

THEOPHRASTUS ON STONES

INTRODUCTION,
GREEK TEXT, ENGLISH TRANSLATION,
AND COMMENTARY

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- 56 τατον, τὸ δὲ δεύτερον ἐκ τῶν παχυτάτων μελάντατον. ταῦτά τε δὴ τέχνη γίνεται καὶ ἔτι τὸ ψιμύθιον. τίθεται γὰρ μόλυβδος ὑπὲρ ὄξους ἐν πίβοις ἠλίκον πλίνθος. ὅταν δὲ λάβῃ πάχος, λαμβάνει δὲ μάλιστα ἐν ἡμέραις δέκα, τότε ἀνοίγουσιν, εἴτ' ἀποξύνουσιν ὡσπερ εὐρώτά τινα ἀπ' αὐτοῦ, καὶ πάλιν, ἕως ἂν καταναλώσωσι. τὸ δ' ἀποξύνόμενον ἐν τριπτῆρι τρίβουσι καὶ ἀφηθοῦσιν
- 57 αἰί, τὸ δ' ἔσχατον ὑφιστάμενόν ἐστι τὸ ψιμύθιον. παραπλησίως δὲ καὶ ὁ ἰὸς γίνεται· χαλκὸς γὰρ ἐρυθρὸς ὑπὲρ τρυγὸς τίθεται καὶ ἀποξύνεται τὸ ἐπιγινόμενον αὐτῷ· ἐπιφαίνεται γὰρ ὁ ἰός.
- 58 γίνεται δὲ καὶ κιννάβαρι τὸ μὲν αὐτοφυῆς τὸ δὲ κατ' ἐργασίαν. αὐτοφυῆς μὲν τὸ περὶ Ἰβηρίαν σκληρὸν σφόδρα καὶ λιθῶδες, καὶ τὸ ἐν Κόλχοις. τοῦτο δὲ φασιν εἶναι (ἐπὶ) κρημνῶν ὁ καταβάλλουσι τοξεύοντες. τὸ δὲ κατ' ἐργασίαν ὑπὲρ Ἐφέσου μικρὸν ἐξ ἑνὸς τόπου μόνον. ἔστι δ' ἄμμος ἣν συλλέγουσι λαμπυρίζουσαν καθάπερ ὁ κόκκος· ταύτην δὲ τρύπαντες ὅλως ἐν ἀγγείοις λιθίνοις λειοτάτην πλύνουσι ἐν χαλκοῖς [μικρὸν ἐν καλοῖς] τὸ δ' ὑφιστάμενον πάλιν λαβόντες πλύνουσι καὶ τρίβουσι, ἐν ᾧ περ ἐστὶ τὸ τῆς τέχνης· οἱ μὲν γὰρ ἐκ τοῦ ἴσου πολὺ περιποιούσιν, οἱ δ' ὀλίγον ἢ οὐθέν· ἀλλὰ πλύσματι (τῷ) ἐπάνω χρῶνται ἐν πρὸς ἐν ἀλείφοντες. γίνεται δὲ τὸ μὲν ὑφιστάμενον
- 59 κάτω κιννάβαρι, τὸ δ' ἐπάνω καὶ πλείον πλύσμα. καταδείξει δὲ φασὶ καὶ εὐρεῖν τὴν ἐργασίαν Καλλιᾶν τινα Ἀθηναῖον ἐκ τῶν ἀργυρείων, ὃς οἰόμενος ἔχειν τὴν ἄμμον χρυσίον διὰ τὸ λαμπυρίζειν ἐπραγματεύετο καὶ συνέλεγεν. ἐπεὶ δ' ἦσθετο ὅτι οὐκ ἔχει τὸ δὲ τῆς ἄμμου κάλλος ἐθαύμαζε διὰ τὴν χροᾶν οὕτως ἐπὶ τὴν ἐργασίαν ἦλθε ταύτην. οὐ παλαιὸν δ' ἐστὶν ἀλλὰ περὶ ἔτη
- 60 μάλιστ' ἐνενήκοντα εἰς ἄρχοντα Πραξιβουλον Ἀθήνησι. φανερόν δ' ἐκ τούτων ὅτι μιμεῖται τὴν φύσιν ἢ τέχνη, τὰ δ' ἴδια ποιεῖ, καὶ τούτων τὰ μὲν χρήσεως χάριν τὰ δὲ μόνον φαντασίας ὡσπερ τὰς ἑάλπει. ἔνια δὲ ἴσως ἀμφοῖν ὡσπερ χυτὸν ἄργυρον. ἔστι γὰρ τις χρεία καὶ τούτου. ποιεῖται δὲ ὅταν τὸ (κιννάβαρι) τριφθῇ μετ' ὄξους ἐν ἀγγεῖῳ χαλκῷ καὶ δοίδυκι χαλκῷ. τὰ μὲν οὖν τοιαῦτα τάχ' ἂν τις λάβοι πλείω.
- 61 Τῶν δὲ μεταλλευτῶν τὰ ἐν τοῖς γεωφανέσις ἔτι λοιπά, [περὶ] ὧν ἡ γένεσις ὡσπερ ἐλέχθη κατ' ἀρχὰς ἐκ συρροῆς τινὸς καὶ ἐκκρίσεως γίνεται καθαρωτέρας καὶ ὁμαλωτέρας τῶν ἄλλων. χρώματα δὲ παντοῖα λαμβάνουσι καὶ διὰ τὴν τῶν ὑποκειμένων † . . . διὰ τὴν τῶν . . . ουντων διαφορὰν, ἐξ ὧν τὰς μὲν μαλάτ-

and ground again and then washed. Skill is needed for this process; for some people make a great deal and others little or nothing out of an equal amount of sand. The washing is done from the top, and separate portions are wetted one after the other; what is left at the bottom is cinnabar, and the washings are what remains above in larger quantities.

59 They say that Kallias, an Athenian from the silver mines, discovered and demonstrated the method of preparation; for thinking that the sand contained gold because it shone brightly, he collected it and worked on it. But when he saw that it did not contain any gold, he admired the beauty of the sand because of its color and so discovered this method of preparation. This did not happen long ago, but about ninety years before Praxiboulos was archon at Athens.

60 It is clear from these facts that art imitates nature and creates its own peculiar products, some of them for use, and some only for show, such as paints,⁴⁸ and others for both purposes equally, such as quicksilver; for this has its use too. It is made when cinnabar mixed with vinegar is ground in a copper vessel with a pestle made of copper. And perhaps several other things of this kind could be discovered.

61 Among the substances obtained by mining there still remain those that are found in earth-pits; these are caused, as we said in the beginning, from some conflux and separation of matter which is purer and more uniform than that of the other kinds. And all sorts of colors are obtained from them owing to the differences of the matter they contain . . . ;⁴⁹ some of them are softened and others are ground and melted, and in this way the stones that are brought from Asia are constructed.

62 The natural kinds of earth, which are useful as well as superior in quality, are three or four in number, the Melian, the Kimolian, the Samian, and a fourth in addition to these, the Tymphaic or *gypsos*.⁵⁰ Painters use only the Melian kind; they do not use the

⁴⁸ This translates ἴ-ἴ-ἴ-ἴ-ἴ-ἴ: & \wcis is unknown. The emendation δι7reis (lit., "without fat") must refer to the type of earth mentioned in sec. 62; this was not greasy and was suitable for painting.

⁴⁹ If ἴῶ±ἴ ἴΖἴἴ ἴἴ* ἴἴῶ ἴΖἴἴ-ἴΖἴἴ ἴἴῶἴ±ἴῶ were read, the meaning would be "and of the matter that percolates."

⁵⁰ A much broader term than the English word *gypsum*. It included not only the