flumina clara CXV. Summa: montes clari XXXVIII. Summa: insulae CVIII. Summa: quae intercidere oppida aut gentes XCV. Summa: res et historiae et observationes MMCCXIV.

Ex auctoribus: M. Agrippa, M. Varrone, Varrone Atacino, Cornelio Nepote, Hygino, L. Vetere, Mela Pomponio, Domitio Corbulone, Licinio Muciano, Claudio Caesare, Arruntio, Seboso, Fabricio Tusco, T. Livio filio, Seneca, Nigidio. Externis: Iuba rege, Hecataeo, Hellanico, Damaste, Eudoxo, Dicearcho, Baetone, Timosthene, Patrocle, Demodamante, Clitarcho, Eratosthene, Alexandro magno, Ephoro, Hipparcho, Panaetio, Callimacho, Artemidoro, Apollodoro, Agathocle, Polybio, Timaeo Siculo, Alexandro polyhistore, Isidoro, Amometo, Metrodoro, Posidonio, Onesicrito, Nearcho, Megasthene, Diogneto, Aristocreonte, Bione, Dalione, Simonide minore, Basile, Xenophonte Lampsaceno.

Libro VII. continentur (ii f.) gentium mirabiles figurae; prodigiosi partus. (iv-xi) De homine generando: pariendi tempora per industria exempla

(xiv) races towards the Scythian Ocean, (xv-xix) Caspian and Hyrcanian Sea, Adiabene, Media, Caspian Gates, races round Hyrcanian Sea, Scythian races, (xx-xxxvi) regions towards the Eastern Sea, China, India (Ganges, Indus), Taprobane, Arians and adjoining races, voyages to India, Carmania, Persian Gulf, Parthian kingdoms, Mesopotamia, Tigris, Arabia, Gulf of Red Sea, Trogodyte country, Ethiopia, Islands of Ethiopian Sea. (xxxvii) The Fortunate Islands. (xxxviii f.) Lands compared by measurements, division of lands into parallels and equal shadows. Totals: 1195 towns; 576 races, 115 famous rivers, 38 famous mountains, 108 islands, 95 extinct towns and races; 2214 facts and investigations and observations.

Authorities: Marcus Agrippa, Marcus Varro, Varro of Atax, Cornelius Nepos, Hyginus, Lucius Vetus, Pomponius Mela, Domitius Corbulo, Licinius Mucianus, Claudius Caesar, Arruntius, Sebosus, Fabricius Tuscus, Titus Livy junior, Seneca, Nigidius. Foreign authorities: King Juba, Hecataeus, Hellenicus, Damastes, Eudoxus, Dicearchus, Baeto, Timosthenes, Patrocles, Demodamas, Clitarchus, Eratosthenes, Alexander the Great, Ephorus, Hipparchus, Panaetius, Callimachus, Artemidorus, Apollodorus, Agathocles, Polybius, Timaeus of Sicily, Alexander the Learned, Isidore, Amometus, Metrodorus, Posidonius, Onesicritus, Nearchus, Megasthenes, Diognetus, Aristocreon, Bion, Dalion, the younger Simonides, Basilis, Xenophon of Lampsacus.

Book VII. Contents: (ii f.) Remarkable racial bodily configurations; monstrous births. (iv-xi) Human generation: periods of pregnancy from 7 months to

a mensibus septem ad tredecim; signa sexus in gravidis pertinentia ante partum; monstruosi partus, excisi utero; qui sint vopisci; de conceptu hominum; de generatione hominum; similitudinum exempla; numerosissimae subolis exempla. (xii) Ad quos annos generatio. (xiii) Mensum in feminis miracula. (xiv) Quae ratio generandi. (xv) Historica circa dentes. Historica circa infantes. (xvi f.) Magnitudinum exempla. Praeproperi infantes. (xviii-xxiii) Insignia corporum, vires eximiae, velocitas praecipua, visus eximius, auditus miraculum, patientia corporis. (xxiv-vi) Memoria, vigor animi, clementia, animi magnitudo. (xxvii) Rerum gestarum claritas summa. (xxviii-xxx) Tres summae virtutes in eodem, innocentia summa, fortitudo summa, ingenia praecipua. qui sapientissimi. (xxxii) Praecepta vitae utilissima. (xxxiii) De divinatione. (xxxiv-vi) Vir optimus iudicatus, matronae pudicissimae; summae pietatis exempla. (xxxvii-ix) Artibus excellentes—astrologia, grammatica, medicina, geometria, architectura, pictura, sculptura aeraria, marmoraria, eboraria, caelatura. (xl-xlvi) Pretia hominum insignia; de felicitate summa; raritas continuationis in familiis; varietatis exempla mirabilia; bis proscriptus; honorum exempla mirabilia; decem res in uno felicissimae; divi Augusti adversa. (xlvii f.) Quos dii felicissimos iudicaverint; quem viventem ut deum coli iusserint. Fulgur mirabile. (xlix) De spatiis vitae longissimis. (l) De varietate nascendi. (li) In morbis exempla

* One of a pair of twins born alive after the premature birth and death of the other.

13 shown by famous examples; significant pre-natal indications of sex in the pregnant; monstrous births, cases of surgical delivery; meaning of *vopiscus*^a; human conception; human generation; cases of likeness; cases of very numerous progeny. (xii) Age-limit of procreation. (xiii) Exceptional periods of pregnancy. (xiv) Theory of generation. (xv) Investigation as to teeth; as to infants. (xvi f.) Instances of exceptional size. Premature births. (xviii-xxiii) Bodily distinctions, exceptional strength, remarkable speed, exceptional sight, marvellous hearing, bodily endurance. (xxiv-xxvi) Memory, mental vigour, clemency, magnanimity. (xxvii) Supremely distinguished exploits. (xxviii-xxx) Three supreme virtues in the same person, supreme innocence, supreme bravery, exceptional talents. Who are the wisest men? (xxxii) The most useful rules of conduct. (xxxiii) Divination. (xxxiv-vi). The man deemed the best, the most chaste matrons; instances of extreme piety. (xxxvii-ix) Cases of eminence in the sciences and arts, astronomy, philology, medicine, geometry, architecture, painting, sculpture in bronze, in marble, in ivory; engraving. (xl-xlvi) Remarkable prizes of mankind; supreme happiness; rarity of its continuance in families; remarkable cases of change of fortune; twice proscribed; remarkable cases of honours; ten supremely happy things in the case of a single person; misfortunes of his late Majesty Augustus. (xlvii f.) Whom the gods have judged happiest; what man they have commanded to be worshipped as a god in his lifetime. A remarkable flash of lightning. (xlix) Cases of exceptional longevity. (l) Various modes of birth. (li) Diseases in various cases.

varia. (lii-lvi f.) De morte; qui elati revixerint; subitae mortis exempla; de sepultura; de manibus; de anima. (lvii-lx) Quae quis in vita invenerit; in quibus rebus primi gentium consensus. De antiquis litteris. Quando primum tonsores, quando primum horologia. Summa: res et historiae et observationes DCCXLVII.

Ex auctoribus: Verrio Flacco, Gnaeo Gellio, Licinio Muciano, Masurio Sabino, Agrippina Claudii, M. Cicerone, Asinio Pollione, M. Varrone, Messala Rufo, Nepote Cornelio, Vergilio, T. Livio, Cordo, Melisso, Seboso, Cornelio Celso, Maximo Valerio, Trogo, Nigidio Figulo, Pomponio Attico, Pediano Asconio, Fabiano, Catone censorio, actis, Fabio Vestale. Externis: Herodoto, Aristeia, Baetone, Isigono, Cratete, Agatharchide, Calliphane, Aristotele, Nymphodoro, Apollonide, Phylarcho, Damone, Megasthene, Ctesia, Taurone, Eudoxo, Onesicrito, Clitarcho, Duride, Artemidoro, Hippocrate medico, Asclepiade medico, Hesiodo, Anacreonte, Theopompo, Hellanico, Damaste, Ephoro, Epigene, Beroso, Petosiri, Nechepso, Alexandro polyhistore, Xenophonte, Callimacho, Democrito, Diyllo historico, Stratone qui contra Ephori εὑρήματα scripsit, Heraclide Pontico, Asclepiade qui τραγωδοῦμενα, Philostephano, Hegesia, Archemacho, Thucydide, Mnesigitone, Xenagora, Metrodoro Scepsio, Anticlido, Critodemo.

Libro VIII. continentur: (i-xi) De elephantis—de sensu eorum; quando primum iuncti; de docilitate eorum; mirabilia in factis eorum; de natura ferarum ad pericula sua intellegenda; quando primum in Italia visi elephantis; pugnae eorum; quibus modis

(lii-lvi) Death; cases of the dead coming to life again; instances of sudden death; burial; ghosts; the soul. (lvii-lx) Discoveries in life; matters on which there was the earliest agreement of the races; ancient literature; date of earliest barbers, earliest time-pieces. Total: 747 facts, investigations and observations.

Authorities: Verrius Flaccus, Gnaeus Gellius, Licinius Mucianus, Masurius Sabinus, Agrippina wife of Claudius, Marcus Cicero, Asinius Pollio, Marcus Varro, Messala Rufus, Cornelius Nepos, Virgil, Livy, Cordus, Melissus, Sebosus, Cornelius Celsus, Valerius Maximus, Trogus, Nigidius Figulus, Pomponius Atticus, Pedianus Asconius, Fabianus, Cato the Censor, *Official Records*, Fabius Vestalis. Foreign authorities: Herodotus, Aristeas, Baeton, Isigonus, Crates, Agatharchides, Calliphanes, Aristotele, Nymphodorus, Apollonides, Phylarchus, Damon, Megasthenes, Ctesias, Tauron, Eudoxus, Onesicritus, Clitarchus, Duris, Artemidorus, the medical authors Hippocrates and Asclepiades, Hesiod, Anacreon, Theopompus, Hellanicus, Damastes, Ephorus, Epigenes, Berosus, Petosiris, Nechepsus, Alexander the Learned, Xenophon, Callimachus, Democritus, the historian Diyllus, Strato's *Reply to Ephorus's 'Heuremata'*, Heraclides of Pontus, the *Tragoedumena* of Asclepiades, Philostephanus, Hegesias, Archemachus, Thucydides, Mnesigiton, Xenagoras, Metrodorus of Scepsis, Anticlides, Critodemus.

Book VIII. Contents: (i-xi) Elephants, their sense; when first harnessed; their docility; remarkable achievements of; instinctive sense of dangers in wild animals; elephants, when first seen in Italy; fights between elephants; modes of capture; modes

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capiantur; quibus domentur; de partu eorum et reliqua natura; ubi nascantur; discordia eorum et draconum. (xii) De sollertia animalium. (xiii) De draconibus. (xiv) Mirae magnitudines serpentium. (xv f.) De Scythicis animalibus, de septentrionalibus, de bisontibus, uris, alce, achli, bonaso. (xvii-xxi) De leonibus—quomodo gignantur; quae genera eorum; quae propria naturae; quis primus leontomachiam Romae, quis plurimos in ea leones donaverit; quis primus Romanorum iunxit; mirabilia in leonum factis. (xxii) A dracone agnitus et servatus. (xxiii f.) De pantheris senatusconsultum et leges de Africanis; quis primus Romae Africanas et quando, quis plurimas. (xxv) De tigribus et quando primum Romae visa tigris; de natura earum, de catulis. (xxvi-xxx) De camelis; genera eorum. de camelopardali; quando primum Romae visa. de chamate. de cephis, de rhinocerote. de lynce et sphingibus. de crocottis. de cercopithecis. (xxxi-iv) Indiae terrestria animalia; item Aethiopiae; bestia visu interficiens; de basiliscis serpentibus; de lupis; unde fabula versipellium. (xxxv-xl) Serpentium genera. de ichneumone; de crocodilo; de scinco; de hippopotamo: quis primus ostenderit eum Romae et crocodilum. (xli-iii) Medicinae ab animalibus repertae; prognostica periculorum ex animalibus; gentes ab animalibus sublatae. (xlv f.) De hyaenis. de corocottis. de mantichoris. (xlvi) De onagris. (xlvii-ix) De aquaticis et iisdem terrestribus: de fibris, de lutris, de vitulo marino, de stellionibus. (l) De cervis. (li f.) De chamaeleonte; de reliquis colorem mutantibus;

^a Identified with the *alces* by some naturalists.

^b Perhaps the hyena.

BOOK I

of domestication; their propagation, and general physiology; native habitat; hostility between elephants and great snakes. (xii) Intelligence of animals. (xiii) Great snakes. (xiv) Serpents of remarkable size. (xv f.) Animals of Scythia; of the north; bisons, bears, the elk, the achlis,^a the Paeonian bull. (xvii-xxi) Lions—their mode of reproduction, their varieties, their characteristics; who first produced a battle with lions in the circus at Rome? who gave such a show with the largest number of lions? what Roman first harnessed lions to a chariot? remarkable cases among the exploits of lions. (xxii) Man recognised and rescued by a great snake. (xxiii f.) Panthers, resolution of senate and laws as to African; who first showed African panthers at Rome, and when? who showed the largest number? (xxv) Tigers; when was a tiger first seen at Rome? nature of tigers; tiger-cubs. (xxvi-xxx) Camels; their kinds. The giraffe; when first seen at Rome. The spotted lynx. The cephi. The rhinoceros. The lynx and the sphynxes. The crocotta.^b The long-tailed monkeys. (xxxi-iv) Land animals of India; *ditto* of Ethiopia; a creature the sight of which brings death; basilisk-snakes; wolves; source of the fabulous were-wolf. (xxxv-xl) Snakes, species of; the ichneumon; the crocodile; the African lizard; the hippopotamus: who first showed this animal, and the crocodile at Rome. (xli-iii). Drugs obtained from animals; warnings of dangers from animals; races destroyed by animals. (xlv f.) Hyaenas; corocottae; mantichorae. (xlvi) Wild asses. (xlvii-ix) Amphibious species: beavers, otters, the sea-calf, geckoes. (l) Stags. (li f.) Chameleon; other species that change

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tarandro, lycaone, thoe. (liii) De hystrice. (liv) De ursis; de fetu eorum. (lv-viii) De muribus Ponticis et Alpinis, erinaceis, leontophono, lynces, meles, sciuri. (lix f.) De cocleis; de lacertis. (lx-lxiii) Canum natura; exempla eorum circa dominos; qui proeliorum causa canes habuerint; de generatione eorum; contra rabiem remedia. (lxiv-vii) Equorum natura; de ingeniis equorum; mirabilia quadrigarum; generatio equorum; vento concipientes. (lxviii) De asinis; generatio in his. (lxix) Mularum natura et reliquorum iumentorum. (lxx f.) De bubus, generatio eorum; Apis in Aegypto. (lxxii-v) Pecorum natura: generatio eorum; genera lanae et colorum; genera vestium. (lxxvi f.) Caprorum natura et generatio; suum item. (lxxviii f.) De feris subus. quis primus vivaria bestiarum instituerit. (lxxx-ii) De simiis. de leporum generibus. de semiferis animalibus. (lxxxiii) Quae quibus locis animalis non sint; ubi et quae advenis tantum noceant, ubi et quae indigenis tantum. Summa: res et historiae et observationes DCCCLXXXVII.

Ex auctoribus: Muciano, Procilio, Verrio Flacco, L. Pisone, Cornelio Valeriano, Catone censorio, Fenestella, Trogo, actis, Columella, Vergilio, Varrone, Lucilio, Metello Scipione, Cornelio Celso, Nigidio, Trebio Nigro, Pomponio Mela, Mamilio Sura. Externis: Iuba rege, Polybio, Herodoto, Antipatro, Aristotele, Demetrio physico, Democrito, Theophrasto, Euanthe, Scopa qui Ὀλυμπιονίκας, Hierone rege, Attalo rege, Philometore rege, Ctesia, Duride, Philisto, Archyta, Phylarcho, Amphilocho Athenaeo, Anaxipoli Thasio, Apollodoro Lemnio, Aristophane Milesio, Antigono Cumaeo, Agathocle Chio, Apollo-

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colour—reindeer, lycaon, jackall (liii) The porcupine, (liv) Bears; their reproduction. (lv-viii) Mice, Black Sea and Alpine; hedgehogs, lion-killer, lynxes, badgers, squirrels. (lix f.) Snails; lizards. (lx-lxiii). Dogs, nature of; instances of relation to masters; nations that have kept dogs of war; dog-breeding; cures for rabies. (lxiv-vii) Nature of horses—equine psychology; remarkable four-in-hands; horse-breeding; cases of conception by wind. (lxviii) Asses; breeding in their case. (lxix) Nature of mules and other draft-animals. (lxx f.) Oxen, breeding of. Apis in Egypt. (lxxii-v) Nature of sheep—their breeding; kinds of wool and of colours; kinds of cloth. (lxxvi f.) Goats, their nature and breeding; swine, ditto. (lxxviii f.) Wild pigs. Who originated menageries? (lxxx-ii) Apes. Hares, their kinds. Half-wild animals. (lxxxiii) What animals do not occur in what places? which in what places harm only strangers? which in what places only natives?—Total: 787 facts, investigations and observations.

Authorities: Mucianus, Procilius, Verrius Flaccus, Lucius Piso, Cornelius Valerianus, Cato the ex-Censor, Fenestella, Trogus, *Official Records*, Columella, Virgil, Varro, Lucilius, Metellus Scipio, Cornelius Celsus, Nigidius, Trebius Niger, Pomponius Mela, Mamilius Sura. Foreign authorities: King Juba, Polybius, Herodotus, Antipater, Aristotle, Demetrius's *Natural History*, Democritus, Theophrastus, Euanthes, Scopas's *Olympic Victors*, King Hiero, King Attalus, King Philometor, Ctesias, Duris, Philisto, Archytas, Phylarchus, Amphilocho of Athens, Anaxipolis of Thasos, Apollodorus of Lemnos, Aristophanes of Miletus, Antigonus of Cumae, Agathocles of Chios,

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nio Pergameno, Aristandro Athenaeo, Bacchio Milesio, Bione Solense, Chaerea Athenaeo, Diodoro, Prienaeco, Dione Colophonio, Epigene Rhodio, Euagone Thasio, Euphronio Athenaeo, Hegesia Maroneo, Menandris Prienaeco et Heracleote, Menecrate poeta, Androtione qui de agricultura scripsit, Aeschrione qui item, Lysimacho qui item, Dionysio qui Magonem transtulit, Diophane qui ex Dionysio epitomen fecit, Archelao rege, Nicandro.

Libro IX. continetur aquatilium natura. (i) Quare maxima in mari animalia. (ii) Indici maris beluae. (iii) Quae in quoque oceano maximae. (iv) De Tritonum et Nereidum figuris. de elephantorum marinatorum figuris. (v) De balaenis, de orcis. (vi) An spirent pisces, an dormiant. (vii-x) De delphinis quos amaverint; quibus in locis societate cum hominibus piscentur; alia circa eos mira. (xi) De tursionibus. (xii f.) De testudinibus: quae genera aquatilium testudinum et quomodo capiuntur, quis primus testudinem secare instituerit. (xiv) Digestio aquatilium per species. (xv) De vitulis marinis sive phocis; quae pilo careant et quomodo pariant. (xvi) Quot genera piscium. (xvii-xix) Qui maximi pisces; cordylae, pelamydes, thynni; membratim ex his salsura; apolecti, cybia; amiae, scombri. (xx) Qui non sint pisces in Ponto, qui intrent, qui alio¹ redeant. (xxi) Quare pisces extra aquam exiliant. gladius piscis. (xxii) Esse auguria ex piscibus. (xxiii-v) In quo genere piscium mares non sint. qui calculum in capite habeant; qui lateant hieme; qui hieme non capiuntur nisi stasis diebus; qui aestate lateant; qui siderentur pisces. (xxvi-xxx) De mugile, de acipensere, de

¹ Rackham: alia aut alias.

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Apollonius of Pergamum, Aristander of Athens, Bacchius of Miletus, Bio of Soli, Chaereas of Athens, Diodorus of Priene, Dio of Colophon, Epigenes of Rhodes, Euagon of Thasos, Euphronius of Athens, Hegesias of Maronea, Menander of Priene and Menander of Heraclea, the poet Menecrates, Androtion *On Agriculture*, Aeschrion *ditto*, Lysimachus *ditto*, Dionysius's translation of Mago, Diophanes's summary of Dionysius, King Archelaus, Nicander.

Book IX. Subject—the nature of aquatic animals. (i) Extreme size of marine animals, reason for. (ii) Monsters of the Indian Sea. (iii) Which are the largest in each Ocean? (iv) Tritons and Nereids, shapes of. Sea elephants, shapes of. (v) Whales, grampuses. (vi) Do fishes breathe? do they sleep? (vii-x) Dolphins, persons loved by; places where they fish in partnership with men; other curious facts as to. (xi) Porpoises. (xii f.) Tortoises—kinds of water-tortoise; mode of capture; who invented cutting tortoise-shells (xiv) Aquatic animals arranged by species. (xv) Sea-calves or seals—which species are hairless? mode of reproduction. (xvi) How many kinds of fish? (xvii-xix). The largest fishes; tunny-fry, young tunny, full-grown tunny; tunny divided and pickled, salted tunny slices, chopped tunny; *amia*-tunny, mackerel-tunny. (xx) Fishes in the Black Sea—which species not found in it, which enter in from elsewhere, which leave it. (xxi) Why fishes leap out of the water. The sword-fish. (xxii) Augury from fishes a fact. (xxiii-v) Species of fish that have no males; that have a stone in the head; that hibernate in winter; that are only caught on certain days in winter; that hide in summer; that are liable to planet-stroke. (xxvi-xxx) Mullet,

lupo, de asello, de scaro, de mustela. mullorum genera. sargus. (xxxii f.) Mirabilia piscium pretia. non ubique eadem genera placere. (xxxiii) Generatim¹ de branchiis, de squamis. (xxxiv) Vocales et sine branchiis pisces; qui in terram exeant; tempora capturae. (xxxv) Digestio piscium in figuras corporis. rhomborum et passerum differentia. de longis piscibus. (xxxvii) De piscium pinnis et natandi ratione. (xxxviii) Anguillae. (xxxix) Murinae. (xl) Planorum piscium genera. (xli) Echeneis effectusque eius. (xlii) Qui pisces colorem mutant. (xliii) De hirundine; de pisce qui noctibus lucet; de cornuto; de dracone marino. (xliv) De piscibus sanguine carentibus; qui pisces molles appellantur. (xlv) De sepia, de lolligine, de pectunculis; qui volent extra aquam. (xlvi-ix) De polypis; de navigatore polypo. de navigatore nauplio. (l-lii) Crusta intecti: de locustis, cancrorum genera, de pinotere, de echinis, de cocleis, de pectinibus, concharum genera. (liii) Quanta luxuriae materia mari sit. (liv-lix) De margaritis quomodo nascantur et ubi; quomodo inveniuntur; quae genera unionum; quae observanda in iis; quae natura eorum; exempla circa eos; quando primum in usum venerint Romae. (lx-lxv) Muricum natura: de purpuris; quae nationes purpurae; quomodo ex his lanae tinguntur; quando purpurae usus Romae, quando lati clavi et praetextae; de conchyliatis vestibus; de amethysto tingendo; de Tyrio, de hysgino, de cocco. (lxvi) De pina et pinotere. (lxvii) De sensu aquatilium; torpedo, pastinaca, scolopendrae, glanis; de ariete pisce. (lxviii f.) De his quae tertiam naturam habent animalium et fruticum: de urticis; de

¹ *Dellefsen*: generati.

sturgeon, pike, cod, wrasse, lamprey; varieties of mullet; the *sargus*. (xxxii f.) Remarkable prices for fish. Different kinds popular in different places. (xxxiii) Gills in various species; scales *ditto*. (xxxiv f.) Fish with voice, fish without gills; fish that go ashore. Seasons for catching fish. (xxxv) Classification of fish by shape. Difference between turbot and sparrow-turbot. Long fishes. (xxxvii) Fins and mode of swimming. (xxxviii) Eels. (xxxix) Lampreys. (xl) Kinds of flat-fish. (xli) The remora and how it operates. (xlii) What fish change colours. (xliii) Swallow-fish. The fish that shines by night. The horned fish. The weever. (xliv) The bloodless fishes. The so-called soft fishes. (xlv) The sepia-fish. The cuttle-fish. The small scallops. Flying fish. (xlvi-ix) The polyps, including the sailing polyp. The sailor-fish. (l-lii) Shell-fish: lobster, varieties of crab, the sea-pen's guard, sea-urchins, snails, scallops. Varieties of shell. (liii) Quantity of delicacies supplied by the sea. (liv-lix) Pearls—how do they grow and where, how found; varieties of large pearl—their remarkable features, their nature, instances of their occurrence, when first used at Rome. (lx-lxv) Nature of varieties of purple—the purple-fish; kinds of purple-fish; how used to supply dye for woollens; date of use of purple at Rome, date of purple stripe and purple-bordered robe; purple dyed dresses; dying amethyst; Tyrian, vegetable-scarlet, kermes-scarlet. (lxvi) The sea-pen and the sea-pen's guard. (lxvii) Perception of aquatic animals: the electric ray, sting-ray, scolopendrae, shad, ramming-fish. (lxviii f.) Species intermediate between animal and vegetable: sea-nettles; sponges,

spongeis, quae genera earum et ubi nascantur; animal esse eas. (lxx) De caniculis. (lxxi) De his quae silicea testa cluduntur; quae sine sensu ullo in mari; de reliquis sordium animalibus. (lxxii) De venenatis marinis. (lxxiii) De morbis piscium. (lxxiv-vii) De generatione eorum: mira generationum; qui intra se et ova pariant et animal; quorum in partu rumpatur venter, dein coeat; qui volvas habeant; qui ipsi se ineant. (lxxviii) Quae longissima vita piscium. (lxxix ff.) Quis primus vivaria piscium instituerit. de ostreis; quis murenarum vivaria instituerit; insignia piscinarum; (lxxxii) Quis primus coclearum vivaria instituerit. (lxxxiii) Pisces terreni. (lxxxiv) De muribus in Nilo. (lxxxv) Quomodo capiantur anthiae pisces. (lxxxvi) De stellis marinis. (lxxxvii) De dactylorum miraculis. (lxxxviii) de inimicitiiis inter se aquatilium et amicitiiis. Summa: res et historiae et observationes DCL.

Ex auctoribus: Turrano Gracile, Trogo, Maecenate, Alfio Flavio, Cornelio Nepote, Laberio mimographo, Fabiano, Fenestella, Muciano, Aelio Stilone, Seboso, Melisso, Seneca, Cicerone, Macro Aemilio, Messala Corvino, Trebio Nigro, Nigidio. Externis: Aristotele, Archelao rege, Callimacho, Democrito, Theophrasto, Thrasylo, Hegesidemo, Sudine, Alexandro polyhistore.

Libro X. continentur volucrum naturae. (i f.) De struthocamelo, phoenice. (iii-vi) Aquilarum genera, natura earum; quando legionum signa esse coeperint; de aquila quae in rogam virginis se misit. (vii) Voltur. (viii) Avis sanqualis, immusulus. (ix-xi) Accipitres: buteo; in quibus locis societate accipitres et homines aucupentur; quae avis sola a suo genere interimatur; quae avis singula ova

their kinds and habitat; sponges, living creatures. (lxx) Sea-bitches. (lxxi) Flint-shell fish; marine animals without senses; other low species. (lxxii) Venomous marine animals. (lxxiii) Diseases of fishes. (lxxiv-vii) Their reproduction—curious reproductive methods; species both oviparous and viviparous; delivery by rupture of the stomach, afterwards closing up; species possessing matrix; self-fertilizing species. (lxxviii) Longest life of fish. (lxxix-lxxxii) First inventor of fish-ponds; oysters; who invented lamprey-ponds. Notable fish-ponds; who first invented snail-ponds. (lxxxiii) Land fishes. (lxxxiv) Mouse-fish in the Nile. (lxxxv) Flower-fish, mode of catching. (lxxxvi) Starfish. (lxxxvii) Remarkable species of finger-fish. (lxxxviii) Instances of hostility and friendship between aquatic animals.—Total: 650 facts, investigations and observations.

Authorities: Turranius Gracilis, Trogus, Maecenas, Alfius Flavus, Cornelius Nepos, the *Mimes* of Laberius, Fabianus, Fenestella, Mucianus, Aelius Stilo, Sebosus, Melissus, Seneca, Cicero, Aemilius Macer, Corvinus Messala, Trebius Niger, Nigidius. Foreign authorities: Aristotle, King Archelaus, Callimachus, Democritus, Theophrastus, Thrasyllus, Hegesidemus, Sudines, Alexander the Learned.

Book X. Subject—the nature of birds. (i f.) The ostrich, the phoenix. (iii-vi) Eagles, their species; their nature; when adopted as regimental badges; self-immolation of eagle on maiden's funeral pyre. (vii) The vulture. (viii) Lämmergeier, sea-eagle (?) (ix-xi) Hawks: the buzzard; use of hawks by fowlers where practised; the only bird that is killed by its own kind; what bird produces one egg at a time. (xii)

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pariat. (xii) Milvi. (xiii) Digestio avium per genera. (xiv-xvi) De inauspicatis avibus; cornices quibus mensibus non sint inauspicatae: de corvis; de bubone. (xvii) Aves quarum vita aut notitia intercidit. (xviii) Quae a cauda nascantur. (xix) De noctuis. (xx) De pico Martio. (xxi) De his quae uncos unguis habent. (xxii-v) De his quae digitos habent: de pavonibus; quis primus pavonem cibi causa occiderit; quis farcire instituerit; de gallinaceis, quomodo castrentur; de gallinaceo locuto. (xxvi) De ansere. (xxvii) Quis primum iecur anserinum instituerit; de Commageno; chenalopeces, chenerotes, tetraones, otides; grues; de ciconiis; de palmipede reliquo genere; de oloribus. (xxxiii-v) De avibus peregrinis quae veniunt: coturnices, glottides, cychramus, otus; de avibus nostris quae discedunt, et quo abeant: hirundines, turdi, merulae, sturni; de avibus quae plumas amittunt in occultatione: turtur, palumbes. (xxxvi) Quae avium perennes, quae semestres, quae trimestres: galguli, upupae. (xxxvii-xl) Memnonides; meleagrides; seleucides; ibis. (xli) Quae quibus locis aves non sint. (xlii-v) Quae mutant colorem et vocem: de oscinum genere; de luscinis; de melancoryphis, erithacis, phoenicuris, oenanthe, chlorio. (xlvi) Tempus avium geniturae. (xlvii) Halcyones: dies earum navigabiles. (xlviii) De reliquo aquaticarum genere. (xlix-li) Sollertia avium in nidis: hirundinum opera mira; ripariae; acanthyllis; merops; de perdicibus. (lii f.) De columbis; opera earum mirabilia et pretia. (liv f.) Differentiae volatus avium et incessus; apodes sive cypseli. (lvi) De pastu avium. caprimulgi, platea. (lvii) De ingeniis avium; carduelis, taurus, anthus. (lviii-lx) De avibus quae

BOOK I

Kites. (xiii) Classification of birds by species. (xiv-xvi) Birds of ill-omen; in what months crows are not a bad omen; ravens; the horned owl. (xvii) Extinct birds; birds no longer known. (xviii) Birds hatched tail first. (xix) Night-owls. (xx) Mars's woodpecker. (xxi) Birds with hooked talons. (xxii-v) Birds with toes: peacocks; who first killed the peacock for food; who invented fattening peacocks; poultry—mode of castrating; a talking cock. (xxvi-xxxii) The goose; who first introduced goose-liver (foie gras); Commagene goose; fox-goose, love-goose, heath-cock, bustard; cranes; storks; rest of reflexed-claw genus; swans. (xxxiii-v) Foreign migrant birds: quails, tongue-birds, ortolan, horned owl; native migrant birds and their destinations—swallows, thrushes, blackbirds, starlings; birds that moult in retirement: turtle-dove, ring-dove. (xxxvi) Non-migrant birds: half-yearly and quarter-yearly visitors: witwalls, hoopoes. (xxxvii-xl) Memnon's hens, Meleager's sisters (guinea-hens), Seleucid hens, ibis. (xli) Where particular species not known. (xlii-v) Species that change colour and voice: the divination-bird class; nightingale, black-cap, robin, red-start, chat, golden oriole. (xlvi) The breeding season. (xlvii) Kingfishers: sign of fine weather for sailing. (xlviii) Remainder of aquatic class. (xlix-li) Craftsmanship of birds in nest-making; remarkable structures of swallows; sand-martins; thistle-finch; bee-eater; partridges. (lii f.) Pigeons—remarkable structures of, and prices paid for; (liv f.) Varieties of birds' flight and walk; footless martins or swifts. (lvi) Food of birds. Goat-suckers, spoon-bill. (lvii) Intelligence of birds; gold-finch, bull-bittern, yellow wagtail. (lviii-lx)

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locuntur: psittaci; picae glandares; propter corvom loquentem seditio populi Romani. (lxi) Diomediae. (lxii) Quae animalia nihil discant. (lxiii) De potu avium; de porphyrione. (lxiv) Himantopodes. (lxv f.) De pastu avium. onocrotali. (lxvii f.) De peregrinis avibus: Phalerides, Phasianae, Numidicae, phoenicopteri, attagenae, phalacrocoraces, pyrrhocoraces, lagopodes. (lxix) De novis avibus: vipiones.¹ (lxx) De fabulosis avibus. (lxxi f.) Quis gallinas farcire instituerit, quique hoc primi consules vetuerint; quis primus aviaria instituerit; de Aesopi patina. (lxxiii-lxxx) Generatio avium: quae praeter aves ova gignant; ovorum genera et naturae; vitia et remedia incubantium; Augustae ex ovis augurium; quales gallinae optima; morbi earum et remedia; ardeolarum genera; quae sint ova urina, quae cynosura, quae hypenemia; quomodo optime serventur ova. (lxxxii f.) Quae volucrum sola animalia pariat et lacte nutriat. quae terrestrium ova pariant. serpentium generatio. (lxxxiii-vii) Terrestrium omnium generatio; quae sit animalium in uteris positio; quorum animalium origo adhuc incerta sit; de salamandris; quae nascantur ex non genitis; quae nata nihil gignant; in quibus neuter sexus sit. (lxxxviii-xc) De sensibus animalium: tactus omnibus esse; item gustatus; quibus visus praecipuus, quibus odoratus, quibus auditus; de talpis; an ostreis auditus; qui ex piscibus clarissime audiant; qui ex piscibus maxime odorentur. (xci-iii) Diversitas animalium in pastu: quae venenis vivant; quae terra; quae fame aut siti non intereant. (xciv) De diversitate potus. (xcv f.) Quae inter se dissi-

¹ *Sillig* (cf. X 135): bibiones aut bubones.

BOOK I

Talking birds: parrots, acorn-pies; riot at Rome caused by talking crow. (lxi) Diomedes' birds. (lxii) What animals learn nothing. (lxiii) Birds, mode of drinking; the sultana hen. (lxiv) The long-legs. (lxv f.) Food of birds. Pelicans. (lxvii f.) Foreign birds: coots, pheasants, Numidian fowl, flamingoes, heath-cock, bald crow or cormorant, red-beaked or Alpine crow, bare-footed crow or ptarmigan. (lxix) New species: small cranes. (lxx) Fabulous birds. (lxxi) Who invented fattening of chickens, and which consuls first prohibited? who first invented aviaries? Aesop's stewpan. (lxxiii-lxxx) Reproduction of birds: oviparous creatures other than birds; kinds and properties of eggs; defective hatching and its cures; Augusta's augury from eggs; what sort of hens the best? their diseases and remedies; kinds of small heron; nature of puff-eggs, addled eggs, wind-eggs; best way of preserving eggs. (lxxxii f.) The only species of bird that is viviparous and suckles its young. Oviparous species of land animals. Reproduction of snakes. (lxxxiii-vii) Reproduction of all land animals; posture of animals in the uterus; animal species whose mode of birth is still uncertain; salamanders; species not reproduced by generation; species whose generated offspring is infertile; sexless species. (lxxxviii-xc) Senses of animals: all have sense of touch, also taste; species with exceptional sight, smell, hearing; moles; have oysters hearing? which fishes hear most clearly? which fishes have keenest sense of smell? (xci-iii) Difference of food in animals: which live on poisonous things? which on earth? which do not die of hunger or thirst? (xciv) Variety of drink. (xcv f.) Species mutually hostile; facts as to friendship and

deant; amicitiam animalium esse et affectus animalium; exempla affectus serpentium. (xcvii f.) De somno animalium; quae somnient. Summa: res et historiae et observationes DCCXCIV.

Ex auctoribus: Manilio, Cornelio Valeriano, actis, Umbricio Meliore, Masurio Sabino, Antistio Labeone, Trogo, Cremutio, M. Varrone, Macro Aemilio, Melisso, Muciano, Nepote, Fabio Pictore, T. Lucretio, Cornelio Celso, Horatio, Deculone, Hygino, Sasernis, Nigidio, Mamilio Sura. Externis: Homero, Phemonoe, Philemone, Boetho qui ὀρνιθογονίαν, Hyla qui de auguriis, Aristotele, Theophrasto, Callimacho, Aeschylo, Hierone rege, Philometore rege, Archyta Tarentino, Amphilocho Atheniense, Anaxipoli Thasio, Apollodoro Lemnio, Aristophane Milesio, Antigono Cumaeo, Agathocle Chio, Apollonio Pergameno, Aristandro Athenaeo, Bacchio Milesio, Bione Solense, Chaerea Atheniense, Diodoro Prienaeano, Dione Colophonio, Democrito, Diophane Nicaeense, Epigene Rhodio, Euagone Thasio, Euphronio Athenaeo, Iuba, Androtione qui de agricultura, Aeschrione qui item, Lysimacho qui item, Dionysio qui Magonem transtulit, Diophane qui ex Dionysio epitomen fecit, Nicandro, Onesicrito, Phylarcho, Hesiodo.

Libro XI. continentur insectorum animalium genera. (i) Subtilitas in his rebus naturae. (ii) An spirent, an habeant sanguinem. (iii) De corpore eorum. (iv-xxiii) De apibus; qui ordo in opere earum; quid sit in eo commosis, quid sit pissoceros, quid sit propolis, quid erithace sive sandaraca sive cerinthos; ex quibus floribus opera fiant; apium studio capti; de fucis; quae natura mellis, quae optima mella, quae genera mellis in singulis locis, quomodo probentur; de erice sive tetralice sive

affection between animals; instances of affection between snakes. (xcvii f.) Sleep of animals; which species sleep? Total: 794 facts, investigations and observations.

Authorities: Manilius, Cornelius Valerian, *Records*, Umbricius Melior, Masurius Sabinus, Antistius Labeo, Trogus, Cremutius, Marcus Varro, Aemilius Macer, Melissus, Mucianus, Nepos, Fabius Pictor, Titus Lucretius, Cornelius Celsus, Horace, Deculo, Hyginus, the Sasernae, Nigidius, Mamilius Sura. Foreign authorities: Homer, Phemonoe, Philemon, Boethus's *Ornithogonia*, Hylas's *Auguries*, Aristotle, Theophrastus, Callimachus, Aeschylus, King Hiero, King Philometor, Archytas of Tarentum, Amphilocho of Athens, Anaxipolis of Thasos, Apollodorus of Lemnos, Aristophanes of Miletus, Antigonus of Cumae, Agathocles of Chios, Apollonius of Pergamum, Aristander of Athens, Bacchius of Miletus, Bion of Soli, Chaereas of Athens, Diodorus of Priene, Dion of Colophon, Democritus, Diophanes of Nicaea, Epigenes of Rhodes, Evagon of Thasos, Euphronius of Athens, Juba, Androtion *On Agriculture*, Aeschrio *ditto*, Lysimachus *ditto*, Dionysius's translation of Mago, Diophanes's epitome of Dionysius, Nicander, Onesicritus, Phylarchus, Hesiod.

Book XI. Subject—the kinds of insects. (i) Nature's subtlety in this department. (ii) Do insects breathe? have they blood? (iii) Their bodies. (iv-xxiii) Bees—structure of their comb; its materials, gum, pitch-wax, bee-glue, bee-bread (*sandarach*, *cerinthus*); flowers from which materials derived; instances of bee-lovers; drones; nature of honey; the best honey; unique local varieties of honey; test of varieties; heather (heath, *sisyrus*); repro-

sisyro; quomodo apes generent; quae regum in iis ratio; aliquando et laetum omen esse examinum; genera apium; de morbis apium; quae inimica apibus; de continendis apibus, de reparandis. (xxiv) De vespis et crabronibus. quae animalia ex alieno suum faciant. (xxv-vii) De bombyce Assyria: de bombyliis, necydalis; quae prima invenerit bombycinam vestem; de bombyce Coa; quomodo conficiatur Coa vestis. (xxviii f.) De araneis qui ex iis texant; quae materiae natura ad texendum; generatio araneorum. (xxx ff.) De scorpionibus; de stellionibus; de cicadis sine ore esse et sine exitu cibi. (xxxiii) De pinnis insectorum. (xxxiv-vi) De scarabaeis; lampyrides; reliqua scarabaeorum genera; de locustis; de formicis. (xxxvii-ix) Chrysallides, asilus, papiliones; de his animalibus quae ex ligno aut in ligno nascantur; sordium hominis animalia; quod animal minimum; aestatis animalia. (xl) Animal cui cibi exitus non sit. (xli-iii) Tineae, cantharides, culices; nivis animal; ignium animal, pyrallis sive pyrotos; hemerobion. (xliv-xcvii) Animalium omnium per singula membra naturae et historiae: quae apices habeant, quae cristas. (xlv-li) Cornuum genera: quibus mobilia; de capitibus: quibus nulla; de capillo; de ossibus capitis; de cerebro; de auribus: quae aures non habeant, quae sine auribus et sine foraminibus audiant; de facie, de fronte, de supercilis. (lii-lvii) De oculis: quae sine oculis animalia; quae singulos tantum oculos habeant; de diversitate oculorum; quae ratio visus; noctu videntes; de natura pupillae; quae non coniveant; quibus eruti oculi renascantur; de palpebris: quibus non sint, quibus ab altera tantum parte sint; quibus genae non sint. (lviii-

duction of bees; their system of royalty; swarming sometimes actually a good omen; kinds of bees; diseases of bees; enemies of bees; beekeeping; replenishment of stock. (xxiv) Wasps and hornets. What animals reproduce from another species? (xxv-vii) Assyrian silk-worm: chrysalis, larva; inventor of silk fabric; silk-worm of Cos; manufacture of Coan silk. (xxviii f.) Spiders—which varieties make webs; material used in webs; mode of reproduction. (xxx ff.) Scorpions; geckoes; grasshoppers—their lack of mouth and vent. (xxxiii) Insects' wings. (xxxiv-vi) Beetles; glowworms; other kinds of beetle; locusts; ants. (xxxvii-ix) Chrysalises, gad-flies, butterflies; animals born from wood or in wood; animals of human refuse; which is the smallest animal? summer animals. (xl) Ventless animal. (xli-iii) Moths, beetles, gnats; snow-animal; fire-animal (*pyrallis* or *pyrotos*); may-flies. (xliv-xcviii) Nature and account of all animals arranged according to the parts of the body: species possessing caps; crested species. (xlv-li) Varieties of horn—which species can move the horns; heads, headless species; hair; bones of head; brain; ears—which species have none, which hear without ears or apertures; face, brow, eye-brow. (lii-lvii) Eyes: what animals without eyes, what with only one eye; varieties of eyes; method of sight; species that see by night; structure of pupil; species that do not close the eyes; species whose eyes after being destroyed grow again; eyelashes—species that lack, species with lashes on only one lid; species with no eyelids.

lx) De malis; de naribus; buccis, labris, mento maxillis. (lxi-iv) De dentibus: quae genera eorum; quibus non utraque parte sint, quibus cavi; de serpentium dentibus, de veneno earum; cui volucris dentes; mirabilia dentium; aetas ruminantium ab his. (lxv) De lingua: quae sine ea; de ranarum sono; de palato. (lxvi-viii) De tonsillis; uva, epiglossis, arteriae, gula, cervix, collum, spina, guttur, fauces, stomachus. (lxix-lxxi) De corde, sanguine, animo; quibus maxima corda, quibus minima, quibus bina; quando in extis adspici coepta. (lxxii) De pulmone: quibus maximus, quibus minimus, quibus nihil aliud quam pulmo intus; quae causa velocitatis animalium. (lxxiii-vi) De iocinere, de capite extorum; haruspicum circa id observationes; quibus animalibus et in quibus locis bina iocinera; de felle: ubi et in quibus geminum; quibus animalium non sit, quibus animalium alibi quam in iocinere; quae vis eius; quibus crescat cum luna et decrescat iecur; haruspicum circa ea observationes et prodigia mira. (lxxvii) Praecordia; risus natura. (lxxviii) De ventre; quibus nullus; quae sola vomant. (lxxix) Lactes, hillae, alvos, colon; quare quaedam insatiabilia animalia. (lxxx-iii) De omento, de splene; quibus animalium non sit; de renibus; ubi quaterni animalibus; quibus nulli; pectus, costae, vesica; quibus animalibus non sit; ilia; de membranis. (lxxxiv-viii) Uterus: de locis, de volvis, de suum volva, sumine; quae adipem, quae sebum habeant; de natura utriusque; quae non pinguescant; de medullis; quibus non sint; de ossibus; de spinis; quibus nec ossa nec spinae; cartilagine; de nervis; quae

(lviii-lx) Cheek-bones; nostrils; cheeks, lips, chin, jaws. (lxi-iv) Teeth—kinds of; species with teeth in one jaw only; with hollow teeth; snakes' teeth, snakes' poison; which bird has teeth; remarkable facts as to teeth; age of ruminants indicated by teeth. (lxv) Tongue—tongueless species; croaking of frogs; palate. (lxvi-viii) Tonsils; uvula, epiglottis, wind-pipe, gullet, nape, neck, backbone, throat, jaws, stomach. (lxix-lxxi) Heart, blood, life; which species has largest heart, which smallest, which two hearts; when inspection of heart of victims began; (lxxii) Lungs—which species has largest, which smallest, which no internal organ besides lungs; cause of speed in animals. (lxxiii-vi) Liver—head of internal organs; its inspection by augurs; species with two livers, and their habitats; gall—what species have two, and where; what animals have none, which have gall elsewhere than in liver; its function; species whose gall grows and shrinks in size with moon; observation of these species by augurs, and marvellous portents. (lxxvii) Diaphragm; nature of laughter. (lxxviii) Stomach; species that have none; the only species that vomit. (lxxix) Smaller intestines, entrails, stomach, great gut; why some animals have voracious appetites. (lxxx-iii) Caul, spleen—species without spleen. Kidneys; habitat of species with four kidneys—with none; chest; ribs; bladder—animals without bladder; entrails; membranes. (lxxxiv-viii) Belly—the 'parts,' the womb, sows' womb, paps; what species have suet, what tallow; nature of each; what species have no fat; marrow; species that have none; bones; prickles; species that have neither bones nor prickles; cartilages; sinews; species without sinews. (lxxxix-

sine nervis. (lxxxix-xcii) Arteriae, venae; quae nec venas nec arterias habeant; de sanguine; de sudore; quorum celerrime sanguis spissetur, quorum non coeat; quibus crassissimus, quibus tenuissimus, quibus nullus, quibus certis temporibus anni nullus; an in sanguine principatus. (xciii f.) De tergore; de pilis et vestitu tergoris; quibus os intus et pedes subtus hirti. (xcv-xcvii) De mammis; quae volucrum mammas habeant. notabilia animalium in uberibus; de lacte; quod solum animal sugat in cursu; de colostris; de caseis; ex quibus non fiat; de coagulo; genera alimenti ex lacte; genera caseorum. (xcviii-cxiii) Differentiae membrorum hominis a reliquis animalibus: de digitis, de brachiis; de simiarum similitudine; de unguibus; de genibus et poplitibus; in quibus membris corporis humani sit religio; varices; de gressu, de pedibus et cruribus; de unguis; volucrum pedes; pedes animalium a binis ad centenos; de pumilionibus; de genitalibus; de hermaphroditis; de testibus; trium generum semiviri; de caudis; de vocibus animalium; de agnascentibus membris. (cxiv) Vitalitatis et morum notae ex membris hominum. (cxv f.) De anima; de victu; quae veneno pasta ipsa non pereant et gustata necent. (cxvii-ix) Quibus de causis homo non concoquat; de remediis cruditatum; quemadmodum corpulentia contingat, quemadmodum minuatur; quae gustu famem et sitim sedent. summa: res et historiae et observationes MMDCC.

Ex auctoribus: M. Varrone, Hygino, Scrofa, Saserna, Celso Cornelio, Aemilio Macro, Vergilio, Columella, Iulio Aquila qui de Etrusca disciplina scripsit, Tarquitio qui item, Umbricio Meliore qui

xcii) Arteries, veins; species with neither veins nor arteries; blood; sweat; species whose blood thickens most quickly, whose blood does not coagulate; which species has the thickest blood, the thinnest, none at all, none at certain seasons of the year; whether blood is dominant factor in body. (xciii f.) Back; hair and integument of back; species having hair inside mouth and under feet. (xcv-xcvii) Paps; which birds have paps; noteworthy points about animals' udders; milk; which the only animal that gives suck while in motion; biestings; cheese; species whose milk does not form cheese; curdled milk; kinds of food obtained from milk; kinds of cheese. (xcviii-cxiii) Differences in limbs between man and other animals; the fingers; arms; resemblance to monkeys; nails; knees and thighs; which parts of human body associated with ritual; dilated veins; gait, feet and legs; hooves; feet of birds; feet of animals, between 2 and 100; dwarfs; genital organs; hermaphrodites; testicles; three kinds of half-man; tails; voices of animals; limbs of subsequent growth. (cxiv) Marks of vitality and character derived from conformation of limbs in man. (cxv) Respiration; nutrition; animals that from eating poison do not die, but kill those who taste them. (cxvii-ix) Causes of indigestion in man; remedies for indigestion; cause of corpulence, and mode of reduction; things whose taste allays hunger and thirst. Total: 2700 facts, investigations and observations.

Authorities: Marcus Varro, Hyginus, Scrofa, Saserna, Cornelius Celsus, Aemilius Macer, Virgil, Columella, Julius Aquila's *Etruscan System*, Tarquitius *ditto*, Umbricius Melior *ditto*, Cato the ex-

item, Catone censorio, Domitio Calvino, Trogo, Melisso, Fabiano, Muciano, Nigidio, Mamilio, Oppio. Externis: Aristotele, Democrito, Neoptolemo qui μελιτουργικά, Aristomacho qui item, Philisco qui item, Nicandro, Menecrate, Dionysio qui Magonem transtulit, Empedocle, Callimacho, Attalo rege, Apollodoro qui de bestiis venenatis, Hippocrate, Herophilo, Erasistrato, Asclepiade, Themisone, Posidonio Stoico, Menandris Prienaeo et Heracleote, Euphronio Athenaeo, Theophrasto, Hesiodo, Philometore rege.

Libro XII. continentur arborum naturae. (i, ii) Honor earum. (iii-lxiii) De peregrinis arboribus. (iii-vi) Platanus; quando primum in Italiam et unde; natura earum; miracula ex iis; chamaeplatani; quis primus viridiaria tondere instituerit. (vii) Malum Assyrium quomodo seratur. (viii-xvii) Indiae arbores: quando primum Romae hebenus visa; quae genera eius; spina Indica; ficus Indica; Indicarum arborum formosae sine nominibus; liniferae Indorum arbores; arbor pala, pomum ariana; piperis arbores, genera piperis, bregma, zingiberi sive zimpiberi, caryophyllon, lycium sive pyxacanthum Chironium, macir, saccharon. (xviii f.) Arbores Arianae gentis, item Gedrosiae, item Hyrcaniae, item Bactriae; bdellium sive brochum sive malacham sive maldacum; scordasti. in omnibus odoribus aut condimentis dicuntur adulterationes, experimenta, pretia. (xx f.) Persidis arbores: Persici maris insularum arbores; gossypinum arbor. (xxii-iv) Cynas arbor. ex quibus arboribus lintea in oriente fiant; quo in loco arborum nullis folia decidant; quibus modis constant arborum fructus. (xxv-xxix) De costo; de nardo,

Censor, Domitius Calvinus, Trogus, Melissus, Fabianus, Mucianus, Nigidius, Mamilius, Oppius. Foreign authorities: Aristotle, Democritus, Neoptolemus's *Production of Honey*, Aristomachus *ditto*, Philiscus *ditto*, Nicander, Menecrates, Dionysius's translation of Mago, Empedocles, Callimachus, King Attalus, *Venomous Animals* by Apollodorus, Hippocrates, Herophilus, Erasistratus, Asclepiades, Themiso, Posidonius the Stoic, Menander of Priene, Menander of Heraclea, Euphronius of Athens, Theophrastus, Hesiod, King Philometor.

Book XII. Contents: trees—their various qualities. (i, ii) In praise of trees. (iii-lxiii) Foreign trees. (iii-vi) Plane—when and whence first introduced into Italy; their nature; remarkable products; dwarf planes; who first introduced the pruning of garden trees. (vii) Assyrian apple, instructions for planting. (viii-xvii) Indian trees; ebony, when first seen at Rome; its kinds; Indian thorn; Indian fig; beautiful unnamed Indian trees; Indians' flax-trees; plantain tree, its fruit bananas; pepper trees, kinds of pepper, defective pepper, ginger, nut-leaf, wolf-plant or Chiron's box-thorn, *macir*, sugar-cane. (xviii f.) Trees of the Arian race, *ditto* of Gedrosia, *ditto* of Hyrcania, *ditto* of Bactria; myrrh plant or gum-plant (*malacha*, *maldacum*); *germander*. Modes of adulteration, tests and prices-specified for all scents or spices. (xx f.) Trees of Persia; trees of islands in Persian Gulf; cotton-tree. (xxii-iv) Cynas tree; trees used in East for making linen; locality with no deciduous trees; modes in which trees form fruits. (xxv-xxix) *Costus*; nard, its

differentiae eius XII; asaron; amomum, amomis, cardamomum. (xxx-xxxii) De turifera regione, de arboribus quae tus ferunt; quae natura turis et quae genera. (xxxiii-v) De myrrha: de arboribus quae ferunt eam; natura et genera myrrhae. (xxxvi-xl) De mastiche; de ladano, scorbo, enhaemo; bratus arbor; stobrum arbor. (xli) De felicitate Arabiae. (xlii-xlvii) De cinnamo, cinnamomo, xylocinnamo; casia, cancamum, tarum; serichatum, gabalium; myrobalanus; phoenicobalanus. (xlviii-lxi) De calamo odorato, de iunco odorato; hammoni-acum; sphagnos; cypros; aspalathos sive erysiscep-trum; maron; de balsamo, opobalsamo, xylobalsamo; styrax; galbanum; de panace; spondylion; de malobathro; de omphacio; bryon, oenanthe, massaris; elate vel spathe; cinnamum comacum. Summa: res et historiae et observationes CCCCLXVIII.

Ex auctoribus: M. Varrone, Muciano, Vergilio, Fabiano, Seboso, Pomponio Mela, Flavio Procilio, Hygino, Trogo, Claudio Caesare, Cornelio Nepote, Sextio Nigro qui Graece de medicina scripsit, Cassio Hemina, L. Pisone, Tuditano, Antiate. Externis: Theophrasto, Herodoto, Callisthene, Isogono, Clitarcho, Anaximene, Duride, Nearcho, Onesicrito, Polycrito, Olympiodoro, Diogneto, Nicobulo, Anticlido, Charete Mytilenaeo, Menaechmo, Dorotheo Athenaeo, Lyco, Antaeo, Ehippo, Dinone, Adimanto, Ptolemaeo Lagi, Marsya Macedone, Zoilo item, Democrito, Amphilocho, Aristomacho, Alexandro polyhistore, Iuba, Apollodoro qui de odoribus, Heraclide medico, Botrye medico, Archedemo item, Dionysio item, Democede item, Euphrone item, Mneside item, Diagora item, Iolla item, Heraclide Tarentino, Xenocrate Ephesio.

12 varieties; hazelwort; *amomum*, *amomis*, cardamon. (xxx-xxxii) The incense-producing district, incense-bearing trees; nature and kinds of incense. (xxxiii-v) Myrrh: trees that produce it; nature and kinds of myrrh. (xxxvi-xl) Mastic; ladanum, scorbus, styptic, *bratus* tree; *stobrum* tree. (xli) Arabia, why happy. (xlii-xlvii) Cinnamon, cinnamomum, cinnamon-shrub; wild cinnamon, cancamum, aloe-wood; serichatum, gabalium; behennut; Egyptian date. (xlviii-lxi) Scented reed, scented rush; Hammonian gum-tree; fragrant moss; cyprus; calycotome or *erysisceptrum*; catthyme; balsam, balsam-juice, balsam-wood; *styrax*; *galbanum*; all-heal; bear's-foot: cinnamon-leaf; grape-plant; moss, vine-flower, wild vine; fir or larch; cinnamon *comacum*. Total: 468 facts, investigations and observations.

Authorities: Marcus Varro, Mucianus, Virgil, Fabianus, Sebosus, Pomponius Mela, Flavius Procilius, Hyginus, Trogus, Claudius Caesar, Cornelius Nepos, Greek *Treatise on Medicine* by Sextius Niger, Cassius Hemina, Lucius Piso, Tuditanus, Antias. Foreign authorities: Theophrastus, Herodotus, Callisthenes, Isogonus, Clitarchus, Anaximenes, Duris, Nearchus, Onesicritus, Polycritus, Olympiodorus, Diognetus, Nicobulus, Anticlides, Chares of Mitylene, Menaechmus, Dorotheus of Athens, Lycus, Antaeus, Ehippus, Dinon, Adimantus, Ptolemy son of Lagus, Marsyas of Macedon, Zoilus of Macedon, Democritus, Amphilocho, Aristomachus, Alexander the Learned, Juba, Apollodorus *On Scents*; the physicians Heraclides, Botrys, Archedemus, Dionysius, Democedes, Euphron, Mnesides, Diagoras and Iollas; Heraclides of Tarentum, Xenocrates of Ephesus.

PLINY: NATURAL HISTORY

Libro XIII. continentur: de peregrinis arboribus. (i-v) De unguentis; quando coeperint; genera eorum et compositiones XII; diapasmata, magmata et probatio unguenti; quanta in unguentis luxuria; quando primum Romanis in usu. (vi-ix) De palmis; de natura earum; quomodo serantur; genera fructus earum et insignia XVIII. (x-xiii) Syriae arbores: pistacia, cottana, Damascena, myxa; cedrus; quae arbores trium annorum fructum pariter habeant; terebinthus; rhus. (xiv-xvi) Aegypti arbores: ficus Alexandrina; ficus Cypria; siliqua ceronia. (xvii-xx) Persica arbor; quibus arboribus subnascatur fructus; cuci; spina Aegyptia; cummum genera VIII, sarcocolla. (xxi-vii) De papyro: de chartae usu; quando coeperit; quomodo fiat; genera eius IX; probatio chartarum; vitia chartarum; de glutino chartarum; de libris Numa. (xxviii) Aethiopiae arbores. (xxix-xxxii) Atlantica arbor; de citri arbore; de citreis mensis, quae probentur aut vituperentur in iis; malum citreum. (xxxiii-iv) Lotos; Cyrenaicae arbores, paliurus; Punici mali genera IX, balaustium. (xxxv-xlvi) Asiae et Graeciae arbores: epicactis, erice, granum Cnidium sive thymelaea sive chamelaea sive pyrosachne sive cnestor sive cneorum; tragion, tragacantha; tragos sive scorpio, myrice sive brya, ostrys; eunonymus; leon arbor; andrachne; coccygia, aphace; ferula; Thapsia; capparis sive cynosbaton sive ophiostaphyle; saripha; spina regia; cytissus. (xlviii-lvii) Arbores et frutices in mari nostro; in mari rubro; item in Indico; item in Trogodytico phycos, grasson sive zoster, bryon marinum, Isidos plocamos, Chariton blepharon. Summa: res et historiae et observationes CCCCLXVIII.

BOOK I

Book XIII. Contents: On foreign trees. (i-v) Perfumes—when invented; 12 kinds and combinations; ointments, salves, testing of perfumes; perfume as promoting luxury; when first in use at Rome. (vi-ix) Palms—their nature; how planted; 18 kinds of fruit and noteworthy facts. (x-xii) Trees of Syria: pistachio, small fig, damson, Syrian plum; cedar; what trees carry three years' fruit at once; terebinth; sumac. (xiv-xvi) Trees of Egypt: Alexandrian fig; Cyprian fig; Carob. (xvii-xx) Persian tree; what trees produce a succession of fruit; *cuci* palm; Egyptian thorn; gum tree, 8 kinds; Persian gum. (xxi-vii) Papyrus; employment of paper; when begun; how manufactured; 9 kinds; mode of testing papers; defects of papers; paper-glue; Books of Numa. (xxviii) Trees of Ethiopia. (xxix) Atlantic tree; citrus-tree; citrus-wood tables, their merits and defects; citrus-fruit. (xxxii-iv) Lotus; trees of Cyrenaica, Christ's-thorn; pomegranate, 9 kinds, wild pomegranate. (xxxv-xlvi) Trees of Asia and Greece; helleborine, heath, seed of Cnidus or altar-plant or carline thistle or fire-foam or *cnestor* or mezereon; goat-plant, goat-thorn; goat or scorpion, tamarisk or brya, hop-hornbeam; eunonymus; lion-tree; purslane; cuckoo-plant, tare; fennel; Thapsus-shrub; caper-bush or dog's bush or snake-vine; *saripha*; king's thorn; tree-medick. (xlviii-lvii) Trees and bushes of the Mediterranean; of the Red Sea; of the Indian Ocean; of Cave-dwellers' Sea—sea-weed, *grasson* or girdle-plant, sea-lettuce, plait of Isis, Graces' eyelid. Total 468 facts, investigations and observations.

PLINY: NATURAL HISTORY

Ex auctoribus: M. Varrone, Muciano, Vergilio, Fabiano, Sebosus, Pomponio Mela, Flavio Proclio, Hygino, Trogo, Claudio Caesare, Cornelio Nepote, Sextio Nigro qui Graece de medicina scripsit, Cassio Hemina, L. Pisone, Tuditano, Antiate. Externis: Theophrasto, Herodoto, Callisthene, Isigono, Clitarcho Anaximene, Duride, Nearcho, Onesicrito, Polycrito, Olympiodoro, Diogneto, Nicobulo, Anticlido, Charete Mytilenaeo, Menaechmo, Dorotheo Atheniense, Lyco, Antaeo, Ehippo, Dinone, Adimanto, Ptolemaeo Lagi, Marsya Macedone, Zoilo item, Democrito, Amphilocho, Aristomacho, Alexandro polyhistore, Iuba, Apollodoro qui de odoribus scripsit, Heraclide medico, Botrye medico, Archedemo item, Dionysio item, Democede item, Euphrone item, Mneside item, Diagora item, Iolla item, Heraclide Tarentino, Xenocrate Ephesio.

Libro XIV. continentur fructiferae arbores. (i-v) De vitium natura; quibus modis ferant; de uvarum natura et cura; vitium et uvarum genera XCI; insignia culturae et vinearum; (vi-xi) De inventione mulsi; vina generosa L, transmarina XXXVIII; de vino Opimiano; notabilia circa apothecas: de natura vini; vini salsi genera VII. de passo et hepsemate et dulcium generibus XVII. (xii) Secundari vini genera III. (xiii-xvii) Quam nuper coeperint vina generosa in Italia; de vino observationes a Romulo rege; quibus vinis usi antiqui; quando primum vini quattuor genera posita. (xviii-xxi) Ex labrusca usus V; qui frigidissimus natura sucus; vini fictici genera LXVI: hydromeli sive apomeli sive melicraton; oxymeli. (xxii-v) Vini prodigiosi genera XII;

BOOK I

Authorities: Marcus Varro, Mucianus, Virgil, Fabianus, Sebosus, Pomponius Mela, Flavius Proclius, Hyginus, Trogus, Claudius Caesar, Cornelius Nepos, Sextus Niger's Greek treatise *On Medicine*, Cassius Hemina, Lucius Piso, Tuditanus, Antias. Foreign authorities: Theophrastus, Herodotus, Callisthenes, Isogonus, Clitarchus, Anaximenes, Duris, Nearchus, Onesicritus, Polycritus, Olympiodorus, Diognetus, Nicobulus, Anticlides, Chares of Mitylene, Menaechmus, Dorotheus of Athens, Lycus, Antaeus, Ehippus, Dinon, Adimantus, Ptolemy son of Lagus, Marsyas of Macedon, Zoilus ditto, Democritus, Amphilocho, Aristomachus, Alexander the Learned, Juba, Apollodorus *On Scents*; the following medical writers—Heraclides, Botrys, Archedemus, Dionysius, Democedes, Euphron, Mnesides, Diagoras, Iollas; Heraclides of Tarentum, Xenophon of Ephesus.

Book XIV. Contents: fruit-trees. (i-v) Vines, their nature; their ways of bearing; grapes, their nature and tending; 91 kinds of vines and grapes; viticulture and vineyards, noteworthy facts as to (vi-xi) Mead, its discovery; 50 wines of quality; 38 foreign vintages; Opimian wine; wine-cellars, notable facts as to; nature of wine; salt wine, 7 kinds; raisin-wine, must, sweet wine, 17 kinds. (xii) Inferior wines, 3 kinds. (xiii-xvii) Wines of quality, how recently begun to be made in Italy; remarks as to wine from reign of Romulus onwards; wines used in early periods; four kinds of wine, when first established. (xviii-xxi) Wild vine, 5 uses of; what juice by nature the coldest; artificial wine, 66 kinds; mead or honey-wine or water-mead; vinegar-honey. (xxii-v) Remarkable wines, 12 kinds;

quibus vinis ad sacra uti fas non sit; quibus generibus musta condiant, de pice, resinis. (xxvi f.) De vasis vinariis, de aceto, de faece, de cellis. (xxviii f.) De ebrietate; ex aqua et frugibus vini vim fieri. Summa: res et historiae et observationes DX.

Ex auctoribus: Cornelio Valeriano, Vergilio, Celso, Catone censorio, Sasernis patre et filio, Scrofa, M. Varrone, D. Silano, Fabio Pictore, Trogo, Hygino, Flacco Verrio, Graecino, Attico Iulio, Columella, Masurio Sabino, Fenestella, Tergilla, Maccio Plauto, Fabio Dossenno, Scaevola, L. Aelio, Ateio Capitone, Cotta Messalino, L. Pisone, Pompeio Lenaeo, Fabiano, Sextio Nigro, Vibio Rufino. Externis: Hesiodo, Theophrasto, Aristotele, Democrito, Hierone rege, Attalo rege, Philometore rege, Archyta, Xenophonte, Amphilocho Athenaeo, Anaxipoli Thasio, Apollodoro Lemnio, Aristophane Milesio, Antigono Cymaeo, Agathocle Chio, Apollonio Pergameno, Aristandro Athenaeo, Bacchio Milesio, Bione Solense, Chaerea Atheniense, Chaeristo item, Diodoro Prienaeno, Dinone Colophonio, Epigene Rhodio, Evagone Thasio, Euphronio Athenaeo, Androtione qui de agricultura scripsit, Aeschrione qui item, Lysimacho qui item, Dionysio qui Magonem transtulit, Diophane qui ex Dionysio epitomen fecit, Asclepiade medico, Erasistrato item, Commiade, qui de conditura vini scripsit, Aristomacho qui item, Hicesio qui item, Themisone medico, Onesicrito, Iuba rege.

Libro XV. continentur naturae frugiferarum arborum. (i-viii) De olea: quamdiu apud Graecos tantum fuerit; quando primum in Italia, Hispania, Africa esse coeperit; de oleo nationes et bonitates

wines not permissible to use at sacrifices; substances used to flavour must—pitch, resins. (xxvi f.) Wine-jars, vinegar, lees, cellars. (xxviii f.) Intoxication; drinks made from water and fruit can be as potent as wine. Total: 510 facts, investigations and observations.

Authorities: Cornelius Valerian, Virgil, Celsus, Cato the Censor, Saserna senior, Saserna junior, Scrofa, Marcus Varro, Decius Silanus, Fabius Pictor, Trogus, Hyginus, Verrius Flaccus, Graecinus, Julius Atticus, Columella, Masurius Sabinus, Fenestella, Tergilla, Maccius Plautus, Fabius Dossennus, Scaevola, Lucius Aelius, Ateius Capito, Cotta Messalinus, Lucius Piso, Pompeius Lenaeus, Fabianus, Sextius Niger, Vibius Rufinus. Foreign authorities: Hesiod, Theophrastus, Aristotle, Democritus, King Hiero, King Attalus, King Philometor, Archytas, Xenophon, Amphilocho of Athens, Anaxipolis of Thasos, Apollodorus of Lemnos, Aristophanes of Miletus, Antigonus of Cumae, Agathocles of Chios, Apollonius of Pergamum, Aristander of Athens, Bacchius of Miletus, Bion of Soli, Chaereas of Athens, Chaeristus *ditto*. Diodorus of Priene, Dinon of Colophon, Epigenes of Rhodes, Evagon of Thasos, Euphronius of Athens, Androtion *On Agriculture*, Aeschrion *ditto*, Lysimachus *ditto*. Dionysius's translation of Mago, Diophanes's Epitome of Dionysius, the medical writers Asclepiades and Erasistratus, treatises on *The Making of Wine* by Commiades, Aristomachus and Hicesius, Themiso on medicine, Onesicritus, King Juba.

Book XV. Contents: Fruit-bearing trees, their various natures. (i-viii) The olive tree—how long was it grown only in Greece; when first introduced into Italy, Spain, Africa; olive-oil, its kinds and

olei; quae natura olivae et olei incipientis; olivarum genera XV; de natura olei; cultura olearum; de servandis olivis; quomodo faciendum sit oleum; olei fictici genera XLVIII; cici arbor sive croto sive sili sive sesamon; de amurca. (ix-xxxiv) Pomorum omnium genera et natura: nucum pinearum genera IV; cotoneorum genera IV; struthiorum genera IV; Punicorum genera IX; Persicorum genera VII; prunorum genera XII; de persea; malorum genera XXX; quo quaeque tempore externa poma venerint in Italiam et unde; quae novissime; pirorum genera XLI; de insitorum varietate et fulgurum piatione: de pomis servandis et uvis; ficorum genera XXIX; de ficis historica; de caprificatione; mespilae genera III; sorborum genera IV; nucum genera VIII; castanearum genera XVIII; siliquae; de carnosis pomis; de moris; de unedone; acinorum naturae; bacarum naturae; cerasorum genera VIII; corna; lentisci; sucorum differentiae XIII. (xxxv-viii) Myrtus: historica de myrto; genera eius XI. (xxxix f.) Laurus: genera eius XIII. Summa: res et historiae et observationes DXX.

Ex auctoribus: Fenestella, Fabiano, Vergilio, Cornelio Valeriano, Celso, Catone censorio, Sasernis patre et filio, Scrofa, M. Varrone, D. Silano, Fabio Pictore, Trogo, Hygino, Flacco Verrio, Graecino, Attico Iulio, Columella, Masurio Sabino, Tergilla, Cotta Messalino, L. Pisone, Pompeio Lenaeo, Maccio Plauto, Fabio Dossenno, Scaevola, L. Aelio, Ateio Capitone, Sextio Nigro, Vibio Rufino. Externis: Hesiodo, Theophrasto, Aristotele, Democrito, Hierone rege, Philometore rege, Attalo rege, Archyta, Xenophonte, Amphilocho Athenaeo, Anaxipoli Thasio

valuable properties; nature of the olive and olive-oil when forming; 15 kinds of olives; nature of olive-oil; cultivation of olive-trees; storing of olives; manufacture of olive-oil; 48 kinds of artificial olive-oil; the kiki-tree or croto or sili or sesamum (castor-oil tree); olive-lees. (ix-xxxiv) The varieties of fruit, their kinds and nature: pine-cones, 4 kinds; quinces, 4 kinds; sparrow-apples, 4 kinds; pomegranate, 9 kinds; peach, 7 kinds; plum, 12 kinds; the persea-tree; apple, 30 kinds; foreign apples—dates and sources of introduction into Italy: most recent introduction; pears, 41 kinds; grafting of varieties, and expiation when struck by lightning; storage of fruit and grapes; figs, 29 kinds; researches as to; artificial ripening of; medlars, 3 kinds; service-berry, 4 kinds; nuts, 8 kinds; chestnuts, 18 kinds; carobs; fleshy fruits; mulberries; the arbutus; berries, varieties of; hard fruit, varieties; cherry, 9 kinds; cornel-cherries; mastic-trees; juices, 13 different sorts; (xxxv-viii) the myrtle, researches as to; 11 kinds. (xxxix f.) The bay-tree, 13 kinds. Total: 520 facts, researches and observations.

Authorities: Fenestella, Fabianus, Virgil, Cornelius Valerian, Celsus, Cato the Censor, the Sasernae, senior and junior, Scrofa, Marcus Varro, Decimus Silanus, Fabius Pictor, Trogus, Hyginus, Verrius Flaccus, Graecinus, Julius Atticus, Columella, Masurius Sabinus, Tergilla, Messalinus Cotta, Lucius Piso, Pompeius Lenaeus, Maccius Plautus, Fabius Dossennus, Scaevola, Lucius Aelius, Ateius Capito, Sextius Niger, Vibius Rufinus. Foreign authorities: Hesiod, Theophrastus, Aristotle, Democritus, King Hiero, King Philometor, King Attalus, Archytas, Xenophon, Amphilocho of Athens, Anaxipolis of

PLINY: NATURAL HISTORY

Apollodore Lemnio, Aristophane Milesio, Antigono Cymaeo, Agathocle Chio, Apollonio Pergameno, Aristandro Athenaeo, Bacchio Milesio, Bione Solense, Chaerea Athenaeo, Chaeristo item, Diodoro Prienaeo, Dinone Colophonio, Epigene Rhodio, Euagone Thasio, Euphronio Athenaeo, Androtione qui de agricultura scripsit, Aeschrione qui item, Dionysio qui Magonem transtulit, Diophane qui ex Dionysio epitomen fecit, Asclepiade medico, Erasistrato item, Commiade qui de conditura vini, Aristomacho qui item, Hicesio qui item, Themisone medico, Onesicrito, Iuba rege.

Libro XVI. continentur silvestrium arborum naturae. (i f.) Gentes sine arbore; miracula in septentrionali regione arborum. (iii-xiii) De glandiferis: de civica corona; de coronarum origine; qui frondea corona donati; glandium genera XIII; de fago; de reliquis glandiferis¹; de carbone; de galla; quam multa praeter glandem ferant eadem arbores: cachrys, coccum, agaricum. (xiv) Quarum arborum cortices in usu. (xv-xx) De scandulis: de pinu, pinastro, picea, abiete, larice, taeda, taxo. (xxi-iii) Quibus modis fiat pix liquida; quomodo cedrium fiat; quibus modis spissa pix fiat, quibus coquatur resina; zopissa. (xxiv-ix) Quarum arborum materiae in pretio: fraxini genera IV; tiliae genera II; aceris genera X; bruscum, molluscum; staphylodendron; buxi genera III; ulmorum genera IV. (xxx f.) Arborum natura per situs: quae montanae, quae campestris, quae siccanae, quae aquaticae, quae communes. (xxxii) Divisio generum. (xxxiii-viii) Quibus folia non decidant: de rhododendro; quibus non omnia folia cadant; quibus in locis nulli arborum;

¹ *Rackham*: glandibus.

BOOK I

Thasos, Apollodorus of Lemnos, Aristophanes of Miletus, Antigonus of Cumae, Agathocles of Chios, Apollonius of Pergamum, Aristander of Athens, Bacchius of Miletus, Bion of Soli, Chaereas of Athens, Chaeristus *ditto*, Diodorus of Priene, Dinon of Colophon, Epigenes of Rhodes, Evagon of Thasos, Euphronius of Athens, Androtion *On Agriculture*, Aeschrion *ditto*, Dionysius's translation of *Mago*, Diophanes's summary of Dionysius, Asclepiades the physician, Erasistratus *ditto*, Commiades *On Making Wine*, Aristomachus *ditto*, Hicesius *ditto*, Onesicritus, King Juba.

Book XVI. Contents: forest trees, their various natures. (i f.) Races that have no trees; remarkable trees in the North. (iii-xiii) Acorn-bearing trees: the civic wreath; origin of wreaths; wreath of foliage, on whom bestowed; 13 kinds of acorns; the beech; the other acorn-bearing trees; charcoal; the oak-apple; how many fruits beside the acorn borne by the same trees; catkin, cochineal-berry, larch-fungus. (xiv) Trees whose bark is utilized. (xv-xx) Roof-shingles: stone-pine, wild pine, spruce, silver-fir, larch, pitch-pine, yew. (xxi-iii) Liquid pitch, methods of making; cedar-oil, methods of making; wax-pitch, methods of making; resin, methods of boiling; thick-pitch. (xxiv-ix) Trees of value for timber: ash, 4 kinds; lime, 2 kinds; maple, 10 kinds; growth on the maple, maple-fungus; pistachio tree; box, 3 kinds; elm, 4 kinds. (xxx f.) Nature of trees classified by habitat: those that grow on mountains, on plains, on dry soils, in water, in several habitats. (xxxii) Classification. (xxxiii-viii) Non-deciduous trees: rhododendron; partially deciduous trees; regions where all trees evergreen; nature of deciduous foliage;

de natura foliorum cadentium; quibus foliorum varii colores: populorum genera III; quorum foliorum figura mutetur; quae folia versentur omnibus annis; foliorum e palmis cura et usus; foliorum mirabilia. (xxxix) Ordo naturae in satis. (xl) Quae arbores numquam floeant: de iuniperis. (xli-l) De conceptu arborum, de germinatione, de partu; quo ordine floeant, de cornu, quo quaeque tempore ferant; anniferae, in triennium ferentes, quae fructum non ferant; quae infelices existimentur; quae facillime perdant fructum aut florem; quae ubi non ferant; quomodo quaeque ferant; quibus fructus ante quam folium nascatur; biferae, triferae. (li) Quae celerrime senescant, quae tardissime; praecoces fructus, serotini. (lii) In quibus plura rerum genera gignantur; crataegum. (liii-vi) differentiae arborum per corpora et ramos; lotos sive faba Graeca. de ramis, cortice, radicibus. (lvii f.) Arbores quae sponte resurrexerint; quibus modis sponte nascantur arbores. (lix-lxi) Naturae differentiae non omnia ubique generantis; ubi quae non nascantur; de cupressis; nasci saepe ex terra quae ante nata non sint. (lxii f.) De hedera: genera eius XX. smilax. (lxiv-lxxi) De aquaticis: de calamis; harundinum genera XXVIII; de sagittaris et scriptoris et fistularis calamis; Orchomenia harundine et aucupatoria et piscatoria; de vinitoria harundine; de alno; de salice, genera eius VII; quae praeter salicem ad ligandum utilia; de scirpis, candelis, cannis, tegulo; de sabucis, de rubis. (lxxii f.) De arborum sucis. (lxxiv-vii) De natura materiarum; de arboribus caedendis; de magnitudine arborum; de sapino;

trees whose foliage changes colour: poplars, 3 kinds; foliage that changes shape of leaf; foliage that yearly turns round; palm-leaves, cultivation and use of; remarkable foliage. (xxxix) Process of growth in trees grown from seed. (xl) Non-flowering trees: the junipers. (xli-l) Conception, germination and parturition of trees; order of flowering; the husk; date of bearing of the various kinds, trees that bear yearly, three-yearly; trees that do not bear fruit; trees believed unlucky; trees that lose fruit or flower most easily; which kinds do not bear in which places; method of bearing of the various kinds; kinds that bear fruit before foliage; kinds that bear twice a year, thrice a year. (li) Which age most rapidly, which least rapidly; early ripening and late ripening fruits. (lii) Which kinds have products of more than one sort: the kernel of the box. (liii-vi) Differences of trees in trunks and boughs: the lotus or date plum; boughs, bark, roots. (lvii f.) Instances of trees rising again of their own accord; spontaneous generation of trees, modes of. (lix-lxi) Differences of nature not generating all kinds everywhere; places where particular kinds do not grow; cypresses; growth from the earth of entirely novel kinds a frequent occurrence. (lxii) Ivy, its 20 kinds. (lxiii) Bindweed. (lxiv-lxxi) Water plants: canes; reeds, 28 kinds; reed arrows, reed pens, reed pipes; the bird-catcher's and fisherman's reed of Orchomenus; the vine-prop reed; the alder; the willow, its 7 kinds; other plants useful for ties; bulrushes, rushlights, canes, thatch; elders, brambles. (lxxi f.) Sap of trees. (lxxiv-vii) Nature of timbers; wood-cutting; sizes of trees; the pine; charcoal. (lxxviii-

PLINY: NATURAL HISTORY

igniaria e ligno. (lxxviii-lxxx) Quae cariem non sentiant, quae rimam; historica de perpetuitate materiarum; teredinum genera; de materiis architectonica. (lxxxii-iv) De materiis fabrilis; de glutinanda materia; de lamnis sectilibus. (lxxxv-xc) Arborum durantium vetustas: ab Africano priore sata; in urbe Roma D annorum arbor; ab urbe condita arbores; vetustiores urbe in suburbanis; ab Agamemnone satae arbores; a primo anno belli Troiani arbores; ab Ili appellatione arbores apud Troiam antiquiores bello Troiano; item Argis; ab Hercule satae; ab Apolline satae: arbor antiquior quam Athenae; quae genera arborum minime durent. (xci-iv) Arbores ex eventu nobiles; quae sedem nascendi suam non habeant; quae in arboribus vivant et in terra nasci possint, genera earum IX; cadytas, hyphear, stelis, hippophaeston; de visci et similium natura; de visco faciendo. Summa: res et historiae et observationes MCXXXV.

Ex auctoribus: M. Varrone, Fetiale, Nigidio, Cornelio Nepote, Hygino, Masurio, Catone, Muciano, L. Pisone, Trogo, Calpurnio Basso, Cremutio, Sextio Nigro, Cornelio Boccho, Vitruvio, Graecino. Externis: Alexandro polyhistore, Hesiodo, Theophrasto, Democrito, Homero, Timaeo mathematico.

Libro XVII. continentur sativarum arborum naturae. (i) Arborum pretia mirabilia. (ii-iv) Caeli natura ad arbores; quam partem caeli spectare vineae debeant; qualis terra optima; de terra qua Graeci et Galliae laetant genera VIII. (v-viii) De cineris usu; de fimo; quae sata uberiores terram faciant, quae urant; quibus modis fimo utendum. (ix-xxi) Quibus modis arbores serantur; semine

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lxxx) Trees exempt from rot—from splitting; researches as to durability of timbers; kinds of wood-worms; wooden architecture. (lxxxii-iv) Wooden tools; gluing timber; sawn sheets of wood. (lxxxv-xc) Age of long-lived trees: tree planted by the elder Africanus; tree in Rome 500 years old; trees dating from the foundation of the city; trees in the suburbs older than the city; trees planted by Agamemnon; trees dating from first year of the Trojan War; trees at Troy shown from designation 'Ilion' to be older than the Trojan War; ditto at Argos; trees planted by Hercules; trees planted by Apollo; a tree older than Athens; what kinds of trees are least long-lived. (xci-iv) Trees celebrated for some occurrence; parasitic plants; plants parasitic on trees and able to grow in earth—9 kinds of these; cadytas, hyphear, stelis, hippophaestum; nature of mistletoe and similar plants; manufacture of bird-lime. Total: 1135 facts, researches and observations.

Authorities: Marcus Varro, Fetialis, Nigidius, Cornelius Nepos, Hyginus, Masurius, Cato, Mucianus, Lucius Piso, Trogus, Calpurnius Bassus, Cremutius, Sextius Niger, Cornelius Bocchus, Vitruvius, Graecinus. Foreign authorities: Alexander the Learned, Hesiod, Theophrastus, Democritus, Homer, Timaeus the mathematician.

Book XVII. Contents: the natures of cultivated trees. (i) Remarkable prices for trees. (ii-iv) Effect of climate on trees; proper aspect for vines; best soil; soil enjoyed by Greece and the Gallic provinces—8 kinds. (v-viii) The use of ashes; dung; what crops enrich the soil, which impoverish it; methods of using manure. (ix-xxi) Methods of growing trees; kinds springing from seed;

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nascentia; quae numquam degenerent; plantis nascentia, avolsione nascentia, surculo; de seminaris, de transferendis seminaris; de ulmis serendis; de scrobibus; de intervallis arborum; de umbra; de stillicidis; quae tarde crescant, quae celeriter; propagine nascentia. (xxii-viii) De insitione quomodo inventa sit; genera insitionum; inoculatio; emplastratio; de vite inserenda; ramo nascentia; quae taleis et quomodo serantur. (xxix-xxxi) Olearum cultura, operum surcularium per tempora anni digestio; de ablaqueandis et adcumulandis. (xxxii-iv) De salicto; harundineta; de ceteris ad perticas et palos caeduis. (xxxv f.) Vinearum ratio et arbustorum; ne uvae ab animalibus infestentur. (xxxvii f.) Morbi arborum; prodigia ex arboribus. (xxxix-xlvii) Medicinae arborum; quomodo rigandum; mirabilia de riguis; de stercoratione; quomodo circumfodiendum; castratio arborum; caprificatio; quae putationis vitia; arboribus medicamenta. Summa: res et historiae et observationes MCCCLXXX.

Ex auctoribus: Cornelio Nepote, Catone censorio, M. Varrone, Celso, Vergilio, Hygino, Sasernis patre et filio, Scrofa, Calpurnio Basso, Trogo, Aemilio Macro, Graecino, Columella, Attico Iulio, Fabiano, Mamilio Sura, Dessio Mundo, C. Epidio, L. Pisone. Externis: Hesiodo, Theophrasto, Aristotele, Democrito, Theopompo, Hierone rege, Philometore rege, Attalo rege, Archyta, Xenophonte, Amphilocho Atheniense, Anaxipoli Thasio, Apollodoro Lemnio, Aristophane Milesio, Antigono Cumaeco, Agathocle

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that never degenerate; kinds springing from settings, from a cutting, from a layer; seed-beds, transference of seed-beds; growing elms from seed; trenching; distances between trees; shade; droppings from leaves; slow-growing and quick-growing kinds; kinds springing from layers. (xxii-viii) Grafting—how discovered; kinds of grafts; eye-grafting; budding; grafting of vines; grafts growing from boughs; kinds grafted by cuttings, and method. (xxix-xxxi) Olive-growing; seasonal arrangement of propagating; trenching round and banking up vines. (xxxii-iv) The willow thicket; reed bed; other plants cut for poles and stakes. (xxxv f.) Arrangement of vineyards and plantations; prevention of injury to vines from animals. (xxxvii f.) Diseases of trees; remarkable products from trees. (xxxix-xlvii) Remedies for diseases of trees; method of watering; remarkable facts as to water-meadows; use of dung; method of hoeing round trunk; lopping of trees; how to dig round trees; pruning of trees; effect of gall-insect; mistakes in pruning; medicaments for trees. Total: 1380 facts, researches and observations.

Authorities: Cornelius Nepos, Cato the censor, Marcus Varro, Celsus, Virgil, Hyginus, the Sasernae senior and junior, Scrofa, Calpurnius Bassus, Trogus, Aemilius Macer, Graecinus, Columella, Julius Atticus, Fabianus, Mamilius Sura, Dessius Mundus, Gaius Epidius, Lucius Piso. Foreign authorities: Hesiod, Theophrastus, Aristotle, Democritus, Theopompus, King Hiero, King Philometer, King Attalus, Archytas, Xenophon, Amphilocho of Athens, Anaxipolis of Thasos, Apollodorus of Lemnos, Aristophanes of Miletus, Antigonus of Cumae, Agathocles of Chios,

Chio, Apollonio Pergameno, Bacchio Milesio, Bione Solense, Chaerea Atheniense, Chaeristo item, Diodoro Prienaeo, Dinone Colophonio, Epigene Rhodio, Euagone Thasio, Euphronio Athenaeo, Androtione qui de agricultura scripsit, Aeschrione qui item, Lysimacho qui item, Dionysio qui Magonem transtulit, Diophane qui ex Dionysio epitomen fecit, Aristandro qui de portentis.

Libro XVIII. continentur naturae frugum. (i) Antiquorum studium in agricultura. (ii) Quae prima Romae corona; de spicea corona. (iii) De iugero. (iv) Quotiens et quibus temporibus fuerit summa vilitas annonae. (v) Qui illustres de agricultura. (vi) Quae observanda in agro parando. (vii) De villarum positione. (viii) Praecepta antiquorum de agro colendo. (ix) Genera frugum. (x-xxix) Naturae per genera frumenti: de farre, tritico, hordeo, polenta, ptisana, trago, amylo, siligine, similagine, arinca sive olyra, semine sive zea; de reliquis in oriente generibus; de pisturis; de sesima, de erysimo sive irione, de hormino, milio, panico; de fermentis; panis faciendi ratio et genera; quando pistorum initium Romae. (xxx-xxxvi) De leguminibus: faba, ciceris genera, faseoli, pisum; de rapis, naps, lupino. (xxxvii-xliii) Pabularia vicia, ervum, silicia, secale sive asia, farrago; de ocimo; ervilia, medica. (xliv f.) De avena; morbi frugum, remedia. (xlvi) Quid in quoque terrae generum debeat seri. (xlvii) Diversitas gentium in sationibus. (xlviii-1) Vomere genera; ratio arandi; de occando, runcando, sarriendo; de cratitione. (li-liiii) De summa fertilitate soli; ratio saepius anno serendi idem arvum; stercoratio. (liv-lxi) Seminum probatio: quantum ex quoque genere frumenti in iugero serendum; de

Apollonius of Pergamum, Bacchius of Miletus, Bion of Soli, Chaereas of Athens, Chaeristus *ditto*, Diodorus of Priene, Dinon of Colophon, Epigenes of Rhodes, Evagon of Thasos, Euphronius of Athens, Androtion *On Agriculture*, Aeschrion *ditto*, Lysimachus *ditto*, Dionysius's translation of Mago, Diophanes's summary of Dionysius, Aristander *On Portents*.

Book XVIII. Contents: crops, their natures. (i) Devotion to agriculture in early times. (ii) The earliest wreath at Rome; the wreath of ears of corn; (iii) The acre. (iv) Number and dates of lowest falls in price of corn. (v) Distinguished authorities on agriculture. (vi) Rules for preparing the ground. (vii) Location of homesteads. (viii) Old authorities on methods of agriculture. (ix) Kinds of grain. (x-xxix) Properties of corn according to kinds; emmer, wheat, barley, pearl-barley; barley-groats; porridge, starch, common wheat, wheat-flour, two grain wheat, seed; the remaining kinds in the east; modes of grinding; sesame, erysimum or irio, clary, species of millet; yeasts; bread, methods of making and kinds of; when bakers began at Rome. (xxx-xxxvi) Leguminous plants: beans, kinds of chick-pea, calavance, pea; turnips, navews, lupin. (xxxvii-xliii) Fodder: vetch, pulse, fenugreek, secale or rye, mixed fodder, basil, bitter vetch; lucerne. (xliv f.) Oats; corn diseases, remedies. (xlvi) Proper crops to sow in various kinds of soil. (xlvii) National differences in methods of sowing. (xlviii-1) Kinds of plough; method of ploughing; harrowing, weeding, hoeing; cross-harrowing. (li-liiii) Greatest fertility of soil; method of cropping same field more than once a year; manuring. (liv-lxi) Seed-testing; amount of seed of different

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temporibus serendi; digestio siderum in dies et notae terrestres rerum in agro agendarum. (lxii-lxxiv) Quid quoque mense in agro fieri oporteat: de papavere; de faeno, causae sterilitatum; remedia; de messibus, de frumento servando, de vindemia et autumnii operibus. (lxxv f.) Lunaris ratio; ventorum ratio. (lxxvii) Limitatio agrorum. (lxxviii-xc) Prognostica: a sole, a luna, stellis, tonitribus, nubibus, ignibus terrestribus, aquis; ab ipsis tempestatibus; ab animalibus aquatilibus, a volucris, a quadrupedibus. Summa: res et historiae et observationes MMLX.

Ex auctoribus: Masurio Sabino, Cassio Hemina, Verrio Flacco, L. Pisone, Cornelio Celso, Turranio Gracile, D. Silano, M. Varrone, Catone censorio, Scrofa, Sasernis patre et filio, Domitio Calvino, Hygino, Vergilio, Trogo, Ovidio, Graecino, Columella, Tuberone, L. Tarutio qui Graece de astris scripsit, Caesare dictatore qui item, Sergio Paulo, Sabino Fabiano, M. Cicerone, Calpurnio Basso, Ateio Capitone, Mamilio Sura, Accio qui Praxidicam¹ scripsit. Externis: Hesiodo, Theophrasto, Aristotele, Democrito, Hierone rege, Philometore rege, Attalo rege, Archelao rege, Archyta, Xenophonte, Amphilocho Athenaeo, Anaxipoli Thasio, Apollodoro Lemnio, Aristophane Milesio, Antigono Cymaeo, Agathocle Chio, Apollonio Pergameno, Aristandro Athenaeo, Bacchio Milesio, Bione Solense, Chaerea Atheniense, Chaeristo item, Diodoro Prienaeco, Dinone Colophonio, Epigene Rhodio, Euagone Thasio, Euphronio Athenaeo, Androtione qui de agricultura scripsit, Aeschrione qui item,

¹ Ribbeck: praxidica aut -aa.

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varieties of corn required per acre; seasons for sowing; position of stars from day to day and earthly signs as to agricultural operations. (lxii-lxxiv) Agricultural operations proper to the several months; poppies; hay; causes of various kinds of infertility; remedies; harvests, storage of corn, vintage and autumn operations. (lxxv f.) Conditions of the moon, of the winds. (lxxvii) Fixing of bounds of estates. (lxxviii-xc) Weather-forecasts: from the sun, moon, stars, thunder-clouds, mists, earth-fires, waters; from the seasons themselves; from aquatic animals, from birds, from quadrupeds. Total: 2060 facts, researches and observations.

Authorities: Masurius Sabinus, Cassius Hemina, Verrius Flaccus, Lucius Piso, Cornelius Celsus, Turranus Gracilis, Decimus Silanus, Marcus Varro, Cato the ex-Censor, Scrofa, the Sasernae senior and junior, Domitius Calvinus, Hyginus, Virgil, Trogus, Ovid, Graecinus, Columella, Tubero, Lucius Tarutius's Greek treatise *On the Stars*, Caesar the Dictator ditto, Sergius Paullus, Sabinus Fabianus, Marcus Cicero, Calpurnius Bassus, Ateius Capito, Mamilius Sura, Accius's *Praxidica*. Foreign authorities: Hesiod, Theophrastus, Aristotle, Democritus, King Hiero, King Philometer, King Attalus, King Archelaus, Archytas, Xenophon, Amphilocho of Athens, Anaxipolis of Thasos, Apollodorus of Lemnos, Aristophanes of Miletus, Antigonus of Cumae, Agathocles of Chios, Apollonius of Pergamos, Aristander of Athens, Bacchius of Miletus, Bion of Soli, Chaereas of Athens, Chaeristus ditto, Diodorus of Priene, Dinon of Colophon, Epigenes of Rhodes, Evagon of Thasos, Euphronius of Athens, Androtion *On Agriculture*, Aeschrio ditto, Lysimachus ditto,

Lysimacho qui item, Dionysio qui Magonem trans-
tulit, Diophane qui ex Dionysio epitomen fecit,
Thalete, Eudoxo, Philippo, Calippo, Dositheo, Par-
menisco, Metone, Critone, Oenopide, Conone, Eucte-
mone, Harpalo, Hecataeo, Anaximandro, Sosigene,
Hipparcho, Arato, Zoroastre, Archibio.

Libro XIX. continentur (i-vi) Lini natura et
miracula; genera eius excellentia XXVII; quomodo
seratur et perficiatur; quando primum in theatris
vela. (vii-ix) De sparti natura: quomodo perficiatur,
quando primus usus eius. (x) De eriophoro bulbo.
(xi-xviii) Quae sine radice nascantur et vivant; quae
nascantur et seri non possint: misy, iton, geranium;
de tuberibus; pezicae: de laserpicio et lasere:
maspetum, magydaris; de rubia; de radícula.
(xix-xxi) Hortorum gratia; digestio terra enascen-
tium praeter fruges et frutices. (xxii-xxxvii) Natura
et genera et historiae nascentium in hortis rerum
XX: de omnium earum radicibus, floribus, foliis;
quibus hortensiorum folia cadant; quoto quaeque die
nascantur; seminum natura; quomodo quaeque
serantur; quorum singula genera, quorum plura
sint. (xxxviii-lv) Natura et genera et historiae ad
condimenta in horto satarum rerum XXIII. (xlviii)
Lacrima nascentia. (lvi) Ferulacea genera iv; can-
nabis. (lvii-lix) Morbi hortensiorum; remedia: quibus
modis formicae necentur; contra urucas remedia,
contra culices; quibus salsae aquae prosint. (lx) Ratio
rigandi hortos. (lxi-ii) De sucis et saporibus horten-
siorum; de piperitide et libanotide et zmyrnio. Sum-
ma: res et historiae et observationes MCXLIV.

Ex auctoribus: Maccio Plauto, M. Varrone, D.
Silano, Catone censorio, Hygino, Vergilio, Muciano,
Celso, Columella, Calpurnio Basso, Mamilio Sura,

Dionysius's translation of Mago, Diophanes's summary
of Dionysius, Thales, Eudoxus, Philip, Calippus,
Dositheus, Parmeniscus, Meto, Crito, Oenopides,
Conon, Euctemon, Harpalus, Hecataeus, Anaximander,
Sosigenes, Hipparchus, Aratus, Zoroaster, Archibius.

Book XIX. Contents: (i-vi) Flax, nature and
remarkable properties of; 27 specially good kinds of;
how grown and how made up; earliest employment of
awnings in the theatre. (vii-ix) Esparto grass,
nature of; how made up; when first used. (x) The
wool-bearing bulb. (xi-xviii) Plants that spring up
and live without root; plants that spring up and cannot
be grown from seed: mushroom, iton, stork's bill;
truffles, stalkless mushrooms; silphium plant, and
its juice, leaf and stalk; madder; dyers' rocket,
(xix-xxi) The charm of gardens; description of plants
other than cereals and shrubs. (xxii-xxxvii) Nature
and kinds and descriptions of 20 garden plants: roots,
flowers, leaves of all these; deciduous garden plants;
various periods of sprouting; nature of seeds; various
modes of sowing; which of a single kind and which
of several kinds. (xxxviii-lv) Nature and kinds and
descriptions of 23 garden plants cultivated for con-
diments. (xlviii) Plants springing from an exudation;
(lvi) Fennel-giant, 4 kinds; hemp. (lvii-lix) Diseases
of garden plants; cures; modes of killing ants; modes
of protecting against caterpillars, against green-fly;
what plants benefited by salt water. (lx) Method of
watering gardens. (lxi f.) Juices and flavours of
garden plants; pepperwort, rosemary, mint. Total
1144 facts, investigations and observations.

Authorities: Maccius Plautus, Marcus Varro,
Decimus Silanus, Cato the Censor, Hyginus, Virgil,
Mucianus, Celsus, Columella, Calpurnius Bassus,

Sabino Tirone, Licinio Macro, Q. Birrio, Vibio Rufino, Caesennio qui κηπουρικὰ scripsit, Castritio item, Firmo item, Potito item. Externis: Herodoto, Theophrasto, Democrito, Aristomacho, Menandro qui βιώχρηστα scripsit, Anaxilao.

Libro XX. continentur medicinae ex his quae in hortis seruntur: (ii) cucumere silvestri XXVI, (iii) elaterio XXVII, (iv) anguino cucumere sive erratico V, (v) cucumere sativo IX, (vi) pepone XI, (vii) cucurbita sive sompho I, (viii) colocynthide X, (ix) rapis IX, (x) rapo silvestri I, (xi) napis sive bunio sive buniade V, (xii-xiii) raphano sativo XLIII, armoracia I, (xiv) pastinaca V, hibisco sive plistolochia sive moloche agria XI, (xv) staphylino sive pastinaca erratica XXII, (xvi) gingidio I, (xvii) sisere XI, (xviii) sile XII, (xix) inula XI, (xx) caepa XXVII (xxi) porro sectivo XXXII, (xxii) porro capitato XXXIX, (xxiii) alio LXI, (xxiv) lactuca XLII, caprina IV, (xxv) caesapo I, isati I, lactuca silvatica VII, (xxvi) hieracia XVII, (xxvii) beta XXIV, (xxviii) limonio sive neuroide III, (xxix) intubo, quae ambubeia, IV, (xxx) cichorio sive chresto sive pancreatio XII, (xxxi) hedyphnoide IV, (xxxii) seris generibus II, medicinae VII, (xxxiii) brassica LXXXVII, (xxxv) cyma, (xxxvi) brassica silvestri XXVII, (xxxvii) lapsana I, (xxxviii) marina brassica I, (xxxix) scilla XXIII, (xl) bulbis XXX, (xli) bulbine I, bulbo vomitorio, (xlii f.) asparago sativo XVII, corruda sive ormino sive Libyco XXIV, (xliv) apio XVII, (xlv) apiastro sive melissophyllo, (xlv) olusatro sive hipposelino XI, oreoselino II, heleoselino I, (xlvii) petroselino I, buselino I, (xlviii) ocimo XXXV, (xlix) eruca XII, (l) nasturtio XLII, (li) ruta LXXXIV, (lii) mentastro XX, (liii) menta XLI, (liv) puleio XXV,

Mamilius Sura, Sabinus Tiro, Licinius Macer, Quintus Birrius, Vibius Rufinus, Caesennius *On gardening*, Castritius *ditto*, Firmus *ditto*, Potitus *ditto*. Foreign authorities: Herodotus, Theophrastus, Democritus, Aristomachus, Menander's *Things serviceable for life*, Anaxilaus.

Book XX. Subject: medicines obtained from garden plants: (ii) from the wood-cucumber 26, (iii) wild cucumber 27; (iv) snake cucumber or wild cucumber 5, (v) garden cucumber 9, (vi) pumpkin 11, (vii) gourd or somphus 1, (viii) colocynth 10, (ix) turnips 9, (x) wild turnip 1, (xi) navews or swede of two varieties 5, (xii f.) garden radish 43, horseradish I, (xiv) parsnip 5, marsh mallow or plistolochia or wild mallow 11, (xv) staphylinus or wild parsnip 22, (xvi) French carrot 1, (xvii) skirwort 11, (xviii) hartwort 12, (xix) elecampane 11, (xx) onion 27, (xxi) cut leek (chives) 32, (xxii) headed leek 39, (xxiii) garlic 61, (xxiv) lettuce 42, goat-lettuce 4, (xxv) caesapum lettuce 1, isatis 1, wild lettuce 7, (xxvi) hawk-weed 17, (xxvii) beet 24, (xxviii) wild beet or neurois 3, (xxix) endive or wild succory 4, (xxx) chicory or worthy or championship 12, (xxxi) scented succory 4, (xxxii) endive 2 kinds, 7 medicines, (xxxiii) cabbage 87, (xxxv) sprouts, (xxxvi) wild cabbage 27, (xxxvii) charlock 1, (xxxviii) sea-cabbage 1, (xxxix) squill 23, (xl) onions 30, (xli) *bulbine* 1, emetic onion, (xlii f.) garden asparagus 17, wild asparagus or orminus or Libyan asparagus 24, (xliv) parsley 17, (xlv) wild parsley or bee-plant; (xlv) olusatrum or horse-parsley 11, mountain parsley 2, bog parsley 1, (xlvii) rock parsley 1, cow-parsley 1, (xlviii) basil 35, (xlix) colewort 12, (l) cress 42, (li) rue 84, (lii) wild mint 20, (liii) mint 41, (liv) flea-bane 25, (lv) wild

(lv) puleio silvestri XVII, (lvi) nepeta IX, (lvii) cumino XLVIII, cumino silvestri XXVII, (lviii) ammi X, (lix) cappari XVIII, (lx) Ligustico sive panace IV, (lxi-v) cunila bubula V, cunila gallinacea sive origano V, cunilagine VIII, cunila molli III, libanotide III, cunila sativa III, cunila montana VII, (lxvi) piperitide sive siliquastro V, (lxvii-ix) origano oniti sive prasio VI, tragorigano IX, origano Heraclio, gen. III, medicinae XXX, (lxx) lepidio III, (lxxi) git sive melanthio XXIII, (lxxii-iv) aneso sive aniceto LXI, anetho IX, (lxxv) sacopenio sive sagapeno XIII, (lxxvi-lxxx) papavere albo III, papavere nigro VIII (de sopore, de opio, contra potiones quas ἀνωδύνους et πεπτικὰς et ληξιπυρέτους et κοιλιακὰς vocant; meconio I, papavere rhoea II, papavere silvestri ceratiti sive glaucio sive paralio VI, papavere Heraclio sive aphro IV (diacodion), papavere tithymalo sive paralio III, (lxxxii) porcilaca, quae et peplis, XXV, (lxxxii-iv) coriandro XXI, atriplice XIV, malva malope XIII, malva malache I, malva althaea sive plistolochia LIV; (lxxxv f.) lapatho silvestri sive oxalide sive lapatho canterino sive rumice I, hydro-lapatho II, hippolapatho VI, oxylapatho IV, lapatho sativo XXI, bulapatho I, (lxxxvii-ix) sinapi, gen. III, medicinae XLIV, adarca XLVIII, marrubio sive prasio sive linostropho sive philopaede sive philochare XXIX, (xc-xcix) serpyllo XVIII, sisymbrio sive Thymbraeo XXIII, lini semine XXX, blito VI, meo Athamantico VII, faeniculo XXII, hippomarathro sive myrsineo V, cannabi IX, ferula VIII, carduo sive scolymo VI. (c) Theriacae compositio. Summa: medicinae et historiae et observationes MDCVI.

Ex auctoribus: Catone censorio, M. Varrone, Pompeio Lenaeo, C. Valgio, Hygino, Sextio Nigro qui

flea-bane 17, (lvi) cat-mint 9, (lvii) cumin 48, wild cumin 27, (lviii) ammi 10, (lix) caper-bush 18, (lx) lovage or all-heal 4, (lxi) ox-cunila 5, (lxii) cock-cunila or marjoram 5, (lxiii) cunilago 8, (lxiv) soft cunila 3, libanotis 3, (lxv) garden cunila 3, mountain cunila 7, (lxvi) pepperwort or Indian pepper 5, (lxvii-ix) wild marjoram or horehound 6, goat's-thyme 9, Heracleean marjoram, 3 kinds, 30 drugs; (lxx) pepperwort 3, (lxxi) git or cultivated fennel 23, (lxxii-iv) anise or anicetum 61, dill 9, (lxxv) sacopenium or sagapenum 13, (lxxvi-lxxx) white poppy 3, black poppy 8 (narcotic effect, opium, prophylactics called anodynes, peptic drugs, febrifuges and purges); poppy-juice 1, wild poppy 2, wild horned poppy or glaucous or shore poppy 6, Heracles poppy or foam poppy 4 (medicinal poppy-juice), spurge poppy or sea poppy 3, (lxxxii) purslane, also called peplis, 25, (lxxxii-iv) coriander 21, orache 14, varieties of mallow-malope 13, malache 1, althaea or plistolochia 54, (lxxxv f.) wood-sorrel or oxalis or horse-sorrel or dock 1, water sorrel 2, horse-sorrel 6, bitter sorrel 4, cultivated sorrel 21, cow-sorrel 1, (lxxxvii-ix) mustard 3 kinds, 44 drugs, sedge-froth 48, horehound or prasium or flax-twist or lads-love or philochares 29, (xc-xcix) wild thyme 18, wild mint or Thymbraeum 23, flax-seed 30, blite 6, bearwort or Athamas 7, fennel 22, horse-fennel or bay-fennel 5, hemp 9, fennel giant 8, edible thistle or cardoon 6. (c) Snake-bite antidote, recipe for.—Total 1606 drugs, investigations and observations.

Authorities: Cato the Censor, Marcus Varro, Pompeius Lenaeus, Gaius Valgius, Hyginus, Sextius Niger's Greek writings, Julius Bassus *ditto*, Celsus,

Graece scripsit, Iulio Basso qui item, Celso, Antonio Castore. Externis: Democrito, Theophrasto, Orpheo, Menandro qui βιόχρηστα scripsit, Pythagora, Nicandro. Medicis: Hippocrate, Chrysippo, Diocle, Ophione, Heraclide, Hicesio, Dionysio, Apollodoro Citiense, Apollodoro Tarentino, Praxagora, Plistonico, Medio, Dieuche, Cleophanto, Philistione, Asclepiade, Crateua, Petronio Diodoto, Iolla, Erasistrato, Diagora, Andrea, Mneside, Epicharmo, Damione, Dalione, Sosimene, Tlepolemo, Metrodoro, Solone, Lycos, Olympiade Thebana, Philino, Petricho, Miccione, Glaucia, Xenocrate.

Libro XXI. continentur naturae florum et coronamentorum. (ii-ix) De stropholis;serta; qui invenerint miscere flores; quando primum corollae appellatae et quare; quis primum coronas foliis argenteis et aureis dederit; quare corollaria dicta; de lemniscis; quis primum caelaverit eos; quantus honor coronarum apud antiquos fuerit; severitas antiquorum in coronis; quem floribus coronaverit populus Romanus; pactiles coronae; de sutilibus coronis, de nardinis, de Sericis; Cleopatrae reginae factum in coronis. (x-xii, lxxiii-v). De rosa, generaeus XII, medicinae XXXII; lili genera III medicinae XXIII; lacrima nascens; narcissi genera III medicinae XVI. (xiii) Quorum semen tinguatur, ut infecta nascantur. (xiv-xxxvii) Quemadmodum quaeque nascantur, serantur, colantur, sub singulis generibus. violae colores III, (lxxvi) medicinae XVII): luteae genera V, (lxxvi) medicinae X; de caltha; regius flos; bacchar (medicinae XVII); combretum (medicina I); crocum (medicinae XX); ubi optimi flores; qui flores Troianis temporibus in

Antonius Castor, Foreign authorities: Democritus, Theophrastus, Orpheus, Menander's *Things serviceable for life*, Pythagoras, Nicander. Medical writers: Hippocrates, Chrysippus, Diocles, Ophion, Heraclides, Hicesius, Dionysius, Apollodorus of Citium, Apollodorus of Tarentum, Praxagoras, Pleistonius, Medius, Dieuches, Cleophrantus, Philistion, Asclepias, Crateuas, Petronius Diodotus, Iollas, Erasistratus, Diagoras, Andreas, Mnesides, Epicharmus, Damion, Dalion, Sosimenes, Tlepolemus, Metrodorus, Solon, Lycus, Olympias of Thebes, Philinus, Petrichus, Miccio, Glaucias, Xenocrates.

Book XXI. Contents: the natures of flowers and of flowers for garlands. (ii-ix). Of wreaths; garlands; inventors of blending flowers; when first called 'floral crowns,' and why; who first bestowed crowns with silver and gold foliage; why called 'garland-gratuities'; of ribbons—who first reproduced them in carving; high value placed on crowns of honour among the ancients; simplicity of crowns among the ancients; who received a crown bestowed by the nation at Rome; plaited crowns; stitched crowns, nard-crowns, silk crowns; Queen Cleopatra's action with regard to crowns. (x-xii, lxxiii-v). Rose, 12 kinds, 32 drugs; lily, 3 kinds, 23 drugs; plant from an exudation; narcissus, 3 kinds, 16 drugs. (xiii) Flowers grown of special colours by dyeing the seed. (xiv-xxxvii) Mode of growing from cuttings, from seed, mode of cultivating various flowers, arranged under various kinds; the violet 3 colours (lxxvi, 17 drugs); yellow herb, 5 kinds (lxxvi, 10 drugs); marsh marigold; king flower; cyclamen (17 drugs); rush (1 drug); crocus (lxxxii, 20 drugs); where the best flowers are; what flowers

usu; de natura odorum; Iris (medicinae XLI); salianca (medicinae III); polium sive teuthrium (medicinae XIX); qui flos alium colorem mane habeat, alium meridie, alium sole occidente; vestium aemulatio cum floribus; amarantus; cyanus (medicinae II); holochrysos (medicinae III); petilium, bellio; chrysocome sive chrysitis (medicinae VI); qui frutices flore coronent, qui folio; melothrum, spiraea, origanum, cneorum sive casia, genera II, melissophyllum sive melittaena (medicinae XXI), melilotos, quae sertula campana sive melilotum (medicinae XII); trifoli genera III (medicinae IV); myophonum. thymi genera III (medicinae XXVIII); flore nascentia, non semine; conyza; Iovis flos; hemerocalles (medicinae IV); helenium (medicinae); phlox; quae ramis et foliis odorata; habrotonum, (medicinae XXII); adonium, genera II; ipsa se propagantia; leucanthemum medicina I; amaraci genera II (medicinae LX); nyctegreton sive chenamyche sive nyctalops. (xxxviii f.) Quo ordine temporum flores nascantur; anemone coronaria sive phrenion (xciv-ix, medicinae X), oenanthe herba (medicinae VI), melanthium (medicinae XI), heliochrysos (medicinae XI), gladiolus, hyacinthus (medicinae VIII), lychnis (medicinae VII), tiphyon, pothi genera II, orsinae genera II, vincapervinca sive chamaedaphne (xl, medicinae IV); quae semper vireat herba. (xli-ix) Quam longa cuique florum vita. quae propter apes serenda inter flores; cerintha; de pabulo apium; de morbis earum et remediis; de venenato melle et remediis eius, de melle insano, de melle quod muscae non attingunt; de alvariis, de alvis et cura eorum; si famem apes sentiant; de cera facienda; quae optima eius genera; de cera

were in vogue in Trojan times; nature of scents; the iris (41 drugs); wild nard (3 drugs); the hulwort or teuthrium (19 drugs); flowers with different colours in the morning, at midday, and at sunset; floral patterns in dress; amaranth; the corn-flower (2 drugs); the all-gold (3 drugs); the petilium or ox-eye daisy; the goldy-locks or gilt lady (6 drugs); which plants' flowers provide wreaths, which plants' leaves; white byrony, privet, wild marjoram, mezereum or casia, 2 kinds, bee-leaf or balm (21 drugs), melilot, garland of Campania or honey-lotus (12 drugs); trefoil, 3 kinds (4 drugs); mouse bane; thyme, 3 kinds (28 drugs); plants springing from flower, not seed; elecampane; flower of Jupiter; martagon-lily (4 drugs); calamint (5 drugs); phlox; plant with scented stalk and leaves: southern-wood (22 drugs); flower of Adonis, 2 kinds; self-fertilizers; leucanthemum (1 drug); marjoram, 2 kinds (60 drugs); wake-by-night or chenamyche or see-by-night. (xxxviii f.) Time-series of birth of flowers; garland anemone or phrenion (xciv-ix 10 drugs); wine-flower grass (6 drugs); cultivated fennel (11 drugs), marigold (11 drugs), gladiolus, hyacinth (8 drugs), lychnis (7 drugs), narcissus, pothos, 2 kinds, crocus, 2 kinds, periwinkle or dwarf laurel (xl, 4 drugs); evergreen grass. (xli-ix) Length of life of various flowers; what kinds among flowers should be cultivated to attract bees; wax-flower; diet of bees; their diseases and remedies; poisonous honey and its remedies; honey that causes madness; honey that flies will not touch; apiaries, hives and care of hives; do bees feel hunger? manufacture of wax; the best kinds of wax; Car-

Punica. (l-cviii) Sponte nascentium herbarum in quibuscumque gentibus usus, naturae, miracula; fraga, tamnum, ruscum (c, medicinae IV); batis, genera II (ci, medicinae II), pastinaca pratensis, lupus salictarius, colocasia (cii, medicinae II), anthalium sive anticellium sive anthyllium (ciii, medicinae VI), oetum; quae radices nihil supra terram gignant; arachidna, aracos; candryala, hypochoeris, caucalis, anthriscum, scandix (eadem tragopogon), parthenium sive leucanthes sive amaracus sive perdicium sive muralis (civ, medicinae VIII), trychnum sive strychnum sive halicacabum sive calitha sive dorycnion sive manicon sive peritton sive neuras sive morio sive moly (cv, medicinae VIII), corchorus (cvi, medicinae VI), aphace, acynopus, epipetron; quae numquam floreat, quae semper; cneci genera IV (cvii, medicinae III). (liv-viii) Aculeati generis herbae (erynge, glycyrriza, tribulus, ononis, pheos sive stoebe, hippophaes, urticae genera IV, laminum, scorpio, acorna sive phonos, leucacanthos, chalceos, cnecos, polyacanthos, onopyxos, helxine, scolymos, chamaeleon, tetralix (acanthice mastiche, cactus, pternica, pappum, ascalia). (lix) Herbarum genera per caules: coronopus, anchusa, anthemis, phyllanthes, crepis, lotos. (lx) Differentiae herbarum per folia: quibus folia non cadant; quae particulatim floreat; heliotropium, adiantum; herbae quarum medicinae sequenti libro dicentur. (lxi-v) Spicatarum genera: stanyops, alopecuros, stelephuros sive ortyx sive plantago, thryallis; perdicium, ornithogale; post annum nascentes, a summo florentes, item ab imo; lappa herba quae intra se parit, opuntia e folio

thaginian wax. (l-cviii) Self-grown vegetation, its use among certain races, its kinds, remarkable cases of; strawberries, wild grapes, butcher's broom (c, 4 drugs); samphire, 2 kinds (ci, 11 drugs), meadow parsnip, willow-hop, culcas (cii, 2 drugs) Cretan pitch plant, anthalium or anticellium or anthyllium (ciii, 6 drugs); oetum; roots with no growth above the surface of the earth; chickling vetch, aracos; candryala, hypochoeris, caucalis, anthriscum, chervil (also called goat's beard), maiden-flower or white blossom or marjoram or partridge-plant or wall-plant (civ, 8 drugs), nightshade or strychnos or halicacabus or calitha or dorycnion or mad-plant or surplus or sinew-plant or lack-wit or moly (cv, 8 drugs), wild pulse (cvi, 6 drugs), chick-pea, acynopus, rock-plant; non-flowering plants, plants perpetually in flower; safflower, 4 kinds (cvii, 3 drugs). (liv-viii) Plants of the prickly kind (erynge thistle, licorice root, land caltrop, rest-harrow, pheos or stoebe, horse-beam, nettle, 4 kinds, dead-nettle, scorpion-grass, acorna or murder-thistle, whitethorn, copper-wort, safflower, many-thorn, donkey-box, helxine, edible thistle, carline thistle, tetralix heath (thorny mastix, cactus, pternica, pappum, artichoke). (lix) Plants classed by stalks: hartshorn, alkanet, chamomile, phyllanthes, crepis, lotus. (lx) Plants distinguished by leaves: evergreens; plants flowering in sections; heliotrope, maidenhair; plants whose use for drugs will be stated in the next Book. (lxi-v) Ear-bearing classes: stanyops, fox-tail, stelephuros, or quail-plant or plantain, thryallis, partridge-wort, bird's milk; plants of twelve-month growth, plants flowering from top, *ditto* from bottom; internal-sprouting burdock, Opus-plant making root from

radicem faciens; iasione, chondrylla, picris quae toto anno floret. (lxvi) Quibus flos antequam caules exeant, quibus caulis antequam flos, quae ter floreat. (lxvii-lxxi) Cypiros, medicinae VIII; Thesium; asphodelus sive hastula regia (anthericus sive album); iunci genera VI, medicinae IV, cyperus, medicinae XIV, cyperis, cypira; holoschoenos. (lxxii) Medicinae ex iunco odorato sive teuchte X, (lxxviii-lxxxii) medicinae ex asaro VIII, medicinae ex Gallicanardo VIII, medicinae ex herba quam phu vocant IV; (lxxxii) Syrium crocomagma, medicinae II. (cviii) pesoluta, medicina I. (cix) Graecorum nominum in ponderibus et mensuris interpretatio. Summa: medicinae et historiae et observationes DCCXXX.

Ex auctoribus: Catone censorio, M. Varrone, Masurio, Antiaste, Caepione, Vestino, Vibio Rufino, Hygino, Pomponio Mela, Pompeio Lenaeo, Cornelio Celso, Calpurnio Basso, C. Valgio, Licinio Macro, Sextio Nigro qui Graece scripsit, Iulio Basso qui item, Antonio Castore. Externis: Theophrasto, Democrito, Orpheo, Pythagora, Magone, Menandro qui *βιόχρηστα* scripsit, Nicandro, Homero, Hesiodo, Musaeo, Sophocle, Anaxilao. Medicis: Mnesitheo qui de coronis, Callimacho qui item, Phania physico, Simo, Timaristo, Hippocrate, Chrysippo, Diocle, Ophione, Heraclide, Hicesio, Dionysio, Apollodoro Citiense, Apollodoro Tarentino, Praxagora, Plistonico, Medio, Dieuche, Cleophanto, Philistione, Asclepiade, Crateua, Petronio Diodoto, Iolla, Erasistrato, Diagora, Andrea, Mneside, Epicharmo, Damione, Dalione, Sosimene, Tlepolemo, Metrodoro, Solone, Lyco, Olympiade Thebana, Philino, Petricho, Miccione, Glaucia, Xenocrate.

Libro XXII. continetur auctoritas herbarum.

leaf; iasione, chondrilla, year-long flowering bitter-plant. (lxvi) Plants producing flower before stalk, stalk before flowers, thrice-flowering. (lxvii-lxxi) Gladiolus, 8 drugs; corydalis; asphodel or royal spear-grass (asphodel-stalk or bulb); rush, 6 kinds, 4 drugs; cyperus, 4 drugs, cyperis, cypira, holoschoenos. (lxxii) Drugs from scented rush or teuchites 10. (lxxviii-lxxxii) Drugs from hazelwort 8, drugs from Gallic nard 8, drugs from 'phu' grass 4; Syrian saffron-leas, 2 drugs, (cviii) pesoluta, 1 drug. (cix) Translation of Greek terms for weights and measures. Total, 730 drugs, investigations and observations.

Authorities: Cato the ex-Censor, Marcus Varro, Masurius, Antias, Caepio, Vestinus, Vibius Rufinus, Hyginus, Pomponius Mela, Pompeius Lenaeus, Cornelius Celsus, Calpurnius Bassus, Gaius Valgius, Licinius Macer, Sextius Niger's Greek treatise, Julius Bassus's *ditto*, Antonius Castor. Foreign authorities: Theophrastus, Democritus, Orpheus, Pythagoras, Mago, Menander's *Things serviceable for life*, Nicander, Homer, Hesiod, Musaeus, Sophocles, Anaxilaus. Medical writers: Mnesitheus *On Wreaths*, Callimachus *ditto*, Phantias the natural scientist, Simus, Timaristus, Hippocrates, Chrysippus, Diocles, Ophion, Heraclides, Hicesius, Dionysius, Apollodorus of Citium, Apollodorus of Tarentum, Praxagoras, Plistonicus, Medius, Dieuches, Cleophantus, Philistio, Asclepias, Crateuas, Petronius Diodotus, Iollas, Erasistratus, Diagoras Andreas, Mnesides, Epicharmus, Damio, Dalio, Sosimenes, Tlepolemus, Metrodorus, Solon, Lycus, Olympias of Thebes, Philinus, Petrichus, Miccio, Glaucias, Xenocrates.

Book XXII. Contents: the importance of herbs.

PLINY: NATURAL HISTORY

(i-vi) Gentes herbis formae gratia uti; herbis infici vestes; item pigmento de oleo chortino; de saminibus, de verbenis et clarigatione; de corona graminea: de raritate eius, qui soli corona ea donati, qui solus centurio. (vii) Medicinae ex reliquis coronamentis. (viii-xlv) Erynge, sive eryngion sive centum capita XXX; acanos I; glycyrriza sive adipso XV. stomatice I; tribuli genera II, medicinae XII; stoebe sive pheos; hippophaes, genera II, medicinae II; urtica LXI; lamium VII; scorpionis genera II, medicina; leucacantha sive phyllos sive ischias sive polygonato IV; helxine XII; perdicio sive Parthenio sive siderite, quae urceolaris sive astericum, XI; chamaeleone sive ixia sive ulophyto sive cynozolo, genera II, medicinae XII (mastiche); coronopode, anchusa XIV; pseudoanchusa sive echis sive doris III; onochilo sive archebio sive onocheli sive rhexia sive enchrysa XXX; cuius radices colorem mutant; anthemide sive leucan themide sive leucanthemo sive chamaemelo sive melanthio, genera III, medicinae XI; loto herba IV; lotometra II; heliotropio sive helioscopio sive verrucaria XII, heliotropio sive tricocco sive scorpiuro XIV; adianto sive callitricho sive trichomane sive polytricho sive saxifraga, genera II, medicinae XXVIII, frutex sine radice; picride I, Thesio I; asphodelo LI; halimo XIV; acantho sive paederote sive melamphylo V; bupleuro V; buprestis I; elaphobosco IX, scandice IX, anthrisco II; iasione IV; caucalide XII; sio XI; sillybo; scolymo sive limonio V; soncho, genera II, medicinae XV; condrio sive condrilla III. (xlvi) De boletis: proprietates eorum in nascendo. (xlvii-ix) De fungis: notae venenatorum; medicinae ex his

BOOK I

(i-vi) That nations use herbs because of their beauty; herbs used to dye clothes; dye made of vegetable oil *ditto*; tufts of sacred grass, sacred branches and the ritual of demanding redress; wreath of grass, its rarity, its only recipients, the only centurion recipient. (vii) Drugs made from the remaining sorts of wreaths. (viii-xlv) Erynge or eryngion or hundred-heads, 30; acanos thistle, 1: sweet-root or licorice, 15; mouth-heal, 1: caltrop, 2 kinds, 12 drugs; stoebe or pheos; horse-beam, 2 kinds, 2 drugs; nettle, 61; dead-nettle 7; scorpion-plant, 2 kinds, 1 drug; pellitory or phyllos or sciatica-plant or polygonaton, 4; helxine, 12; pellitory or maiden-herb or iron-wort (the same as pitcher-polish or astericum) 11; chamaeleon-plant or carline thistle or ulophytum or cynozolon, 2 kinds, 12 drugs (gum mastic); hartshorn, alkanet, 14; bastard-bugloss or echis or doris, 3; donkey-lip or archebius or donkey-hoof or rhexia or enchrysa, 30; the plant whose roots make dye; chamomile or white anthemis or earth-apple or fennel-flower, 3 kinds, 11 drugs; lotus grass, 4; lotometra, 2; heliotrope or turnsole or wartwort, 12; heliotrope or three-berry or scorpion's tail, 14; adiantum or maiden-hair or trichomanes or many-hair or saxifrage, 2 kinds, 28 drugs, rootless stem; bitter lettuce 1, corydalis 1; asphodel 51; orach 14; bear's breech or lad's love or black-leaf 5; hare's ear 5, cow-nettle 1; wild parsnip 9; chervil 9; southern chevril 2; bind-weed 4; caucalis 12; bur-parsley 11; sillybus thistle; cardoon or meadow thistle 5; sow-thistle, 2 kinds, 15 drugs; chondrilla 3. (xlvi) Mushrooms: peculiarity in their mode of reproduction. (xlvii-ix) Toadstools: signs of poisonous kinds; 9 drugs

IX; silphio VII; laseri XXXIX. (l-lv) Propoli V, mellis XVI, aquae mulsae XVIII; quare genere ciborum mores quoque mutantur; mulso VI; melitite III; cera VIII. (lvi) Contra compositiones medicorum. (lvii-lxxvi) Medicinae ex frugibus (siligine I, tritico I, palea II, farre I, furfuribus I, arinca, athera II; farina per genera; medicinae XXIX; polenta VIII; polline V, pulte I, farina chartaria I; alica VI; milio VI; panico IV; sesima VII; sesimoide III, Anticyrico III; hordeo IX, hordeo murino, quam Graeci Phoenicium; I; ptisana IV, amylo VIII, avena I; pane XXI; faba XVI; lente XVII, *φάκω ἐπὶ τελευμάτων* III; eleliphaco sive sphaco, quae salvia, XIII; cicere et cicerula XXIII; ervo XX; lupino XXXV; irone sive erysimo, quod Galli velam, XV; hormino VI). (lxxvii-lxxx) Iolio V, miliaria herba I, bromo I, orobanche sive cynomorio I. (lxxxii f.) Contra leguminum bestiolas. spuma de zytho. Summa: medicinae et historiae et observationes DCCCCVI.

Ex auctoribus iisdem quibus priore libro et praeter eos Chrysermo, Eratosthene, Alcaeo.

Libro XXIII. continentur medicinae ex arboribus cultis: (ii-xxii) vitibus XX; foliis vitium VII, pampinis VII; omphacio vitium XIV; oenanthe XXI; uvis recentibus; uvarum servatarum generibus, medicinae XI; sarmentis uvarum I; nucleis acinorum VI; vinaceis VIII; uva theriace IV, uva passa sive astaphide XIV; astaphide agria sive staphide sive taminia sive pituitaria XII; labrusca sive ampelo agria XII; salicastro XII; vite alba sive ampelo leuce sive staphyle sive melothro sive psilothro sive archezosti sive cedrosti sive mado XXXI; vite nigra sive bryonia sive Chironia sive

obtained from these; silphium 7; assafoetida plant 39. (l-lv) Bee-glue 5, honey 16, hydromel 18; reason for influence of diet on character; mead 6; honey-must, 3; wax, 8. (lvi) Warning against doctors' mixtures. (lvii-lxxvi). Drugs from various grains: common wheat 1, wheat 1, chaff 2, emmer 1, bran 1, arinca, rye-water 2; corresponding varieties of flour; 29 drugs; pearl-barley 8; fine flour, pulse 1, paper flour 1; alica 6; millet 6; Italian millet 4; sesame 7; near-sesame 3, hellebore 3; barley 9, wild barley (Greek 'Phoenician barley') 1; pearl-barley 4; starch 8; oats 1; bread 21; bean 16; lentil 17; marsh-bean 3; eleliphacon or fragrant moss (sage) 13; chick-pea and small chick-pea 23; bitter vetch 20; lupine 35; winter-cress or erysimum (Gallic 'vela') 15; clary 6. (lxxvii-lxxx) Darnel 5, millet grass 1, oats 1, choke-weed or broomrape 1. (lxxxii f.) Protection against maggots in vegetables. Foam from beer.—Total 906 drugs, investigations and observations.

Authorities as in preceding book, also Chrysermus, Eratosthenes, Alcaeus.

Book XXIII. Contents: drugs obtained from cultivated trees: (ii-xxii) from vines 20; vine-leaves 7; tendrils 7; juice of unripe grape 14; wild vine 21; fresh grapes; varieties of stored grapes, 11 drugs; vine-shoots 1; grape-stones 6; grape-skins 8; treacle-grape 4; dried grape or raisin 14; wild raisin or staves-acre or taminia or phlegm-heal 12; claret-vine or wild vine 12; salicastro wild vine 12; white grape or ampelos leuke or staphyle or white bryony or psilothrum or archezostis or cedrostis or mado 31; black grape or bryony or

LXIX, myrtis LX, myrtidano XIII, oxymyrsine sive chamaemyrsine sive ruscum VI. Summa: medicinae et historiae et observationes MCCCCXVIII.

Ex auctoribus: C. Valgio, Pompeio Lenaeo, Sextio Nigro qui Graece scripsit, Iulio Basso qui item, Antonio Castore, M. Varrone, Cornelio Celso, Fabiano. Externis: Theophrasto, Democrito, Orpheo, Pythagora, Magone, Menandro qui βιόχρηστα, Nicandro, Homero, Hesiodo, Musaeo, Sophocle, Anaxilao. Medicis: Mnesitheo, Callimacho, Phania physico, Timaristo, Simo, Hippocrate, Chrysippo, Diocle, Ophione, Heraclide, Hicesio, Dionysio, Apollodoro Citiense, Apollodoro Tarentino, Praxagora, Plistonico, Medio, Dieuche, Cleophante, Philistione, Asclepiade, Crateua, Petronio Diodoto, Iolla, Erasistrato, Diagora, Andrea, Mneside, Epicharmo, Damione, Dalione, Sosimene, Tlepolemo, Metrodoro, Solone, Lyco, Olympiade Thebana, Philino, Petricho, Miccione, Glaucia, Xenocrate.

Libro XXIV. continentur medicinae ex arboribus silvestribus: (ii-ix) loto Italica VI, glandibus XIII, cocco ilicis III, galla XXIII, visco XI, pilulis glandiferarum I, cerro VIII, subere II, fago IV. (x-xix) Cupresso XXIII, cedro XIII, cedride X, galbano XXIII, Hammoniaco XXIV, styrace X, spondylio XVII, sphagno sive sphaco sive bryo V, terebintho VI, picea VIII. (xx-xxix) Chamaepity X, pityusa VI, resinis XXII, pice XXXIV, pisselaeo sive palimpissa XVI, pissasphalto II, zopissa I, taeda I, lentisco XXII, platano XXV. (xxx-xxxix) Fraxino V, acere I, populo VIII, ulmo XVI, tilia V, sambuco XV, iunipero XXI, salice XIV, Amerina I, vitice XXXIII, erice I; (xl-xlix) genista V, my-

myrtle-berry wine 13, Prickly myrtle or ground-myrtle or butcher's broom 6. Total 1418 drugs, investigations and observations.

Authorities: Gaius Valgius, Pompeius Linaeus, Sextius Niger's Greek writings, Julius Bassus's *ditto*, Antonius Castor, Marcus Varro, Cornelius Celsus, Fabianus. Foreign authorities: Theophrastus, Democritus, Orpheus, Pythagoras, Mago, Menander's *Things serviceable for life*, Nicander, Homer, Hesiod, Musaeus, Sophocles, Anaxilaus. Medical writers: Mnesitheus, Callimachus, Phania's *Natural Science*, Timaristus, Simus, Hippocrates, Chrysippus, Diocles, Ophion, Heraclides, Hicesius, Dionysius, Apollodorus of Citium, Apollodorus of Tarentum, Praxagoras, Plistonicus, Medius, Dieuches, Cleophantes, Philistion, Asclepiades, Crateuas, Petronius Diodotus, Iollas, Erasistratus, Diagoras, Andreas, Mnesides, Epicharmus, Damion, Dalion, Sosimenes, Tlepolemus, Metrodorus, Solon, Lycus, Olympias of Thebes, Philinus, Petrichus, Miccio, Glaucias, Xenocrates.

Book XXIV. Contents: Drugs obtained from forest trees: (ii-ix) Egyptian water-lily 6, acorns 13, holm-oak berry 3, oak-apple 23, mistletoe 11, acorns of glandiferous trees 1, Turkey oak 8, cork 2, beech 4. (x-xix) Cypress 23, cedar 13, cedar-berry 10, galbanum 23, gumtree 24, styrax gumtree 10, bear's-foot 17, sphagnus or sphacus or moss 5, turpentine 6, pitch-pine 8. (xx-xxix) Ground-pine 10, pityusa 6, resin 22, pitch 34, cedar-resin oil or twice-boiled pitch 16, earth-pitch 2, wax-pitch 1, pitch-pine 1, mastic-tree 22, plane 25. (xxx-xxxix) Beech 5, maple 1, poplar 8, elm 16, lime 5, elder 15, juniper 21, willow 14, Amerian apple 1, chaste-tree 33, heath 1. (xl-xlix)

gynacanthæ sive apronia XXXV; musto XV; Falerno VI, Albano II, Surrentino III; Setino I, Statano I, Signino I; ceteris vinis LXIV. (xxiii-vi) observationes circa vina LXI: quibus aegris danda, quando danda, quomodo danda; observationes circa ea XCI. (xxvii-xxxiii) Aceto XXVIII, aceto scillino XVII, oxymelite VII, sapa VII, faece vini XII, faece acetæ XVII, faece sapaæ IV. (xxxiv-xxxix) Foliis oleæ XXIII; flore IV, olea ipsa VI; olivis albis IV, olivis nigris III; amurca XXI, foliis oleastri XVI, omphacio III. (xl-l) Oenanthino oleo XXVIII; cicino XVI; amygdalino XVI; laurino IX; myrteo XX; chamaemyrsinae sive oxymyrsinae, cupressino, citreo, caryino, Cnidio, lentiscino, balanino; cyprino et cypro ipsa XVI, gleucino I; balsamino V; malobathro V; hyoscyamino II, thermino I, narcissino I, raphanino V, sesamino III, lilino I, Selgitico I, Iguino I; elaeomeli II, pissino II. (li-iii) Palmis IX; palma myrobalano III; palma elate XVII. (liv-lxxxiii) Medicinæ ex singulorum generum flore, foliis, fructu, ramis, cortice, succo, ligno, radice, cinere (malorum observationes VI, cotoneorum XXII, struthiorum I; dulcium malorum VI, austerorum IV, citreorum V; Punicorum XXVI; stomatice XIV; cytino VIII balaustio XII. (lxii-lxix) Pirorum observationes XIII; ficorum CXI; caprificorum XLII; erineo herba III, prunis IV, Persicis II, prunis silvestribus II; lichene arborum II; (lxx-lxxv) moris XXXIX; stomatice sive arteriace sive panchrestos IV, cerasis V, mespilis II, sorbis, II, nucibus pineis XIII, amygdalis XXIX. (lxxvi-lxxxix) Nucibus Graecis I, iuglandibus XXIX. (antidoto); Abellanis III, pistaciis VIII, castaneis V, siliquis V, corno I, unedonibus. (lxxx-lxxxiii) Lauris

Chiron's plant or gynacanthæ or apronia 35; must 15; Falernian 6, Alban 2, Surrentine 3; Setine 1, Statane 1, Signine 1; other wines 64. (xxiii-vi) Observations about wines 61; what invalids to be given them, and when and how; observations on these points 91. (xxvii-xxxiii) Vinegar 28, squill-vinegar 17, vinegar-honey 7, must 7, wine lees 12, vinegar lees 17, must lees 4. (xxxiv-xxxix) Olive leaves 23; olive flowers 4, olive berries 6, white olives 4, black olives 3; olive lees 21, wild olive leaves 16, oil of unripe olives 3. (xl-l) Wild olive oil 28; castor oil 16; almond oil 16; bay oil 9; myrtle oil 20; oil of dwarf myrtle or prickly myrtle (butcher's broom), of cypress, of citrus, nut-oil, Cnidian oil, mastic oil, oil of behen-nut, cyprus oil and cyprus flower 16; oil of must 1; of balsam 5; of betel 5, of henbane 2, of lupine 1, of narcissus 1, of radish 5, of sesame 3, of lily-seed 1, oil of Selga 1, of Iguvium 1; of olive-honey 2, of pitch 2. (li-iii) Palm-oil 9, palm-oil of behen-nut 3, of fir 17. (liv-lxxxiii) Drugs from flower, leaves, fruit, branches, bark, sap, wood, root, ash, of the different sorts of tree; observations as to apple-trees 6, as to quinces 22, as to soapworts 1, sweet apples 6, crab apples 4, citron apples 5, pomegranates 26; lip-salve 14; pomegranate blossom 8, wild pomegranate blossom 12. (lxii-lxix) Observations on pear trees, 13, on figs 111, on wild figs 42; erineus grass 3, plums 4, peaches 2, wild plums 2; tree lichen 2. (lxx-lxxv) Mulberries 39; lip-salve or wind-pipe salve or all-heal 4; cherries 5, medlars 2, service-berries 2, pine-cones 13, almonds 29. (lxxvi-lxxxix) Greek nuts 1, walnuts 24 (antidote); filberts 3, pistachios 8, chestnuts 5, caroes 5, cornel-cherry 1, arbutuses. (lxxx-lxxxiii) Bay-trees 69, myrtles 60,

rice quae et tamarica III, virga sanguinea I, brya XXIX, silere III, ligustro VIII, alno I, hederis XXXIX, cistho V, cisso erythrano II, chamaecisso II, milace III, clematide III. (1-lix) Harundine XVIII, papyro charta III, hebeno V, rhododendro I, rhus gen. II, medicinae VIII (stomatice), rhu erythro IX, erythrodano XI, alyssu II, radícula sive struthio XIII, apocyno II, rore marino XVIII; (lx-lxix) cachry VI, herba Sabina VII, selagine II, samolo II, cummi XI, spina Arabica, IV, spina alba II, acanthio I, acacia XVIII, aspalatho sive erysisceptro sive adipsatheo sive diaxylo VIII, (lxx-lxxxix) spina appendice II, pyracantha I, paliuro X, aquifolia X, taxo I, rubis LI (stomatice), cynosbato III, Idaeo rubo I, rhamni gen. II, medic. V, Lycio XVIII, sarcocolla II, oporice II, (lxxx-lxxxix) trixagine sive chamaedrye sive chamaerope sive Teucra XVI, chamaedaphne V, chamelaea VI, chamaesyce VIII, chamaecisso herba I, chamaeleuce sive farfaro sive farfugio I, chamaepeuce V, chamaecyparisso II, ampelopraso VI, stachye I, clinopodio sive cleopiceto sive zopyrontio sive ocimoides III, clematide centunculo III, clematide sive aetite sive lagine. (xl-xlvi) Clematide Aegyptia sive daphnoide sive polygonoide II, aro XIII, dracunculo II, ari III, millefolio sive myriophyllo VII, pseudobunio IV, myrride sive myrra sive myriza VII, oenobreche III. (xcix-cii) Magica de herbis coracesia et calicia, Minyade sive Corinthia I, aproxi (Pythagoria de recidivis morborum), aglaophotide sive marmaritide, Achaemenide sive hippophobade, theombrotio sive semnio, adamantide, Arianide, theronarca, Aethiopide sive Meroide, ophiusa, thalassaegle sive potamaugide, theangelide, gelotophyllide, hestiateride

Broom 5, myrice, also called tamarisk, 3, golden-rod 1, brya 29, brook-willow 3, privet 8, alder 1, ivies 39, cisthus 5, reddish-ivy 2, ground-ivy 2, yew 3, clematis 3. (1-lix) Reed 18, papyrus reed 3, ebony 5, rhododendron 1, sumach 2 kinds, 8 drugs (mouth-heal), red sumach 9, madder 11, madwort 2, radícula or soapwort 13, dog's-bane 2, rosemary 18. (lx-lxix) Rosemary capsule 6, sabine grass 7, savin-tree 2, brookweed 2, cummin 11, Arabian thorn 4, white-thorn 2, bear's-foot 1, acacia 18, rosewood or erysisceptrum or adipsatheum or diaxylo 8. (lxx-lxxxix) Barberry-bush 2, pyracanthus 1, Christ's-thorn 10, holly 10, yew 1, blackberries 51 (mouth-heal), dog-rose 3, Ida bramble 1; buckthorn 2 kinds, 5 drugs; Lycium thorn 18, Persian gum 2, oporice 2. (lxxx-lxxxix) Germander or dwarf oak or chamaerops or Teucrican plant 16; dwarf laurel 5, dwarf olive 6, dwarf fig 8, ground ivy 1, chamaeleuce or colt's-foot or farfugium 1, ground larch 5, ground cypress 2, field-garlic 6, horsemint 1, wild basil or cleopicetum or zopyrontium or ocimoides 3, knotweed clematis 3. clematis or aetis or cimoides. (xl-xlvi) Egyptian clematis or laurel clematis or polygonoides 2, wake-robin 13, tarragon 2, dragon-root 3, milfoil or yarrow 7. bastard-bunion 4, sweet-cicely or myrra or myriza 7. oenobreche 3. (xcix-cii) Sorcery from herbs: coracesia and calicia; Minyad or Corinthian herb 1; aproxi (Pythagorean teachings as to recurrent diseases), aglaophotis or marble-quarry plant. Achaemenis or horse's-mane, theombrotion or semnion, uncrushable herb, Ariana plant, theronarca. Ethiopian plant or herb of Meroe, ophiusa, sea-ray or river-flash, theangelis, gelotophyllis, hestiateris or

sive protomedia sive casignete sive Dionysonymphade, helianthide sive heliocallide, hermesjade, aeschynomene, crocide, oenotheride, anacampserote. (ciii-cix) Eriphia, herba lanaria I, lactoris I, militaris I, stratiotes V, herba de capite statuae I, herba de fluminibus I, lingua herba I, herba de cribro I. (cx-cxx) Herba de fimetis I, herba a canum urina I, rodarum III, impia II, Veneris pecten I, exedum, notia II, philanthropos I, lappa canaria II, tordylon sive syreon III, gramen XVII, dactylos V, fenum Graecum, quae silicia, XXXI. Summa: medicinae et historiae et observationes MCLXXVI.

Ex auctoribus: C. Valgio, Pompeio Lenaeo, Sextio Nigro qui Graece scripsit, Iulio Basso qui item, Antonio Castore, Cornelio Celso. Externis: Theophrasto, Apollodoro, Democrito, Orpheo, Pythagora, Magone, Menandro qui βιόχρηστα, Nicandro, Homero, Hesiodo, Musaeo, Sophocle, Anaxilao. Medicis: Mnesitheo, Callimacho, Phania physico, Timaristo, Simo, Hippocrate, Chrysippo, Diocle, Ophione, Heraclide, Hicesio, Dionysio, Apollodoro Citiense, Apollodoro Tarentino, Praxagora, Plistonico, Medio, Dieuche, Cleophanto, Philistione, Asclepiade, Crateua, Petronio Diodoto, Iolla, Erasistrato, Diagora, Andrea, Mneside, Epicharmo, Damione, Sosimene, Tlepolemo, Metrodoro, Solone, Lyco, Olympiade Thebana, Philino, Petricho, Miccione, Glaucia, Xenocrate.

Libro XXV. continentur naturae herbarum sponte nascentium; auctoritas herbarum. (i-vi) De origine usus earum; qui Latine usus earum scripserint; quando ad Romanos ea notitia pervenerit; qui primi Graecorum de his composuerint; quare minus exercentur ea remedia; herbae mirabiliter inventae.

protomedia or casignetes or Dionysonymphas, helianthis or heliocallis, hermesjades, aeschynomenes, crocis, oenetheris, anacampseros. (ciii-cix) Eriphia, wool grass 1, milk-wort 1, soldier-grass 1, stratiotes 5, statue's head grass 1, river grass 1, tongue grass 1, sieve grass 1. (cx-cxx) Dung-hill grass 1, dog's water grass 1, rodarum 3, French everlasting 2, Venus's comb 1, exedum, southern-wood 2, goose-grass 1, dog-bur 2, hart-wort or syreon 3, couch-grass 17, lady's finger 5, Greek hay or fenugreek, our silicia, 31. Total: 1176 drugs, investigations and observations.

Authorities used: Gaius Valgius, Pompeius Lenaeus, Sextius Niger's Greek writings, Julius Bassus's ditto, Antonius Castor, Cornelius Celsus. Foreign authorities: Theophrastus, Apollodorus, Democritus, Orpheus, Pythagoras, Mago, Menander's *Things serviceable for life*, Nicander, Homer, Hesiod, Musaeus, Sophocles, Anaxilaus. Medical writers: Mnesitheus, Callimachus, Phantias the scientific writer, Timaristus, Simus, Hippocrates, Chrysippus, Diocles, Ophion, Heraclides, Hicesius, Dionysius, Apollodorus of Citium, Apollodorus of Tarentum, Praxagoras, Plistonicus, Medius, Dieuches, Cleophantus, Philistio, Asclepiades, Crateuas, Petronius Diodotus, Iollas, Erasistratus, Diagoras, Andreas, Mnesides, Epicharmus, Damion, Sosimenes, Tlepolemus, Metrodorus, Solon, Lycus, Olympias of Thebes, Philinus, Petrichus, Miccio, Glaucias, Xenocrates.

Book XXV. Contents: the natures of self-grown plants; value of plants. (i-vi) Origin of their use; Latin writers on uses of plants; when this knowledge reached the Romans; first Greek writers on the subject; herbal remedies, why comparatively little used; remarkable discoveries of plants. Dog-rose,

Cynorrodum, medicinae II, dracunculus caulis I, Britannica V. (vii-xix) De maximo dolore. nobilium herbarum inventores. moly III, dodecatheon I, paeonia sive pentorobos sive glycyssides, I, panaces Asclepion II, panaces Heraclion III, panaces Chironion IV, panaces Centaurion sive Pharnacion III, Heraclion siderion IV, hyoscyamos, quae Apollinaris sive altercum, genera II, medicinae III, linostosis sive parthenion sive Hermupoa, quae Mercurialis, genera II, medicinae XXII, Achillea sideritis sive panaces Heraclium, quae millefolium sive scopa regia, gen. VI, med. III. (xx-xxix) Teucra sive hermione sive splenios II, Melampodium sive elleborum, quod veratrum, genera III; quomodo colligatur, quomodo probetur; medicinae ex nigro XXIV, quomodo sumendum; item in albo: medicinae ex eo XXIII; quibus non dandum; observationes circa utrumque genus LXXXVIII. Mithridatia II, scordotis sive scordion IV, Polemonia sive Philetaeria sive chiliodynamus VI, Eupatoria I, (xxx-xlii) Centaurion sive Chironion XX, Centaurion lepton sive libadion, quod fel terrae, XXII, Centauris triorchis II, Clymenos II, Gentiana XIII, Lysimachia VIII, Artemisia sive parthenis sive botrys sive ambrosia V, nymphaea sive Heraclion sive rhopalon sive mallos, genera II, medicinae XIV, Euphorbiae genera II, medicinae IV, plantaginis genera II, medicinae XLVI, buglossos III, cynoglossos III, buphthalmos sive cachla I. (xliii-ix) Herbae quas gentes invenerunt Scythice III, hippace III, ischaemon II, cestros sive psychotrophon, quae Vettonica sive serratula, XLVIII; Cantabrica II, consiligo I, Iberis VII. (l-liii) Herbae ab animalibus repertae chelidonia VI, canaria I, dictamnion VIII,

2 drugs, tarragon 1, water-clock 5. (vii-ix) The greatest pain. Discoverers of famous plants. Moly 3, shooting star 1, peony or pentorobos or glycyssides 1, varieties of all-heal—Asclepion 2, Heraclion 3, Chironion 4, Centaurion or Pharnacion 3, iron-wort Heraclion 4, hyoscyamos or Apollo-plant or henbane, 2 kinds, 3 drugs; linostosis or maiden-hair or grass of Hermes or grass of Mercury, 2 kinds, 22 drugs; Achilles star-wort or all-heal of Heracles, our milfoil or king's-broom, 6 kinds, 3 drugs. (xx-xxix) Teucra's grass or hermione or spleenwort 2; Melampodium or hellebore, our veratrum 3 kinds, method of gathering, method of testing; drugs from black hellebore 24, how taken; ditto with white hellebore; drugs from the latter 23; to what patients not to be given: observations in regard to each kind 88. Grass of Mithridates 2, scordotis or water-germander 4, Polemonia or Philetaeria or thousand-virtues 6, Eupatoria 1. (xxx-xlii) Centaury or grass of Chiron 20, lesser centaury or libadion, our earth-gall (fumitory) 22, triorchis centaury 2, Clymenos 2, gentian 13, Lysimachia 8, Artemisia or maiden-herb or magwort or ambrosia 5, water-lily or rod of Heracles or rhopalon or mallos, 2 kinds, 14 drugs; Euphorbia 2 kinds, 4 drugs; plantain 2 kinds, 46 drugs; bugloss 3; hound's-tongue 3; ox-eye or cachla 1. (xliii-ix) Plants discovered by various races: Scythian grass 3, mare's-grass 3, styptic plant 2, cestros or psychotrophon, our Vettonica or betony, 48; Cantabrian bindweed 2, lung-wort 1, candy-tuft 7. (l-liii) Plants found from animals: swallow-wort 6, dog's-grass 1, dittany 8, sham-dittany or horehound.

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pseudodictamnion sive chondris. quibus locis potentissimae herbae. propter herbas in Arcadia lac potari. (liv-lix) Aristolochia sive clematidis sive Cretica sive plistolochia sive lochia polyrrizos, quae malum terrae, XXII. argemonia IV, agaricum XXXIII, echios, genera III, medicinae II, hierobotane sive peristereon, quae verbenaca, genera II, medicinae X, blattaria I, molemonium I, pentapetes sive pentaphyllon sive chamaezelon, quae quinquefolium, medicinae XXXIII, sparganion I, dauci genera IV, medicinae XVIII, theronarca II, persolata sive arcion VIII, cyclaminos, quae tuber terrae, XII, cyclaminos cissanthemos IV, cyclaminos chamaecissos III. (lxx-xc) Peucedanum XXVIII, ebulum VI, phlomos quae verbascum XV, phlomides II, phlomis sive lychnitis sive thryallis, thelyphonon sive scorpio I, phrynion sive neuras sive poterion I, alisma sive damasonium sive lyron XVII, peristereos VI, antirrhinon sive anarrhinon sive lychnis agria III, euplia I, pericarpum, genera II, medicinae II, nymphaea Heraclia II, lingu-laca I, cacalia sive leontice III, callithrix I, hysso-pum X, lonchitis IV, xiphion sive phasganion IV, psyllion sive cynoides sive chrysallion sive Sicelicon sive cynomyia XVI, thryselinon I. (xci-cv) Remedia oculorum anagallis sive corchoron, quae felis oculus, genera II, medicinae III, aegilops II, mandragoras sive Circaeon sive morion sive hippophlomon, genera II, medicinae XXIV, cicuta XIII, crethmos agrios I, molybdaena I, capnos trunca, quae pedes gallinacei I, capnos fruticosa III, acoron sive acorion XIV, cotyledon, genera II, medicinae LXI, aizoum maius sive buphthalmon sive zoophthalmon sive stergethron sive hypogeson sive ambrosion sive

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Localities where herbs most potent. Milk drunk for herbal contents in Arcady. (liv-lix) Aristolochia or clematis or Cretan plant or plistolochia or many-rooted lochia, our earth-bane, 22; agrimony 4, tinder-fungus 33; viper's-bugloss 3 kinds, 2 drugs; holy-wort or dove-wort, our vervain, 2 kinds 10 drugs; moth-mullein 1, molemony 1; pentapetes or pentaphyllon or chamaezelon, our cinquefoil, 33 drugs; bur-weed 1; wild carrot, 4 kinds, 18 drugs; theronarca 2; brown mullein or arcion 8; cyclamen, our mole-hill plant, 12; ivy-flower cyclamen 4; ground-ivy cyclamen 3. (lxx-xc) Sulphurwort 28, dwarf elder 6; phlomos, our mullein 15; phlomides 2, phlomis or wild lychnis or thryallis; thelyphonon or scorpion-grass (aconite) 1; phrynion or neuras or poterion 1; water-plantain or damasonium or lyron 17; vervain 6; antirrhinum or anarrhinum or wild lychnis 3; euplia 1; pericarpum, 2 kinds, 2 drugs; Hercules water-lily 2; marsh crowfoot 1; colt's-foot or lion-wort 3; hair-dye plant 1; hyssop 10; satyrion 4; gladiolus or sword-lily 4; flea-bane or dog-wort or gold garlic or Sicilian grass or dog-fly 16; thryselinon 1. (xci-cv) Eyesalves: pimpernel or chickweed, our cat's-eye, 2 kinds, 3 drugs; aegilops 2, mandragora or Circe's herb or nightshade or white mandrake, 2 kinds, 24 drugs; hemlock 13; wild sea-fennel 1, leadwort 1; 'dwarfed smoke,' our chicken-feet (fumitory) 1; bush-smoke 3; acoron or sweet-flag 14; navelwort, 2 kinds 61 drugs; greater live-for-ever or ox-eye or zoophthalmon or love-charm or gutter-leek or immortal or care-free, our great

amerimnon, quae sedum magnum aut oculus aut digitellus, medicinae XXXI; aizoum minus sive erithales sive trithales sive erysithales, quae isoetes aut sedum, medicinae XXXII; andrachle agria, quae inlecebra, XXXII. (cvi-x) Erigeron sive pappos sive acanthis, quae senecio, VIII; ephemeron II, labrum Venereum I, batrachion, quae ranunculus sive strumos, genera IV, medicinae XIV stomatice, genera II. Summa: medicinae et historiae et observationes MCCXCII.

Ex auctoribus: C. Valgio, Pompeio Lenaeo, Sextio Nigro qui Graece scripsit, Iulio Basso qui item, Antonio Castore, Cornelio Celso, Fabiano. Externis: Theophrasto, Apollodoro, Democrito, Iuba, Orpheo, Pythagora, Magone, Menandro qui βιόχρηστα, Nicandro, Homero, Hesiodo, Musaeo, Sophocle, Xantho, Anaxilao. Medicis: Mnesitheo, Callimacho, Phania physico, Timaristo, Simo, Hippocrate, Chrysippo, Diocle, Ophione, Heraclide, Hicesio, Dionysio, Apollodoro Citiense, Apollodoro Tarentino, Praxagora, Plistonico, Medio, Dieuche, Cleophanto, Philistione, Asclepiade, Crateua, Petronio Diodoto, Iolla, Erasistrato, Diagora, Andrea, Mneside, Epicharmo, Damione, Sosimene, Tlepolemo, Metrodoro, Solone, Lyco, Olympiade Thebana, Philino, Petricho, Miccione, Glaucia, Xenocrate.

Libro XXVI. continentur reliquae per genera medicinae. (i) De novis morbis. (ii-vi) Quid sint lichenes; quando primum in Italia coeperint; item carbunculus; item elephantiasis; item colum. (vii-ix) De nova medicina; de Asclepiade medico. qua ratione medicinam veterem mutaverint; contra Magos. (x-xix) Lichen, genera II, medicinae V; Proserpinaca I, bellis II, condurdum I, bechion sive

houseleek or eye or little finger, 31 drugs; lesser live-for-ever or erithales or trithales or erysithales, our aye-green or stonecrop, 32 drugs; wild purslane, our decoy-bird 32. (cvi-x) Erigeron or pappos or groundsel, our old-man, 8; ephemeron 2; Venus's-lip 1, frog-weed, our ranunculus or buttercup, 4 kinds, 14 drugs; mouth-heal, 2 kinds. Total 1292 drugs, investigations and observations.

Authorities: Gaius Valgius, Pompeius Lenaeus, Sextius Niger's Greek writings, Julius Bassus's *ditto*, Antonius Castor, Cornelius Celsus, Fabianus. Foreign authorities: Theophrastus, Apollodorus, Democritus, Juba, Orpheus, Pythagoras, Mago, Menander's *Things serviceable for life*, Nicander, Homer, Hesiod, Musaeus, Sophocles, Xanthus, Anaxilaus. Medical writers: Mnesitheus, Callimachus, Phantias the natural scientist, Timaristus, Simus, Hippocrates, Chrysippus, Diocles, Ophion, Heraclides, Hicesius, Dionysius, Apollodorus of Citium, Apollodorus of Tarentum, Praxagoras, Plistonicus, Medius, Dieuches, Cleophantus, Philistion, Asclepias, Crateuas, Petronius Diodotus, Iollas, Erasistratus, Diagoras, Andreas, Mnesides, Epicharmus, Damion, Sosimenes, Tlepolemus, Metrodorus, Solon, Lycus, Olympias of Thebes, Philinus, Petrichus, Miccio, Glaucias, Xenocrates.

Book XXVI. Contents: the remaining drugs by classes. (i) New diseases. (ii-vi) Ringworm—when first occurring in Italy; carbuncle *ditto*; elephantiasis *ditto*; colic *ditto*. (vii-ix) The new medicine; the physician Asclepias; reason for alteration of the old medicine; refutation of Magi. (x-xix) Lichen, 2 kinds, 5 drugs, Proserpinaca 1, ox-eye daisy 2, condurdum

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arcion sive chamaeleuce, quae tussilago, III, bechion, salvia, IV, molon sive syron, amomon III, (xx-xxix) ephedra sive anabasis III, geum III, tripolion III, gromphaena, malundrum II, chalcetum II, molemonium I, halus sive cotonea V, chamaerops I, stoechas I, astragalus VI. (xxx-xxxix) Ladanum VIII, chondris sive pseudodictamnium I, hypocisthis sive orobethron, genera II, medicinae VIII, laver sive sion II, potamogiton VIII, statice III, ceratia II, leontopodion sive leuceoron sive doribethron sive thorybethron; lagopus III; epithymon sive hippopheos VIII; pycnocomon IV; polypodion III; scammonia VIII; tithymalos characias. (xl-xlvi) Tithymalos myrtites sive caryites XXI; tithymalos paralius sive tithymalis IV, tithymalos helioscopios XVIII; tithymalos cyparissias XVIII; tithymalos platyphyllos sive corymbites sive amygdalites III; tithymalos dendroides sive cobios sive leptophyllos XVIII; apios ischias sive raphanos agraria II: (l-lix) Crethmon XI, cachry; anthyllion II, anthyllis II; cepaea I; hypericon sive chamaepitys sive corisson IX; caros sive hypericon X; callithrix I, perpressa I, chrysanthemum I, anthemis I; silaus I; herba Fulviana; inguinalis sive argemo. (lx-lxix) Chrysippeos I; orchis sive Serapia V; Satyrion III, satyrion Erythraicon IV; lappago sive mollugo I, asperugo I; phycos, quod fucus marinus, genera III, medicinae V; lappa boaria; geranion sive myrris sive myrtis, genera III, medicinae VI; onothera sive onear III. (lxxiii) Acte sive ebulum, chamaeacte. (lxxxiii-xciii) Hippuris sive ephedron sive anabasis, quae equisaetum, genera III, medicinae XVIII; stephanomelis; erysithales I; polycnemon I; arsenogonon I, thelygonon I; mastos I,

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1, bechion or arcion or chamaeleuce, our white colt's-foot, 3; bechion, our sage, 4; molon or syron, balsam-shrub 3. (xx-xxix) Horse-tail or anabasis 3, geum 3, tripolion 3, amaranth, malundrum 2, chalcetum 2, molemonium 1; comfrey or black bryony 5, wall germander 1, French lavender 1, Spanish tragacanth 6. (xxx-xxxix) Ladanum 8; horehound or bastard dittany 1, cisthus-parasite or orobethron, 2 kinds, 8 drugs; laver or sion 2; pond-weed 8, statice 3; horn-weed 2, leontopodion or leuceoron or doribethron or thorybethron; hare's foot 3; thyme-flower or hippopheos 8; devil's-bit 4; polypody 3; scammony 8; stake-spurge. (xl-xlvi) Myrtle-spurge or nut-spurge 21, sea-spurge or thymalis 4, heliotrope spurge 18, cyparissias-spurge 18, broadleaved spurge or corymbites or almond-spurge 3; tree-spurge or cobius or small-leaved spurge 18; sciatica-spurge or wild radish 2. (l-lix) Sea-fennel 11, sea-fennel kernel, pitch-plant 2, musk-ivy 2, portulaca 1, hypericon or ground-pine or corisson 9, ground-pine seed or hypericon 10, hair-dye plant 1, perpressa 1, marigold 1, chamomile 1, smallage 1, Fulvius-grass, groin-grass or argemo. (lx-lxix) Chrysippus-grass 1, orchis or Serapia 5, ragwort 3, red ragwort 4, lappagobur or mollugo 1, prickly bur 1, phycos, our seaweed, 3 kinds, 5 drugs; cattle-bur; crane's bill or geranium or myrtis, 3 kinds, 6 drugs; donkey-hunt or refreshment-plant 3, (lxxiii) Danewort or dwarf-elder, ground Dane-wort. (lxxxiii-xciii) Horse-tail or ephedron or anabasis, our horse-hair, 3 kinds, 18 drugs; stephanomelis; erysithales 1, polycnemon 1, arsenogonon 1, thelygonon 1, mastos 1,

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ophrys. Summa: medicinae et historiae et observationes MXIX.

Ex auctoribus: M. Varrone, C. Valgio, Pompeio Lenaeo, Sextio Nigro qui Graece scripsit, Iulio Basso qui item, Antonio Castore, Cornelio Celso. Externis: Theophrasto, Apollodoro, Democrito, Iuba, Orpheo, Pythagora, Magone, Menandro qui βιόχρηστα scripsit, Nicandro, Homero, Hesiodo, Musaeo, Sophocle, Xantho, Anaxilao. Medicis: Mnesitheo, Callimacho, Phania physico, Timaristo, Simo, Hippocrate, Chrysippo, Diocle, Ophione, Heraclide, Hicesio, Dionysio, Apollodoro Citiense, Apollodoro Tarentino, Praxagora, Plistonico, Medio, Dieuche, Cleophanto, Philistione, Asclepiade, Crateua, Petronio Diodoto, Iolla, Erasistrato, Diagora, Andrea, Mneside, Epicharmo, Damione, Sosimene, Tlepolemo, Metrodoro, Solone, Lyco, Olympiade Thebana, Philino, Petricho, Miccione, Glaucia, Xenocrate.

Libro XXVII. continentur reliqua genera herbarum, medicinae ex his. (ii-x) Aconitum sive thelyphonon sive cammoron sive pardalianches sive scorpion, medicinae IV; Aethiopsis IV; ageraton IV; aloe XXIX; alcea I; alypon I, alsine ad eadem quae helxine V; androsaces VI; andro-saemon sive ascyron VI. (xi-xx) Ambrosia sive botrys sive Artemisia III; anonis sive ononis V; anagyros sive acopon III; anonymos II, aparine sive omphacocarpos sive philanthropos IV; arction sive arcturon V; asplenon sive hemionios II; Asclepias II; aster sive bubonion III; ascyron et ascyroides III. (xxi-xxx) Aphaca III, alcibium I; alectoros lophos, quae crista, II; alum, quod symphyton pe-

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ophrys. Total, 1019 drugs, investigations and observations.

Authorities: Marcus Varro, Gaius Valgius, Pompeius Lenaeus, Sextius Niger's Greek writings, Julius Bassus's ditto, Antonius Castor, Cornelius Celsus. Foreign Authorities: Theophrastus, Apollodorus, Democritus, Juba, Orpheus, Pythagoras, Mago, Menander's *Things serviceable for life*, Nicander, Homer, Hesiod, Musaeus, Sophocles, Xanthus, Anaxilaus. Medical writers: Mnesitheus, Callimachus, Phania the natural philosopher, Timaristus, Simus, Hippocrates, Chrysippus, Diocles, Ophion, Heraclides, Hicesius, Dionysius, Apollodorus of Citium, Apollodorus of Tarentum, Praxagoras, Plistonicus, Medius, Dieuches, Cleophantus, Philistion, Asclepiades, Crateuas, Petronius Diodotus, Iollas, Erasistratus, Diagoras, Andreas, Mnesides, Epicharmus, Damion, Sosimenes, Tlepolemus, Metrodorus, Solon, Lycus, Olympias of Thebes, Philinus, Petrichus, Miccio, Glaucias, Xenocrates.

Book XXVII. Contents: the remaining kinds of plants, drugs derived from them. (ii-x) Monk's-hood or lady-killer or cammoron or choke-leopard or scorpion, 4 drugs; Aethiopic sage 4; never-grow-old 4; aloe 29; alcea-mallow 1; herb terrible 1; chickweed for the same uses as helxine 5; androsaces 6; man's-blood or St. John's-wort 6. (xi-xx) Ambrosia or mug-wort or Artemisia 3, rest-harrow or ononis 5, bean-trefoil or pain-killer 3, no-name 2, cleavers or grape-fruit or goose-grass 4, bear-weed or bear-ward 5, miltwort or spleenwort 2, swallowwort 2, aster or star-wort 3, St. John's wort and ascyroides 3. (xxi-xxx) Chick-pea 3, alcibium 1, alectoros lophos, our cock's-comb 2, comfrey, our rock wallwort 14,

traeum, XIV, alga rufa I; actaea I; ampelos agria IV; absinthium, genera IV, medicinae XLVIII; absinthium marinum sive seriphum; ballotetes sive porrum nigrum III; (xxxix-xl) botrys sive ambrosia sive Artemisia I; brabyla I; bryon marinum V; bupleuron I; catanance I, cemos I; calyx III; calyx sive anchusa sive rhinoclia II; Circaea III; cirsion I; crataegonon, genera III, medicinae VIII; (xli-l) crocodileon II; cynosorchis sive orchis IV; chrysolachanum, genera II, medicinae III, coagulum terrae II; cucullus sive strumus sive strychnos VI; conferva II; coccum Cnidium II; dipsacos III; dryopteris II; (xlx) drabe I; elatine II; (li-lx) empetros, quam nostri calcifragam, IV; epicactis sive elleborine II; epimedion III; enneaphyllon III; filicis genera II, quam Graeci pterim, alii blachnon, item thelypterim, nymphaeam pterim vocant, XI; femur bubulum; galeopsis sive galeobdolon sive galion VI; glaux I; glaucion III (collyrium, medicinae II); glycyde sive Paeonia sive pentorobon XX; (lxi-lxx) gnaphalion sive chamaezelon VI; gallidraga I; holcus sive aristis; hyoseris I; holosteon III; hippophaeston VIII; hypoglossa I; hypecoon; Idaea IV; isopyron sive phasiolon II; (lxxi-lxxx) lathyris II; leontopetalon, alii rhapeion, II; lycapsos II; lithospermon sive exonychon sive diospyron; sive Heracleos II; lapidis muscus I; limeum I, leuce sive mesoleucium sive leucas III; leucographis V; medion III; myosota sive myosotis III; (lxxxii, xc) myagros I; nyma I; natrux I; odontitis I; othonna I; onosma I; onopraddon V; osyris IV; oxys II; polyanthemum sive batrachion III; (xci-c) polygonos sive polygonatos sive thalattias sive carcinothron sive clema sive myrtopetalos, quae

red seaweed 1, herb Christopher 1, wild vine 4; wormwood, 4 kinds, 48 drugs; sea-wormwood or seriphum; horehound or black chives 3. (xxxix-xl) Mugwort or ambrosia or Artemisia 1, brabyla 1; sea bryon 5, hare's-ear 1, catanance 1, cemos 1, calyx 3, calyx or strangle-plant or rhinoclia 2, herb of Circe 3, cirsion thistle 1; crataegonon, 3 kinds, 8 drugs; (xli-l) crocodile plant 2, hound's-cod or orchis 4, garden orach, 2 kinds, 3 drugs, earth-bond 2, nightshade or strumus or strychnos 6, salve-herb 2, Cnidus berry 2, teasel 3, oak-wing 2, drabe 1, elatine 2. (li-lx) Harts-tongue, called in Latin break-stone, 4; epicactis or helleborine 2, epimedion 3, nine-leaf 3, fern, 2 kinds called by the Greeks 'feather-fern' or blachnon, also female feather or bride's-feather, 11; ox-thigh; dead-nettle or galeobdolon or galion 6; owl-plant 1; celandine 3 (pillar-plant, 2 drugs) glycyde or peony or pentorobon 20. (lxi-lxx) Cotton-grass or cudweed 6, hairy teasel 1, mouse-barley or aristis, black centaury, white plantain 3, hippophaeston 8, butcher's broom 1, humble-plant, grass of Ida 4, isopyron or phasiolon 2. (lxxi-lxxx) Wolf's-milk 2, lion's-leaf (others call it 'rhapeion') 2, alkanet 2, lithospermon or exonychon or diospyron or grass of Hercules 2, stone-crop 1, arrow-poison 1, spotted dead-nettle or mesoleucium or leucas 3, St. Mary's thistle 5; medion 3, mouse-ear or forget-me-not 3. (lxxxii-xc) Mouse-hunter 1, nyma 1, water-snake 1, toothwort 1, othonna 1, onosma 1, St. Mary's thistle 5, goose-foot 4, wood sorrel 2, many-flowered crowfoot or frogwort 3. (xci-c) Knot-grass or polygonatum or sea-grass or carcinothron or clema or bayleaf (the same as blood-

sanguinaria sive orios, genera IV, medicinae XL; pancration XII; peplis sive syce sive meconion sive mecon aphrodes III; periclymenon V; pelecinos I; polygala I; poterion sive phrynion sive neuras IV; phalangites sive phalangion sive leucacanthon IV, phyteuma I; phyllon I; (ci-cx) phellandrion II, phaleris II; polyrrizon V; Proserpinaca V; rhecoma XXXVI; reseda II; stoechas III; solanum, quam Graeci strychnon, II; Smyrnion XXXII, sinon II; Telephion IV; (cxi-cxvii) trichomanes V, thalictrum I, thlaspi sive Persicon napy IV; Trachinia I; tragonis sive tragion I; tragos sive scorpio IV; tragopogon sive come I. (cxviii-cxx) De aetatibus herbarum; quomodo cuiusque vires efficaciores. Gentium vitia diversa. Summa: medicinae et historiae et observationes DCII.

Ex auctoribus: C. Valgio, Pompeio Lenaeo, Sextio Nigro qui Graece scripsit, Iulio Basso qui item, Antonio Castore, Cornelio Celso. Externis: Theophrasto, Apollodoro, Democrito, Aristogitone, Orpheo Pythagora, Magone, Menandro qui βίολογία scripsit, Nicandro. Medicis: Mnesitheo, Callimacho, Timaristo, Simo, Hippocrate, Chrysippo, Diocle, Ophione, Heraclide, Hicesio, Dionysio, Apollodoro Citiense, Apollodoro Tarentino, Praxagora, Plistonico, Medio, Dieuche, Cleophanto, Philistione, Asclepiade, Crateua, Petronio Diodoto, Iolla, Erasistrato, Diagora, Andrea, Mneside, Epicharmo, Damione, Sosimene, Tlepolemo, Metrodoro, Solone, Lyco, Olympiade Thebana, Philino, Petricho, Miccione, Glaucia, Xenocrate.

Libro XXVIII. continentur medicinae ex animalibus. (iii) An sit in medendo verborum aliqua vis.

weed or orios) 4 kinds, 40 drugs; succory 12, peplis or syce or meconion or foam-poppy 3, honeysuckle 5, hatchet-vetch 1, milkwort 1, tragacanth or frog-cup or tendon-plant 4; anthericum or spider-root or whitethorn 4; groundsel 1; phyllon 1. (ci-cx) Phellandrion 2, canary-grass 2, many-root 5, Proserpinaca 5, rhecoma 36, reseda 2, French lavender 3, nightshade, Greek strychnon, 2; common alexanders 32, sinon 2, purslane 4. (cxi-cxvii) Madlocks 5, meadow-rue 1, thlaspi or Persian mustard 4, herb of Trachis 1, tragonis or goatwort 1, goat-grass or scorpion-grass 4, goat's-beard or come 1. (cxviii-cxx) Length of life of herbs; means of increasing the potency of each kind. Different national maladies. Total, 602 drugs, investigations and observations.

Authorities: Gaius Valgius, Pompeius Lenaeus, Greek works of Sextius Niger, ditto of Julius Bassus, Antonius Castor, Cornelius Celsus. Foreign authorities: Theophrastus, Apollodorus, Democritus, Aristogiton, Orpheus, Pythagoras, Mago, Menander's *Things serviceable for life*, Nicander. Medical writers: Mnesitheus, Callimachus, Timaristus, Simus, Hippocrates, Chrysippus, Diocles, Ophion, Heraclides, Hicesius, Dionysius, Apollodorus of Citium, Apollodorus of Tarentum, Praxagoras, Plistonicus, Medius, Dieuches, Cleophantus, Philistion, Asclepiades, Crateuas, Petronius Diodotus, Iollas, Erasistratus, Diagoras, Andreas, Mnesides, Epicharmus, Damion, Sosimenes, Tlepolemus, Metrodorus, Solon, Lycus, Olympias of Thebes, Philinus, Petrichus, Miccio, Glaucia, Xenocrates.

Book XXVIII. Contents: drugs obtained from animals. (iii) Whether there is any healing power

(iv-v) Ostenta et sanciri et depelli. (vi-xix) Ex homine remedia; contra magos; ex viro medicinae et observationes CCXXVI, puero VIII; (xx-xxiii) muliere LXI, (xxiv-xxxii) ex peregrinis animalibus elephanto VIII, leone X, camelo X, hyaena LXXIX, crocodilo XIX, crocodilea XI, chamaeleone XV, scinco IV, hippopotamio VII, lynce V. (xxxiii-xli) Medicinae communes ex animalibus feris aut eiusdem generis placidis; lactis usus et observationes LIV, de caseis XII; butyro XXV; oxygala I; adipis usus et observationes LII; de sebo; de medulla; de felle; de sanguine. (xlii-lxxx) Privatae ex animalibus medicinae digestae in morbos, ex apro XII, sue LX, cervo III, lupo XXVII, urso XXIV, onagro XII, asino LXXVI, polea III, equifero XI, eculi coagulo I, equo XLII, hippace I, bubus feris II, bove LXXXI, tauro LIII, vitulo LIX, lepore LXIV, volpe XX, mele II, fele V, capra CXVI, hirco XXXI, haedo XXI. (lxxi) De glutino taurino probando, et medicinae ex eo VII. Summa: medicinae et historiae et observationes MDCLXXXII.

Ex auctoribus: M. Varrone, L. Pisone, Antiate, Verrio, Fabiano, Catone censorio, Servio Sulpicio, Licinio Macro, Celso, Masurio, Sextio Nigro qui Graece scripsit, Bytho Durracheno, Rabirio medico, Ofilio medico, Granio medico. Externis: Democrito, Apollonio qui et Mys, Meleto, Artemone, Sextilio Antaeo, Homero, Theophrasto, Lysimacho, Attalo, Xenocrate, Orptheo qui *ἰδιοφυῆ* scripsit, Archelao qui item, Demetrio, Sotira, Laide, Elephantide, Salpe, Olympiade Thebana, Diotimo Thebano, Iolla, Andrea, Marcione Zmyrnaeo,

in spoken charms. (iv-v) Portents ratified and rejected. (vi-xix) Remedies obtained from the human body; against magicians; 226 drugs and observations derived from an adult male, 8 from a boy; (xx-xxiii) 61 from a woman; (xxiv-xxxii) from foreign animals—elephant 8, lion 10, camel 10, hyena 79, crocodile 19, crocodile's excrement 11, chameleon 15, lizard 4, hippopotamus 7, lynx 5. (xxxiii-xli) Drugs obtained equally from wild animals and tame animals of the same kind; milk, modes of using and remarks as to, 54; cheeses 12; butter 25; sour milk 1; fat, modes of using and observations as to, 52; suet; marrow; gall; blood. (xlii-lxxx) Special drugs derived from particular animals arranged according to diseases; from the boar 12, pig 60, stag 3, wolf 27, bear 24, wild ass 12, ass 76, ass's foal 3, wild horse 11, foal's rennet 1, horse 42, mare's milk cheese 1, wild oxen 2, ox 81, bull 53, calf 59, hare 64, fox 20, badger 2, cat 5, she-goat 116, he-goat 31, kid 21. (lxxi) On testing bull-glue, and 7 drugs from it. Total 1682 drugs, investigations and observations.

Authorities: Marcus Varro, Lucius Piso, Antias, Verrius, Fabianus, Cato the ex-Censor, Servius Sulpicius, Licinius, Macer, Celsus, Masurius, Greek works of Sextius Niger, Bythus of Durazzo, medical works of Rabirius, Ofilius and Granius. Foreign authorities: Democritus, Apollonius alias the Mouse, Meletus, Artemon, Sextilius Antaeus, Homer, Theophrastus, Lysimachus, Attalus, Xenocrates, Orpheus writer of *Idiophye*, Archelaus *ditto*, Demetrius, Sotira, Lais, Elephantis, Salpe, Olympias of Thebes, Diotimus of Thebes, Iollas, Andreas, Marcio of Smyrna, medical works of Aeschines, Hippocrates,

Aeschine medico, Hippocrate, Aristotele, Metrodoro Scepsio, Hicetida medico, Apelle medico, Hesiodo, Bialcone, Caecilio, Bione qui *περὶ δυνάμεων* scripsit, Anaxilao, Iuba rege.

Libro XXIX. continentur medicinae ex animalibus. (i-viii) de origine medicinae; de Hippocrate; quando primum clinice, quando primum iatraliptice; de Chrysippo medico, de Erasistrato; de empirice; de Herophilo; de reliquis inlustribus medicis; quotiens ratio medicinae mutata sit; quis primus Romae medicus et quando; quid de medicis antiquis Romani iudicaverint; vitia medicinae. (ix-xiii) remedia ex lanis XXXV et sequenti libro XXV = LX; oesypo XXXII, sequenti libro XX = LII; ovis XXII, sequenti libro XLIII = LXV; quae sitista ova; quomodo fiant tota lutea; de serpentium ovis; de Commageno conficiendo; medicinae ex eo IV et sequenti libro V = IX. (xiv-xl) remedia ex animalibus quae placida non sint aut fera (ariete V et sequenti libro VII = XII, pecude II et sequenti libro XV = XVII, mulis I et sequenti libro V = VI, caballis I et sequenti libro III = IV, cane XVI et sequenti libro XLI = LVII, cane rabioso III et sequenti libro II = V, ichneumone I, mure XIV et sequenti libro XXVIII = XLII, mure araneo IV et sequenti libro I = V, glire II et sequenti libro VI = VIII, sorice I et sequenti libro II = III, mustela XIX et sequenti libro XXV = XLIV, stellione IV et sequenti libro XII = XVI, erinaceo V et sequenti libro XIII = XVIII, hystrice I et sequenti libro II = III, lacerta XIII et sequenti libro XXX = XLIII, salamandra I et sequenti libro III = IV, coclea XXVII et sequenti libro * XIX¹ = * XLVI, aspide I et sequenti libro III =

Aristotle, Metrodorus of Scepsis, medical works of Hicetidas and Apelles, Hesiod, Bialcon, Caecilius, Bion's *On Potencies*, Anaxilaus, King Juba.

Book XXIX. Contents: drugs obtained from animals. (i-viii) Origin of medicine; Hippocrates; first employment of clinic medicine, first employment of embrocations; Chrysippus the physician, Erasistratus; experimental medicine; Hierophilus; remaining famous physicians; how often the system of medicine has altered; the first physician at Rome, name and date; judgement of Romans as to ancient physicians; defects of medicine. (ix-xiii) Cures from wools 35 and in the next book 25, making 60; from wool-washings 32, next book 20, making 52; from eggs 22, next book 43, making 65; meaning of 'fattened' eggs; how to make eggs all yoke; snakes' eggs; how to make Commagene-cure; drugs from it 4, and in next book 5, making 9. (xiv-xl) Remedies from roaming or wild animals (ram 5 and next book 7 = 12, sheep 2 and next book 15 = 17, mules 1 and next book 5 = 6, horses 1 and next book 3 = 4, dog 16 and next book 41 = 57, mad dog 3 and next book 5 = 7, ichneumon 1, mouse 14 and next book 28 = 42, pygmymouse 4 and next book 1 = 5, dormouse 2 and next book 6 = 8, shrew-mouse 1 and next book 2 = 3, weasel 19 and next book 25 = 44, gecko 4 and next book 12 = 16, hedgehog 5 and next book 13 = 18, porcupine 1 and next book 2 = 3, lizard 13 and next book 30 = 43, salamander 1 and next book 3 = 4, snail 27 and next book 19 = 46, asp 1 and next book 3 = 4,

¹ Asterisks mark numbers corrected by editors to conform with text of Book XXIX.

IV, basilisco IV, dracone * IV et sequenti libro * VI = * X, vipera XIV et sequenti libro XXI = XXXV, (xxi de viperino sale theriace; xxxviii echeon), angue VIII et sequenti libro XXVII = XXXV, hydro I, bova IV et sequenti libro III = VII, enhydride I et sequenti libro II = III, serpentibus ceteris VIII et sequenti libro VII = XV, scorpione IV et sequenti libro II = VI, araneorum et phalangiorum genera XII, medicinae ex his IX et sequentilibro XXVII = XXXVI, gryllo sive tauro I et sequenti libro VII = VIII, scolopendra sive multipeda sive millepeda sive centipeda sive onisco sive iulo I et sequenti libro XX = XXI, (xvii admiratio naturae nihil sine usu gignentis), limace I et sequenti libro III = IV, uruca I et sequenti libro II = III, verme terreno II et sequenti libro * XX = * XXII, verme ex arboribus I et sequenti libro IV = V, ex volucris aquila IV et sequenti libro III = VII, vulture * IX et sequenti libro * VII = * XVI, gallinaceo XXI et sequenti libro XXXV = LVI, gallina X et sequenti libro XXII = XXXII, ansere VII et sequenti libro XV = XXII, cygno I et sequenti libro V = VI, (xiii de adipe avium conficiendo), corvo II et sequenti libro IV = VI, cornice I et sequenti libro II = III, accipitre II et sequenti libro II = * IV, milvo II et sequenti libro VI = VIII, cenchride II, ciconia II et sequenti libro I = III, anate II et sequenti libro IV = VI, perdice VI et sequenti libro XI = XVII, columba VII et sequenti libro XXV = XXXII, palumbe II et sequenti libro XIV = XVI, pico Martio I, turture IV et sequenti libro V = IX, hirundine IX et sequenti libro * XXIV = * XXXIII, noctua IV et sequenti libro V = IX, ulula I et sequenti libro I = * II,

basilisk 4, serpent 4 and next book 6 = 10, viper 14 and next book 21 = 35 (xxi, salt antidote for viper-bite; xxxviii, adder-ash drug) snake 8 and next book 27 = 35, water-serpent 1, ox-snake 4 and next book 3 = 7, water-snake 1 and next book 2 = 3, the other serpents 8 and next book 7 = 15, scorpion 4 and next book 2 = 6, spiders and poison-spiders, 12 kinds, drugs from these 9 and next book 27 = 36, cricket or bull-beetle 1 and next book 7 = 8, scolopendra or multipede or millepede or centipede or wood-louse or catkin 1 and next book 20 = 21 (xvii, admiration of nature who produces nothing useless), slug 1 and next book 3 = 4, caterpillar 1 and next book 2 = 3, earth-worm 2 and next book 20 = 22, tree-worm 1 and next book 4 = 5; from birds—eagle 4 and next book 3 = 7, vulture 9 and next book 7 = 16, cock 21 and next book 35 = 56, hen 10 and next book 22 = 32, goose 7 and next book 15 = 22, swan 1 and next book 5 = 6 (xiii manufacture of bird's lard); raven 2 and next book 4 = 6, crow 1 and next book 2 = 3, hawk 2 and next book 2 = 4, kite 2 and next book 6 = 8, goshawk 2, stork 2 and next book 1 = 3, duck 2 and next book 4 = 6, partridge 6 and next book 11 = 17, dove 7 and next book 25 = 32, pigeon 2 and next book 14 = 16, Mars's woodpecker 1, turtle-dove 4 and next book 5 = 9, swallow 9 and next book 24 = 33, night-owl 4 and next book 5 = 9, screech-owl 1 and next book

bubone II et sequenti libro V = VII, vespertilione IV et sequenti libro * IX = XIII, apibus V et sequenti libro VII = XII, buprestis III et sequenti libro III = VI, pityocampe II et sequenti libro IV = VI, (xvii naturae benignitatem etiam foedis animalibus inseruisse magna remedia), scarabaeo I et sequenti libro VII = VIII, blatta IV et sequenti libro XIII = XVII. (xxx) de genere cantharidum. medicinae ex his V et sequenti libro XI = XVI, cimice * IX et sequenti libro V = XIV, musca VII et sequenti libro V = XII, locustis IV et sequenti libro III = VII, attelebis I, formicis III et sequenti libro V = * VIII. Summa: medicinae et historiae et observationes DCXXI.

Ex auctoribus: M. Varrone, L. Pisone, Flacco Verrio, Antiatese, Nigidio, Cassio Hemina, Cicerone, Plauto, Celso, Sextio Nigro qui Graece scripsit, Caecilio medico, Metello Scipione, Ovidio poeta, Licinio Macro. Externis: Palaephato, Homero, Aristotele, Orpheo, Democrito, Anaxilao. Medicis: Botrye, Apollodoro, Archedemo, Aristogene, Xenocrate, Democrate, Diodoro, Chrysippo, Philippo, Oro, Nicandro, Apollonio Pitanaeo.

Libro XXX. continentur medicinae ex animalibus reliquae prioribus libris. (i-vii) de origine magices; quando et a quo coeperit, a quibus celebrata sit; an exercuerit eam Italia. quando primum senatus vetuerit hominem immolari; de Galliarum Druidis; de generibus magices; opinio magorum de talpis; medicinae V. (viii-liii) reliquae medicinae per morbos digestae in animalibus quorum genera non sunt placida aut fera: pecude * II¹ et priore libro * XV = * XVII, ariete VII et priore libro V = XII,

¹ See note on p. 131.

1 = 2, horned owl 2 and next book 5 = 7, bat 4 and next book 9 = 13, bees 5 and next book 7 = 12, cow-fly 3 and next book 3 = 6, pine-grub 2 and next book 4 = 6, (xvii that the beneficence of nature has placed powerful remedies even in disgusting animals), beetle 1 and next book 7 = 8, cockroach 4 and next book 13 = 17. (xxx) The genus Spanish fly—drugs from these 5 and next book 11 = 16, bug 9 and next book 5 = 14, house-fly 7 and next book 5 = 12, locusts 4 and next book 3 = 7, wingless locust 1, ants 3 and next book 5 = 8.—Total 621 drugs, investigations and observations.

Authorities: Marcus Varro, Lucius Piso, Verrius Flaccus, Antias, Nigidius, Cassius Hemina, Cicero, Plautus, Celsus, Sextius Niger (Greek works of), Caecilius the medical writer, Metellus Scipio, the poet Ovid, Licinius Macer. Foreign authorities: Palaephatus, Homer, Aristotle, Orpheus, Democritus, Anaxilaus. Medical writers: Botrys, Apollodorus, Archedemus, Aristogenes, Xenocrates, Democrates, Diodorus, Chrysippus, Philip, Orus, Nicander, Apollonius of Pitane.

Book XXX. Contents: drugs obtained from animals (concluded). (i-vii) Origin of magic—date and place of its commencement, by whom practised; whether carried on in Italy. Human sacrifice, when first prohibited by the senate; the Druids of the Gauls; kinds of magic; magicians' view as to moles; 5 drugs. (viii-liii) Remaining drugs, arranged according to diseases, found in animals not classed as tame or wild: cattle 2 and in last book 15 = 17, ram 7 and in last book 5 = 12, wool 25 and in last

XLIII et priore libro XXII = LXV, Commageno V et priore libro * IV = * IX, cygno V et priore libro I = VI, otide II, corvo IV et priore libro II = VI, cornice II et priore libro I = III, accipitre II et priore libro II = IV, milvo VI et priore libro II = VIII, grue I, ciconia I et priore libro II = III, ibide III, ardiola I, anate IV et priore libro II = VI, mergo II, perdice XI et priore libro VI = XVII, palumbe XIV et priore libro * II = * XVI, galerita IV, cuculo I, pico Martio I, turture V et priore libro IV = IX, turdis III, merula I, hirundine XXIV et priore libro IX = XXXIII, noctua V et priore libro IV = IX, ulula I et priore libro I = II, upupa I, bubone V et priore libro II = VII, passere V, galgulo II, vespertilione IX et priore libro IV = XIII, cicadis I, apibus VII et priore libro V = XII, vespis II, buprestis III et priore libro III = VI, pityocampis IV et priore libro II = VI, (naturae benignitatem et foedis animalibus inseruisse magna remedia.) scarabaeo VII et priore libro I = VIII, blatta XIII et priore libro IV = XVII. de genere cantharidum: medicinae ex his XI et priore libro V = XVI, cimice V et priore libro IX = XIV, musca V et priore libro * VII = XII, locustis III et priore libro IV = VII, formicis V et priore libro III = VIII. Summa: medicinae et historiae et observationes DCCCLIV.

Ex auctoribus: M. Varrone, Nigidio, M. Cicerone, Sextio Nigro qui Graece scripsit, Licinio Macro. Externis: Eudoxo, Aristotele, Hermippo, Homero, Apione, Orpheo, Democrito, Anaxilao. Medicis: Botrye, Apollodoro, Menandro, Archedemo, Aristogene, Xenocrate, Diodoro, Chrysippo, Philippo, Oro, Nicandro, Apollonio Pitanaeo.

eggs 43 and in last book 22 = 65, Syrian cock 5 and in last book 4 = 9, swan 5 and in last book 1 = 6, otis 2, raven 4 and in last book 2 = 6, crow 2 and in last book 1 = 3, hawk 2 and in last book 2 = 4, kite 6 in last book 2 = 8, crane 1, stork 1 and in last book 2 = 3, ibis 3, little heron 1, duck 4 and in last book 2 = 6, diver 2, partridge 11 and in last book 6 = 17, dove 14 and in last book 2 = 16, crested lark 4, cuckoo 1, Mars's woodpecker 1, turtledove 5 and in last book 4 = 9, thrush 3, blackbird 1, swallow 24 and in last book 9 = 33, night-owl 5 and in last book 4 = 9, screech-owl 1 and in last book 1 = 2, hoopoe 1, horned owl 5 and in last book 2 = 7, sparrow 5, galgulus 2, bat 9 and in last book 4 = 13, tree cricket 1, bees 7 and in last book 5 = 12, wasps 2, cowfly 3 and in last book 3 = 6, pine-grub 4 and in last book 2 = 6 (that the beneficence of nature has placed powerful remedies even in disgusting animals), beetle 7 and in last book 1 = 8, cockroaches 13 and in last book 4 = 17; the genus Spanish fly—drugs from these 11 and in last book 5 = 16, bug 5 and in last book 9 = 14, house-fly 5 and in last book 7 = 12, locusts 3 and in last book 4 = 7, ants 5 and in last book 3 = 8.—Total 854 drugs, investigations and observations.

Authorities: Marcus Varro, Nigidius, Marcus Cicero, Sextius Niger (Greek works of), Licinius Macer. Foreign authorities: Eudoxus, Aristotle, Hermippus, Homer, Apion, Orpheus, Democritus, Anaxilaus. Medical writers: Botrys, Apollodorus, Menander, Archidemus, Aristogenes, Xenocrates, Diodorus, Chrysippus, Philippus, Orus, Nicander, Apollonius of Pitane.

lana XXV et priore libro XXXV = LX. oesypo XX et priore libro XXXII = LII, mulis V et priore libro I = VI, caballis III et priore libro I = * IV, cane XLI et priore libro XVI = * LVII, cane rabioso II et priore III = V, viverra I, mure XXVIII et priore libro XIV = LXII, mure araneo I et priore libro IV = V, glire VI et priore libro II = VIII, sorice II et priore libro I = III, mustela XXV et priore libro XIX = XLIV, stellione XII et priore libro IV = XVI, erinaceo XIII et priore libro V = XVIII, hystrice II et priore libro I = III, lacerta XXX et priore libro XIII = XLIII, salamandra III et priore libro I = IV, coclea XIX et priore libro XXVII = XLVI (xliii ageraton¹ medicamentum), aspide III et priore libro I = IV, dracone VI et priore libro IV = X, vipera XXI et priore libro XIV = XXXV, angue XXVII et priore libro VIII = XXXV, bova III et priore libro IV = VII, enhydride II et priore libro I = III, amphisbaena III, serpentibus ceteris VII et priore libro VIII = XV scorpione II et priore libro IV = VI, araneorum et phalangiorum genera * XII, medicinae XXVII et priore libro IX = XXXVI, troxalide III, phryganione I, scolopendra sive multipeda sive millepeda sive centipeda sive onisco sive iulo XX et priore libro I = XXI, (admiratio naturae nihil sine usu gignentis), limace III et priore libro I = IV, uruca II et priore libro I = III, verme terreno XX et priore libro II = XXII, verme ex arboribus IV et priore libro I = V, verme ex herba VIII, herpete I, ricino III, ex volucris aquila III et priore libro IV = VII, vulture VII et priore libro IX = XVI, ossifrago VI, gallinaceo XXXV et priore libro XXI = LVI, gallina * XXII et priore libro X = XXXII, ovis

book 35 = 60, wool-washings 20 and in last book 32 = 52, mules 5 and in last book 1 = 6, horses 3 and in last book 1 = 4; dog 41 and in last book 16 = 57, mad dog 2 and in last book 3 = 5, ferret 1, mouse 28 and in last book 14 = 62, shrewmouse 1 and in last book 4 = 5, dormouse 6 and in last book 2 = 8, shrew-mouse 2 and in last book 1 = 3, weasel 25 and in last book 19 = 44, newt 12 and in last book 4 = 16, hedgehog 13 and in last book 5 = 18, porcupine 2 and in last book 1 = 3, lizard 30 and in last book 13 = 43, salamander 3 and in last book 1 = 4, snail 19 and in last book 27 = 46 (xliii the drug 'everlasting'), viper 3 and in last book 1 = 4, snake 6 and in last book 4 = 10, viper 21 and in last book 14 = 35, serpent 27 and in last book 8 = 35, bova 3 and in last book 4 = 7, water snake 2 and in last book 1 = 3, Libyan snake 3, remaining serpents 7 and in last book 8 = 15, scorpion 2 and in last book 9 = 36, cricket 3, phryganion 1, scolopendra or multipede or millepede or centipede or woodlouse or catkin 20 and in last book 1 = 21 (admiration for nature who produces nothing useless), slug 3 and in last book 1 = 4, caterpillar 2 and in last book 1 = 3, earth-worm 20 and in last book 2 = 22, tree-worm 4 and in last book 1 = 5, grass-worm 8, herpes 1, tick 3; from birds, eagle 3 and in last book 4 = 7, vulture 7 and in last book 9 = 16, lämmergeier 6, cock 35 and in last book 21 = 56, hen 22 and in last book 10 = 32,

¹ ἀκεράτων, *Mayhoff*.

Libro XXXI. continentur medicinae ex aquatilibus. (i) aquarum mirabilia. (ii) aquarum differentiae. (iii-xvi) medicinae: observationes CCLXVI: quales oculis aquae prosint, quales fecunditatem faciant, quales insaniae medeantur, quales calculosis, quales vulneribus, quales partum custodiant, quales vitiliginem tollant, quae colorem lanis faciant, quae hominibus, quae memoriam, quae oblivionem, quae sensus subtilitatem, quae tarditatem, quae canoram vocem, quae vini taedium, quae inebrient, quae olei vicem praestent, quae salsae et amarae; saxa egerentes, risum aut ploratum facientes, quae amorem sanare dicantur. (xvii) per triduum calentes haustus. (xviii-xx) aquarum miracula: in quibus omnia mergantur, in quibus nihil; aquae necantes, pisces venenati; quae lapideae fiant aut lapidem faciant. (xxi-iii) de salubritate aquarum; de vitiis aquarum; probatio aquarum. (xxiv f.) de aqua Marcia; de aqua Virgine. (xxvi-ix) aquas inveniendi ratio; signa aquarum; differentia aquarum per genera terrae; ratio aquarum per tempora anni. (xxx) aquarum subito nascentium aut desinentium observatio historica. (xxxii) ratio aquae ducendae. (xxxii f.) quomodo medicatis utendum et ad quae genera valetudinum; item marinis XXIX. quid prosit navigatio V. (xxxiv-vi) quomodo marina aqua in mediterraneis fieri possit I, quomodo thalassomeli I, quomodo hydromeli I. (xxxvii f.) remedium contra peregrinas aquas; ex musco medicinae VI; medicinae ex harenis. (xxxix-xlv) de salis generibus et confecturis et medicinis observationes CCIV; de salis auctoritate

Book XXXI. Contents: drugs obtained from aquatic animals. (i) Remarkable facts as to waters. (ii) Differences in waters. (iii-xvi) Medicinal properties: 266 observations; what sorts of waters are good for the eyes, what sorts produce fertility, what sorts cure insanity, what sorts gall-stone, what sorts wounds, what sorts protect the embryo, what sorts remove tetter, which make dye for wools, which for human beings, which produce memory, which forgetfulness, which keenness of sense, which slowness, which a musical voice, which dislike of wine, which intoxication, which fill the place of oil, which are salt and bitter; springs discharging rocks, springs that cause laughter or weeping, springs said to cure love. (xvii) Water keeping hot for three days after being drawn. (xviii-xx) Remarkable waters: waters in which all objects sink, in which no objects; waters that kill, poisonous fishes; waters that turn into stone, or produce stones. (xxi-iii) Health-giving property of waters; impurities of waters; mode of testing waters. (xxiv f.) The Marcian Spring, the Maiden Spring. (xxvi-ix) Method of finding water; signs of springs; differences of waters according to kinds of earth; variation of springs with the seasons. (xxx). Historical account of springs suddenly arising or stopping. (xxxii) Method of carrying water in pipes. (xxxii f.) Medicinal waters, mode of employing, for what kinds of illnesses; *ditto* sea-water, 29 kinds. Benefits of a voyage, 5. (xxxiv-vi) Sea-water at places inland, 1 method of producing, sea-water-honey 1, water-honey 1. (xxxvii f.) Remedy against foreign waters; 6 drugs from moss; drugs from sands. (xxxix-xlv) Salt, kinds of, preparations and drugs from, 204 observations; historical importance

historica CXX; spuma salis; flos salis XX, salsugo II; de garo XV; de muria XV; de allece VIII; de natura salis. (xlvi f.) de nitri generibus et confecturis et medicinis observationes CCXXI; de spongeis medicinae et observationes XCII. Summa: medicinae et historiae et observationes DCCCCXXIV.

Ex auctoribus: M. Varrone, Cassio Parmense, Cicerone, Muciano, Caelio, Celso, Trogo, Ovidio, Polybio, Sornatio. Externis: Callimacho, Ctesia, Eudico, Theophrasto, Eudoxo, Theopompo, Polyclito, Iuba, Lyco, Apione, Epigene, Pelope, Apelle, Democrito, Thrasylo, Nicandro, Menandro comoedo, Attalo, Sallustio, Dionysio, Andrea, Nicerato, Hippocrate, Anaxilao.

Libro XXXII. continentur medicinae ex aquatilibus. (i-iv) summa naturae vis in antipathia. de echeneide II, de torpedine VII, de lepore marino V; mirabilia rubri maris. (v-ix) de ingeniis piscium; proprietates piscium mirabiles; ubi responsa dentur ex piscibus, ubi ex manu edant, ubi vocem agnoscant, ubi amari sint, ubi salsi, ubi dulces, ubi non muti; esse et locorum sympathiam et antipathiam. (x) quando marini pisces in usu P. R. esse coeperint. Numae regis constitutio de piscibus. (xi) de curatio medicinae et observationes XLIV. (xii) de discordia inter se marinorum, pastinaca IX, galeo, mullo XV. (xiii-xx) de iis quibus in aqua et in terra victus est: de castoreis medicinae et observationes LVI, de testudine medicinae et observationes LXVI, aurata IV, stella marina VII, dracone marino III, salsamento XXV, sardis I, cybia; rana marina VI, fluviatiles LII, rana rubeta; observationes circa eas XXXII; enhydris VI, cancri fluviatiles XIV, cancri marini VII, cocleae fluviatiles VII, coracini IV, porco pisce II,

of salt 120; froth of salt; flower of salt 20; brine 2; fish-sauce 15; pickle 15; fish-brine 8; nature of salt. (xlvi f.) Native soda, kinds of, preparations and drugs from—221 observations; sponges, 92 drugs from and observations—Total 924 drugs, investigations and observations.

Authorities: Marcus Varro, Cassius of Parma, Cicero, Mucianus, Caelius, Celsus, Trogus, Ovid, Polybius, Sornatius. Foreign authorities: Callimachus, Ctesias, Eudicus, Theophrastus, Eudoxus, Theopompos, Polyclitus, Juba, Lycus, Apion, Epigenes, Pelops, Apelles, Democritus, Thrasyllus, Nicander, comedies of Menander, Attalus, Sallustius, Dionysius, Andreas, Niceratus, Hippocrates, Anaxilaus.

Book XXXII. Contents—drugs from aquatic animals. (i-iv) Nature's supreme force in antipathy. The sucking-fish, 2 cases; the electric ray, 7 cases; the sea-hare, 5 cases; marvels of the Red Sea. (v-ix) Intellect of fishes; remarkable properties of fishes; places where oracles are given from fishes, where fishes eat out of the hand, where they recognize the voice, where they are bitter, where salt, where sweet, where not dumb; their sympathy and also antipathy for localities. (x) Sea-fish when first used by the Roman nation. King Numa's regulation as to fish. (xi) Coral, drugs from and observations as to, 66. (xii) Discord between marine animals: sting-ray 9, dog-fish, mullet 15. (xiii-xx) Amphibious animals: beaver-castors, drugs from and observations as to, 56; tortoise, drugs and observations 66; gilt-bream 4, star-fish 7, sea-snake 3, salt fish 25, sardines 1, tunnies, sea-frog 6, river-frog 52, bramble-toad; observations about them 32; water-snake 6, river-crabs 14, sea-crabs 7, river-snails 7, crow-fish 4, pig-

equestris ordinis mutatum; de donis militaribus aureis et argenteis; quando primum corona aurea data; de reliquo usu auri, feminarum. (xiii-xxv) de nummo aureo; quando primum signatum aes, argentum, aurum; antequam signaretur, quis mos in aere; quæ maxima pecunia primo censu; quotiens et quibus temporibus aucta sit aeris et nummi signati aestimatio; de cupiditate auri; qui plurimum auri et argenti possederint; quando primum argenti apparatus in harena, quando in scaena; quibus temporibus plurimum in aerario populi Romani auri et argenti fuerit; quando primum lacunaria inaurata; quibus de causis præcipua auctoritas auro; ratio inaurandi; de inveniendo auro; de auripigmento; de electro; primæ aureæ statuæ; medicinæ ex auro VIII. (xxvi-ix) de chrysocolla: ratio eius in picturis; medicinæ ex chrysocolla VII; de aurificum chrysocolla sive santerna. (xxx) mirabilia naturæ glutinandis inter se et perficiendis metallicis rebus. (xxxi-v) de argento; de argento vivo; de stimi sive stibi sive alabastro sive larbasi sive platyophthalamo; medicinæ sive ex eo VII; de scoria argenti; medicinæ ex ea VI; de spuma argenti; medicinæ ex ea VII. (xxxvi-xli) de minio; quam religiosum apud antiquos fuerit; de inventione eius et origine; de cinnabari; ratio eius in medicina et in picturis; genera mini, ratio eius in picturis, in medicina; de hydrargyro. (xlii f.) de argento inaurando; de coticulis aurariis. (xliii-lv) argenti genera et experimenta: de speculis; de Aegyptio argento; de inmodica pecunia; quorum maximæ opes fuerint; quando primum populus Romanus stipem sparserit; de luxuria in vasis argenteis; frugalitatis antiquæ in argento exempla;

often the title 'equestrian order' altered; gold and silver military gifts; gold wreath, when first bestowed; other uses of gold, its use by women. (xiii-xxv) Gold coinage; date of earliest coins, copper, silver, gold; method of using copper before introduction of stamping; highest money rating at first census; how often and at what dates value of copper and stamped coinage raised; the lust for gold; largest owners of silver and gold; date of earliest employment of silver ornaments in the arena, and on the stage; dates of largest accumulations of gold and silver in the national treasury; date of earliest gilded ceilings; reasons for special value of gold; method of gilding; discovery of gold; orpiment; synthetic amber; earliest gold statues; 8 drugs from gold. (xxvi-ix) malachite, method of employing it in painting; 7 drugs from malachite; goldsmith's malachite or mountain-green. (xxx) Remarkable natural facts as to the welding of metals and as to metal manufactures. (xxxi-v) Silver; quicksilver; antimony or stibis or alabaster or larbasis or platyopathalmus, drugs made of, 7; silver slag, drugs made of, 6; foam of silver, drugs made of, 7. (xxxvi-xli) Minimum, reverence for among the ancients; discovery and source of; cinnabar, method of using in medicine and in painting; kinds of red-lead; method of use in medicine and painting; watersilver. (xliii f.) Gilding of silver; touchstones for gold. (xliii-lv) Silver, its kinds and methods of testing; mirrors; Egyptian silver; immoderate wealth; who were the richest people; when did the Roman nation begin to squander money; luxury in silver vessels; sparing use of silver in antiquity, instances of;

vitulo marino X, murena I, hippocampo IX, echinis XI. (xxi-xxx) ostreorum genera et observationes et medicinae LIX, purpura IX, alga marina II, mus marinus II, scorpio marinus XII, sanguisugae VI, murices XIII, conchylia V, piscium adeps II, callionymi III, coracini fel I, sepiae XXIV, ichthyocolla V, batia I, bacchus sive myxon II, marini peduculi II, canicula IV, cetum I, delphinus IX, coluthia sive coryphia III, alcyoneum VII, thynnus V, maenae XIII, scolopendra II, saurus I, conchis I, silurus XV, strombus sive concha longa VI, tethea V. (xxxii-lii) holus marinum I, myaces XXV, mituli VIII, pelorides I, seriphum II, erythinis II, solea pisce I, rhombo I, blendia I, urtica marina VII, pulmo marinus VI, onyches IV. ex colubra aquatica I, ex hydro I, mugile I, ex pelamyde IV, sciaena I, perca IV, ex squatina III, zmarides III, ophidio I, ex fibro IV, bryon I, ex asello pisce I, phagro I, ex balaena I, polypo I. ex glano I, glaucisco I, rubellio I, uva marina I, anguilla I, hippopotamio I, crocodilo I, adarca sive calamochnus III, calamo VIII. (liii) animalium omnium in mari viventium nomina CLXXVI. Summa: medicinae et historiae et observationes DCCCCXC.

Ex auctoribus: Licinio Macro, Trebio Nigro, Sextio Nigro qui Graece scripsit, Ovidio poeta, Cassio Hemina, Maecenate, Iaccho, Sornatio. Externis: Iuba, Andrea, Salpe, Apione, Pelope, Apelle, Thrasylo, Nicandro.

Libro XXXIII. continentur metallorum naturae. (ii-xii) de auro: quae prima commendatio eius; de anulorum aureorum origine; de modo auri apud antiquos; de equestri ordine, de iure anulorum aureorum, de decuriis iudicum; quotiens nomen

fish 2, sea-calf 10, lamprey 1, sea-horse 9, sea-urchins 11. (xxi-xxx) Shellfish: kinds, observations and drugs 59, purple dye 9; seaweed 2, sea-mouse 2, sea-scorpion 12, leeches 6, purple-fishes 13, mussels 5, fishes' fat 2, callyonymi 3, crow-fish's gall 1, cuttle-fish 24, huso sturgeon 5, batia 1, bacchus or myxon 2, sea-lice 2, sea-bitch 4, seal 1, dolphin 9, sea-snail or murex 3, sea-foam 7, tunny 5, maena 13, scolopendra 2, lizard 1, conchis 1, sheat-fish 15, sea-snail or longmussel 6, sponge 5. (xxxii-lii) Sea-cabbage 1, myax mussel 25, sea-mussels 8, giant mussels 1, seriphus fish 2, sea-mullet 2, sole-fish 1, turbot 1, blendia 1, sea-nettle 7, sea-lung 6, scallops 4; from the water-snake 4, from the water-serpent 1, mullet 1, from the young tunny 4, grayling 1, perch 4, from the skate 3, zmarides 3, conger 1, beaver 4, moss 1, haddock 1, phager 1, from the whale 1, polypus 1, shad 1, blue-fish 1, rudd 1, sea-grape 1, eel 1, river-horse 1, crocodile 1, adarca or sea-foam 3, rush 8. (liii) Names of all animals living in the sea 176.—Total: 990 drugs, investigations and observations.

Authorities: Licinius Macer, Trebius Niger, Sextius Niger (Greek writings of), the poet Ovid, Cassius Hemina, Maecenas, Iacchus, Sornatius. Foreign authorities: Juba, Andreas, Salpes, Apion, Pelops, Apelles, Thrasyllus, Nicander.

Book XXXIII. Contents: the properties of the metals. (ii-xii) Gold, what first caused it to be valued; origin of gold rings; limited amount of gold among the ancients; the equestrian order, its right of wearing gold rings; its panels of judges; how

quando primum lectis argentum additum; quando lances immodicae factae; quando repositoriis argentum additum, quando tympana facta; inmodica argenti pretia; de statu argenteis; nobilitates operum et artificum in argento. (lvi-lviii) de sile; qui primi sile pinxerint et qua ratione; de caeruleo; medicinae ex eo II. Summa: medicinae et historiae et observationes CCLXXXVIII.

Ex auctoribus: Domitiano Caesare, Iunio Gracchano, L. Pisone, M. Varrone, Corvino, Attico Pomponio, Calvo Licinio, Cornelio Nepote, Muciano, Boccho, Fetiale, Fenestella, Valerio Maximo, Iulio Basso qui de medicina Graece scripsit, Sextio Nigro qui item. Externis: Theophrasto, Democrito, Iuba, Timaeo historico qui de medicina metallica scripsit, Heraclide, Andrea, Diagora, Botrye, Archedemo, Dionysio, Aristogene, Democle, Mneside, Attalo medico, Xenocrate item, Theomnesto, Nymphodoro, Iolla, Apollodoro, Pasitele qui mirabilia opera scripsit, Antigono qui de toreutice scripsit, Menaechmo qui item, Xenocrate qui item, Duride qui item, Menandro qui de toreutis, Heliodoro qui de Atheniensium anathematis scripsit, Metrodoro Scepsio.

Libro XXXIV. continentur: aeris metalla. (ii-x) genera aeris; quae Corinthia, quae Deliaea, quae Aeginetica. de tricliniis aereis, de candelabris; de templorum ornamentis ex aere; quod primum dei simulacrum Romae ex aere factum; de origine statuarum et honore. (x-xix) statuarum genera et figurae. antiquas statuas togatas sine tunicis fuisse; quae primae statuae Romae, quibus primum publice positae, quibus primum in columna; quando rostra; quibus externis Romae publice positae, quibus Romae mulieribus in publico positae,

date of earliest use of silver inlay on couches, of silver vessels of excessive size, of trays inlaid with silver, of making 'drums'; excessive prices for silver; silver statuary; famous works of art and artists in silver. (lvi-lviii) Of yellow ochre, who first used for painting and how. Steel blue; drugs made from, 2.—Total 288 drugs, investigations and observations.

Authorities: the Emperor Domitian, Junius Gracchanus, Lucius Piso, Marcus Varro, Corvinus, Pomponius Atticus, Licinius Calvus, Cornelius Nepos, Mucianus, Bocchus, Fetialis, Fenestella, Valerius Maximus, Julius Bassus, Greek medical writings of, Sextius Niger, *ditto*. Foreign authorities: Theophrastus, Democritus, Juba, the historian Timaeus's *Mineral Drugs*, Heraclides, Andreas, Diagoras, Botrys, Archedemus, Dionysius, Aristogenes, Democles, Mnesides, Attalus the medical writer, Xenocrates *ditto*, Theomnestus, Nymphodorus, Iollas, Apollodorus, Pasiteles's *Masterpieces*, Antigonus *On Graving*, Menaechmus *ditto*, Xenocrates *ditto*, Duris *ditto*, Menander *On Gravers*, Heliodorus's *Votive Offerings of Athens*, Metrodorus of Scepsis.

Book XXXIV. Contents: (i) Copper metals. (ii-x) Kinds of copper—Corinthian, Delian, Aeginetan. On bronze dining-couches; on candelabra; on temple decorations of bronze; first bronze image of a god made at Rome; on the origin of statues and the reverence paid to them. (x-xix) Statues, their kinds and shapes. Ancient statues dressed in toga without tunic; the first statues at Rome, the first erected by the state, the first erected on a column; ship's beaks, when added; first foreigners to whom statues erected by the state at Rome; first women to

quae prima Romae statua equestris publice posita; quando omnes privatim positae statuae ex publico sublatae; quae prima ab externis publice posita; fuisse antiquitus et in Italia statuarios; de pretiis signorum inmodicis; de colossis in urbe celeberrimis; nobilitates ex aere operum et artificum CCCLXVI. (xx-xxix) differentiae aeris et mixturae; de pyropo, de Campano aere; de servando aere; de cadmia; medicinae ex ea XV; aeris usti effectus in medicina X; de scoria aeris, de flore aeris, squama aeris, stomomate aeris: medicinae ex his XLVII; aerugo: medicinae ex ea XVIII; hieracium; scolex aeris; medicinae ex eo XVIII; de chalcitide; medicinae ex ea VII; psoricon. (xxx-xxxviii) sory; medicinae ex eo III; misy: medicinae ex eo XIV; chalcanthum sive atramentum sutorium: medicinae ex eo XVI; pompholyx, spodium: medicinae ex eis VI; antispori genera XV; smegma; de diphryge; de triente Servilio. (xxxix-xlvi) de ferri metallis: simulacra ex ferro; caelaturae ex ferro; differentiae ferri; de ferro quod vivum appellant; ferri temperatura; robiginis remedia; medicinae ex ferro VII; medicinae ex robigine XIV; medicinae ex squama ferri XVII; hygremplastrum. (xlvii-lvi) de plumbi metallis: de plumbo albo; de argentario, de stagno; de plumbo nigro; medicinae ex plumbo XV; medicinae ex scoria plumbi XV; spodium ex plumbo; de molybdaena; medicinae ex ea XV; psimythium sive cerussa: medicinae ex ea VI; sandaraca: medicinae ex ea XI; arrenicum. Summa: medicinae CCLVII; ex iis ad canis morsus, ad caput, alopecias, oculos, aures, nares, oris vitia, lepras, gingivas, dentes, uvam, pituitam, fauces, tonsillas, anginam, tussim, vomiti-

whom statues so erected; first equestrian statue erected by the state at Rome; date of removal from public places of all statues erected by private donors; first statue publicly erected by foreigners; existence of sculptors from early times even in Italy; excessive prices for statues; the most celebrated colossal statues in the city; 366 famous instances of bronze statues and sculptors in bronze. (xx-xxix) Different kinds of bronze and alloy; gold-bronze, Capuan bronze; preservation of bronze; cadmia, 15 drugs made from; melted bronze, 10 medicinal products of; copper slag, copper blisters, copper scales, copper flakes, 47 drugs from these; copper rust, 18 drugs from; eye-salve; worm-eaten bronze, 18 drugs from; copper ore, 7 drugs from; itch-salve. (xxx-xxxviii) Ink-stone, 3 drugs from; copperas, 14 drugs from; copperas water or shoe-maker's blacking, 16 drugs from; pompholyx, slag, 6 drugs from these; slag-ashes, 15 kinds; skin-detergent; diphryx; the Servilian family's magic sixpence. (xxxix-xlvi) Iron mines; iron statues; chased iron; different kinds of iron; 'live iron'; the tempering of iron; remedies for rust; 7 drugs from iron; 14 drugs from rust; 17 drugs from iron scale; wet plaster. (xlvii-lvi) Lead mines; white lead; silver-lead, stannum, black lead; 15 drugs from lead; 15 drugs from lead slag; dross from lead; molybdaena, 15 drugs from; sugar of lead or cerussa, 6 drugs from; sandarach, 11 drugs from; arsenic.— Total, 257 drugs, including remedies for dog-bite, for the head, fox-mange, eyes, ears, nostrils, ailments of the mouth, leprosy, gums, teeth, uvula, phlegm, throat, tonsils, quinsy, cough, vomiting, chest, stomach, asthma, pains in the side, spleen, stomach,

tionem, pectus, stomachum, suspiria, lateris dolores, splenem, ventrem, tenesum, dysenteriam, sedem, verenda, sanguinem sistendum, podagras, hydropicos, ulcera, volnera XXVI, suppurata, ossa, paronychia, ignem sacrum, haemorrhoidas, fistulas, callum, pusulas, scabiem, cicatrices, infantes, muliebria vitia, psilostrium, Venerem inhibendam, ad vocem, contra lymphationes. summa: res et historiae et observationes DCCCCXV.

Ex auctoribus: L. Pisone, Antiate, Verrio, M. Varrone, Cornelio Nepote, Messala Rufo, Marso poeta, Boccho, Iulio Basso qui de medicina Graece scripsit, Sextio Nigro qui item, Fabio Vestale. Externis: Democrito, Metrodoro Scepsio, Menaechmo qui de toreutice scripsit, Xenocrate qui item, Antigono qui item, Duride qui item, Heliodoro qui de Atheniensium anathematis scripsit, Pasitele qui de mirabilibus operibus scripsit, Timaeo qui de medicina metallica scripsit, Nymphodoro, Iolla, Apollodoro, Andrea, Heraclide, Diagora, Botrye, Archedemo, Dionysio, Aristogene, Democle, Mneside, Xenocrate Zenonis, Theomnesto.

Libro XXXV. continentur: (i-x) Honos picturae, honos imaginum. quando primum clipei imaginum instituti; quando primum in publico positi; quando in domibus. de picturae initiis, de monochromatis picturis, de primis pictoribus. antiquitas picturarum in Italia. de pictoribus Romanis. quando primum dignitas picturae et quibus ex causis Romae, qui¹ victorias suas pictas proposuerint. quando primum externis picturis dignitas Romae. (xi) ratio pingendi. (xii-xxx) de pigmentis praeter metallica. de coloribus ficticiis; de Sinopide; medicinae ex ea XI; de rubrica; de terra Lemnia;

straining, dysentery, the seat, the private parts, blood-stanching, gout, dropsy, ulcers, 26 wounds, pus, bones, whitlows, erysipelas, haemorrhoids, ulcers, callus, pinples, mange, scars, infants, ailments of women, depilatory, sex restraint, for the voice, against attacks of frenzy—Total, 915 facts, investigations and observations.

Authorities: Lucius Piso, Antias, Verrius, Marcus Varro, Cornelius Nepos, Rufus Messala, the poet Marsus, Bocchus, Julius Bassus's Greek treatise on medicine, Sextius Niger's *ditto*, Fabius Vestalis. Foreign authorities: Democritus, Metrodorus of Scepsis, Menacchmus's *Art of Graving*, Xenocrates *ditto*, Antigonus *ditto*, Duris *ditto*, Heliodoros's *Votive Offerings of Athens*, Pasiteles's *Masterpieces*, Timaeus's *Mineral Drugs*, Nymphodorus, Iollas, Apollodorus, Andreas, Heraclides, Diagoras, Botrys, Archedemus, Dionysius, Aristogenes, Democles, Mnesides, Xenocrates son of Zeno, Theomnestus.

Book XXXV. Contents: (i-x) Praise of painting. Praise of sculpture. Shields with sculptured figures, when first instituted; when first set up in public; when in private houses. The commencement of painting; pictures in monochrome; the first painters. Antiquity of paintings in Italy. Roman painters. Painting—when first esteemed at Rome, and for what reasons, who first exhibited paintings of their victories. Foreign pictures, when first valued at Rome. (xi) Method of painting. (xii-xxx) Non-mineral pigments. Artificial colours; red ochre, 11 drugs from it; red chalk; Lemnian

¹ qui primi? *Rackham*.

medicinae ex ea IX; de Aegyptia terra; de ochra; medicinae ex rubrica III; leucophorum; Paraetonium. Melinum; medicinae ex eo VI; cerussa usta; Eretria terra, medicinae ex ea VI; sandaraca; sandyx; Syricum; atramentum; purpurissum; Indicum: medicinae ex eo IV; Armenium, medicina ex eo I; viride Appianum; anulare. (xxxii-iii) qui colores udo non inducantur. quibus coloribus antiqui pinxerint. quando primum gladiatorum pugnae pictae et propositae sint. (xxxiv-xli) de aetate picturae; operum et artificum in pictura nobilitates CCCCV, picturae primum certamen; qui penicillo pinxerint; de avium cantu conpescendo; qui encausto aut ceris vel cestro vel penicillo pinxerint. quae quis primus invenerit in pictura; quid difficillimum in pictura; de generibus picturae; quis primus lacunaria pinxerit, quando primum camarae pictae; pretia mirabilia picturarum; de talento. (xliii-xlvi) plastices primi inventores; quis primus ex facie imaginem expresserit; nobilitates artificum in plastice XIV. de figlinis operibus; de Signinis. (xlvii-lix) terrae varietates; de pulvere Puteolano et aliis terrae generibus quae in lapidem vertuntur; de parietibus formaceis; de latericiis et de laterum ratione; de sulphure et generibus eius; medicinae XIV; de bitumine et generibus eius; medicinae XXVII; de alumine et generibus eius; medicinae ex eo XXXVIII; de terra Samia; medicinae ex ea III; Eretriae terrae genera; de terra ad medicinam lavanda; de Chia terra: medicinae ex ea III; de Selinusia; medicinae ex ea III; de pignitide; medicinae ex ea IX; de ampelitide; medicinae ex ea IV; cretae ad vestium usus; cimolia: medicinae ex ea IX; Sarda, Umbrica, saxum; argentaria;

earth, 9 drugs from it; Egyptian earth; yellow ochre; 3 drugs from red ochre; gold size; Paraetonium white; Melian white; 6 drugs from it; burnt white-lead; earth of Eretria, 6 drugs from it; sandarach; vermilion; Syrian; black ink; dark purple ink; indigo, 4 drugs from it; ultramarine, 1 drug from it; Appian green; signet-ring white. (xxxii-iii) Colours that cannot be painted on a damp surface. Colours used by painters of early dates. When battles of gladiators were first painted and exhibited. (xxxiv-xli) The antiquity of painting; 405 celebrated cases of paintings and artists; earliest painting competition; painters that used the brush; how to check the song of birds; what painters used encaustic or waxes or graver or brush; inventors of successive improvements in painting; the most difficult thing in painting; kinds of painting; first painter of panelled ceilings; vaulted roofs, when first painted; remarkable prices for pictures; the talent. (xliii-xlvi) The first discoveries of modelling; who first took a mould of a face; 14 celebrated cases of artists in modelling; works in pottery; Segni plaster. (xlvii-lix) Varieties of earth: Pozzuoli dust and other kinds of earth used for concrete; walls cast in moulds; brickwork and employment of brick; brimstone and its kinds; 14 drugs; bitumen and its kinds; 27 drugs; alum and its kinds; 38 drugs therefrom; Samian earth; 3 drugs therefrom; Eretrian earth, its kinds; on washing earth to make a drug; Chian earth; 3 drugs therefrom; earth of Selinunte; 3 drugs therefrom; potters' clay; 9 drugs therefrom; vine-earth; 4 drugs therefrom; chalks for use in connexion with clothes; earth of Kimolo; 9 drugs therefrom; earth of Sardis, of Umbria, rock;

qui et quorum liberti praepotentes; terra ex Galata, terra Clupea, terra Balarica, terra Ebusitana: medicinae ex eis IV. Summa: medicinae et historiae et observationes DCCCCLVI.

Ex auctoribus: Messala oratore, Messala sene, Fenestella, Attico, M. Varrone, Verrio, Nepote Cornelio, Deculone, Muciano, Melisso, Vitruvio, Cassio Severo, Longulano, Fabio Vestale qui de pictura scripsit. Externis: Pasitele, Apelle, Melanthio, Asclepiodoro, Euphranore, Parrhasio, Heliodoro qui de anathematis Atheniensium scripsit, Metrodoro qui de architectonice scripsit, Democrito, Theophrasto, Apione grammatico qui de metallica medicina scripsit, Nymphodoro, Iolla, Apollodoro, Andrea, Heraclide, Diagora, Botrye, Archedemo, Dionysio, Aristogene, Democle, Mneside Xenocrate Zenonis, Theomnesto.

Libro XXXVI. continentur naturae lapidum. (i-xi) luxuria in marmoribus: quis primus peregrino marmore columnas habuerit Romae; quis primus in publicis operibus ostenderit; qui primi laudati in marmore scalpendo et quibus temporibus (ix de Mausoleo Cariae); nobilitates operum et artificum in marmore CCXXV; quando primum marmorum in aedificiis usus; qui primi marmora secuerint et quando; quis primus Romae crustaverit parietes; quibus aetatibus quaeque marmora in usum venerint Romae; ratio secandi marmora; de harenis quibus secantur; de Naxio, de Armenio; de Alexandrinis marmoribus. (xii f.) de onyche, de alabastrite: medicinae ex eis VI; de lygdino, corallitico, Alabandico, Thebaico, Syenite. (xiv f.) de obeliscis: de eo qui pro gnomone in campo Martio est. (xvi-xxiii) opera mirabilia in terris: Sphinx Aegyptia, pyra-

rotten-stone; what people and whose freedmen are excessively powerful; Galatian earth, Kalibian earth, Balearic earth, Iviza earth; 4 drugs from these.— Total 956 drugs, investigations and observations.

Authorities: the orator Messala, Messala senior, Fenestella, Atticus, Marcus Varro, Verrius, Cornelius Nepos, Deculo, Mucianus, Melissus, Vitruvius, Cassius Severus, Longulanus, Fabius Vestalis *On Painting*. Foreign authorities; Pasiteles, Apelles, Melanthius, Asclepiodorus, Euphranor, Parrhasius, Heliodorus's *Votive offerings of Athens*, Metrodorus's *Science of Architecture*, Democritus, Theophrastus, the philologist Apion's *Mineral Drugs*, Nymphodorus, Iollas, Apollodorus, Andreas, Heraclides, Diagoras, Botrys, Archedemus, Dionysius, Aristogenes, Democles, Mnesides, Xenocrates son of Zeno, Theomnestus.

Book XXXVI. Contents: the natures of stones. (i-xi) Luxury in use of marbles; first owner of foreign marble pillars at Rome; first exhibitor of marble in public works; first distinguished sculptors in marble, and their dates; (ix the Mausoleum of Caria); 225 famous works and artists in marble; date of first employment of marbles in buildings; what people first cut marbles, and at what date; who first used marble wall-panelling at Rome; at which periods did the various marbles come into use at Rome; method of cutting marble; sands employed in marble-cutting; Naxian marble, Armenian marble, marbles of Alexandria. (xii f.) Onyx, alabaster; 6 drugs therefrom; Parian marble, coral marble, Alabanda stone, Theban stone, Syene granite. (xiv f.) Obelisks: obelisk in Campus Martius serving as gnomon. (xvi-xxiii) Remarkable structures in various countries; Egyptian Sphinx, pyramids; Pharos lighthouse;

mides; Pharos; labyrinthi; pensiles horti, pensile oppidum; de templo Ephesiae Dianae; aliorum templorum admirabilia; de lapide fugitivo; echo septiens resonans; sine clavo aedificia. (xxiv) Romae miracula operum XVIII. (xxv-xxx) de magnete lapide: medicinae ex eo III; Syrius lapis; de sarcophago sive Assio: medicinae ex eo X; de chernite, de poro; de lapidibus osseis, de palmatis, de Taenariis, de Coranis, de nigris marmoribus; de molaribus lapidibus; pyritis; medicinae ex eo VII. (xxxi-xl) ostracites: medicinae ex eo IV; amiantus: medicinae ex eo II; geodes: medicinae ex eo III; melitinus: medicinae ex eo VI; gagates: medicinae ex eo VI; spongites: medicinae ex eo II; phrygius; haematites: medicinae ex eo V; schistos: medicinae ex eo VII; androdamas: medicinae ex eo II; Arabicus; miltites sive hepatites, anthracites; aetites, Taphiusius, callimus; Samius: medicinae ex eo VIII. (xli-l) arabus: medicinae ex eo VI; de pumice: medicinae ex eo IX; de mortariis medicinalibus et aliis; Etesius lapis, chalazius; siphnius, lapides molles; lapis specularis; phengites; de cotibus; de tophis; de silicum natura; de reliquis ad structuram lapidibus. (li-lix) genera structurae; de cisternis; de calce; harenae genera, harenae et calcis mixturae; vitia structurae; de tectoriis; de columnis: genera columnarum; medicinae ex calce V; de maltha; de gypso. (lx-lxx) de pavimentis: asarotos oecos; quod primum pavimentum Romae; de subdialibus pavimentis; Graecanica pavimenta: quando primum lithostrotum; quando primum camarae vitreae; origo vitri; genera eius et ratio faciendi; de Obsianis; miracula ignium; medicinae ex igni et cinere III; prodigia foci. Summa:

labyrinths; hanging gardens, hanging town; temple of Diana at Ephesus; remarkable facts as to other temples; runaway stone; sevenfold echo; buildings constructed without clamps. (xxiv) Eighteen remarkable works at Rome. (xxv-xxx) Magnetic stone: 3 drugs therefrom; Syros stone; flesh-eating or Assos stone, 10 drugs therefrom; Chernites marble; tufa; bone-stones, palm-branch stones, Taenarus stones, Cora stones, black marbles; mill-stones; pyritis, 7 drugs therefrom. (xxxi-xl) Oyster-shell stone, 4 drugs therefrom; asbestos, 2 drugs therefrom; earthstone, 3 drugs therefrom; honey-stone; 6 drugs therefrom; jet, 6 drugs therefrom; sponge-stone, 2 drugs therefrom; Phrygian stone; bloodstone, 5 drugs therefrom; schistose, 7 drugs therefrom; *androdamas* bloodstone, 3 drugs therefrom; Arabian stone; minium bloodstone or liverstone, anthracite; eagle-stone, Taphiusian stone, *callimus*; Samos stone, 8 drugs therefrom. (xli-l) Arab stone; 6 drugs therefrom; pumicestone, 9 drugs therefrom; medicinal and other mortars; *Etesius* stone, hailstone stone; Siphnos stone; soft stones; muscovy-stone; selenite; whetstones; tufas; flints, nature of; other building stones. (li-lix) Kinds of building; cisterns; lime; kinds of sand; mixtures of sand and lime; faults in building; stuccos; pillars; kinds of pillars; 5 drugs from chalk; lime-cement; white lime plaster. (lx-lxx) Pavements: the Tesselated Hall; first pavement at Rome; terrace pavements; pavements in the Greek mode; date of first mosaic pavement; date of first glass ceilings; origin of glass; its kinds and mode of manufacture; obsidian panes; remarkable uses of fire; 3 drugs from fire and ash; marvels of the hearth.—Total: 89 drugs

medicinae ex his LXXXIX, ad serpentes III. bestiarum morsus, ad venena, caput, oculos, epinyctidas, dentes, dentifricia, fauces, strumas, stomachum, iocinera, pituitam, testes, vesicam, calculos, panos, haemorrhoidas, podagras, sanguini sistendo, sanguinem reicientibus, luxata; phreneticos, lethargicos, comitiales, melancholicos, vertigines, ulcera, volnera urenda, secanda, convolsa, contusa, maculas, usta, phthisin, mammas, muliebria vitia, carbunculos, pestilentia. Summa omnis: res et historiae et observationes CCCCXXXIV.

Ex auctoribus: M. Varrone, C. Galba, Cincio, Muciano, Nepote Cornelio, L. Pisone, Q. Tuberone, Fabio Vestale, Annio Fetiale, Fabiano, Seneca, Catone censorio, Vitruvio. Externis: Theophrasto, Pasitele, Iuba rege, Nicandro, Sotaco, Sudine, Alexandro polyhistore, Apione Plistonico, Duride, Herodoto, Euhemero, Aristagora, Dionysio, Artemidoro, Butorida, Antisthene, Demetrio, Demotele, Lycea.

Libro XXXVII. continentur: (i-x) origo gemmarum; de Polycratis tyranni gemma; de Pyrrhi gemma; qui scalptores optimi, nobilitates scalpturae; quae prima Romae dactylithece; gemmae in Pompei Magni triumpho translatae; quando primum murrina invecta; luxuria circa ea; natura eorum; natura crystalli, medicina ex eo: luxuria in crystallo. (xi-xx) de sucino: quae de eo mendacia; genera sucinorum; medicinae ex his; lyngurium: medicinae II; de adamante sive anancite: genera adamantis VI, medicinae II; de zmaragdis: genera eorum XII, vitia eorum; tanos gemma; chalcozmaragdos; de beryllis: genera eorum VIII, vitia eorum. (xxi-xxx) de opalis: genera eorum VII,

from these materials, 3 for serpents, animals' bites, for poisons, for the head, eyes, eyelid sores, teeth, tooth-powders, throat, scrofula, stomach, liver, phlegm, testicles, bladder, stone, tumours, piles, gout, remedy for bleeding, for vomiting blood, dislocation, cases of insanity, of lethargy, of epilepsy, of melancholy, of giddiness, ulcers, caustic and surgical treatment of wounds, sprains, bruises, moles burns, consumption, the breasts, diseases of women, carbuncles, plague. Full total: 434 facts, investigations and observations.

Authorities: Marcus Varro, Gaius Galba, Cincius, Mucianus, Cornelius Nepos, Lucius Piso, Quintus Tuberone, Fabius Vestalis, Annius Fetialis, Fabianus, Seneca, Cato the Censor, Vitruvius. Foreign authorities: Theophrastus, Pasiteles, King Juba, Nicander, Sotacus, Sudines, Alexander the Learned, Apion Plistonicus, Duris, Herodotus, Euhemerus, Aristagoras, Dionysius, Artemidorus, Butoridas, Antisthenes, Demetrius, Demoteles, Lyceas.

Book XXXVII. Contents: (i-x) Origin of gems: the tyrant Polycrates's jewel; Pyrrhus's jewel; the best engravers; famous specimens of engraving; the first collection of signet-rings at Rome; jewels carried in the triumph of Pompey the Great; murrine vases, date of first importation; extravagance connected with; their nature; nature of rock-crystal, drug from it; extravagance in use of rock-crystal. (xi-xx) Amber, erroneous statements about; kinds of amber, drugs from these; tourmaline, 2 drugs; diamond or anancite, 6 kinds of diamonds, 2 drugs; emeralds, 12 kinds, their blemishes; the gem tanos; malachite; beryls, their 8 kinds, their blemishes. (xxi-xxx) Opals, their 7 kinds, their blemishes, tests

vitia eorum, experimenta eorum; de sardonyche: genera eius, vitia eius; de onyche: genera eius; de carbunculis: genera eorum XII, vitia eorum et experimenta; anthracitis; sandastros sive Garamantitis sive sandacitis, sandaresus; lychnis: genera eius IV; carchedonia. (xxxix-xl) sarda: genera eius V; de topazo: genera eius II; de callaina; de prasio: genera eius III; nilion; molochitis; de iaspide, genera eius XIV, vitia eorum; de cyano: genera eius; de sapphiro; amethysto: genera eius IV; socondion, sapos, pharanitis, Aphrodites blepharon sive anteros sive paederos. (xli-l) hyacinthus; de chrysolitho genera eius VII; de chryselectro; leucochrysos: genera eius IV; melichrysi, xuthi; paederos sive sangenos sive tenites; asteria; astrion; astriotes; astolon. (li-lx) ceraunia: genera eius IV; baetylos; Iris; hieros; achatae: genera eorum; acopos: medicinae ex ea; alabastritis; medicinae ex ea; alectoriae, androdamas, argyrodamas, antipathes, Arabica, aromatitis, asbestos, aspisatis, atizoe, augitis, amphidanes sive chrysocolla, Aphrodisiaca, apsyctos, Aegyptilla; balanitae, batrachitis, baptes; Beli oculus, Belus, baroptenus sive baripe, botryitis, bostrychitis, bucardia, brontea, boloe; cadmitis, callais, capnitis, Cappadocia, callaica, catochitis, catoptritis, cepitis sive cepolatitis, ceramitis, cinaediae, ceritis, circoş, corsoides, coralloachates, corallis, crateritis, crocallis, cyitis, chalcophonos, chelidoniae, cheloniae, chelonitis, chloritis, Choaspitis, chrysolampis, chrysopis, cepionides; daphnea, diadochos, diphyes, Dionysias, dracontitis; encardia sive enariste, enorchis, exhebenus, erythallis, erotylos sive amphi-comos sive hieromnemon, eumeces, eumi-

of opals; sardonyx, its kinds, its blemishes; onyx, its kinds; carbuncles, their 12 kinds, their blemishes and tests; coal-carbuncle; sandastros or Garamantitis or sandacitis; sandaresus; lychnis, its 4 kinds; Carthaginian stone. (xxxix-xl) Carnelian, its 5 kinds; chrysolite, its 2 kinds; turquoise; leek-green stone, its 3 kinds; Nile-stone; malachite; jasper, its 4 kinds, their blemishes; lapis lazuli, its kinds; sapphire; amethyst, its 4 kinds; socondion, sapos, pharanitis, Venus's eyelid or love-retained or lad's-love. (xli-l) Hyacinth; chrysolite, its 7 kinds; golden-amber; chrysolite, its 4 kinds; golden chrysolite; xuthis; lad's-love or sangenos or tenites; cat's-eye; adularia, astriotes, astolon. (li-lx) St. John's bread, its 4 kinds; baetylos; rainbow-stone; holy-stone; agates, their kinds; crystalline quartz, drugs therefrom; alabaster-stone, drugs therefrom; cock-stones, androdamas, silver-stone, charm-coral, chalcedony, scented amber, asbestos-stone, aspisatis, atizoe, turquoise, amphidanes or chrysocolla, Aphrodisiaca, apsyctos, little-gypsy; acorn-stone, frog-stone, baptes, cat's eye, Belus, baroptenus or baripe, grape-stone, lock-of-hair-stone, cow's-heart, thunder-stone, boloe, cadmitis, turquoise, smoke-stone, Cappadocian stone, turquoise-stone, catochitis, catoptritis, cepitis or cepolatitis, brick-stone, cinaedias (kinds of), wax-stone, top-stone, hair-stone, coral-agate, coral-stone, crateritis, crocallis, cyitis, brazen-voice, swallow-stones, tortoise-stones, tortoise-shell-stone, green-stone, Choaspes-stone, gold-gleam, golden-topaz, cepionides, Daphne-stone, diadochos, diphyes, Dionysus-stone, snake-stone, heart-stone or enariste, enorchis, exhebenus, erythallis, erotylos or amphi-comos or stone of remembrance, eumeces, eumithres,

thres, eupetalos, eureos, Eurotias, eusebes, epimelas; galaxias, galactitis sive leucogaea sive leucographitis sive synnephitis, gallaica, gassinade, glossopetra, Gorgonia, goniaea; heliotropion, Hephaestitis, Hermuaedoeon, hexecontalithos, hieracitis, hammitis, Hammonis cornu, hormiscion, hyaeniae, haematitis meniu sive xuthos. (lxi-lxx) Idaeï dactyli, icterias, Iovis gemma sive drosolithos, Indica, ion; lepidotis, Lesbias, leucophthalmos, leucopoecilos, libanochrus, limoniatis, liparea, lysimachos, leucochrysos; Memnonia, Media, meconitis, mithrax, morochthos, mormorion sive promnium sive Alexandrinum, myrritis, myrmecias, myrsinitis, mesoleucos, mesomelas; nasamonitis, nebritis, Nipparena; oica, ombria sive notia, onocardia, oritis sive sideritis, ostracias sive ostracitis, ostritis, ophicardelos, Obsiana; panchrus, pangonus, paneros sive panerastos, Ponticae genera IV, phloginos sive chrysitis, phoenicitis, phycitis, perileucos, Paeanitis sive gaeanis; solis gemma, sagda, Samothracia, sauritis, sarcitis, selenitis, sideritis, sideropoecilos, spongitis, synodontitis, Syrtitis, syringitis; trichrus, thelyrrizos, thelycardios sive mucul, Thracia (genera III), tephritis, tecolithos; veneris crines, Veientana; zathene, zmilampis, zoraniscaea. (lxxi-lxxvii) hepatitis, steatitis, Adadu nephros, Adadu ophthalmos, Adadu dactylos, triophthalmos; carcinias, echitis, scorptis, scaritis, triglitis, aegophthalmos, hyophthalmos, geranitis, aetitis, myrmecitis, cantharias, lycophthalmos, taos, timiclonia; ammochrysos, cenchritis, dryitis, cissitis, narcissitis, cyamias, pyren,

eupetalos, eureos, Eurotas-stone, eusebes, epimelas; milk-stone, milky-stone or white-earth-stone or white graphite or cloud-stone, Galician-stone, gassinades, tongue-stone, Gorgon-stone, goniaea, striped-jasper, Vulcan-stone, Mercury's privates, sixty-colour-stone, hawk-stone, hammitis, ammonite, hormiscion, hyena-stone, meniou bloodstone or yellow-stone. (lxi-lxx) Ida's fingers, icterias, Jove-stone or dew-stone, Indian stone, violet-stone, scale-stone, Lesbian stone, white-eye, white-spot, myrrh-colour, emerald, Lipari-stone, lysimachos, white gold, Memnon-stone, Persian stone, poppy-stone, mithrax, morochthos, mormorion or promnium or Alexandria stone, myrrh-stone, wart-stone, myrrh-stone, white-centre, black-centre, stone of Nasamon, fawn-stone, Nipparena, egg-stone, rain-stone or storm-stone, ass's-heart, mountain-stone or star-stone, hornstone or chalcedony, oyster-stone, ophicardelos, obsidian, all-colours, all-seeds, love-all or all-love, Black Sea stone, 4 kinds, flame-stone or gold-stone, purple-stone, sea-weed-stone, white-ring, Paeanite or gae-anite, sun-stone, green-stone, Samothracian stone, lizard-stone, flesh-stone, moon-stone, iron-stone, variegated iron-stone, sponge-stone, bream-stone, Syrtian stone, reed-stone, tricolor, thelyrrizos, thelycardios or mucul, Thracian-stone (3 kinds), ash-stone, tecolithos, love-locks, Veii-stone, zathene, zmilampis, zoraniscaea. (lxxi-lxxvii) Liver-stone, soapstone, Adad's-kidney, Adad's-eye, Adad's-finger, three-eyed-stone, crab-stone, adder-stone, scorpion-stone, wrasse-stone, triglitis, goat's-eye, sow's-eye, crane-stone, eagle-stone, ant-stone, beetle-stone, wolf's-eye, peacock-stone, timiclonia; gold-sand-stone, millet-stone, oak-stone, ivy stone, narcissus-stone,

phoenicitis, chalazias, pyritis, polyzonos, astrapaea, phlogitis, anthracitis, enygros, polytrichos, leontios, pardalios, drosolithos, melichrus, melichloros, polias, spartopolia, rhoditis, melitis, chalcitis, sycitis, bostrychitis, chernitis, anancitis, synochitis, dendritis; cochlides; de figura gemmarum; ratio probandi. comparatio naturae per terras. comparatio rerum per pretia. Summa: res et historiae et observationes MCCC.

Ex auctoribus: M. Varrone, actis triumphorum Maecenate, Iaccho, Cornelio Boccho. Externis: Iuba rege, Xenocrate Zenonis, Sudine, Aeschylo, Philoxeno, Euripide, Nicandro, Satyro, Theophrasto, Charete, Philemone, Demostrato, Zenothemi, Metrodoro, Sotaco, Pythea, Timaeo Siculo, Nicia, Theochresto, Asaruba, Mnasea, Theomene, Ctesia, Mithridate, Sophocle, Archelao rege, Callistrato, Democrito, Ismenia, Olympico, Alexandro polyhistore, Apione, Oro, Zoroastre, Zachalia.

bean-stone, pyren, purple-stone, hail-stone, pyritis, striped-stone, lightning-stone, flame-stone, coal-stone, enygros, hairy-stone, lion-stone, leopard-stone, dew-stone, honey-colour-stone, honey-yellow-stone, gray-stone, spartopolia, rose-stone, honey-stone, copper-stone, fig-stone, ringlet-stone, ivory-marble, anancitis, synochitis, tree-stone, snail-shell. Shape of precious stones; method of testing; natural properties compared in various countries; products compared in respect of price.—Total, 1300 facts, investigations and observations.

Authorities: Marcus Varro, *Records of Triumphs*, Maecenas, Iacchus, Cornelius Bocchus. Foreign authorities: King Juba, Xenocrates son of Zeno, Sudines, Aeschylus, Philoxenus, Euripides, Nicander, Satyrus, Theophrastus, Chares, Philemon, Demostratus, Zenothemis, Metrodorus, Sotacus, Pytheas, Timaeus of Sicily, Nicias, Theochrestus, Asaruba, Mnaseas, Theomenes, Ctesias, Mithridates, Sophocles, King Archelaus, Callistratus, Democritus, Ismenias, Olympicus, Alexander the Learned, Apion, Orus, Zoroaster, Zachalias.

C. Plinius Secundus.

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IN TEN VOLUMES

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