



X-85-43

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THE GIFT OF

Prof. E.H. Warmington.





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INSTITUTE OF CLASSICAL STUDIES

24 JAN 1973

A. 1. 1: 'Ayla · AYX0 taker name "glor 1. 2: Apto xx111 1. 2: Lysar Iambi work 1. 3. Kall See] 1. 4: 100 1 1. 5: 200 : ceede 1. 6:. . . Em. та в of. βητα al

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LIFE AND WORKS: A-S:

- A. 1. 1: 'Αγλαοῦ, οἱ δὲ 'Αμβροσίου. Frs. G and J give 'Αγλαοῦ, but see fr. K. 'Αμβροσίου is generally taken, with reasonable probability, as a nickname or a play on the meaning of ἀγλαοῦ, "glorious".
 - 1. 2: Apforwood, See frs. 42 and 43, and Intr. p. xx111.
 - 2: Lysanias wrote (Ath. XIV, 6200) a work "On Iambic Poets", which may be a part of a general work "On Poets". (Pauly-Wissowa).
 - 1. 3. Kallindxov. Writer of many extant epigrams. See Intr. p. vii; etc., and fr. J, note.
 - 1. 4: TOU THITON HTONEHAGON, Evergetes, c. 247-22 B. C.
 - 1. 5: τοῦ πέμπτου. Epiphanes, c. 205-181 B. C. Succeeded at age 5.
 - 6:..., καιδείας, τοῖς ἄμροις ἐγγίσαντα, βῆτα ἐπευλήθη.
 Em. Neursius, for παιδείας τοῖς ἄμροις ἐγγίσασι τὰ βήματα ἐπευλήθη.

of. Marc. Herac. perpil. p. 63: Ειατοσθένης, Όν βητα έκάλεσαν οι του Μουσείου προστάντες;

also Chrestomath. ex Strab. p. 5 vol. II



geogr. Hudson: ότι 'Ερατοσθένης ούτε των άπαιδεύτων ήν, ούτε των γνησίως φιλοσοφούντων· διδ και βήτα έκαλεϊτο, ώς τά δευτερεία φέρειν δοκων έπι πάση παιδεία.

See Intr. p. iz.

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1. 7: δεύτερον η νέον Πλάτωνα) See Intr. p. viii. Πένταθλον.

8: ρκς 'Ολυμπιάδι. 126th Olympiad = 276-2 B. G.
 For dates of birth and death, see Intr. pp. 1-viii
 9: ...διά τὸ ἁμβλύώττειν. of. fr. G, and Suidas
 s. v. 'Αρίσταρχος, where the same account of death is given.

1. 10: Αριστοφάνην τον Βυζάντιον. . . . Αρίσταρχος.

Both these men were eminent critics and "grammarians". Their exact dates are unknown, but the dough of Aristophanes appears to have been about the end of the 3rd and beginning of the 2nd century, that of Aristarchus, (whose birth Suidas assigns to the 156th Olympiad) somewhat later. It was Aristophanes who introduced the use of accents in written Greek to assist foreigners in acquiring the correct musical pitch of words, while Aristarchus produced an elaborate new critical edition of the Iliad and Odyssey on which modern editions are founded.

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 1: Ννασέας. Author of a περίπλους of Europe, Asia, and Africa, and of a collection of Delphic oracles. He was a follower of Euhemerus (Ath. IV, 158, et passim.)

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"Apiotic. A friend of Theocritus and Aratus of Cos. (Theoc. VII, 99)

Mévavbroc. Of this Menander nothing more is known (Pauly: Menandros 12)

1. 12: Icropiac. of. fr. K. Enaack takes this as proof that Eratosthenes the sone of Agacles is a different man, and Jacoby follows. The word icropic is, however, extremely vague in its essential meaning, and there seems no reason why it should not apply to the Kpovoypágiai or even to the Fewypaginá (see fr. N).

1. 13: xataotepionoúc. Em. Portus, for wataotapiynoúc, or "fixings". For this work see Intr. p. xxviii.

B.

Apollonius, usually called Rhodius for his success in teaching rhotoric there, was born at Alexandria. His exact dates are unknown, but he flourished about 200 B. C. His chief work is the still extant "Argonautica", which contains many fine passages and whose third book conveys a foretaste of Romantic literature. It is marred by the excess of recondite reference typical of "Alexandrianism".

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 Eύφορίωνος. Post and critic, librarian at Antioch 221 B. C. Born at Chalcis in Euboca in the same Olympiad as Eratosthenes. (Suidas) He studied under Lacydes and Prytanis (Ath. XI p. 447c) Tupápχoς. He is not mentioned elsewhere.

C. This fragment, which reverses the order of Eratosthenes and Apollonius, is accepted by Jacoby in spite of its difficulties and obvious inaccuracies which are pointed out by Grenfell and Hunt.

 3: τοῦ πρώτου βασιλέως. "An obvious mistake" (G. and H.) for τρ(του (Euergetes I). Jacoby accepts the emendation without comment.

1. 4: Apollonius the Portrait-Painter, of unknown date, was concerned in establishing the Pindaric canon (Pauly)

Aristarchus: see fr. A, note.

 7: Φιλοπάτορος. "Α mistake" (G. and H.) for 'Επιφάνους or Φιλομήτορος, cf. Suidas: 'Αρίσταρχος' γέγονε δέ
 ... έπι Πτολεμαίου τοῦ Φιλομήτορος, οδ καὶ τὸν υἰον (Εὐπάτορα) ἐπαίδευσεν.

 S: τῷ ἐνάτῷ βασιλεί. "τοῦ ἐνάτου βασιλέως" is expected; moreover Euergetes II, if he is here meant, is usually called the 7th or 5th Ptolemy" (G. and H.)

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1. 8: Zavo. . . . Zavóboroc, "or possibly Zavobupoc." (G. and H.) 273

Euclid flourished about 300 B. C. Archimedes was killed at the siege of Syracuse in 212 B. C., aged 75. (Tzetzes, Ghil. II, 106) ovyxpovor need not mean exact contemporaries here, any more than in fr. B. For the relationship of Eratosthenes and Archimedes see fr. M and note. To what written work of Eratosthenes Cosep well 9401V refers there is no evidence.

If this is the Philochorus who wrote the "Atthis", a history of Athens to 262 B. C. (cf. frr. 59, 114), clearly Suidas has his dates the wrong way round whatever birth-date is assigned to Eratosthenes.

Xenocrates became president of the Academy in 339 B. C., aged 57, between Speusippus and Polemon. (Dieg. Laert. IV, 15)

G. 1. 1: Contrast fr. A: ἀποσχόμενος τροφῆς διὰ τὸ ἀμβλυώττειν.

The omitted portion of this passage, which appears to refer to the work of Eratosthenes on Ariston, is included below as fr. 42.

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1. B: Zavo. Zavőboroc. "ar possikity Zavok, ve. kno k (.R bas .0). Str See molts flooringing spin 300 b. 0. 1. 4: of. Πολ als d. C., sgal TS. (Instanty Jull. II, 106) 066 ofygover med not need easet fonterporten heres per any core than in Cr. 31 And the test stin at nai andon bas a protection and the saudienters 0ás To what writebay work of Independence Coast not Ala - secondere po at energi stator vior v The ." shits in the relience who wrote the "At shit 11 tha a listory of Athens to 260 H. C. (at. 19 yrotald a 1002 ives anora ddi aetab air aet achtos veraelo . (All 8 8 reconfictory birthweight is costand to for the costant mat whe 18 1. 8: h : He) (Dier. Mart. IV, 15) ph: Constitute fr. At Grougdysvor trough rid at 15 22.00 11. 10-15: of w1t The oulties portion of this passing, which appearing # 0] 18 TÃ BE is included below as fry 43. 1. 2: 4 good deal of what we have of the "housenby" is Tp

known to us only at third hand, being quoted by Strabo from Hipparchus' work "Against Eratosthenes". See e. g. frr. 188, 206, 213.

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 4: of. Schol. Arist. Av. 11: μέμνηται δὲ αὐτοῦ καὶ Πολέμων ἐν τῷ δευτέρῷ κερὶ τῆς 'Αθήνησιν 'Ερατοσθένους ἀποδημίας, and Schol. Soph. Oed. Gol. 489: μετὰ γὰρ ἡσυχίας τὰ ἰερὰ (τῶν Εὐμενιδῶν) δρῶσι, καὶ διὰ τοῦτο οἱ ἀπὸ 'Ησύχου θύουσιν αὐταῖς, καθάπερ Πολέμων ἐν τοῖς πρὸς 'Ερατοσθένην φησίν. . . . Αἰso see Fr. 61, n.

> There is no need to suppose that Polemon's quip that Eratosthenes "had not even seen Athens" was meant to be taken literally, or otherwise than as a suggestion that Eratosthenes, writing of Athenian matters in later life, had found his memory somewhat unreliable.

 β: h περί των άγαθων έκδοθετσα. Frr. 44-7. μελέται. "Exercises" or "essays", usually on philosophical subjects.

11. 10-15: of. Fr. A, 11. 5-6, and notes; also inconnexion with "mathematical geography", Strab G. 94: πολλαχού γάρ έκπιπτει πρός τό έπιστημονικώτερον τῆς προπειμένης ἰστορίας, ἐκπεσών δὲ οὖκ ἀκριβετς, ἀλλ'δδοσχερετς ποιεῖται τας ἀποφάσεις, τρόπον τινὰ ἐν μὲν τοῖς γεωγραφικοῖς μαθηματικός,

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αι, υσιαί, απίαι, αν. Πι μέρνηται δι αδτού και πολέ,ων έν το δευτέρο κε, ί της 'Αθήνηστν 'Ερατοσσένους δεοδηρίας, απά δολαί, από, Οσά, Οσί, Αθη μετό γό, ήσοχίας το Έερά (κθν Εδηεντέζν) δρόση, και διά τοθτο εί δεύ 'Εσόχαυ Θόσσειν αδταίς, καπαί διά τοθτο εί δεύ 'Εσόχαυ Θόσσειν αδταίς, καπαι διά τοθτο εί δεύ 'Εσόχαυ Θόσσειν αδταίς, καίμαι ασό της δί, αι τομοτο δίαι 'Εσίσταται' στα τίαι το ποσ της Έρων το τοματο τότα 'Εσίσταται' στα τους το το τομοι Έτωνταϊζο, οι σύσστατα τομοι στα πους το το τομοι Έτωνταϊζο, οι σύσστατα δίατα τόταται το πους το το τομοι Έτωνταϊζο, οι σύσστατα τότα και πους το το τομοι Έτωνταϊζο, οι σύσστατα τότα και πους το το τομοι Έτωνταϊζο, οι σύσστατα τότα και πους το το τομοι Έτωνταϊζο, οι σύσστατα τόται και

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έν δέ τοῖς μαθηματικοῖς γεωγραφικός ών, ὤστε πρὸς ἄμφω δίδωσιν ἀφορμὰς τοῖς ἀντιλέγουσιν.

Apollodorus of Cyme is mentioned also by Pliny (H. N. VII, 37) as having been specially honoured by the Amphictyonic Council. He wrote a work on drinking vessels often quoted by Suidas and the Etymology. (Ath. XI, 487)

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11. 10-15: of.

The word "critic", popular in modern times, was not very much used in antiquity, its connotation being included in that of "grammarian". "Grammar" is a peculiarly Alexandrian invention, of which the nearest modern equivalent is perhaps "Scholarship". It included not only the study of language in its mechanical aspects but also that of style, and hence literary studies generally. Almost immediately this conception spread to the schools of Rome, which came under Greek influence in the 2nd century B. C., and "grammar" became for boys up to 14 or 15 the normal study leading up to the "higher" studies of rhetoric and later to the seven liberal arts. For the development of this idea, which still influences the idea of the "Grammar School"in England, see Aubrey Gwynn's "Roman Education" (Oxford, 1926).

A curious light is thrown on the respect paid to

έν δέ τοτς μαθημοτικοτς γκογματικός Σν. Δοτα πρός δινα δότα πρός δμου δέδωσιν δεσιμάς τοτς δυτελέγουσιν.

Apollodarus of Ogna is sentiment also by Filmy (N., N. 111, 37) as imving heat socially behavior by the Archietgonic foundil. He where a work we drinking vectors often quoted of initia and the itypology. (Ath. 41, 687)

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grammarians in the Middle Ages by the development of "grammar" into "gramarys", or magic, and later into "glamour".

For Eratosthenes' work on the subject, which seems to have been more concentrated on the modern idea of linguistic study, see Intr. p. xx and frr. 92-100.

Suetonius (de Illustr. Gramm. 10) also attributes to Eratosthenes the title φιλόλογος, presumably an alternative and almost equivalent to γραμματικός: "Philologi appellationem assumpsiese videtur (Ateius), quia, sicut Eratosthenes, qui primus hos cognomen sibi vindicavit, multiplici variaque doctrina censebatur."

> of. Strab. C. 838: Κυρηναϊος δ'έστι και Καλλίμαχος και 'Ερατοσθένης, άμφότεροι τετιμημένοι καρά τοῖς τῶν Αίγυκτίων βασιλεύσιν, δ μὲν κοιητής άμα και κερί γραμματικήν ἐσπουδακώς, δ δὲ και ταῦτα, και κερί φιλοσοφίαν, και τὰ μαθήματα, εἴ τις ὅλλος, διαφέρων. The order in which Eratosthenes' interests are placed in both these passages is noteworthy, as is also the fact that, like the entry in Suidas, neither mentions geography at all. See Intr. pp.ix-xii.

See Fr. A, 1. 12, n.

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For the correspondence of Archimedes with Eratosthenes, see Arch. ed. Heibergovol. II p. 426, or Ivor Thomas, "Greek Mathematical Works", vol. II p. 220:

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(Dedication of "The Method"). Περί τῶν μηχανικῶν Θεωρημάτων πρός Ἐρατοσθένην ἔφοδος· ᾿Αρχιμήδης Ἐρατοσθένει εἶ πράττειν. ἀπεστεϊλα σοι πρότερον...

For the authenticity of Eratosthenes' Egyptian studies and records, see Intr. p. xix.

The original "Periegesis" of Soysnus was in prose: nothing is known of the origins of this extant work. (Meineke, ed. Berlin, 1846).

1. 3: iotopinov. See Fr. A. 1. 12, n., and Fr. K.

1. 5: whipaoi. See Intr. p. lxx. Here this term appears to be attributed loosely to Eratosthenes, whipaoi wai oxipaoi being roughly equivalent to the modern "physical geography". Cf. fr. P.

> It is a remarkable tribute to the lasting influence of Eratosthenes on geography that, not only did Julius Caesar take his map on his campaigns (see Intr. p. x.), but Gieero naturally turned to him as a "model" for a standard work in Latin. It is quite clear that Hipparchus had not succeeded in deposing him from his pre-eminence, for evidently

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Serapio of Antioch was among the chief authorities in geographical matters used by Pliny (Elench. Lib. II, 4, 5).

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Arrian, nearly two centuries after Gicero, still regards Eratosthenes as the best authority for Eastern geography. For the North and Nest, authorities had sultiplied in the meantime, especially for Gaul and Britain.

(γῆς) sepiodoc, geographically, is used in two senses: (1) map or chart (Herod. IV, 56, V, 49; Arist. Nub. 206); (2) descriptive geography (Aristot. Pol. II, 3, 9; Rhet. I, 4, 13)

The coupling of these two names (cf. Strab. C. 104) suggests that they had a good deal in common (see Intr.p. lxviii.) The following fragment shows that Eratosthenes was not averse from adopting in considerable detail other people's work. The maps of Dicaearchus were still current in Gicero's time. "... hominis, non nequam, sed etiam tuo iudicio

ition that not even accession again when the pre whill he was well on the say to addition one of fitm ad civilit of your indiction on announce indy be taken T1m R. energy will be added to be a to the the the the the 100 himboont weeks out ", destitations" feattamenten wort 10 0. . . idil intraffit distriction wood of Plant Includent of συγ άλλ Arrian, nearly too sentended after dismer, attit 12 . . not introduce the the second address phraper not station , and has the North and strangers motors. t10 the main rolting in the mantham but noit ack for Goal and Brithlar. nor (vic) as todoc, chocked back in anot in the Str son at the .NE .Norohl dundo to can (1) second WOI Antes, Nob. 206); (2) descriptive calender app (Ariston, Pol. 11, 3: 3: Bunna, A. Maria) 88 the coupling of these two pares (or. School, C. 104) fr. over) rounds at last tony a fast voit their adverture th late, picitxvill.) the rollening fragment shound PT that Erstostheres was not avoids fred adopting in UB considerable detail office possible a within "The maps p1. of Dienservine were still strivet in Signa's time. (1 . . . howlals, non nequer, and otlad the folioto

probati Dicasarchi tabulis credidi." (Cic. Ep. ad Att. VI 2)

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Timosthenes flourished c. 282 B. C. See Intr. p. 1xvii. To what extent this accusation is justified it is impossible to say definitely, though Strabo, C. 92, suggests that it was at least exaggerated: συγγράψαντος (δν έπαινες μέν έκετνος μάλιστα των άλλων, διαφωνών δ'έλεγχεται πρός αύτον πλετστα]. It must be remembered that in ancient times not only was there no law of copyright but adaptation and even verbatim copying, with or without acknowledgment, was common and without serious moral stigma. It is not easy to decide where Strabo's quotations begin and end; and even in works of imagination we find a master like Virgil appropriating whole lines from Lucretius as well as literally translating Eratesthenes himself. (See fr. 13, n.) There can be little doubt that Eratosthenes himself adopted and incorporated most of Pytheas on N. W. Europe. (Fr. 271 ff.) Gossellin used this passage to support his charge of ignorant plagiarism from a previous race of astronomers. (Intr. p. 1x11)

and the state of the second transfer the second teadors Aeg S. Adaption and the second s his bat Timostiones Rourished a. 280 D. C. Des Intr. D. Lintl. 073 To what extent this accountion to Hunter Sade of 200 to incomible to any definitivity, though Strates, his C. 92. supresta that it was it taken astronomicals 道 anvier star bas superiferent tab for + + + + and and provide low facever new shereas way you and D. . . . Brother , Brogwow B' Busy star side abrot inetarde mot sents instant it fails belowned of four SI . . and only and there is the fit of societant but adaptathan and even verbatte socilar, with an white anticely bundly had manica new scenabolyomics Th 1. Manife of imagination we find a matter line Vicell wit appropriating whole line indresion on well the as literally translating introduced binast class H1 res 13, na) There can be 11761e denbb that Interepor Ho Tribund on H. M. Sunope. (Pr. 271 11.) Normalian du summer to again the support bis charge of transmis 14 plagiarica from a provious man of autronomy. br (Intr. p. Inil) 311

Aegisthus was the lover of Clytaennestra, who for his sake murdered her husband Agamemnon in his bath on his return from Troy.

280

It is interesting to note that Eratosthenes, where accusations of plagiarism were concerned, could hold his own not without wit.

Andreas was physician to Ptolemy IV Philopator, and was murdered in mistake for his master in 217 B. C. (Polyb. V, 81) He is mentioned also as a mountebank in Galen XI, 795.

NOTES ON TEXT:

population states that the reference is to

This verse is quoted in Stob. Flor. XOV, 15 together with fr. 7, according to Heller in connexion with the educative effect of suffering. Both Bergk and Hiller assign it tentatively to the beginning of the poem, which appears to have opened with the birth of Hermes and the creation of the Milky Way: this was due, according to Eratosthenes (Ach. Tat. in Ar. p. 146 E; Hyg. de Astr. II 43) to his tugging at Hera's breast and spilling her milk when she offered to suckle him.

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Theod. xepi whisewe the sie wy Baputévev, ed. Dind. ad Schol. Aristoph. vol. III p. 418. The word Actovec (em. Dind. Adtovec) is quoted as an example of declension. Hiller assigns to "Hermes" as the story begins in Arcadia, where the river Ladon flows. It is mentioned also in fr. 261.

281

Chaerob. in Theod. p. 119. This also is quoted to illustrate the declension of 'Apúac. This river is not known. Hiller follows Bernhardy in taking it as an Acolian form of 'Apoac, a tributary of the Ladon. (of. Eóavoc, Eúavoc). of. also Strabo C. 389: 'Avíav malóv motomóv.

Schol. Ap. Rhod. III 802, on the derivation of qupicpdc. Hiller suggests that the reference is to the story told in Schol. Il. 24, 24. This relates how the infant Hermes stole and hid the clothes of his mother Maia and her sister nymphs while they were bathing, returning them after he had had a laugh at their expense.

Ath. V. p. 189 D, on the use of βαθύς as a feminine form, comparing θῆλυς ἐέρση (Hes. Sc. 395 and Hom. Od.V 467). Bernhardy refers to the theft of the oxen, with some probability. of. Hom. Hym. 95: πολλά ὅρη σπιόεντα παὶ αὐλῶνας πελαδεινοὺς παὶ πε ὅι'ἀνθερόεντα διήλασε πύδιμος Ἐρρῆς.

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Pollux VII, 90, quotes for the word gainagióv, as a white shoe worn by Athenian gymnasiarchs, Egyptian priests, and, here, country people. Bergk reads sorippásteonev for the Aldine sori pásteonev, and explains as a method of eluding pursuit instead of reversing sandals.

282

TRACE IN THE REAL PORT

These lines are quoted, with minor variations, as follows: Schol. Ap. Rhod. I 972; St. m. 472, 36 a. v. Toukoc; Fretz. in Lyc. 23; Tretz. Shil. XIII, 563; Schol. Ap. Rhod. II, 43. The first of these explains that the primary meaning of Toukoc is "the first growth of hair on the chin", but that Eratosthenes uses it to mean "a reaper's song", while Didymus, pointing out that both odkoc and Toukoc can signify a sheaf, and that Demeter bears the surname Odkó, says that it is used of a hymn to Demeter: he compares the odstryyoc of the Troezenians to Artemis.

 2: δενδαλίδας. Heavenius gives of μέν άνθος τι. άλλοι τάς λευκάς κάχρυς (parched barley). οι δέ τάς

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έπτισμένας πριθάς (winnowed barley) πρό του φρυγήναι· οί δέ τάς έπ πριθών μάζας γενομένας.

St. m. 135, 31 quotes as iv to 'Eppisimply, together with a pentameter illustrating the more normal epolling: vivéneve: npávac ibpenev 'Apyagiac. Bergk and Osann both assign to the "Hermes" of Eratosthenes rather than that of Philetas, and Bergk goes on to assign the pentameter to the "Erigone." It is, however, scarcely likely that Eratosthenes, a specialist in etymology and spelling, would use two spellings of one word even in different poems.

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Ath. Vil p. 284D: the 3rd. line is also quoted in Plut. de soll. anim. p. 981 D, reading evbpopiqy.

cf. also Ath. VII p. 284 C, from the "Galatea" of Gallimachus:

ή μάλλον χρύσειον έν δφρύσιν Ιερόν Ιχθύν,
ή sépuac, öσα τ'άλλα φέρει βυθός άσπετος άλμης.
1. 1: Ιούλους. The "red-fish", or "rainbowwrasse," more usually Ιουλίς (Arist. HI.A. 9, 2, 1 etc.), or χρύσοφρυς ("golden-brow").
1. 2: πίχλη. "Thrush" or "fieldfare": perhaps "speckled."

1. 3: lepov. According to Plutarch, "large", as

ξατισμένος η 163ς (πάπαστος απόλας) και τος φρογήναι. οι 52 τας έν πριθών μέζας γενομένας.

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Et. 3. 135. It quotes as for rob "head stanty, ton gother with a perstaneter tilustrating the more normal excitters withdreve approxing the more rough, and excit onem total emige to the "Hermes" of methodeteened reliner then that of indleteo, and hermic goes on to estima the pare indleteo, and hermic goes on to assiste the pare indleteo, and hermic goes on to assiste the pare indleteo, and hermic goes on to assiste the pare indleteo, and hermic goes on to assiste the pare indleteo, and hermic goes on to assiste the pare indleteo, and hermic goes on to assiste the pare indleteo, and hermic goes on to assiste the pare indleteo, and hermic goes on to assiste the pare indleteo, and hermic goes on to assiste the pare indleteo, and hermic goes and to be to assiste the the objection work in stifference to apolitants of one word work in stifference pare apolitants of one word work in stifference pare.

Ath. VIL D. 2840: the Sel. Time is also protect in Flat, do soll, anim, p. 981 D. maining of t. ogfav.

er. also Ath. Vil p. 284 G. from the "falsbes" of Galilmerinas & address ky bendery tarby 1,060, % adress for a 833 of the proof factor 8,490.

(od.cot. The "rod-fiet", or "rainform
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9, 8, 1 etc.), or Ardone, or ("gelden-brow"),
*(yAq. "Thread" or "fieldiard"; portage

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d'Arcy W. Thompson in his "Glossary of Greek Fishes" (Oxford, 1947) pp. 293-4, gives xpoor opvor Gilthead or Dorade, otherwise xpoorsoc (Plut. 977E). He adds that it has a gold band between the eyes, and is sacred to Aphrodite (Arch. ap. Ath. 328 A): it is a sea-fish (Plin. XXXII, 145) but lives inshore and in estuaries.

alone protobly in the "Tatonious".

284

Theo Smyrn. p. 165 (Bull). At p. 192 Theo desoribes how, according to Eratosthenes, Hermes, after inventing the lyre with a complete octave of eight strings, travelled up into the heavens and was amazed to find that the eight spheres between the unmoved earth and the sphere of the fixed stars each emitted a note corresponding with the scale of his own instrument. Both Theo and Chalcid. comment in Flat. Tim. 72 emphasize that Eratosthenes did not follow the orthodox Pythagorean order or that of Alexander of Ephesus, but placed the moon and sun first and second from the earth.

Eratosthenes appears to have dealt with this

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sub See Ach 12. HAX 1. 1: avt: zon 1to fr. pla · ON the 103 a and In pos 1. 2: 651 Aol 13. COL pp. 4 shi su
subject in prose also, probably in the"Platonicus". See frr. 35, 36 and note.

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Ach. Tat. p. 152 A quotes in connexion with the "axis", or spirit (systpa) of the universe.

1. 1: côtáv. Bernhardy misunderstood as the middle zone. Bergk and Hiller refer it to the earth itself, which makes excellent sense: Theo, on fr. 11, specifically states that Eratosthenes placed the earth fixed in the centre.
Oxópsov. In the Iliad always a mountain, in the Odyssey often confused with oòpovoc, e.g. XX.

103 and 113:

aðrína δ'έβρόντησεν ås'alγλήεντος 'Ολύμπου, and μεγάλ'έβρόντησας ds'oðpavoð dorepóevroς. In later times commonly used by philosophers and poets for the sky.

1. 2: Est, Brunck for dso, which hardly makes sense.

Ach. Tat. p. 153 C

13.

For the Zones and their treatment, see Introd. pp. 1-111 and frr. 169-173 in the "Geography". The text of this passage, though corrupt, shows sufficient power to explain why it made such an impression on the contemporaries and

aubject in prose also, uncently in cashelanters", See Fry. 35, 36 apt. apts. suc

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Ach. Tat. P. 153 0 For the Senar and their treatment, we Attes. Pp. 1-111 and for. 169-173 in the "sequency". The tork of this paramet, though derivat. shows multiplasit power to existing any it into anob as increasion on the contemporaries and suscessors of Eratosthenes at least until Virgil (Georg. I 233-9) adapted it into Latin: "Quinque tenent caelum zonae: quorum una corusco semper sole rubens et torrida semper ab igni; quam circum extremae dextra laevaque trahuntur caeruleae, glacie concretae atque imbribus atris; has inter mediamque duae mortalibus aegris munere concessae divum, et via secta per ambas, obliquus qua se aignorum verteret ordo . . . " The text given here is that of E. Hiller, "Eratosthenes carminum reliquiae". J.U. Powell reads, in 1. 9: cist apopaléat, cist 8'88art vorécorces, and for 1. 11:

κεττ', αξάν τ'άμπίσχε, περί ψύχος δ'έτέτυπτο. άλλά τά μέν χερσαΐα άνέμβατοι άνθρώποισι.

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Anterinys or Hesiod:

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Schol. Nic. Ther. 472, coupled with the following lines of Antimachus: 'Ηφαίστου πυρί είμελον, ήν βα τιτύσκει δαίμων άμροτάτης δρεος μορυφησι Μοσύχλου. Mosychlus was a volcanic mountain in tempos . Bergk emended the MS. εδ τοι δσοις φαίνεσκε . .

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He quoted Schol. Arist. Lys. 298 for "Lemnian fire", either from the island's women or from Hephaestus.

Bernhardy emended to Eŭioc, δς φαίνεσκε . . . This emendation was accepted by Osann, who assigned the line to the "Erigone", supplying olvov from the following line.

The text given is that of Hiller, who assigns it to the "Anterinys" on the ground that the next two fragments, from the same source, clearly belong to it. Powell follows this, and in the absence of other evidence the suggestion may be provisionally accepted.

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Schol. Nic. Ther. 465, explaining the word suffe-

Bergk reads subebovec yaypaiwaw bait, eqov . . . , and refers the quotation to the disease sent to the Athenians as a punishment for killing learius, in the "Hernes". He distinguishes between the diseases described in the "Hermes" and the "Erigone": in the latter it consisted of maidens hanging themselves- the origin of Aiúpa, a Dionysiac festival at which the 'Alījīic was sung and dolls were hung up.

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He quoted Sabol. Animt, Lys. 200 for "Lemoids. fire", sither from the laient's warm, or from ... Hepheestus.

Bargmandy escanded to Misec, be pairwown This econtation was accepted by Oceano, who montgood the line to the "Erigone", subsigned of you from the following line.

The text given is that of Hiller, whe designs it to the "Anterings" on the ground line the mat two fragments, from the mate source, simily belong to it. "owell follows this, and in the absence of other evidence the attgention may be provisionally adverted.

Samoi. via. There 455, explaining the word sold-

Hiller's explanation, that it refers to the body of Hesiod after it had been in the sea, has perhaps the greatest probability. It is, however, rejected by Powell, who leaves its position uncertain.

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Schol. Nic. Ther. 400, quoted for the meaning of ivyá, which is explained as ßed ábiápôpætoc ásð teö supßaívovtoc sessiquéva. It is quoted as év 'Epivvúi: Bernhardy explains this as a mistake for "Erigone", but Bergk and Hiller refer it to the finding of Hesiod's body in the "Anterinys".

Erigoner

bis a state which the state of the

Hyg. de astr. II, 4. Hyginus, quoting this line, describes how Icarius planted and tended the vineshoot given him by Bacchus. It had just come to blossom when a goat nibbled it. Icarius killed the goat, made its hide into a bladder, and danced round it with his companions. This was the origin of the festival of the Ascolia, and according to Bergk the line should be assigned to the "Hermes" with the rest of the unnamed references by Hyginus: he reads 'Imapicou soci following

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ivyd, which is explained as polydindphaned dad rod outpolyerred association. It is control as is "Zervyde: Borehardy explaine this as a sintake for "Erigone", but Bergh and Hiller refer is to the finding of Bestevie and Hiller refer torings".

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in part Bernhardy's reading of 'Imapiot sodi . . . Powell, with Hiller, places it at the beginning of the "Erigone".

of. Stoph. Byz. 'Inapia. δήμος Αίγηίδος φυλής, άπό 'Inapioυ του πατρός 'Ηριγόνης; and Athonaous II p. 40 B: άπό μέθης και ή τής πωρωδίας και ή τής τραγωδίας ευρεσις έν 'Inaρίω τής 'Αττικής ευρέθη.

Icarus was the island of Pramnian wine.

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Steph. Byz. s.v.čoru Bernhardy reads čoru $\tau \in \delta h \Theta \dots$, and Bergk follows. This seems a more reasonable correction of the MS. $\varepsilon i \subset \tau \varepsilon \delta h \Theta \dots$ than Hiller's $\varepsilon i \sigma \delta \tau \varepsilon$ $\delta h \dots$, which Powell accepts.

Thoricus was a deme of Attica near Eleusis, through which, as Bergk points out, Demeter also passed on her way to Eleusis (Hymn to D. 126). Icarius was killed near Marathon, according to Statius XI, 644. This line, according to Bergk, refers to Bacchus going to or from Icarius.

19.

Schol. Dion. Thr. p. 654, illustrating the stymology of both & gavoaro and gavvov from the verb avvo. "I kindle".

Ibes solgers's reading of 'trapies and	1.94	25.	Pe
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or. seath, Byn. Inarte. Man Marchine			Dior
eolige, dad "incefer auf sared " "Herydeness and kamenasus II p. 40 Bt dad pådne not h alle		20.	Plu VII
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Schol, Sing, Chr. p. 694, Allustanting the sty-			to
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Powell hesitatingly accepts Bergk's suggestion that this refers to Icarius when entertaining Dionysus.

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Plut. conv. disp. p. 699 A, and Macrob. Sat. VII 15, 22. The line is quoted as support for Plato's doctrine that drink passes through the lungs. Bergk's suggestion that it refers to learnus tasting wine for the first time is as likely as any.

Schol. Dioscoridis apud Matth. Med. vet. p. 360. Osann refers this line, which is quoted in connexion with botanical terminology, to Dionyms giving a lesson in viticulture to Icarius. Hiller follows Bergk's attribution to the sating of the vine-shoots by the goat. There is no evidence whatever which explanation, if either, is to be accepted.

22. Gis

Theod. sepi whisewe tay sie av of wrow. Assigned by Powell, with moderate probability, to the description of the growing vine.

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Flut, conv. disp. P. 669 A. and Hannob. Mat. VII 15, 22. The line is cuoted as surport for rigio's doctring that drink researc birrich the lunge. Sorph's supportion that is refere to lasting testing wine for the files then is as 1999, as any.

Sobol, Disecondida and inter, Mat. vet. 5. 300 Camm refere this line, which is moted in conmation with botenical terrinology, to Biompus giving a heasen in visigalture to ine characture. Allter follows bergh's attribution to the coling of the vine-shoote by the gest. Eners is in evidence whetever which exclanation, if extner, is to be accepted.

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Ath. II p. 36 E, and Stob.Flor. XVIII, 3.
The same two couplets are also quoted by Clem.
Alex., Paedag. II p. 155 D, who adds
φαίνει άμαρτοεπής οίνος μεθύουσιν δλισθος

291

There is no real evidence that these couplets form part of the Erigone. They would, if detached, constitute a complete epigram of the Alexandrian type. This is the interpretation adopted by Powell. Having regard, however, to the subject, it seems better to follow Osann, Bergk and Hiller, of whom Osann assigned them to a speech of Dionysus to Icarius, Bergk to the narrative of the murder of Icarius by shepherds influenced by wine: the last is the most reasonable explanation.

Aiguorav axa. No doubt a personal picture

of the sea at home in Cyrene. Epithalamium:

24.

1. 2:

Et. m. 170, 47: Έρατοσθένης δὲ ἐν ἐπιθαλαμίφ τὸ κατὰ βότρυν κλῆμα. εἰρηται δὲ ἐπαιωρημένη οὖσα ὅσχη. Reluctant to admit the possibility of an epithalamium, Bernhardy emended ^{*}E. δὲ ἐν ^{*}Ηριγόνη· ἕτι θαλλομένη τ'αὐροσχάς· τὸ κατὰ

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Abh. II D. 36 2, and Shoh.Fine. 20122, 3. The mass two scalates are also quoted by Glom. Alar., Baada's, II D. 136 3,000 adda polver dum, reache of voc actioned birofoc

apparently from another sources.

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there is no real estimate the trade accelete fore part of the lifeton. They would, if detacted, constitute a checkete offerer of the destation type. Stick is the interpretation to the emploit, it course return, however, body and filler, of sheet being require, herefore to a second of the medae to landon, herefore the margetime of the medae of landon herefore herefor infraction by sizes the landon is the to accel reacted in the second of size and the landon of the the margetime of the medae of landon is the to accel reacted in the second of size and the landon of the termination of the medae of landon is the to accel reacted in the second of size and the termination reacted in the second of sizes and the termination of the second of the medae of the landon of the termination is a second of sizes and the termination of the termination reacted in the second of sizes and the termination is a second of the second of sizes and the termination reacted in the second of sizes and the termination of the termination reacted in the second of sizes and the termination of the termination reacted in the second of sizes and the termination of the termination reacted the second of the second of the termination of terminati

 Afforders Die. No doubt a permanal piedune of the sea at home in drame.
 Spithelening:

φ. π. 170, 471 'δρατουθένης 58 έν έχιθαλαμές
 τό κατά βάτρυν κλάμα. «Τρητού δε έκαισμημένη
 οδου δαχη. ποιουκοι το ολαία της μουσταίζες
 ας ου ογέτραξουδια, ποιουκους σποιάσα 'Ε. 58 έν
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βότρυν κλήμα, an enterprising way of removing the apparent difficulty. Even Hiller suspected a lacuna between 'Ερατοσθένης and έν έπιθα-λαμίφ. Powell, however, follows Bergk by placing it under a separate heading, as here. Osann connects the quotation, by way of έπαι-ωρημένη, with the festival of the Aiώρα (see fr. 15, n.), but Bergk rightly rejects. For "Icarioneia", cf. fr. 17, and note.

tion of an "speets tyde" state as the last ats

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Zpigram.

Sutocius ad Arch. sphaer. et cyl. II, 1. Osann (de Erigone p. 6), (Nachr. Gott. Ges. d. Wissensch. 1894, I) and Knaack (Pauly-Wissowa) believe this epigram genuine. Hiller (E. Carm. Rel. p. 122) is emphatically against it, and Fowell, though including it with the Eratosthemic verse, is extremely doubtful of its authenticity mainly on linguistic grounds. His objections, though they must carry weight when dealing with a "grammarian" like Eratosthemes, are not conclusive. The subject is not in any sense

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literary; and the whole outburst conveys a sense of almost naive exultation in achievement which fits what we know of the man's character.

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- 1. 1: Δγαθε. Powell objects that this is not a likely form of address from Eratosthenes to the king. It is, however, a normal address to the passer-by in inscriptions, and there is nothing intrinsically unlikely in the addition of an "apostrophe" such as the last six lines.
- 1. 2: αλλην might be expected for exact sense: ".... any solid character into another", but ".... into something else" is reasonably intelligible.
- 1. 4: σιρός, later σιρός (Draco p. 81).
- For the figure and demonstration of the construction by half-cylinders, beautiful in theory but not practical (vouixava), see Heath "Greek Mathematics", vol. I, pp. 246-9.
- 1. 8: For Menaechmus's two solutions by conic sections, see Heath I, 251-5. Menaechmus was a pupil of Eudoxus and is credited with the discovery of conic sections.



26.

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1. 9: Ocoubéoc: "god-fearing"; perhaps Ocobeic, not decerche. It is a little difficult to see why Eudoxus in particular should have this epithet, but Powell's objections to this and to the form bilga: seem insufficient to prove spuriousness. a introduces the lines on wine, fr. 23.

> According to Heath (pp. 249-51) the solution attributed to Eudoxus by Eutocius is incorrect: Heath suggests that "while Eudoxus made use of what was really a curvilinear locus, he did not actually draw the whole curve but only indicated a point or two upon it sufficient for his purpose." The actual solutions given are the suggestions of Tannery.

1. 12: έν παύρου πυθμένος άρχόμενος. "However small the original lines", or perhaps "however small the difference between them".

1. 13: Etolepaie satip: Evergetes, satôi: Philopator.

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Doubtful Poess.

Ath. I, p. 24 A, on the meaning of sacaceat, "to be satisfied". Callimachus is also quoted

1.-9: Beoubéue: "gua-dourdant's probang decla(c. not Geoeside. It is a lighter diritable to her any Determe is particular allocits burd-dould and the first, but Powell's elementant allocits and to the from b(Lap) area interfictent to prove approxe. note:

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in the sense of "tasting" a story.

It is hardly likely that this fragment refers to the supper of Dionysus with Icarius.

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Ath. I, p. 2 A: referred to & Kupqwaloc songticmost probably Eratosthenes, as this is how Athenaeus introduces the lines on wine, fr. 23. Bergk places this quotation at the beginning of the "Erigone", in the sense of "third time lucky", deducing that this is a second edition of the full story, the first attempt being a brief form in the "Hermes" among the accounts of some of the stars. Hiller rejects this; but there is not reason why beggh's suggestion should not be possible in the simple sense that the "Erigone" followed two other major poems.

28.

Plin. Nat. Hist. XXII #86. Miller Der Ekorersen

Bernhardy includes this extract among the fragments of "The Old Comedy". Bergk and Hiller, with some degree of probability, refer it to the meal of Dienysus with Icarius. Powell puts it among the doubtful fragments, where it seems better to leave it.

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Ath. 1, 5. 2 at referred to 5 kongrafog anerthmost preistoly frequetteness, as this to the Athere is preistoly frequetteness, as this to the Athere is preistoly frequetteness an elms, fr. 25. Angle states the controlog at the best best and a the "triggers", he the sense of "haben time" here?" deducing the tota is a sense of "haben time" here?" full abory, the first attent balance of the state. It light to pote this; the sense and a states of the state. It light to pote this; the sense and the sense to the attents before this; the sense the sense is the the attents balance the sense of the sense to the attents each the sense the sense is the the state of the sense the sense is the state of the sense the sense of the sense is the the attents as the sense the sense of the sense is the the state of the sense the sense of the sense is the the state of the sense the sense the sense is the the state of the sense the sense the sense of the sense is the the state of the sense the sense the sense of the sense the the state of the sense the sense the sense of the sense is the sense the sense the sense the sense of the sense is the sense the sense the sense the sense of the sense is the sense the sense the sense the sense the sense of the sense is the sense the sense the sense the sense of the sense sense of the sense is the sense sense the sense the sense of the sense sense of the sense is the sense the sense the sense the sense of the sense sense sense the sense the sense sense the sense the sense sense the sense sense the sense sense sense the sense the sense sense sense the sense the sense the sense the sense the sense sense the sense the sense sense sense sense the sense the sense sense sense sense the sense sense sense the sense sense the sense sense the sense sense sense the sense sense sense sense the sen

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'Aντιμάχειος. It is not impossible that this should refer to Antimachus, who flourished towards the end of the 5th century B.C. and wrote an epic "The Thebaid". It looks, however, as though there were some corruption arising from άντιμαχηστύς; and for this reason Bernhardy reads 'Aττική.

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296

Platonicus.

Blass de Plat. math. 27: "Videtur mihi veri non dissimile, ab Eratosthene qui ipsé poeta fuit hanc de peste Deliaca fabulam esse fictam, qui aemularetur Euripideam". Hiller (Der Πλατωνικός

des E.) quotes this remark and objects that the "Platonious" is no fit place for poetic invention. It does not matter very much whether the story is true or not, but Hiller seems here to be applying Teutonic ideas of suitability and forgetting the Platonic myth. If, as seems most likely, the "Platonicus" was based to some extent on Plato's "Timaeus", it is not difficult to remember that the "Timaeus" begins with the story of Atlantis, which, though

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Αντιμάχεια: Σε δα μεν μποργολία όλως λάλα αφουλά στας το Απότοπολου, που Γλαφολαίος του πατά τως από ος είας 352 σούταση 3+0, από προτο άπ αφός "Τος Τόφοαιά". Το Σοπάς, ποτατούς πο δυουρο είσεια νατα κοπο σοποτοτείος Απίτελος και διτιμαχοστός: από τος τόλα ποστο Ιστοίουτο στοδο διτιμαχοστός: από τος τόλα ποστο Ιστοίουτο στοδο άτος του.

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Blace de l'at. mab. 37: "Télevie albi tert non dissistin, ab instructions est tre pour hit hais de poste helises fateles est floten, qui den fa, quetes this mari ant object des fa, quetes this mari ant object des fait "Latentons" is no fit disse face fort des fait dess not atte dess for the face browthe, if dess not atter ter mai the dess to be sublishe bore of attents into the dess to be sublishe bore of attents into the dess west thist, the "Latenton' and main to and tertesting the fates into at attent dess dess dess in the of the sublishes in the second state of the fates into attents to and tertesting the fatestic with the second difficult to remember that the "Internet" lates attents difficult to remember that the "Internet" begin gene quent oula does toni plac ment Wh Plat . . 400 Bo tlor ther also ding The the 10 the Men cus the sou

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generally admitted to be fictitious, is frequently taken as a basis for geographical speculation even today. Bernhardy, although he does not seriously try to separate the "Platonicus" from the other philosophical works, places this first among the philosophical fragments. 297

Whatever the truth is about the Delians, Plato's opinion is clearly stated in Rep.528 A: oùdepia sóhic évrípwc aùrd éxei, douevac re jaretrai, xahesd övra.

Both the proof and the Delian story are mentioned in connexion with Archytas and Eratosthenes by Vitruvius (de Arch. IX #13-14). See also Procl. in Tim. 149 D and Pappus a (Commandino conversus) III prop. 4.

> There can be little doubt that the Doubling of the Gube was discussed in the "Platonicus", and it seems reasonable to suppose that the story of the problem from Minos and the Delians on to Menaechmus and Archytas led up to a general discussion on "means", proportions, the universe, the musical scale and perhaps the nature of the soul. Whether a detailed proof of the efficiency

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of the μεσολαβον was included it is impossible to say, but the general trend cannot have been much different from that given here. This "letter", in the form in which it is quoted by Eutocius, is now generally considered spurious on the authority of Wilamowitz (Goett. Nachr. 1894), but it cannot be determined whether it was based on a prose original or merely a prose expansion of the epigram (fr. 25) with a proof derived by the author from actual sight of the monument. In favour of this view is the fact that the spigram itself is addressed to King Ptolemy. 298

11. 5-7: These three lines are not from any known source. They were attributed to Euripides, but Wilamowitz ascribes them to some minor poet: see Ivor Thomas, I, 258, n. The text of lines 6 and 7 was restored by Hiller and adopted by Heiberg from the corrupt version fiven by Bernhardy from the edition of 1544: bishdoioc forw, tou nubou be up opalic. bishaoidjwy fractor uphov for sdget theory

1. 16: Hippocrates of Chics, according to Faloponus (in Phys. I, 2 (Arist. 185 a 16) ed. Vitelli

this figures (next page).

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31, 3-9) came to Athens to prosecute some pirates who had robbed him. He there consorted with philosophers and became proficient in geometry. He attempted to square the circle by way of "quadrature of the lune". See Ivor Thomas I, 235-253.

11. 17-20: "If x and y are mean proportionals between a and b, then $\frac{1}{x} = \frac{1}{y} = \frac{1}{b}$ $\therefore y = \frac{1}{a} = \frac{ab}{x}$,

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and, eliminating y, $x^3 = a^2b$, so that $\frac{a}{x} = \frac{a}{b}$. (Ivor Thomas, I, 258-9, n.)

11. 27-31: For Archytas, Eudoxus and Menaechmus see notes on fr. 25.

11. 41-42: Nol bid tộc toứtou M.T.A. Literally: "And by means of its (the measure's) side measure of the vessels capable of receiving these (the medimni), how great is their (the vessels's) capacity".

11. 53-55: From the point of view of rigidity rectangles would be more satisfactory, though in the absence of a transparent material like celluloid it would be difficult if not impossible in practice to see the points of intermection of the diagonals. In the account given by Pappus (Goll. III, 7) triangular plates are given. See figure, (next page).





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1. 59: Seutépou. Two figures are necessary for the full exposition, but there appears to have been only one on the monument. See 11. 89-91.

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1. 91: There is no evidence whether this "short proof" is an actual copy from the monument, but it may reasonably be assumed that it is: the chief objection is the mention in 1. 94 of the "second figure", but this might easily be an error in the copying.

32. 1.2: λόγος. οΓ. Eucl. ΕΙ. V Def. 3: λόγος έστὶ δύο μεγεθῶν δμογενῶν ἡ κατὰ κηλικότητα πρός ἄλληλα ποιὰ σχέσις. Also Adrastus ap. Theon. p. 113: λόγος δέ ἐστιν ὁ κατ'ἀνάλογον δυοῖν δρων δμογενῶν ἡ πρός ἀλλήλους ποιὰ σχέσις.

 4: καὶ ἐν ἀδιαφόροις. Hiller inserts, of. Porph.
 p. 268: ὅτι μὲν τοίνων ὁ λόγος ἐν διαφόροις γίνεται ὅροις, ὅμογενέσι δέ παντως, καὶ ἐν ἀδιαφόροις, ὡς Εὐκλείδει ὑοκεῖ, δειχθήσεται·
 διάστημα δ' (Hiller ὅτι) ἐν τοῖς διαφέρουσι μόνον, φανερόν.

 12. 10-13: of. Porph. p. 266: Ερατοσθάνης μέν οδν φησιν, Ετερον είναι διάστημα λόγου. έν γάρ ένι διατήματι δύο λόγοι γίνονται, δ δέ λόγος δις φέρεται, δ τε του μείζονος πρός τό

έλα Severageou. Two regents and consider for the 14 891 H11 33. real eventations but there anisated badrate includes tez will any on the schulpert. The Mr. Co- Will cor 1. Sta - Starts 10 to 30 ovijertan Mastadi Lilla " signt prodi" oa] the de seture inter and well work the letter of at the and hantly and that has don't because an assistance and 前得了 beaute" end to MR . I al nothers end at entruch The tigenet, but the state that the set of any it 2 1. 2: the displace. WOI 100 30, 3.21 Maroc. of. Codi. 31. V Det. 30" Novoc Lovi -Th bio nerrow sporever & word a historica apor dpy divight and extens. " Also hereaded any theorem. Eů These weyeshad there a werea be sayed tell of 0 1. 9: · BILLY DROYEVEN & RODE GANGLOOD AUTO OVERONE VILL 2.8 . Her wol iv dough antitud . standausch vi for et .3 on on 2681 Set par rolvoy 5 Layor by have in 1 82 viveral Sport, Sugveries of Auvaic, and Sv. TAC doinger oic, de lowkeiter boner, Berreigerore 7 11. 14-15: bederigen d' (Hallen bat) by vole hereigener in sidvor, paverêr. and the second second 00 11. 10-171 of. Torph. p. 2661 "Eparaosimat non ofe bo saoiv, Ereper efrai bidaripa Légar. Er Py rd, byi biordinari bio boyer yivovari, b th At Adres die geheran, 5 te too hetzever mide to th

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Hiller includes the paragraph connecting, in the text of Theo, this fragment and the foregoing. It contains a definition of two kinds of progression called "continuous" and "discrete". From the fact that he begins again with Eratosthenes by name it may be assumed that the intervening remarks are Theo's own.

 άρχη και - deleted by Bull. and Hill. If these words are retained the effect is clumsy but the meaning unaffected. Hiller quotes Adrastus ap. Theon. p. 168: δείκνυσι δὲ ὅτι ὁ τῆς ἰσότητος λόγος ἀρχηγὸς καὶ πρῶτός ἐστι καὶ στοιχεῖον πάντων τῶν εὖραμένων λόγων καὶ τῶν κατ'αὐτοὺς ἀναλογιῶν.

 9: στοιχεΐον. On the whole argument of inequality as the "unit" of proportion, Hiller quotes Proclus on Tim. 1445: ὡς γὰρ τοῦ καθ ἐαυτὸ κοσοῦ κηγὴ καὶ βίζα ἐστὶν ἡ μονάς, οὅτωο τοῦ κρῶς τι καντὸς ἡ ἰσότης, τὴν μονάδος ἕχουσα τάξιν κρὸς τὰς ἀλλὰς σχέσεις.
 14-15: τοῦ μἐν οὖν κοσοῦ . . . στιγμῷ. The idea of the indivisible unit, together with the absence of conceptions of zero and the minus quantity, produced both the mystical philosophy of numbers among the Pythagoreans and the physical theories of the Atomists. The Pythagorean confusion of unity with the point was responsible for the tetraktys and

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ultimately for their fattribution of moral quaitties to numbers: hence we find even Aristotle describing justice as a "square". The "analysis" of proportion into "inequality" is a curious but natural development. The talk encoderical and arithmetical

of. also Theo p. 173: 'Ecarocoevac de énobeinνυσιν, ότι καί τὰ σχήματα κάντα έκ τινων άναλογιών συνέστημεν άρχομένων της συστάσεως άπό ισότητος, καί άναλυσμένων είς ίσότητα.

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nard ouvéxesav justoa. The old dropia of Achilles and the tortoise had shown the continuity of both time and space, but this idea of the line as the "locus" of a point, the plane as the locus por a line and the solid of a plane was by no mesas universally held. cf. Sext. Emp. ado. math. III, 28: άλλ'είώθασι πρός τάς τοιαύτας έπιχειphoene Snavrävree of nept rov 'Eparosoevy λέγειν, ότι τὸ σημεῖον οῦτε ἐπιλαμβάνει τινά τόπον, ούτε καταμετρεί το διάστημα της γραμpic, puer be noter the spapping, onep forte άδιανόητον.

34. 11. 1-2: Bernhardy emends sac per horos & sai bidorna ward robe Spoue , but Hiller retains the MS. reading. The difference between "every properare proceeding those of Smitheriners

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tion is increased in respect of difference or in respect to its terms" and "every proportion or difference is increased in respect to its terms" is not very great: both, though obscurely expressed, must refer to what we now call geometrical and arithmetrical progression. of. Porph. ad Ptol. Harm. III p. 267 (Wallis): βεβαιοΐ δὲ καὶ τὸ προκειμένον καὶ Παναίτιος, ἀποδείξας ὅτι καὶ αὐτὸς Ἐρατοσθένης κατεχρήσατό που τῷ διαστήματι ἀντὶ τοῦ λόγου.

On marà Sudorana aŭfera: Hillerquotes Bullialdus:: "Augetur ratio secundum intervallum, quando differentia duorum terminorum additurusemek-aŭt ph ries maiori."

11.3-4 εύδηλον δέ αύξηθήσεται. i.e. if both sides of an equation are increased either by multiplication or by addition, it is still an equation.
11.6-7 πάντα τά ούγκειται. cf. Proclus in Eucl. El. p. 13: και μήν και τόν σύνδεσμον τῶν μαθημάτων οὐ τὴν ἀναλογίαν, ὥσπερ 'Ερατοσθένης οἴεται, θετέον.

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There was much disagreement about the mathematical and mystical aspects of the different kinds of musical scale. The scoles given in the next fragment are presumably those of Eratosthenes himself, and certainly differ from those of the Pythagoreans as well as others: cf. Porph. p. 270: TOV SE

tion is increased in request of differences or in. to activonous treve" and "every properties of "eccured and of decomen at beaucreat at concercitle is not very greats both, though obcounty wary great, -diffus the factores the set out factories for the astrical programming of, Surph. at Shal, Same. vovigrament for for 56 Torness : (212200) Tes is III ant involving, droballac for not obrie "spectrostings wares, forse and the brancharts deres too beaut Bullialdest: "turotur ratio secondar intervaliat; quando differentia duonum terminorum additurnaenat ".inclas main . 10730000300 38 vo.40803 4-E.II Mind 32 . a.t. alder of an equation are increased elther by multiplication or by addition, it is at still an equation. and some star p. 13: not phy not vor ofvicence wir anvhourned" ganad , volvedave vár do verbenden

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There was much disarressent about the saturation -laur to shall depend of the different kinds of mustonl sould. The sooles given in the mant fragment are presentedly those of Arstesthanes himself, and contestaly differ from those of the Fyingereaus as sa var sotheres of, Forphy P. 270: Tav 52



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明 lat the 111 συμφωνών, έξ τον άριθμον ούσών, άς μόνος ο Πτολεματος (Harm. p. 9) κατηρίθμησε, παρείς τάς λοιπάς, 'Αριστόξενος γάρ Διονύσιος και 'Ερατοσθένης και αλλοί πολλοί κατηρίθμησαν.

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Possibly Eratosthenes set out in the "Platonicus" what purported to be a Pythagorean version for criticising as well his own. This would be very much in place in a discussion of Plato's metaphysics, e.g. in "Timaeus" 35 A-36 B. See also note on fr. 11.

Archytas of Tarentum, already mentioned in connexion with the Doubling of the Cube, is quoted as follows in Porph. in Ptol. Harm. ed. Wallis, Opera Math. III 267, 39-268, 9: pécai bé évri roic ră povoină, pia pèv ápi0parină, bevrépa bè yaperpină, roira bè brevavria, 'àv maléovri àppovináv.

- 1) b is the arithmetic mean if a-b = b-c; e.g. 2, 4, 6.
- 2) b is the geometric mean if 5 = 5; e.g. 2, 4, 8.
- 3) b is the harmonic mean if $\frac{1}{a} = \frac{1}{b} = \frac{1}{b} = \frac{1}{c}$; e.g. 3, 4, 6.

The Fythagoreans, who first discovered the relations between musical pitch and number, discovered that the lengths of string required to give any note, its major fourth and its upper octave are in harmonic

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Arotytes of Estention, streaty sentions in connexion with the Fouritzy of the Guine, is quoted as follows in Fourit, in Fool, Harb, et. Wallis, Onera Math. 11 207, 30-000, 9: plan. M by: refers proving, pla per determined, beaches by: reprint, refer to bervavie, for addentia bires and the the extermetic math of a sideres beauted.

> 2) b is the geometries man if § = § ; 5. 5. 5. 5.

The Fythagorooms, and first discovered the tolettons between musical sitch and michae, discovered that the longthe of string required to give any mate, the major feared and its wave estant are in hemonic

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(o th th progression, while those required for a given note, its major fifth and its upper octave are in arithmetical progression. If lengths of string are translated into terms of vibration, as the effect of haking a tring is to double its frequency, the same is still true. If, according to the data given by Sir James Jeans in "Science and Music" (Gambridge, 1938) pp. 27 and 160-78, we turn the Eratosthenic figures given here into notes (where possible) on the keyboard of the piano, we arrive at the following:

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Harmonics America	Chrom	atios	River B	Diato	nics	
60 b 76 d# 78 d##(2+tone) 80 e 90 f# 114 a# 117 a##(2-tone) 120 b	60 72 76 80 90 108 114 120	b d d # e f # a a b	b. Vico tim de uarteri earda t	60 67 75 80 90 101 113 120	b d e d b d d e d d d d d d d d d d d d	

It must, of course, be remembered that the original form reads downwards, theihighest note at the top, while the modernized form is the reverse. It must be emphasized that these tables are a mathematical and metaphysical exercise, of which the poetic side is to be found in the "Hermes" (of. fr. 11, and note). It may, however, be noted that the "diatonio" column corresponds exactly with the modern major scale, while the "harmonic" contains

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It must, of course, to recombined that the ordgical form reads downwards, thminicant rots at the top, while the sciencized form is the meaner. It must be emphasized that there to be in a size mathematical and setenitysical exercise, of mile the pootto aids is to be found in the "screed" (af. fr. 11, and note). It say, herever, he set the moders taber touts' column correspond emotify with the actions taber touts in the "screed" the awk strongl as oung άνήνυτο άττα δι Gaoir l elvas 7 a 11tt] "Timaeu The T aspects but the Prof. and in by Ma Aris 4th Ce menta Maoran Bernha and Sv here w "HX100

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the awkward intervals and quarter-tones to which Plato strongly objected (Rep. 531 A-G: τάς γάρ άκουομένας αδ συμφωνίας και φθόγγους άλλήλοις άναμετρούντες άνήνυτα πονούσι... και γελοίως γε, πυκνώματ' άττα δνομάζοντες και παραβάλλοντες τὰ ότα... οι μέν φασιν έτι καταπούειν έν μέσφ τινά ήχην, και σμικρότατον είναι τοῦτο διάστημα. The "chromatic" corresponds a little more closely to a modern minor scale. (of. "Timaeus" 35 B).

The variations of modes and the properly musical aspects of the matter are not strictly relevant here, but they are treated in "Node in Greek Music", by Prof. J. T. Mountford and Sr. R.P. Winnington-Ingram, and in an article "The Growth of the Greek "Appoviat", by N. I. Henderson ("Classical Quarterly", Oct. 1942) Aristoxenus, who flourished towards the end of the 4th Century, wrote a comprehensive treatise on "Elements of Harmony" which is still extant (ed. H.S. Maoran, Oxford 1902).

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Knaack, in Pauly-Wiskowa, assigns the fragment to a supposititious Neo-Platonist named Eratosthenes; perhaps forgetting that the son of Aglaus was by some called "New Plato". The connexion with the "Timaeus" is so obvious that it is unnecessary to labour it. The problem of the connexion between a purely spiritual soul and a purely physical body has in the course of ages produced many ourlous attempts at explanation, from the desperate "psycho-physical parallelism" to the modern psychologist's "bodymind". Syidently Fratosthenes felt that Plate's teaching of an immortal spirit, sometimes communing with the Ideal World in a state of complete disembodiment, at other times shackled by physical bodies. was not water-tight, and himself put forward a theory that the soul was never wholly disembodisd. This doctrine might perhaps be compared with that of S. Paul on the Resurrection of the Body, with its metamorphosis or flowering of the human spirit into a "spiritual body" into which it is "maised incorruptible".

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11. 9-10: είς μοτράν τινα του αίσθητου. ΟΓ. Proclus ad Flat. Tim. p. 186: οψη άρα ἀνεξόμεθα λέγειν ήμετς ούτω μέσην αύτην ὡς ἔχουσάν τι καὶ ἀσώματον καὶ σωματικόν, ὡς ᾿ἑρατοσθένης ὑsέλαβεν.

First every third matter is subject only for it con-

The Sieve:

It is not possible to determine whether the device which Eratosthenes called the "Sieve" was included in some larger work on the nature of number or was published in a separate treatise or letter. It has no obvious relation to proportions, and is very unlikely to have appeared in the "Platonicus" or, if there was such a work, "On Means". In the work of Nicomachus this complicated exposition is preceded by a triple classification of numbers: (1) spGtev mai dodv@stev, "prime and not compound",

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10 is not recentible to determine scalar the "throw" and dering which ireteothenes which the "throw" and instand is some integer work on the mature of mature or and published in a separate transise of letter it has no obvious relation to separationic and is warp unlikely to have appared in the "throminan" or, if there was call a work, "to boost". So the work of Hodimoian fair instituted appointed is protocold by a briefs classifier institute of "esteriors. It approach by a triefs classifier and one institute of the protocold by a triefs classifier and one institute is protocold by a triefs classifier and one compared. i.e. "prime" in the ordinary sense; (2) Savtapov wai ovverov, "secondary and compound", i.e. apparently (Ivor Thumas, I, 69 n.) a product of prime numbers; (3) was 'taurd pty Savtapov wai ovverov, spbc the Staphov wai dovverov, "secondary and compound in itself, but prime and not compound in relation to enother", i.e. composed of a number of odd prime factors. Thomas points out that (2) includes (3).

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For sorting out the prime numbers Nicomachus quotes the Sieve, which, in somewhat simpler language than his, works as follows.

The consecutive odd numbers are set out in a row, either vertical or horizontal, beginning from 3. First every third number is struck out, for it contains 3 as a factor, and the other factors of the numbers struck out are the same as the numbers in the original row, thus: 3, 5, 7, 9, 11, 13, 25, 16, 17, 5 19, 21, 23, 25, 27, 29, 31 ... Areimilar result is obtained by repeating the process with 5, and so on: 3, 5, 7, 9, 11, 13, 29, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37 ... The numbers left behind in the

original row are prime numbers.

Thomas (I,102-3,n.) sums up the method: "The general formula is that we obtain all multiples of a prime numLes, "prise" in the ordinary senser. (2) beurs, or and obverve, "seconders and compound", i.e. appomently (low Physics I, 00 n.) a unduct of prime senser (3) and beurb ply bedre, or and obverve, apòc 6332 62 adiros and deferrer. "secondary and compound in iteril, but ortins and not empound in relation to another, i.e. compound of a muchor at add prime theorem. "Donas prime out that (2)

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to octained by repeating the product mill 5, and to our 3, 5, 7, 5, 11, 13, 15, 17, 10, 27, 85, 5, 57, 85, 34, 35, 35, 37, . . . The surport juit behind in the

original row are prize numbers. Thomas (1,100-3,0.) dune up the methods "The constal formula is that we obtain all multiples of a prime number mak ser it met whe

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ber n by skipping n-1 terms at a time. But to make sure that any odd number $\sqrt{2n+1}$ left in the series is prime we should have to try to divide it by all the prime numbers up to $\sqrt{2n+1}$, and the method is not a practicable way of ascertaining whether any large number is prime."

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Evidently the festival of Isis had shifted its position in the solar year asua result of faulty intercalation, like Christmas in England before the elision of eleven days in 1752.

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Exagior popio. The length of the solar year had
been calculated with a very close approach to exactitude for a long time. The Julian calendar, established by Julius Caesar and prevailing for over fifteen centuries in Europe, was based on the Egyptian calendar as revised in 238 B.C.

and be opperover the sum and moon are then in the same relative position.

duramatdenaerqpidt. The Metonic cycle (discovered by Meton about 432 B.C.) was 6940 days, or a little over nineteen solar years. Edbóξου. c. 408-355 B.C. bor a by extending and terms at a time. Suc to each suce that any odd number |2n+1| left in the sector that any odd number |2n+1| left in the sector is provid have to dry to divise its by all the prime method is practicable may of according to the whether any left and the prime.

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avidently the fastival of Isls had shifted the position in the solar pass asis reach of faulty intervalation, like Christmas in Seclard before the sliston of sleven days in 1752.

Elegitore por te. The length of the salar rear had been calculated with a very close approach to amore titude for a long time. The Julian coloniar, establiabed by dulius Caesar and prevailing for over fifeteen conturies in Europe, was based on the Syptian calcular ap revised in 238 8.0.

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bureautóenaerqeibe. Ine Hetenia ayole (stasovered by Heten about 432 B.C.) was 6940 days, or a little over nicetern solar years. Edodice. a. 408-355 B.C. 42. 1. 3: 50' the the rice oit; . 1. . Ora. Was He He aa 1. 7: 34 "th ñ . , 1. 8: 20 87) Pilling 1 1. 8: 85 for

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Ariston:

42. 1. 3: ὑφ'ἕνα περίβολον. Probably hendiadys: "within the fortifications (i.e. the central part, right in the city itself) of one city." Possibly metaphorical: "gathered within a single circle in a single city."

1. 4: Apiotuva. See Intr. p. axili.

'Apacoikacy of Pitane in Aeolia. Hessucceeded Orates as Master of the Academy about 241 8.3., and was regarded as the founder of the Second Academy. He died of drink at 75. (Diog. Laert. IV, 18, 30). He summed up his learning (Cicero) , Acad. I, 12), as not even being sure of his own ignorance.
1. 7: wopugaiouc. "Leaders of the chorus": perhaps

"those who set the tune" for the others. 1. 8: "Aschlig. Appointed as guardian of Philip V

of Macedon by his uncle Antigonus Doson (Polyb.IV, 87).

1. 8: Bίων. Imported to Athens from the Borysthenes as a slave. He was set free, studied and became famous for his pungent comments, comparable with those of Voltaire. of. Horace, Ep. II, 2, 60: "Bioneis sermonibus at sale nigro". (See Diog. Laert. IV, 46 etc.)

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1.10: Odyssey XVIII, 73-4: Andre Floce "Attoc information

ή τάχα ' Ιρος 'ΑΥρος ἐπίσπαστον παπὸν ἔξει, οῖην ἐμφαπέων ὁ γέρων ἐπιγουνίδα φαίνει.
Odysseus, disguised as an old man on his return to Ithaca, was insulted by Irus in his own home, and when he girded up his tunic to fight he revealed his own heroic limbs underneath. Under the fluttering gewgaws of Bion's wit could sometimes be seen the gleam of sound philosophic judgement.

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11.12-13: Zhvavoc See Intr. p.v.-vi.

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cf. Athen. XIII, p. 588 A: δ μυρτίλος, Μή τι τοιούτοι δμετς οι φιλόσοφοι, Εφη, οι και πρό των 'Ηδονικών καλουμένων αύτοι τόν τῆς ήδονῆς τοῖχον ὑποσκάπτοντες, ὡς που δ 'Ερατοσθένης φησί.

The fine distinctions of "preferable indifferents" originated by Ariston made it possible for so-called Stoics to live a life wholly at variance with the single-minded pursuit or Virtue as the only desirable possession. On his contempt for dialectic of. Stob. Serm. LXXX: "Apiorar Eleyev Econévai the dialectic of. Stob. Serm. LXXX: "Apiorar Eleyev Econévai the dialectic hy tộ êv taic booic salie; and Glem. Alex. Strom. II, p. 175: Soev, ác Eleyev 'Apiorav, spóc ölov tô tetpáxopbov, houriv, lúsav, oópov, Esioupiav, sollic bei tic dougoeuc nai páxac.

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	η. 273: 5θεν, ός έλεγεν Απτοτέν, η τστράχορδον, άδονήν, λάεην, σύρον, Γ τατ σζς άσκήσεως καί μάχης.			
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On Good and Evil:

In the absence of positive evidence, this fragment seems to fit most suitably under this title.

"Apportai. Literally "adjusters".

Zeno of Elea, in Italy, was the chief follower of Pamenides. He was born about 488 B.G., and accompanied Parmenides to Athens about forty years later. This story is referred to "On Good and Evil" also in Theodoret. Graec. Affect. serm. VIII, p. 604 B.

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11.12-13: 24

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From its subject-matter, this fragment seems to be most suitably placed here.

Grates of Thebes, who flourished about 320 B.C., was one of the most distinguished followers of Disgenes the Gynic. (See Diog. Laert. VI, 85-93, 96-98).

On Wealth and Poverty:

Pyrrho, of Elis, was the founder of the Sceptics. This doctrine was that certain knowledge on any subject is unattainable, and a virtuous life is the sole aim of man. He wrote only a poem in praise of Alexander, and his system was recorded by his disciple Timon. Pyrrho's dates are unknown, but if he accompanied Alexander the Great's expedition his life (of

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ninety years) must have included the second half of the fourth century. (Diog. Laert. IX, 61, 62, 69; Aristocles ap. Euseb. Pracp. Ev. XIV, 18) 315

Themistocles, after being the chief instrument of the Greek victory over the Persians under Xerxes, fell into disfavour and was catracized in 471 B.C. He lived five years at argos; then, being suspected of complicity with the Spartan king Pausanias in treasonable correspondence with Persia, he himself fled by stages to Persia, where, after waiting for the death of Xerxes, he was handsomely received by the new king Artaxerxes. He died not long afterwards in 449 B.G., aged 65. (Plutarch, etc.)

miture", and fragarant 57+98 to the "Argutentettude.

Athenaeus has just been descanting on Boeotian gluttony. The remark seems tohave two points: (a) that Boeotians are so brainless that they are entertained by childish fables of an Aesopian type, and (b) that even these fables reflect their preoccupation with capacity for food and drink. The same story, in exactly the same words, is told by Eustathius ad IL. p. 954, 34. Nothing more is known of Pempelus.

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This passage is quoted by Macrob. Sat. V, 21: de Cymbia, where it is assigned to the same source.

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Old Comedy:

Fragments 52-56 probably belong to the section referred to as Discorpaquic, or "Treatise on Furniture", and fragments 57-58 to the 'Apritextoriné, or "Book on Engineering". Both seem to have been glossaries of technical terms, and may well have contained many of the entries to which reference is made in the fragments grouped under the titles of comedies and names of authors. Whether they were prefixed or appended to the main work is unknown: they are placed first here entirely for convenience. See also Introduction p. EXV.

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317

Xenophon wrote, probably shortly before the battle of Mantinea in 362 B.J., a guide for commanders of cavalry entitled "Hipparchicus". This may be the work mentioned here.

Normally dvaloystov = dvayvoothpiov, "reading-desk". The wording here, though obscure, seems rather to indicate a book-case.

Spicles of Grete is cited 21 times by Erotian for his alphabetical glessary.

Gallistratus was the most famous pupil of Aristophanes of Byzantium next to Aristarchus. He wrote voluminous works of criticism on Homer and the dramatists, and a "Miscellany", in at least seven books, dealing with general linguistic subjects (Ath. I, 21; III, 125; XIII, 591; etc.)

"King-boots": of. "Wellingtons", "Blüchers".

Pollux, VII, 85 mentions that these were worn by

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the Basileus at Athens. Although the political title of King had died at Athens in prehistoric times, it was retained by the Archon Basileus for religious purposes, like the title of "Rex" at Rome.

318

Athenaeus (XI, 474) gives a similar satalogue of the parts of the mast; but he represents the "heel" $(x\tau \epsilon_{\mu}v\alpha)$ as fitting into a "tabernaele", or box $(\lambda_{\eta}v \delta_{\zeta})$ instead of a mere "sty" $(in_{\mu}fov)$ as in earlier times and smaller vessels.

The Paris Scholiast speaks of the squriv, or "col-

Polus: son of Charicles of Sunium, and pupil of Archias of Thurii. (of. Plut. Dem. 859 B). Philochorus, who lived at Athens between 306 and 260 B.C., wrote a history of Athens to 262 in 17 books full of detail. It was entitled "Atthis". (Suidas).

Staywwiscoser seems to imply that he was acting as Protagonist in each play. This could involve as much as one "Hamlet" a day; though presumably, if a whole trilogy was performed daily, the maximum possible would be nine tragedies in three days.

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Atheneous (11, 674) gives a similar excession of the parts of the wast; but he represents the "neel" (art, va) as fitting into a "teleprodule", or box (art, va) instead of a nore "sop" (inclow) as in seriler time out smaller wassion

The Arris Scholingt specks of the memory, or "agapound" plough.

initial and of Omeridies of Similar, and raph? of archites of Thurds. (of. Fine. Sim. 500 P). Filicotronie, who lived at Schools Deraport 300 and 260 D.C., wrote a bistory of Strong to 202 in 17 books full of detail. It was antibled "Limits". (Juides).

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8th. ed.) from pélyw, dpélyw, confused with dpépyw a I pluck, strip.

päja åpolyain perhapse"milking loaf", i.e. loaf eaten by shepherds or cow-herds at work.

ος. Ξτγπολ. Η p. 573, 23: άμολγαίην δέ, τουτέστι κρατίστην, άκμαίαν. το γάρ άμολγόν έκι του άκμαίου τίθεται. Έρατοσθένης δε κοιμενικήν, and Proclus ad Hesiod V. 590: άμολγαίη, άντι του κρατίστη, άκμαία, το γάρ άμολγόν έκι του άκμαίου

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τίθεται. "Ερατοσθένης έν ποιμενικοίς.

This explanation is based on an identification of épolyóc with éxpíp in the Achaean dialect; of. the English use of "milk" or "cream" of anything.

Eratosthenes seems to have been mistaken in confusing the wipβιςwith the äξων. The former appear to have borne regulations about religious festivals, the latter secular laws. They were three- and four-sided respectively. Schol. Ap. Rhod. IV 280 confirms that Eratosthenes did confuse the two. af. Etym. M. p. 547, 51: 'Eparosdévag dè τριγώνους adrág (κύρβεις) φησιν είναι, où τετραγώνους. φησίν 'Αριστοφάνας δμοίας είναι τοῖς "Αξοσιsλην δτι οἱ μὲν "Αξονες νόμους, al δὲ κύρβεις θυσίας ἔχουσιν.

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This fragment may be adduced as evidence that at least this part of the "Old Comedy" was not written at Athens but some time after the author's residence there. Indeed, according to Harpocratio, s.v. $\tilde{\alpha}\xi_{0}$ $v_{\epsilon\zeta}$, this was one of the points adduced by Polemo to show that he had never visited Athens at all.

& Mapunac (= a minion, or a young foreigner male slave: Hesychius. See Kook, vol I, 307-13). A play by Eupolis, produced in 421 B.G., attacking Hyperbolus and his mother. Aristophanes complains (blouds", 553) that it is a poor copy of his own "Knights".

raic bibaomakiaic. The verb bibdomeiv, "to teach", was used in a specialized sense of teaching or training a chorus, hence of producing a play. Thus ai bibaomakiai is the name given to the official lists of plays produced at the festivals of Dionysus, with their authors and the order in which prizes gere awarded by popular vote.

τῶν Νεφελῶν. According to the fourth "Argument" to the play, it was originally produced in the Archonship of Isarchus, or 423 B.C., when Gratinus took the first prize and Ameippias the second: Aristophanes

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0 Map 1945 19 2 minutes of a found contrast manage slaves Hesychius. See Roak, vol 1, 307-13). A play by Supolls, produced in A21 9.0., attaching Hyperbolus and his mother. Artecophysics completing (Slauts", 353) that it is a peak copy of his out "intents".

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thereupon re-wrote the play to some extent, and it is the second edition which we have. The statement that the play was produced again the following year and failed even more than before is disoredited on the grounds that the revision appears not to be complete. The point Eratosthenes is making here seems to be that the "Clouds" appeared before the "Maricas", though it is quite possible that the second edition, if produced, would also appear in the list.

Khέωv. The demagogue "hero" of the "Knights" fell at the battle of Amphipolis in 422 B.C. of. fr.69, and note.

d bribes, and the equipation remains checurs,

Phrynicus: the Alexandrian critic of the 2nd-3rd centuries A.D., not the comedian or the pre-Aeschylean tragedian.

Lamprocles: a writer of dithyrambs, who flourished about 500 B.C. He was a pupil of Agathooles and teacher of Damon (Schol. Plat. Alc. I p. 387). He improved the Mixolydian mode (Plut. de Mus. 16, p. 1136).

There appears to be no other mention of Cydides.

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Lycophron, of Ghalcis in Euboca, resided at Alezandria in the second quarter of the third century B.C., He wrote a very obscure poem entitled "Cassandra" or SEE SPA

therewoon re-wrote the play to some extends and it is the the second shitton which we make . The statement that the play was produced again the following year and following the evolution appears in the following year the point instant the newtoice source is thereased the open point instants the newtoice source in the test sample the "Clouds" appeared before the "heritan", though it is quite possible that the second stitue, if yough it which, the issues appeared before 's the 's interval' the battle of instigute "heritan" is the test the 's interval' in the test is the second stitue, if yough it is the battle of instigute herits in the 's interval' is the battle of instigute in the 's interval' is ' int rote.

Enguntous: the Alexandrian origin of the Sud-Jos contarios A.D., not the paresize or the pro-coorder loss tragedies.

Lamprooles: a writer of dithemando, who flow dehed about 500 8.0. He was a ranki of instingtes and teacher of Damon (Schol. 2742, Alo. I p. 397). He improved the Himolydian mode (Figs. de Nov. 16, p. 1136).

There appears to be no other monther of dytides. Lycophron, of Ghaldis in Subsec, residue at Alexandria in the second quarter of the third contary 5.5. He wrote a very obscure poon entitled "Gamandra" or "Alex Libra das a nóg Scott

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"Alexander". He worked on the comic poets in the Library and wrote a large work sspi wwpwbiac. (Suidas and Tzetzes).

nopxopos or nopnopos. According to Liddell and Scott, 6th ed, "pimpernel or Jew's-mallow" 8th ed. omits. n. Ev Naxavetet, "of sorry pretenders".

cf. Schol. Vesp. 388, on Philocleon's cry of a Aune Sécaera, where an alternative and perhaps slightly more likely explanation is given that the jurymen's three obols' pay was dealt out at the shrine of Lycus. Unfortunately the term Sanac meant a juryman who received bribes, and the connexion remains obscure. Presumably the number had some connexion with the number of "tribes".

Lycus was a son of Pandion, king of Athens. A suggestion of J. van Leeuwen, quoted here by Merry, is that his name is a remnant of an old custom of symbolizing a guilty man as a wolf. of. the Israelite scapegoat. ter grant Clean, who she also billed, in the sec

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Lycophron: see fr. 64, n.

disturbers of the pass are deal.

of. American "sicking on" a dog, in the same sense. There may be a play on words between as bootahav

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Kévy Perhs WELS I say. "E deper 8180 68. Gry 1sho f1rs chua An. betw de G 0100 69. 開 eral and vict He 1 L sla dis Gra 70.

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"Alexander". No vorked on the ousie peets in the Albrary and wrote a large work repi republic. (Datdas and Tastare). Répyrer or répropor. According to biddell and sents. Str ed. "pimpernel or Jew's-millow" Str ed. outse. weit derderer, "of somy protestore". of. Schol. Verp. 388, en Shilesloon's and of S

Adve béredro, where an elternotive and pariness slightly more likely explanation is given that the furmen's bares obole' pay was boalt out at the marine of Lynna. Unfortunately the term ^{Newde} mant a juryman who renetved bribes, and the connector remains otsource. Freewably the mather had some connector with the number of "tribes".

Lyous was a son of Fandion, king of Athens. A suggestion of J. van Leeuwen, quoted here by Merry, is that his mane is a resmant of an old custon of symbolizing a guilty man as a wolf. of. the demolite suppoport.

Lycophron: see fr. 64, m. of. American "sicking on" a dog, in the came sense. There may be a play on words between du'beachedy

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Kúvvąc and Hom. Il. 1, 225: κυνός δμματ'έχων. Perhaps Eratosthenes mentioned this, but whether he was misreported on his conclusion is impossible to say.

'Eπιμενίδης. Unknown. Valok and Bernhardy independently emend &ς έπι άναιδοῦς.

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Sibaonaliaic. See fr. 62, note.

Grates: probably not the Theban Cynic, who flourished about 320, but Grates of Mallus in Gilicia, the first "grammarian" of Pergamus, who opposed Aristarchus in his edition of Homer. (Suidas; Aelian Hist. An. XVII, 9). He was sent as ambassador to Rome between the 2nd and 3rd Punic Ware by Attalus (Suet. de Gram. 2)

69.

Gleon, the constant butt of Aristophanes, was a tanner. Brasidas, the most able and famous of Spartan generals, destroyed the Athenian empire in Chalcidice and fell at Amphipolis after achieving a brilliant victory over Gleon, who was also killed, in 422 B. G. He was adopted as "founder" by the city.

Later in the play (11. 269, 282) Trygaeus, whose slave makes the remark criticized, learns that both disturbers of the peace are dead.

Cratinus, the famous comic poet coupled with Eupolis

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bathering and the for derived and Dermander in-

Bibernallare. See Pr. 63, notes.

Unators providir not the Instead Cynte, whe floretained about 300, but Gratess of malling in difficie, the first "grammantar" of Parkston, who expected arbitches obus in his edition of Hanser. (Buidant cellon Wist, Ap. 2011, 9). We can somb in antermodor to more between the 2nd and 3rd Jef Jenite and by Atalian (dust, de Gran. 8)

Place, the sometime built of interpretation, was a terminal interface, the most ship and farmure of Reprise (and evale, destroyed the Athenian evolution in Annistan end. Fall at Amphibolic after solutioning a builthant vistory over Gloom, who was also billed, in 202 3. 5. No was adopted as "remder" by the offy. Inter its the otay (it. 200, 200) Taysanda, whose slave sales the recent original, loores that both disturbers of the power and the fact.

attoons sigth before doors atmos incomes put amount fand

and Aristophanes by Horace (Sat. I, 4, 1), died aged 97 in 422. Aristophanes constantly makes fun of his fondness for the bottle--not, perhaps, in an illnatured way.

Lycophron: see fr. 64, note.

Schol. Plat. 250 says that Eratosthenes made orovipa a cloak of goat-skins with the hair on, orovipve one of fleeces. It seems probable that he was making a distinction that was not really clear.

Schol. Av. 1514 states that savin'arra is not Attic, archaic, or correct. The usage seems similar to the vulgar use of "ever" and "never" in English: e. g. "Whenever did you arrive?" and "He never came".

Lycophron: see fr. 64, Note.

The offering referred to was the lamb offered on the third day of the Apaturia, the moups&ric, when a father enrolled a son in his brotherhood. (Liddell and Scott).

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"The Persians", the only extant tragedy on a contemporary subject, was produced in 472 B. C. It concerns the victory of Salamis in 480 B. C., in which Asschylus himself fought.

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"Some 76. The r 77. not 1 Arist throw fruit 81 nóßa wort The 78. stag viou A Ē١ Seo. S (Su Peo (At P and oar Öre 79. -

and Artistophanes by Haraos (2nt. 1, 4, 1). Aled aged 97 in 432. Artistophanes constantly mikes for af His rendered for the bottlo--mot, performe, in an 112. natured way. Lycophrent are fr. 64, note.

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Sonol. Plat. 250 anyo that instructioned ando erafed a clock of gent-aking with the hair dis credeve one of fladges. It access probable that he was making a distinction that who are soully closer.

Hobol. Av. 1914 states that savin form is not attic, archaid, or correct. The mage score similar to the volgar use of "over" and "nerver" in Englisht or S. "Membered is you archive" and "Is never case". Lycommon. ass in. 64, 5000.

"The Fereiene", the only extent broady on a containportry subject, whe produced in 472 3. C. It concerns the victory of Galaria in 480 5. C., in which here shyled biaself forget.

Annale the state of the second state when the

"Some votes": partitive genitive.

The practice of throwing presents from the stage has not been unknown in modern pantomime and revue. Aristophanes is protesting against the undignified throwing of loxdota wal towydlta (figs and dessertfruits).

bià tòv aùtav òpolóv. Bernhardy reads bià tò aùtav mópalov (roguery). The idea of throwing "pennyworths" to the audience seems both apt and more cutting.

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The practice of introducing lighted torshes on the stage is regarded, like that described in the previous fragment, as meretricious.

Λυκόφρων. Fr. 64, note.

έν 'Εκκλησιαζούσαις. Presumably a reference to Sec. 1150: ἕχω δέ τοι καὶ δάδα ταυτηνὶ καλῶς. Strattis flourished a little later than Gallias (Suidas), and attacked Philyllius in the "River People", which was produced in 394 or 393 B. G. (Ath. XII, 551c; Pollux X, 189)

Fhilyllius was a contemporary of Diocles (Suidas) and belongs to the latter part of the Old and the earlier part of the New Comedy.

Gratinus. Fr. 70, note. The old Homeric shields were of ox-hide, stretched

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over s knob (Was a the p off. might horse Lysia Phere a con Nic 36 A) play The 1 81. 6003 82. Ph11 not or t Acad is t ord WELTT

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Awnowpay. Pr. 54. meter.

ty "Davigoral stances. Spacements a reference to See. 13501 Syn 66 for not 6660 represent notice. Scrattle flowringed a little later then Salites (Soldad) , and althought faileling in the "attend beople", which was produced in 394 or 393 8. 01 (ath. XII, 5510; Pollar X, 109)

(ostica) selects to grandentation a base sufficient and belongs to the latter cart of the Old and the authour part of the flow Goundy. drating, Fr. 70, 10564

bedeteris .eblikes to ever ablabs attacet bio edi

over a wooden frame-work and drawn to a projecting knob of metal in the centre. This knob, or boss, was always retained, and if possible the warrior caught the point of the energy's spear on it to make it glance off. This comic degradation of military objects might suggest some such English phrase as "towelhorse lancers".

325 326

Lysias: one of the famous Attic Orators, 458-378 B.C. Fherecrates, inventor of the Fherecratean metre, was a contempowary of Aristophanes. (Suid. s.V.EAdtov) Nicomachus is mentioned also by Athenaeus (VIII, 36 A), who calls him fu8pinóc and assigns to him a play Xe(pov.

The normal constructions with sold are: sold spoc (acc.) sold is; (gen.) and sometimes sold alone with gen.

Philosophical schools were usually called by the names, not of their founders, but of the places where they met or the most individual part of their doctrine: e.g. Academics, Sceptics. The only noteworthy exception is the school of Epicurus. There were many croaf, or colonnades, in and about Athens, as is natural in a warm climate, but the most famous was the Painted Co-

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over a wooden frame-work and drawn to a projucting knob of motal in the contro. This knob, or boos, was always retained, and if possible the marsion compathe soint of the coup's spear on it to mine it glance off. Tale could degradation of willtary abjects atght suggest sour each English phrase as "tagin bores income".

Evelops one of the famous sizis omitors, 000-378 342, Thereoretes, investor of the Thermansteen metro, was a contemposity of Ariskophanes, (2010, 2+00124mm) Sicomanna is antitoped also by Athenedus (2011, 36 A), she wills his interfect and moders to him a play leteor.

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initiasophical schools were usedily colled by the names, not of thate foundars, but of the places where they not or the neet individual part of their sections where the Academies, Sceptics. She only normanity exception to the school of Schemens. There were pair over a colonistes, to and show here, is is normalized to ever olightets, had the scot formula the state of the ever olightets, had the scot formula the schemes dow lonnade, with its pictures of the Persian Wars. Nothing is known of any definite school of literary men called Stoics, except that Hesychius, s.v. Excunoi; gives: of povor of and Zárovoc gilócogoi, dlld nei tives Frappatinoi.

327

channety = to ward off

àluéa = a wild mallow

adminos = strong

With which, if any, of these words dhusév is connected it is not possible to say. Perhaps Eratosthenes confused the word with the name Alcaeus.

of. Hes. Aiveipou θέα. αϊγειρος ήν 'Αθήνησι «λησίον τοῦ ἰσροῦ, ἔνθα γενέσθαι θέατρον τὰ ἰκρία ἐπήγνυον; also Phot. Anecd. Bekk. p. 354. 25: Aiveipou θέα καὶ ἡ παρ'αϊγειρον θέα. 'Αθήνησιν αϊγειρος ῆν, ῆς πλησίον τὰ ἰκρία ἐπήγνυντο εἰς τὴν θέαν πρὸ τοῦ θέατρον γενέσθαι, οῦτω Κρατϊνος. The text given here is that of the standard edition of Albert, revised by Schmidt, Jena 1862.

or the Beard Lory . How

Presumably from the "Old Gomedy", if the number of the book is correctly given.

Eratosthenes probably made this statement by deduction from the Spic form ¿ Stukein(II. 8, 285, etc.)

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Presumbly from the "old Genedy", 10 the pumber of the book is domnactly given.

instationes probably wile this statement by doduction from the Spis form, formers(11, 8, 200, etc.) In Aesch. Theb. 685 it is scanned einheid, butthe normal form, as with gyvoid, etc., is condeid.

328

Philyllius and Epilyeus were contemporaries of the Old Gomedy who flourished about the first decade of the 4th century B.C. (Suidas)

Lycophron: fr. 64, n.

The text is that of the codex Marcianus, which seems to make some sense. Bergh reads oid, offici

From the mention of Phereorates (fr. 80), presumably "Old Comedy".

d. Photius: ήια. την των δοκρίων καλάμην. ούτφς 'Ερατοσθένης.

οΓ. Photius: ποτ Ϋχος. ποτ, ἐγγύς, εἰς τίνα τόπον. Ἐρατοσθένης δὲ τὸ ἐγγύς.

If the whole argument is that of Eratosthenes, it is an excellent example of his stymological method. As the quotations are from comedy it seems more likely to belong to the "Old Comedy" than to the "Ofammatica".

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σάμαξ is apparently a comic word. The only use quoted in Liadell and Scott is from Chionides, who flourished early in the 5th century B.C. (Munife, from 2, β.5) of. Hespehius: σάμαξ. of 82 φορμόν.

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In Acquit. Thop. 605 10 10 sourced etals Tableit. Tables neráz 90. portail forms as with dyrara, abo., is a short larray λάγυι 91. Thilyilian and Epilyean were conferented of the Old Comedy who filedefielded about the filmt desade of the 4th conting 2.5. (Suited) Some 52. Lyoophrass fre. 65, 34 Comed.; The toxt is the of the point introducing which liter abone to make Some asses. Bergh reads old, alogs when the p From this mantices of Musequirates (cr. 50), press. 478 87 an ".""Theman bito" gloine This 92. . Dev See ors dd * ginni pure: .voabr over pla .pbyys .Tos .poxi Tos septement . 10 mode ". abyyl it it actabueroga" The If the Medie argument to fast of Smernin electrones, is to what an aborteet feelgeterete ald to alcone trations the with the quotestions and from several it access and anterin their grou to bulcar to the "Old Corely" Enks to the "Granmatica". that perception and a section a content and and and a sector 108 SI to Ladell and Court is from Distantion, who flowdated carly in the Sth continue R. C. ("hinds, for former 1. (.5) Thi 93. . The Bongolizion of a state. of at generate. to -20 化物质 化二磷酸合物 医下 adı

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peténepode quoted also from Philyllius by L.and S. (v. Mt. 135)

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hayovoc: a comic word,

Granmatica:

Some of these fragments may well belong to the "Old Comedy". The title could include general points of literary criticism, as well as the purely philological. When there is no positive evidence on the source of the point criticized, as there is, e.g., in gragments 87 and 88, the gragments are included under this heading.

This fragment seems most likely to belong to the beginning of the work. The definition given is more purely linguistic, and more nearly approaching the modern idea of "grammar", than the later conception. The "grammar schools" of the Roman Empire supplied what was intended to be a general literary education, with attention to historical and geographical background; these being treated in an "artistic" rather than scientific manner. See Aubrey Gwynn:: "Roman Education", and fr.I, n.

This fragment also seems in place in the introduction to a work on literary studies.

"Literis" here must be taken in the narrow sense, of learning the "letters" as a preliminary to more advanced work.

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wopoq: the side of the forehead (Hom. Il. 5, 584 etc.) is woppqc is found in Demosthenes and Pisto, ward woppqc only in Lucian. (See L. and Se)t accord is an emeridation by Sylburg for accord.

There are no extant comic uses of these two terms.

There is no other extant reference to this word. This is included, doubtfully, by Hiller among the poetic fragments. Schmidt places it in the "Old Comedy".

The only other reference to this word is in Pollux, IV, 116, where it is explained as the name of a garment worn by sootheayers as well as Bacchanals. Fowell includes this among the poetic fragments "incertae sedis", following Hiller, whosuggests that it might be used of the garment worn by Dionysus in the "Erigone". Bergk, however, thinks it may belong to the "Old Gomedy".

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Od. 9, 6: 5 57'Euspoordvy per Exp ward Sipov asavra . . An interesting example of "higher criticism" from a purely moral standpoint.

According to Thuefdides (I, 25) the Coreyraeans were formerly Phaeacians and shipping experts.

his excentility and breath of print

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without the state of the forement (none 11. Se the 11. 24 99. and all weapons the found in Demostration is inches Sec 1, word whet at only an employed in the draw date of Avona to an approximan of principle as of vours. It v but p there's and weath to used state spatts of the brieff. 122 "Th a prior a fin of constant public sollo an al a sell 430 For and groom wellight up systematiced , belasteril at ataly Homer 100. bito" and all di neracio d'alterioù ", c'anonnerit el paot media Odyss control at all brone the at waiting its making the sail 1.12 and H wine a be when a second and an all a man of a star man at a man Posed ... Landing the film of acase dices of wrate soon fathe ... Powerll leaded with anothe addition the state fragments plac: Jost quantization, reflict manualter, "aites entropet" they 4 111 1050 west war bl windste gewonnen "Betult " berugsins" add V1 land to the "old Sounds". VI. that 02. 92 65 % St Stoppersty all and all and all a start and a a most "matalaine existe" to sintane emideeredet as "Inincipant include Lievens See 101. According to Thursdalass (1, 26) the Cordynaeda vero Tł .strange Balacians and which washed wiresets. gree his

X-45-1-2

Il. 24, 281-2:

τώ μέν ζευγνύσθην έν δώμασιν ύψηλοτοι κήρυξ καί Πρίαμος, πυκινά φρεσί μήδε έχοντες.

530 331

It will be noted that the participle is not dual but plural.

"The nine sons of Priam": Il. 24, 249-50. For Grates, see fr. 68, n.

100.

Homer, in Od. 11, 305-20, tells the story of Iphimedia among those of other famous women whose ghosts Odysseus sees in the Underworld: her twin sons, Otus and Ephialtes, according to his version are sons of Poseidon. At the age of 9, 9 cubits broad and 9 fathoms high, they attempted to invade heaven by placing Mt. Ossa on Olympus, and Pelion on Ossa, but they were destroyed by Apollo before reaching adolescence.

Virgil refers to this often quoted story in Aen. VI, 582-4, also in the Underworld. It is noteworthy that in Georg. I, 278-283, he makes them sons of Earth.

Against Baton:

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See Intr. p. xxiv.

The writer referred to is Eudoxus of Cnidus, the great mathematician. Diogenes is giving examples of his versatility and breadth of mind.

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to per freyvicient it binart duploter affect and thinker, summed energy while frevence. It will be noted therein participle is not dual

but ploral.

"The size cone of Fried's IL. 26, 269-50. For Grates, see Fr. 68, s.

Homer, in 04. 11. 203-20, tails the story of Ishimedia among those of other famele women where ghosts Odysteeus sees in the Unierworkin her twin some Othe and Sokialtes, associated to his version are one of Fossidon. At the set of 9, 8 oubliks broad and 9 fathoms high, they attaunded to invade meyers by plasing Nt. Game on Digmong, and Fallon on Game, but they were destroyed by Applic before resolute adslargence.

Virgil refers to this offer quotes story in sec. VI, 382-4, also in the Universiti. It is noteworthy that in Secre. 1, 275-283, he makes them ease of Sarth.

India tealant

tee intre p. xair. The writter referred to is informe of inides, the great mathematician. Disguase is giving examples of bis versability and breatth of wind. 102, See In 1. 4: Arsi 1.16: of second

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1. 5: Λυ διαξ τδν δλί

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Arsinoe:

See Intr. p. wit and p. xx.

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4: Arsince III; Ptolemy Philopator.
1.16: of Xoéc. "The Pitchers": also the name of the second day of the Anthesteria at Athens.

de recentrante and discussion bourt's weeks and dates,

Chronography:

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The main dates are as follows:

Fall of Troy	1184/3 B.C.
Dorian migration	1104/3
Ionian migration	1044/3
Lyourgus	885/4
1st Olympiad	773/6 (προηγούμενον έτος)
Invasion of Xerxes	480/79
Peloponnesian War	432/1 Matarial red
Defeat of Athens	405/4
Battle of Leustra	371/0 of tone toll in
Death of Philip	336/5
Death of Alexander	324/3

240

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1. 5:

Αυκούργου. of. Plut. Lyc. ad init.: οί δὲ ταῖς
διαδοχαῖς τῶν ἐν Σπάρτῃ βεβασιλευκότων ἀναλεγόμενοι
τὸν χρόνον, ὥσπερ Ἐρατοσθένης καὶ ᾿Απολλόδωρος, οὐκ
ὅλίγοις ἔτεσι πρεσβύτερον ἀποφαίνουσι τῆς πρώτης
Ὁλυμπιάδος.

This makes Alexander invade Asia 330-29 B.C.

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the main dates are as follown; Fall of Troy 118407 8.0. Contan stracton 1104/3 Determine Jol Invasion of Merican Palapennerian War AVAGA .. - energy to rested Battanal 10 011000 DONTE OF THE READ Death of Alexander Sha/3

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Cato "or1 Th 11.4-5: 752-1. 6: 75 18 7 M 010 oct Ap

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He left Egypt in the spring of 331, and defeated Darius at Gaugamela in the autumn.

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i.e. inthe first half of the 11th century.

cf. the same words in Tatiani oratio ad Grascos p. 106, where Eratosthenes is mentioned in a list of ypopparine; who discussed Homer's works and dates. The others are Zenodotus, Aristophanes, Gallimachus and Crates.

Osann (de Erigona) p. 43) also quotes the same from Godd. Gr. Bibl. Matrit. T. 1. p. 233, where Grates is said to have placed Homer's floruit "over sixty years" after the Trojan War. Herodotus (II, 53) placesbboth Homerand Hesiod 400 years before himself.

106.

Gato the Gensor wrote or began a historical work "Origines", quoted in Livy XXXIV, 5,

11.4-5: This would make the foundation of Rome fall in 752-1 B.C.

1. 6: 753-2 B.C. The traditional date by modern reckoning is 753 B.C.

Müller quotes with hesitation Solinus I, 27: Cincio Romam duodecima Olympiade placet conditam, Pictori octava, nepoti et Lutatio opinionem Eratosthenis et Apollodori comprobantibus Olympiadis septimae anno secundo.

Accord 107. adopte Longa was b sente Ilium Juliu Bernh 108. the g to th the " Pis H1pp: a to was ' 550late Th phan thir 8000 the the Was

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He lott derent in the spring of 351, and defeated

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of. the same words in Tatlant ombits in a Stat p. 105, where Erstostiones is continued in a 21st of yrapparrant who dimoused homer's works and dates. The others are lenderty, Aristophanes, Fallimentus and Spates.

Osano (de Erigana, p. 43) else quotos tos mene from Joid. Or. Bibl. Hetrit. I. I. p. 233, mierre drates is said to here plated Homer's florit form sixty years' after the Projan Mur. Herodotus (II, 55) platesthoth Homernol Regigt.

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Gate bis General wests or began a Mistoriani work "Origines", quoted in Livy Lilly, 5.

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ta 755 h.C. Miller quites with husitetian Solinus I, 27: '01neto Roman diodecies Olympicale placet condition, Fictori cotave, hepoti et faitetie opinione indicatione et Apoliadori dimonichetico Olympicale sontione anno

T33-2 B.C. The traditional date by adden walker

According to the later version of the story as finally adopted by Virgil and Livy, Ascanius founded Alba Longa and was succeeded by his son Silvius: Romulus was born three centuries later. Ascanius was presented with the name Iulus, developed from Ilus and Ilium, to connect with the Julii and particularly Julius Gaesar. Aeneid I 267-277, and VI 756-779.

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108.

Bernhardy places this fragment in the "Old Gomedy" on the ground that that work was more likely to be known to the Scholiast. Müller, however, places it in the "Chronography".

Pisistratus seized the tyranny 561-0 B.C., and Hippias was banished with his children in 510 B.C.; a total of about fifty years. Pisistratus, however, was banished for five or six years, from 556-5 to 550-49, and again for about ten years, a few months later, until 540-39 (Herod. I, 59-64).

This extract continues to the effect that Aristophanes made the period forty-one years, and Herodotus thirty-six. Freeumably the former allowed for the second exile, the latter for both. The most recent theory, put forward by Professor F.E. Adcock, is that there was in fact only one exile, and that the story was duplicated by tradition.

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Andron 109. According to the later version of the abovy as finally 107 . (Diog adopted by Virgil and Livy, asoaatus founded alors Σαμίω Lutiench sestvill nos ald pi bebacous any has egnel Phe was born three conturies later. Assantus me proabout this cult mort becoleveb . cului and add dity beings thago Titue, to connect with the dulit and particularly Athen Julius Gassar. Aquaid I 267-277, 432 73 736-779. tus, quiti Serminerdy places this frequent to the "Old Semedy" on 1084 I, 11 awoul of as plasti wars any show Jadi teds havong add to the Scholingt. Miller, however, places 15 in Simon 110. ""ddyrgonoudo" ets In 48 Piststratus select the tyrange 361-0 370.. and for a Hippins and buninged with His whilehow in 510 H. o. : thon a securit and decards . Manual vitte avoid to face a The the sweet shoet for fitte or easy yours, from 500w5 to 18 84 SSG-49, and anoth for obsets for young, a for months he di later, until 240-39 (Serod. Y. 59-64). Casto -essive sais secto oil of countrant forming ald price phanes nade the partod forty-one years, and Harodotus 8 110 intrip-size. Preservedit the forcer allowed for the wish second exiles the latter for man. The most recent room theory, put forward by Professor F.S. Adoost, to that men there use in fuct only one sills, and that the story Ap was depiled by trained pay

Andron of Ephesus wrote a work on the Seven Sages. (Diog. Laert. I, 30; Suidas and Photius s.v. Σαμίων δ δήμος.

335

Pherecydes: one, of Syros in Cyclades, flourished about 544 B.C., said to have been the master of Pythagoras; the second, born at Leros but lived at Athens, a logographer, was a contemporary of Herodotus, and wrote a work on myths and on Athenian antiquities, frequently quoted by Scholiasts. (Diog. Laert. I, 119; Stob. C. 487 b)

110.

Simonides of Geos, the lyric poet, was born in 556 B.C. In 489 he defeated Aeschylus at Athens in competition for a prize offered for an elegy on the dead at Marathon. He died at Hiero's court in Syracuse in 467. The story to which reference is made by Quintilian is as follows: in writing an ode to a victorious boxer he digressed, according to custom, on the subject of Gastor and Pollux, and the boxer refused to pay the full price. At the dinner given to celebrate the victory a message was brought to Simonides that two young men wished to see him. As he left the house the diningroom collapsed, killing all the diners; but no young men were to be seen.

Apollodorus: presumably the Athenian historian and

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Report 544 B.C., Ball to have been the hyphanes, flourdained about 544 B.C., Ball to have been the mester of firthegores) the second, born at Lares but lived at Athene, a logographer, was a contemporary of Herodotus, and wrote a work on sythe and on Athenian antiquistes, frequently quoted by Secolization (Dies, Laret 1, 119; Stop. C. adf pi

Himonites of Jecos, the lyste pool, was been in 186 A.C. in AS9 he defeated isosciptes at shiens to competition for a prize offered for an elect on the dead at larsbon. He stat at Here's sourt is Symeoner in 607. The story to worke reference is made by initializing is as follows: in writter as sis to a virtualized be digressed, accounting to mutch, on the addject of be digressed, accounting to mutch, on the addject of be digressed, accounting to mutch, on the addject of states and follow, and the boars reluced to interview where to be dimensioner to interview the top of the states and toller, and the boars reluced to interview and a state to be dimensioned to determine the state of a second to be dimensioned to be boars to top of the states is states to fine the boars to top of and a second to be top at the state to be boars to top of the state to be at the state to be board to be boars to top of top of the top to be a state to be board to be board to be top of the top of the state of the top board top to be board to be top of the top to be at the state top top of the top of the top top at the state top top of the top top of the state top top top of mythographer of the 2nd century B.C. He wrote sept vedv (natalóyou) (fr. 137) and βιβλιοθήκη, a mythological catalogue very often quoted.

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The Sacred War of 448 B.C., Thuc. I, 112, 5.

The Phocians seized the temple at Delphi, the Spartans sent an expedition and drove them out, and when the Spartans left the Athenians under Perioles restored the temple to the Phocians.

Theopompus was born in Chios about 378 B.C., and was a pupil of Isocrates. He wrote speeches and twelve books of histories, continuing Thuoydides to 304 B.C., the latter of which were praised for accuracy but censured for their severity. He was expelled from Chios and fled to Ptolemy in Egypt (Phot. God. 176 p. 120). He was a fellow-stunent of Ephorus (Gic, Brut. 56; de Oratore II, 13, 22).

This passage was formerly punctuated: 'Ε. ἐν τῷ ἐννάτῷ τῶν 'Αμαθουσίων, βασιλέα τοῦτον . . . Fell and others were thus led to attribute to Eratosthenes a work on "The Amathusians" of nine or more books. This theory was supported by the entry of Hesychius under 'Αφροδίτος . . . δ δὲ τặ sepì 'Αμαθοῦντα γεγραφὸς Παιάνισον ἅνδρα τὸν θεὸν ἐσχαματίσθαι ἐν Κύπμῷ λέγει. Bernhardy, while repunctuating the passage, places it

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aythographian of the Red contrary B.C. Ha wrote styl in th vedv (norahdyon) (fr. 137) and pight offing. a sysholo-The stail estalogue wery often quoted. Eupo] 113. with the providence of the providence of the providence of the The Sadred Mar of 448 3.0., Thus. I. 112, 5. alit Arist The Phoetans source the texple at Pelphi, the Sparaxped tent and any south and drows them out, and when place the Spartane Loft the Athenians under Feridies restoned Ber the trapic to the incorner. the ' Theopoopute was born in diston about 378 8.0., and was "Chro may 1 books of mistories, continuing Thursdaysies to 304 B.C., Du the latter of which were praised for acounty but day-128) wared for their severity. He was expelled from Ohios ject and flod to Peolosy in Seypt (Past, Sod, 176 p. 180), 281 He was a fellow-sturent of Spherma (Ole, Brub. 56) of A de Uraburg 31, 13, 823. 114. Phil This passage was forwardy pinnshuted: "E. iv of freing ALLS. Eu The "Apolouofur, Basilis robrer . . . Fall and at t a secondentation of enditers of bal and even areals 115. Hipp work on "The Association of this or sore books. " This exta theory was autopread by the datery of Husperites onto succ ligidvioov Evopa vor Geor Sozghaviobai er Konig hiver. Bernhardy, while reputetinging the passage, places it

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in the "Old Comedy" as a probable gloss on Aristophanes. There is no other extant reference to this Rhoecus.

Eupolis, c. 446-411 B.G. Associated with Gratinus and Aristophanes in Horace Sat. I, 4, 1. The Sicilian Expedition, in which this incident was supposed to take place, set sail in 415 B.C.

Bernhardy not unnaturally places this fragment in the "Old Comedy". Jacoby, however, places it in the "Chronography", where in the absence of evidence it may be left.

Duris of Samos, a pupil of Eheophrastus, (Ath. IV, 128) wrote many works on historical and literary subjects, including & TOV 'Ehhivov lotopic from 370-281 at least (Diod. XV, 60). He was a descendant of Alcibiades (Flut. Alcib. 32).

Philochorus: fr. 59, n. Euripides: 480-406 B.G. He died in Macedonia at the court of Archelaus.

 Hippocrates of Gos, c. 460-c.357 B.G. Most of the extant works under his name are probably by his medical successors.

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Phe in the "Old Comedy" as a probable gloss on Arlatopheree. Apo There is no other extant reference to this Recourt. Leo We want the second state of the Augolia, c. 445-411 3.C. Associated vith Unitimum and Nero. Artitophanes in Horses Sat. I. 4. 1. The Stolling XII. Superition, in which this inclicent was aunposed to hake Even 116. place, det sail in dis B.C. nores Bernhardy not unistantly places this frequent in cent 4. the "old Somedy", Shaoby, however, places it in the Hy "obromography", where in the absence of evidence it frie . The lot you Anti Duris of Semos, a pupil of Smeephrachae, (Ath. 17) ty 7 120) wrote sany works on historical and literary anddere jooks, including & row 'soldway lorapia from 370-Or 281 at loset (21ed. C. 60). No was a descendant Diog of Aloibiades (Figs. Aloib. 30). but is Whileonorus: fr. 50, n. 117. Deme pare Surtplass: 480-405 3.5. He died in Massionia was 6 A REAL PROPERTY AND A REAL at the court of Archelaus. (Die meti antant works, under his name and photobly by his modical edu .8108866008 and Art 118.

Pherecydes: see fr. 110, n. Apollodorus: fr. 111, n. Lecanius Areius: a Greek physician of the time of Nero. He wrote a compendium of medicine. (Galen XII, 776)

338

Evenus, an elegiac poet (see Gaisford: "Poetae Minores Graeci") flourished in the middle of the 5th century.

Hyperides was one of the ten Attic Orators and a friend of Demosthenes. He was killed by order of Antipater in 322 B.C. There were extant in antiquity 77 of his speeches, of which 25 were already considered spurious.

Only fragments now survive. (Flut., Dec. Or. 848 D; Diog. Lasert. III, 46). Or fragment was marine of word of the but whe yes and "against attingues" and "he brandford" was about parents, became an orator, philosopher and poet. He was appointed governor of Athens by Cassander in 317, (Diog. Lasert. XIX, 78) but fled on the approach of Demetrius Pollorcetes in 307 to Alexandria, where he assisted in the establishment of the Library. He was educated at the school of Theophrastus with Menander, and died about 283. (Diog. Lasert. V, 5).

After the death of Alexander the Great and the rising

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Phoreosydes: sev fr. 110, n. Apollodorus: fr. 111, n. Leosnine Arcius: a Greek physicizes of the fine of Noro. He wrote a composition of multichie. (Note: 311, TFG)

Ryenus, an elegine post (see Galefonds "Postes Rineres Grassi") flowfieldd in the middle of the Sth ...

Reportions was not the two two attic Oretons and a friend of Demostiones. So was stilled by order of a Antipater in 302 3.4. Share were antant in antipate: is for TT of bis speeches, of which 25 were already condudered spurious.

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Ding. Lasts. III, 561. 541 marks an anomal and a few and a second state of the second

After the death of Alexander the Orest and the rising
of the Greek cities, Demosthenes took refuge from Antipater's followers in the temple of Poseidon in the island of Galauria and poisoned himself in 322 B.C.

of. Decem Oratorum Vitae 847 Β: "Ερατοσθένης δέ, έκ πολλού δεδοικότα Μακεδόνας περί τῷ βραχίονι κρίκον περικετσθαι πεφαρμαγμένον.

Olympias, daughter of Neoptolemus I of Epirus, married Philip of Macedon c. 357 B.C. He divorced her in 336 to marry Gleopatra, niece of his general Attalus, who at the wedding suggested a prayer for a "legitimate" heir to the throne. Alexander took Olympias to Lyncestis, and shortly afterwards Philip was assassinated probably at her instigation. After Alexander's death she played a prominent part: in 317 she seized the supreme power in Macedonia, but was put to death by Cassander at Fydna in the following year.

Whether Alexander was really the son of Philip cannot be known, but it is fairly certain that, at least after his visit to the temple of Ammon in 331, he himself became convinced that there was something more than human about him.

120.

Darius III was utterly defeated at the battle of Gaugamela in 331.

This passage is a good example, whether true or not, of the openly superstitious side of Alexander's charac-

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of the Orest states, Demosthenes took reites from Lab. poter's followers in the temple of Domition to the talend of Calcurate and potesses himself to 302 2.2. of. Desen Oretoria Vites Ser 31 "Lerverberge to, he solled teborster invectives and all polyfors spinov septembra invectives and all polyfors

Olympias, daughter of Memorialment I al Diffuse, manifed Multip of Mession c. 357 2.0. He diversed her In 336 to marry Discontre, sizes of his general Attain who at the welling suggested a proper for a "lemitmate" heir to the throws. Alexander took Digatize to itrassatic, and shortly aftermate Pality we establish probably at her instigation. After Alexander's cost and played a provinest parts in 317 and establish supreme power 10 Kessionis, but we put to took to any one to the the the following parts.

Rether Liesender wes really the end of Millip cannot be known, but it is fairly certain that, at least after his visit to the tampic of Amoon in 531, he Almeuic broase convinced that there are something more than human shout his.

Santas III was actorly defeated at the brittle of Gamegauela in 332.

This passage is a good example, whether true or not, of the openic superchitican side of Alexander's charge-

ter, and also of the "chatty"method of history employed by Eratosthenes.

For the possibility of a separate biography of Alexander, see Intr. p. xxiii.

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Fhilotas was the son of Parmenio and friend of Alexander. (Plut. Alex. 10) He distinguished himself early, and commanded the EtaTpoi (Arr. Anab. I, 2,5). Suspected of complicity in the conspiracy of Dimnus, he confessed under torture and was stoned to death. (Arr. Anab. III, 20; Plut. Alex. 48,49).

To the ordinary Greek Alexander's aim of mixing the better parts of the Hellenic and Persian cultures and encouraging, even by personal example, the intermarriage of the two peoples must have seemed disgusting and perverted. Evidently Eratosthenes, an ealectic himself, approved of the principle and defended even his apparently effeminate adoption of a Persian garb. Whether the latter part of the extract belongs to Eratosthenes cannot be decided definitely from the wording, though from the implied approval of the Stoic treatment of doideops perhaps the balance of probability is against it. of. fr. 42, and fr. 43, n. Müller ends his extract at 'E. lotopaxey; Jacoby gives the whole.

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Doubtful "Chronography":

Whether this or the following fragment can reasonably be included in the "Chronography" is very doubtful, though in view of the "popular" nature of the work not impossible. Fabricius (Bibl. Gr. IV) suggested a separate work #spi Eißthlag.

341

If this fragment is accepted it should presumably stand before fr. 103 at the beginning of the book, as Evander's expedition to Italy was assigned to the period before the Trojan War. As Eratosthenes seems to have as his first date the fall of Troy, this is in itself an argument against its inclusion. Bernhardy includes both in the "Geography". For the Cumasan Sibyl and her story see Virg. Asn.

VI.

123.

Jacoby includes the Sibyls in the "Chronography", and adduces this fragment as possible evidence that Eratosthenes had access to ancient municipal records. Bernhardy, with more probability, dismisses the "antiqui annales" as "nihil aliud quam Ecuicand vetusti cuiusdam logographi".

of. Suidas; Σιβύλλαι. Έπτη, Σαρία, ή πυρίφ δνόματι παλουμένη Φυτώ· περί ής έγραψεν 'Ερατοσθένης. According to most accounts there were no fewer than ten Sibyls.

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The "white poplar" was associated with the underworld because of its colourless appearance. The name "Acherois" is found in IL. XIII, 389; XVI, 482. This fragment evidently concerns the events leading up to the foundation of the Olympic Games by Heracles, and belongs to the introduction to the work.

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125.

Bernhardy places this in the "Old Comedy", under "doubtful plays of Aristophanes". Aristophanes does introduce the phrase tivella xallivinoc at the end of the "Birds" and the "Acharnians", in the general sense of "See, the conquering hero comes". This fragment seems therefore to refer rather to Heracles himself and his attributes, and to be placed correctly here. The wordtivella is supposed to imitate the "twang" of a lyre.

Archilochus flourished c. 714-676 B.J. He was one of the earliest lyric poets, and also invented the iambic metre: cf. Horace, A.F. 79. Archilochum proprio rabies armavit iambo.

126.

Bernhardy and Müller place this passage in the "Chronography", but there can be little doubt that it is better placed here.

Th STRAND 11g1 "malue "while noulses" was associated with the underever world begauges of its velourises appearinge. . The Dind and "Addarois" to found in TI. TIIL, SHOT of "aloredoa" amag 362, This Imagaint wyidently concerns the events leading emer to to the foundation of the Olympic Camab by Remained. The There and of entropyordal sits of according 127. sphe Seminardy places this is the "old decaly "business 1254 3 "doubtful plays of artistephanos". Artstophanos d18 in the part of an addition addition and an the and of ple three "Birds" and the "spin-related", in the "abili" and T of "See, the sociaring have comes". This framment Ber 128. presente enterned or reduct releves as enclosed aneed not and his abbrenies locally of he has selected a shi bas rea "concut" and adapted to concerns al . ollavir triow add C State and the state of the second state of the second in the TPU nal and beingenil oals one , stept birts mellings and the Sel 129. proprio vebles areavit iamos. na 20 Bernhardy and Hiller place this has an and the the (3 ". test thread alasti on and event tod ."".d manarid" the test better of some iners of the stands su

The text is so corrupt that it can be made intelligible only by guess-work; the general sense, however, is clear. The text given here is that of Dindorf (Schol. Graec. in Eurip. Frag., vol. 1, p. 362, Oxford, 1863), which involves less drastic emendation than that of Müller.

Eller places this frequent is the "Oproperuply".

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The σόλος appears to have been more or less spherical, the bioxoc flat.

Evidently Eratosthenes continued his book with a discussion of different customs, sports, and implements used.

The lines are Iliad XXIII, 826 and 431 respectively.

Bernhardy, to support his doctrine that there cannot have been more than one book of "Olympic Victors", reads TQ sepi for sportQ.

of. Theopompus ap. Ath. XII, 518B: 8πδ δὲ τῆς τρυφῆς οἱ Τυρρηνοί, ὡς "Αλκιμος ἱστορεῖ, πρός αὐλόν καὶ μάττουσι καὶ πυκτεύουσι καὶ μαστιγοῦσιν.

ca els "themaster hernohever that vie

129.

Schol. Vesp. 1186 refers to a Maenalian "pancratiast" named Ephudion ('Egoudiuw), and Bernhardy accordingly reads Maiváliov for pélavov and adopts sepiciovingv (Sopingius) for sepicitiév. It seems reasonable to suppose that the references are to the same man.

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The text is an express that it can be made initiitable only by guess-work; the general same, havever, is class. The text siven here is that of bindow? (Sabol. Graec. in Surip. Fred., vol. 1, p. 352, Oxford. 1965), watch involves less drastis esendation than that of RELISE.

the diver appears to have been more or loss a spherical, the fire class.

Andently Sectorthered continued his book with B discussion of different oustons, sports, and ispleasate used.

The lines are flied will, 605 and 432 requestively.

Barrissandy. So aucoort his doctrino that blore cannot have been nore than one book of "circule Victore". reads to repl ture sport.

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Sabol. Verp. 1135 refere to a Magnellan "purprating" manad Spinotics ("Spootfar), and Dermandy accordingly reads Matvd.tov for phinver and adapts accordingly (September) for schools of a second reasonable to suppose that the references are to the same pan. xepio the g of th wrest The

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xepipiocowas the name for the complete round of all the games, and vinäv thy xepicitov meant to win at all of them. The xayapátiov was a kind of "all-in" wrestling.

There is no evidence to which Polemon this refers.

Müller places this fragment in the "Chronography". He takes it as referring to "the Samian Philosopher", and accordingly follows Bernhardy's suggestion that the 48th Olympiad (609-8 B.G.) refers to the year of birth, not to that of competing in the games. Pythagoras the philosopher flourished 540-510.

The whole story, though odd, is not out of character with what little is known of him. It seems, however. to be forcing the sense unduly to take the date as referring to anything but the Games.

of. Proverb. God. Paris. suppl. gr. 676, quoted by Jacoby:

τόν (έν Σάμφ) πομήτην. Σάμιδν φησιν πύπτην πομώντα είς 'Ολυμπίαν άφιπόμενον (παι νιπή)σαντα έπι τών Θηλυπρεπεί πρός τών άνταγωνιστών χλευαζόμενον είς παροιμ(ίαν έλθειν). 'Ερατοσθένης δέ πατά την μη' δλυμπιάδα Πυθαγόραν Σάμιον τόν πο(μήτην) νιπήσαι.

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There is no evidence to which foleson this refere.

Miller places this fragment in the "Caronagraphy". He takes it as referring to "the Samish Philosopher". and abro-dizarly follows Herminardy"s suggestion that the 46th Olympian (509+8 3.0.) refers to the rest of birth, not to that of associating in the games. 'Ptheory the this philosopher frequence 50-510.

The whole story, though set, is not out of diminister with what little is inside of him. It actis, however, to be foreing the sense waisily to take the date an referring to anything but the Games.

af. iroverb. Ond. Farls. aunpl. gr. 676, quoted by Jacobyt

τόν (δυ Είμφ) πορήτην. Εάμτόν αφοιν αθατην πομώντα είς 'Ολφικείαν δοιπόμενου (ποί νιπή)ουντα δαί τών Θηλυπρεπεί πρός των δνταγωντατών χλουα-Εόμενον είς παροιμ(fav δλύετν). 'Ερατοσθόνης δδ πατό τήν μη' δλυματόνο Πυθαγόραν Εάμτον τόν πο(μήτην) νιπήσωι.

and the muchar of stories about the famous philoso-

pher is taken into consideration, it is difficult to believe that such an example would pass into a proverb simply as the tw Zápo monitar. The simplest explanation is that the reference is to another Pythagoras.

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71st Olympiad = 497-6 B. C.

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The father of Meton, who introduced the Metonic Gyole (fr. 41, n.) about 432 B. G., was Empedocles of Acragas, who "flourished" about the middle of the 5th Gentury. This fragment could possibly refer to him, but if so it is curious that he is not given his own name.

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The father of Fater, who introduced the Materia Oyolo (Tr. Al. c.) about A32 3. S. man. Magadoolog of Asregas, who "flourished" about the middle of the 5th Century. This fragment could powerbly al ad faits apolyne at it os th fud antis os welce and given bis own mame.

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The way in which Strabo expresses this sentence suggests that the juxtaposition of Homer and the two genuine scientists is intended to stress Homer's claims to a scientific knowledge of geography, and may be taken as Strabo's own. Perhaps Eratosthenes referred to the three writers separately, occupying considerable space in his adverse criticisms of Homer, and then going on to summarize the contributions of Anaximander (born 610) and Hecataeus (fl. c. 520). First Can contenent, and blacks of. fr. 149.

346

world an in the next frequent.

135.

Ancher puts this extract as fr. 1, omitting the 134. mere mention of Homer above.

1. 1. The "inconsistency" is to describe Homer as ignorant and then to give examples of his accuracy in description. To Altroi to the boling lespelyede.

1. 2. τῆς λεχθείσης ἀποφάσεως: fr. 135.

The same collection of epithets is quoted also by Strabo at C. 298 and by Eustathius, in Hom. Il. II. 502. The from at the Presta Sug act and

> Bapelous guebasatoGrace The word wuxaywy a rouses Strabo to a religious

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The way in which Strabe expresses this sectores add ban memoli to mothinouptury, out south alwayson two genuine spientists is intended to strong "Homes to enabled by the second by a collecter of mened repairs and may be taken as Straig's sim has . Termon second and the the the three wittens adde. rately, coounting compiderable ander in his shveres outsides of he gaing soit has , nevel to emaled in the contributions of Americander (born 610) and Hectsens (11. r. 220). ar. er. 149.

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134. Anoher puts this extract as fr. 2, outting the mero mention of Hoger shows. 1. 1. The "Inconsistency" is to describe House as ignorant and than to give examples of his acouracy in deearticton.

1. 2. The heydelene decoderenc: for 135. the same collection of epithete is quoted also

by Strabe at G. 296 and by Eustathius, in Nor. IL. . 502 . 21

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at d of NELE 1 300 355 pano. . qi Stra atic quot the 8. 98 ADO] Ar the 11. 4-5: 10) σύνι "EX 11. 10-11: Era ALO 11. 30-31: Not 11. 32-33: Not 1. 34: "RA:

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Strabo goes on to admit that it is, in fact, fanatical to attribute all knowledge to Homer, and quotes Hipparchus as saying that it is like treating the poet as a Christmas tree ('Attuch elpeonova, a sacrificial branch with offerings tied on it).

• Apollodorus: see fr. 110, n., and 142. Ancher omits the first two sentences, and places the rest as fr. 2.

11. 4-5; τὰ μὲν Ἐλληνικὰ . . . of. G. 18; ἀλλ'οὐδὲ τὰ σύνεγγυς μόνον, ὤσκερ Ἐ. εἴρηκε, καὶ τὰ ἐν τοῖς Ἐλλησιν, ἁλλὰ καὶ τῶν κόρρω κολλὰ λεγει.

11. 10-11: Eratosthenes also quoted (Strabo C. 300) Hesiod: Αἰθίοπάς τε Λίγυς τε ίδὲ Σκύθας ἰππημολγούς.

11. 30-31: Not in any extant work of Hesiod (Loeb. ed., p. 180) 11. 32-33: Not in the extant "Prometheus Bound".

1. 34: <u>Ρικαΐα δρη:</u> αξεσδτυαδος Ο. 2931 διά δε την άγνοιαν των τόπων τούτων οι τά 'Ρικαΐα δρη και τους 'Υπερβορείους μυθοποιούντες λόγου ήξίωνται ;

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also Mela I, 117. They were a mythical range in the extreme north of Europe, associated with Boreas (pisat, blasts)

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1. 36: Maposiba yiv. Aelian (Var. Hist. III, 18) says Theopompus (fr. 111, n.) related a conversation between Midas and Silenus, in which Silenus mentioned the Meropians, a larger continent than Asia, Africa and Europe put together.

1. 38: Euhemerus and Panchaea: of, fr. 150, n.

 39: xorapious libous. These are not found in the extant works of Aristotle.

1. 44: Γερήνων. The birthplace of Mestor, in Messenia.
'Ακακησίου. A mountain in Arcadia. of. Schol.
B.D. Il. 5, 422, assigned by Hiller to the "Hermes":
οδδ'ώς 'Ερατοσθένας καρήκουσεν 'Ομήρου εἰκόντος
'Ερμείας ἀκάκητα, ὅτι ἀκὸ 'Ακακησίου ὅρους, ἀλλ'
ὁ μηδενὸς καροῦ μεταδοτικός, ἐκεὶ καὶ δοτὴρ ἐάων.
Prometheus was also called 'Ακακήσιος by Hesiod (Theog.
614)

1. 44: Afpov. Il. 3, 201. Some held that it was the name of a people.

1. 44: HakeOpoviou. Not found in Homer or Hesiod. Some said it was a city in Thessaly, some a mountain or a

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part of Mt. Pelion, others the cave where Cheiron taught Achilles. (Jones, Loeb Strabo, vol. III p. 191-2)

- 1. 44-5: Flaumestou Not in Homer or Hesiod. Apparently connected with Flaumestog 'Addiva.
- 1. 57: "Aξενος "Aξεινος Persian Achshaenasz dark: cf. Mod. Greek "Mavrothalassa". (Hyde, p. 29-30, n. 14)
- 58: ¹ Ιππημολγούς The Mongol Kalmucks, who still use "koumiss".

138. In 1902 V. Bérard, in "Les Phéniciens et l'Odymee", put forward an ingenious theory based partly on the supposed etymology of place-names that the "Odyssey" was in fact a Greek adaptation of the story of early Phoenician exploration. This theory has been sufficiently exploded by the disoveries about the Minoan civilization made by Sir Arthur Evans at Grete and other archaeologists since that time. (Ancient Explorers", pp. 15-17; Hyde, p. 33), although the Gadmus story (fr. 263,n.), for example, illustrates that it is not without some basis.

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This remark is quoted also by Eustathius, in Od. XI, 19.

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there scene Homes treat marve For with 141. Samu this See a 142. Erate 01110 88804 AD Cat it a 143. See 3 The Thra and 1 that Hell

parts of Me. Dollars, others the owne where Chairon taught Addilles. (Jones, Losb Strate, vol. III p. 191-2)" 1. Shadi Thankerfor Not in Honor or Heald. Appendingly .pvheA* preSaucht sitte beteennoo L. STE . AEEVOC 2041333."30 work besting allaping any

wertenward maero . bol . 10 . minst waarendaries asteret lassa". (Hyde, p. 25-30; 5. 14) 1. 581

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In 1900 V. Borney, in "Les Théololons et 1'03paée", put formant an ingenious thoory based partity on the aupposed stralegy of place-manue that the "divisory" was in fact a Greek staptation of the story of early "he need and yrough ald" . moltanoigue mainimedi figiently appleded by the cleoveries about the Minoun ofvillention main by Sir Arthur Swam ut Grute and other archaeologists since that these dents Emplorers", pp. 15-17; Syde. p. 33), although the Gadame story (fr. 263, a.), for example, dilustrates that it is not without some basis.

This remark is quoted also by Sustainius, in 64. 21.

dents blue that and odents. Starbound the fast anth that

there is a "better" and a "worse" way for placing the scene of the Odyssey round Sicily: the better, that Homer believed that that was the actual scene and treated it poetically; the worse, to take all the marvellous parts as fact also, or as meant to be so. For Sirenussae see fr. 267, n. Geryon was associated with the island of Erythes (see fr. 275, n.)

141.

Samuel Butler, in "The Authoress of the Odyssey", defends this hypothesis with great energy and some cogency. See also fr. 138, note.

142.

Eratosthenes himself appears to have opposed the Sicilian theory to the point of opposing his friend and associate Gallimachus. of. Strabo G. 299. Apollodorus of Athens: see fr. 137 and 110, note. Gaudos is Gozo, south of Sicily. Gallimachus took it as the island of Galypso.

See Intr. III A on the Winds.

gaographers (fra 196, la 28, ma)

The Gulf of Melas (Saros) is on the north of the Thracian Chersonese, and has Thrace also to the north and west. It would, of course, be equally true to say that the north and west winds blow from Thrace in the Hellespont, of which Homer is writing particularly

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Semuel Sutler, in "One Antronass of the Odyasey", defende this hypothesis with great energy and some degener. See also fr. 133, pote.

Aratosthemen himself appears to have apposed the Steilian theory to the point of appearing his fetend and associate Galifreehue. of, Strabe 0. 399. Apollodores of Athenet des fr. 137 and 130, note. Gautos is Goro, south of Stolly. Galifreehue tech it as the island of Galyneo.

des liner. III & on the Winds.

The Gulf of Helas (Saros) is on the north of the Ihracian Ohersender, and has Hirace also to the month and west. It would, of course, be equally true to any that the month and west winds blow from Threes in the Heliospont, of which Homor is writing (pupilsularly in the Iliad. Eratosthenes, knowing the ancient method of describing winds by the places where they arise, seems to have forgotten Homer's "horizon" and to have applied the line to the Greek mainland, where it would be meaningless,

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of. Schol. Buttm. Od. IV 477: τον Νετλον Αίγυκτον δνομάζει, δ δέ 'Ησίοδος ώσαν νεώτερος Νετλον αύτον οίδε καλούμενον.

The name "Nile", which is Semitic, is first found in Theog. 332. (Hyde, p. 76).

145.

It is more than likely that Pharos was at one time "out at sea", but no method of calculating dates is reliable. An alternative explanation of the "whole day's" journey is that it means distance along the coast from the Ganobic mouth. Alyoarow referring to the river. The passage (Od. 4, 354-7) is as follows:

νήσος ἕπειτά τις ἕστι πολυκλύστω ένὶ πόντω Αἰγύπτου προπάροιθε, Φάρον δὲ ἐ κικλήσκουσι, τόσσον ἄνευθ ὅσσον τε πανημερίη γλαφύρη νηῦς ήνυσεν, ϳ λιγός οδρος ἐπιενείgσιν ὅπισθεν.

146.

The idea of two separate "Ethipias" died hard, and it was not until Alexander's expedition that the Indus was finally separated from the Nile in the minds of geographers (fr. 196, 1. 22, n.)

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in the line line, investments, incuring the soutent nor that of descripting winds by the places where they arise, seems to inves "presting Horser"s "horizon" and to have spolled the line to the Greek estained, where it would be meaningless,

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The name "utils", which is desiring to first found in Theory, 332, (Eyder, 5, 76).

At is sore then likely that Shares was at one time. "out at see", but so possed of colouisting dates is settable. An elferra-tive explanation of the "shale day"s" journey is that it some distance along the coast from the Conduct south, division of oreing to the river, The passage (od. 6, 396-7) is an follows

vijose kasird rie kori nohundonų kui abvai alyberov sposdoriba, Odeas iš k aindonavori, rbovov Kurob bovov za savajiseta yhapdea vąte fvooru, į hirde ošeae laisvalgore barobeu.

The idea of two separate "Sthipins" dist hard, and is what not would Alexander's expedition that the locus whe finally separated from the Alls in the mins of geographers (fr. 196, 1. 22, n.) Strabo (G. 31) quotes Aristarchus as simply denying the existence of two Ethiopias and ascribing the line to the poet's ignorance of "this and of the other points mentioned by Apollodorus in his "Gatalogue of Ships'." The next line, however, of piv Suoppévou 'Ysspióvoc, of S'dviovtoc (Od. I, 24), is not so definite as Herodotus (VII, 69, 70) who divides them into "Ethipians above Egypt" and Ethiopians in Asia, with ourly and straight hair respectively (of. fr. 196). Eratosthenes himself (fr. 222) produces "western Ethiopians"beyond Morocco. See also figures 1 and 2 (Introd) Alefoy, in any case, only means "burnt face" or "negro".

352

147.11.5-7: Diod. Sic. I 67 and 88 also emphatically denies the stories of the sacrifice of strangers to Busiris: he adds that there was no king Busiris, but that this was a local name for the "tomb of Osiris".

11.15-16: There is even a story of a Carthaginian captain who sacrificed his own ship to lure a foreign vessel into the shallows, and was publicly compensated. (Strabo, C. 176).

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This passage goes closely with the foregoing. Both describe the difficulties and dangers of early exploration owing not only to the necessity of coasting but

to th tribe that not a See 149. 30 30 3 B. Th Th fore Die 150. Dam to and p. I. 6.01 Cos Nº & thirty the S. YPO WA al BE a

service (0. 91) quotes arterardius as many (10. .0) educted anti not shidhoon bun netopinit ows in constitue and tenic and to and align to epiconal attent and as points contioned by Apollodorus in his "Catalogue of davangand win to every however, bound and .". "aging "Yaspedvoc, of 5'dy(ovroc (04. J. 34), to not so dertadai mond apprend and (or . 00, 117) subchered as othe "Still antes, at analogicate has "toys" system in this with during and straight hair respectively (er. Tr. 196). -oldfs grossey" encodency (SE2) "lisenid considerate. (Sender) S Sea I semplif dala est , coocool Encod anald " store" at any only movie "burnt face" or "negro". the animal wilesigned on in 68 and 68 airs and in-Call. W. atorian of the magnifies of strangers to Sudatat in new alid fand and , abiland, hald on any event that the a local came for the "tosh of Ostria". originate outsignation a lo youts a neve at events iditelill stat factor plant a grai of the man and boothreas the shallows, and was publicly compensated. (Straho, G. 176).

This passage yous closely with the foregoing. Both describe the difficulties and dangers of saily annioration owing not only to the moreselty of coastles but to the inhospitality and hostility of the barbarian tribes encountered. This also shows conclusively that ancient ships, except in very early times, did not always hug the coast.

See fr. 133, and note. the state stilling had append

For Thales, Anaximander, and Hecataeus see Introd., 3 B.

The extant "Periodos" of Hecataeus is considered a forgery by Glover and others, genuine by M. Cary and Diels. (Hyde, pp. 112-3, n.)

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Damastes was a contemporary of Herodotus and, according to Suidas, a pupil of Hellanicus. He wrote histories and a repishouc, copied according to Agathemerus I p. 2 from Hecatacus. According to Dion. Hal. A. R. I, 72 he mentioned the foundation of Rome. Euhemerus, most say of Messene, others of Teges or Gos (Ath. XV, 658) was a Gyrenaic and "rationalized" the gods and myths. He claimed to have sailed along S. Asia to an island Fanchaca, and wrote a icpd dva-(Sext. Emp. IX, 17). The original "Bergacan" vas Antiphanes of Berga (Polyb. XIXIII 12 and 5). of. also Strab. C. 104: . Eparosobéva & tov piv Edápspov

Bapyalov makelv, Hudda be storavery. Diotimus, son of Strombichus, is mentioned by Thucydides (I, 45, 2) as one of the commanders of the first

to the integrited its continent in this with of ten al tribos encontrio als also dinus concerco podint ginni the souther withes anaget to very early times, and Indee 151. . Sampe and your symple somet. from 500 27. 133, and note. as th . For finales, analisation, and Houstook and Inkedt tot. up th east 3 3. to p The extent "Forloce" of Heathense is constanted a forgery by Blover and others, genuine by H. Cary and This 152. Diels. (Hyde, po. 112-5, n.) fire the pathoppe , has substanting of Herbicking a car potentia on, and a restance copies adoarding to again the sector phy See D. 2 from Hachiston, According to Man. Mal. M. M. T I. The montivened the foundation of Adust. dou to sense to everine, or inspace, othere of there or Cos (Ath. XV. 653) mas & Gyrenate and "settemilland" COL the gods and orthan . Is claimed to have antich along 1.53. ada "ned fand a store ins anonara insist as of sist .8 " S (Jest. Map. 14, 111. The original "Ferdaum 11 S . 2050Y who aptimizes of Forge (Polyb. Alairs 12 and 5). of. WO 96 Bepyatov malety; Hobig 66 storederv. 84 Distibut, and of Strombishon, is muchicad by Thursdi-ATP AL . des (I, 45, 2) as and of the commoders of the first

ten ships sent by Athens to help Goreyra at the beginning of the Peloponnesian War.

354

Indeed, knowledge of the East remained almost stationary from the time of Erstosthenes to that of Strabo, whereas the Roman penetrations, also military, had opened up the West. Hence Strabo uses Erstosthenes for the eastern "Seals" and then abandons him until he comes to parts where Romans had not yet explored fully.

152.

151.

This is the key-passage introducing what appears at first sight to be a digression on the spherioity of the earth, the "circumfluence" of the Ocean and so on, but which seems to fit in better as a history of physical geography following the history of exploration. See Introd. 3 C.

The words Exep Ev clusionspor leave no doubt that the full treatment of the earth as a whole comes later in the work.

opaiposible "like a sphere"; not the technical term "spheroidal", but to be distinguished from opaiping " "spherical". It is noteworthy that Strabo uses this word particularly in connexion with Sratosthenes, who seems to mean by it that, if its irregularities, which are relatively insignificant, were evened up the earth's

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shape would be a perfect sphere. From this he naturally proceeds to enumerate the researchers into the various causes which have brought about these deviations from perfection.

ούχ ώς έκ τόρνου is evidently an echo of Herod. IV, 36: γελώ δε δρέων γῆς κεριόδους ἐοῦσαν κυκλοτερέα ὡς ἀκὸ τόρνου

Dicaearchus appears to have been the first man to attempt the measurement of mountains by intruments (see Intr. pp. livi & limiv)

The actual height of Mt. Olympus is given in modern maps as 9744 feet, but it must be remembered that this is height above sea-level.

Simplicius (in Arist. de Caelo II, ad fin) gives the same information in very similar words, emphasizing the same point as fr. 153.

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In this and the succeeding fragments Eratosthenes foes on dealing with the minor irregularities of the earth's surface, under the sea. The temple of Ammon (Siwa Oasis) is about 150 miles inland, inthe midst of desert: Alexander made a special journey there, and was told he was the son of Ammon.

Whatever the reason, and there is still no generally accepted hypothesis, it is now known that the Libyan desert and the Sahara were covered with sea-water

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allage would be A perfect sphere. From this he has turally proceeds to summarity the researchers into the virious causes which have brought about these devisions from perfection.

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Discontroined appears to have been the first can to attends the measurement of nounfairs by inframents (see Intr. pp. <u>1</u>] The assurt height of Mt. Clympus is given in modern maps as 9744 feat, but it must be remembered that this

is height above sectional. Simplicius (in Arist, de Caelo II, ad fin) gives the same fuformation in very similar words, equinations

the same point of it. 153. In this and the successing interpolarities drain dees on dealing with the single interpolarities of the earth's surface, under the sec. The temple of amon (Sive Casts) is about 150 miles inland, inthe adde of desert: Alexander made a special journey there, and who tever the reason, and there is still no generally desert and the Schere were devered with as formula in a comparatively recent geological period. 1.5-6: την έπ'αὐτὸ ὅδόν. Meineke ἐπ'αὐτῷ.

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Strato of Lampsacus was a Peripatetic, and tutor to Ptolemy Philadelphus. He was head of the School 288-270 between Theophrastus and Lycon (Diog. Laert. V. 58). He was known as guoinoc Gicero (Ac. Quaest. I, 9) censures him for ignoring morals.

Xanthus the Lydian wrote a history to which Herodotu was mid to have been indebted (Sph. ap. Ath. XII p. 515 It is not known whether the four books known in ancient times were genuine.

. See Introd. p. lxviii.

With this passage of. Strab. C. 38: μή γάρ πω το Επρηγμα το πατά τας Στήλας γεγονέναι νομίζει. ώστ' ένταῦθα συνάπτειν τὴν εἴσω θάλασσαν τῷ ἐπτος παὶ παλύπτειν τον ἰσθμον μετεωροτέραν οὖσαν, τοῦ δ'ἐπρήγματος γενομένου ταπεινωθῆναι παὶ ἀναπαλύψαι τὴν Υῆν τὴν πατὰ τὸ Κάσιον παὶ τὸ Πηλούσιον μεχρὶ τῆς Ἐρυθρᾶς.

He repeats the same point in C. 55 and 764. Mt. Casius - Jebel-el-Akra, near Nymphaeum in N. Syria. Hadrian climbed it to see "night and day" at the same time, but was prevented by a storm. (Spart. Hadr. 14)

Gerrha: see fr. 211.

356

Demet 158. . Lotrum fantgoloen insoen trevisionanimo à al .gróp'al einesel .vood dede'al vir id-E.I Demet and the second The Atrate of Laupacous sus a Perimitation, and hitter by 135074 of wh Protony Shilladeline. He was hood of the Shines. ... have 283-270 betrees Theorization and Links (2107. Dient. like] v. 50). In was, known as sweets (decess (de Erate Susant. I. 9) aspennes his for ignoring mouth. plans windered delive as wanted a provide a state of a suddered to w the .s. III. .dot .use .skill boodstat seed eval of his can Sici 12, 10, 00% Rooten aneth and the line house provid income in an Sard times were gonaine. It w . See Introd. p. Irrill. with Vith this passie of. Theat. 0. 38: 159. This no to Engran to note the Englace reported would be of B Son bergeda over trist of a bonder the state of the more -yaqua'a bar , woode wegerequereq voque! vor vierabion ad L the sir southourse for southers and demanders any parent YÉYO "sandous" ser fagen verobelai er fon verobe er fron vir ånd. Th He repeats the same point in 0, 55 and 764. .st ci mronfordi saan .anda-for-jedel - euteel .th. the 15 Syria bos idata" one of it bedaile ashibet .atavi the same time, but was prevented by a store. (Smart. tos alog derring and fry Stl.
Demetrius I of Macedon, surnamed Poliorcetes (Plut., Demet.), 337-283 B. C.

357

The complicated currents in the Mediterranean, some of which, as at Messina, are very strong and regular, have not yet been completely explained. If anyone is likely to have known and understood Archimedes, it is Eratosthenes, but he seems to have attempted an explanation based on unevenness of surface probably due to unevenness of bed. The submarine ridge at the Sicilian Strait and the great depth of the sea round Sardinia was known to the ancients (Strab. C. 50). It was Pytheas who first associated the Ocean tides with the phases of the moon. (Plac. Phil. III, 16)

This passage is placed by Berger in the general survey of Book 3, but as Thalamas suggests it fits in much more appropriately here. Berger also quotes Tzetzes ad Lycoph. 591: wal spotspov συνέστη νέφος sόλυ, wal γέγονεν δ έsi Δευκαλίωνος καταπλυσμός, και δστερον άπό σεισμού κατεποντίσθησαν, ώς 'Ερατοσθένης φησί. The battle of Leuctra was fought in 371 B. C., when the Thebans under Epaminendas defeated the Spartans, ismónepsoc: the sea-horse, supposed to bring luck to sailors. Its ashes, mixed with tar or lard, cure alopscia and other skin diseases (Gal. XII, 362), and

In Intr. p. anavid.

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it was used to cure the bite of a mad dog (Ael. XIV, 20) (D'Arcy W. Thompson, "Glossary of Greek Fishes", Oxford, 1947).

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Strabo now returns to the order of Eratosthenes. At fr. 152 the section on the history of physical geography succeeded the history of exploration. The g book now concludes with some general comments on and warnings against foolish geographers and travellers' tales.

For Hyperboreans, the belief in symmetry, and the general framework of geography in the time of Herodotus, see Intr., 3 A.

The counter-"arguments" raised by Eratosthenes are, perhaps intentionally, as foolish as those of Herodotus. He says (a) you could take any pair of opposites and say the same of them, (b) in any case there is no proof that there are no "Hypernotians", because probably Notus, the south wind, originates from "lower down", that is, nearer to the (Mediterranean) sea. In this "argument", if one is to take it with any seriousness at all, Eratosthenes is evidently arguing from the terminology and point of view of Herodotus; his own ideas on winds, as coming not from places but from directions, are explained in Intr. p. xxxvii.

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The remark of Herodotus (IV, 36) is referred to in a distorted form by Schol. Ap. Rhod. II, 675, where it is attributed to Herodorus: 'Υπερβορέους δὲ 'Ηρόδωρος μὲν εἶναι ὅλως φησίν· εἰ γάρ εἰσιν 'Υπερβόρειοι ἕσονται καὶ 'Υπερνότιοι.

359

The reading yelofav is Tyrwhitt's, for lével av Formerly waf was inserted between alla and warwtépw, which gives a more obvious meaning; but it is dropped again by Kramer, Meineke, Müller, and Jones. "Down" to a Greek meant always "seaward", regardless of the compass: cf. "up-country".

Strabe outs almost the whole of the remarks on "foolish writers" and comparison of sources, which would have been of great interest. He does, however, refer to them at C. 70 (fr. 163) and C687 (fr. 162, n.).

Before Alexander's time ignorance about the East was almost complete, even India and Ethiopia being confused (see fr. 146, and note). Thus it was only natural that when the Parapamisus (Hindu Kush) was reached, Alexander's expedition took it for the Gaucasus; there is no question of "exaggeration".

Strabo, G. 687, says that Megasthenes was one of a minority who believed such stories, while Eratosthenes considered them as incredible as those current in Greeco.

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Strabo, G. 607, says that Hegashames eas and of a minority who believed such stories, while insteathenes considered thes as incredible as these enrors in Greece.

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Deimachus and Megasthenes: see Intr. p. 1x111.

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360

The only recent attempt to reconstruct Megasthenes is a painstaking survey of the authorities, especially Arrian, Strabo, and Diodorus, by Barbara Gatharine Jacoba Timmer. The book is entitled "Megasthenes en de Indische Maatschappij", and was published in Dutch at Amsterdam in 1930.

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Book 2:

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164.1. 5: xeptotxeTtat. cf. fr. 183. From this it seems that Eratosthenes (quoted here verbatim by Strabe) did not think that there was in fact another "inhabited world" in the northern temperate zone, and that the word septotxeTtat does not refer to "Antichthones" and "Antipodes" in fact but only to their theoretical possibility. The "inhabited world" of Eratosthenes did in fact stretch more than half-way round the globe at latitude N. 36° (fm 183-4)

1. 8: ouv tā vypā quose. Evidently Strabo did not fully understand Eratosthenes on sea-curbents, and hence it is impossible to reconstruct fully what he did say. At the beginning of fr. 158 he upbraids Eratosthenes for ignorance of Archimedes on the behaviour of liquids, but if it is a choice between Eratosthenes and Strabo for knowledge and understanding of any theory of Archimedes there can be little doubt which to pick.

165. Strabo's insistence in fr. 164 on the excessive attention paid by Eratosthenes to xal & xóopoc and xal & expavóc makes it permissible to include at this point like Bernhardy the relationship of the earth to other

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The same measurements are also referred to Eratosthenes by Johannes Lydus, de Mensibus p. 39, and Stobasus, Ecl. Phys. p. 566. In Plac. Phil. II, 31, the two measurements are confused: περί άποστήματος σελήνης, δ' άφέστηκε τοῦ ἡλίου Έ. τον ὅλιον ἀπέχειν τῆς Υῆς σταδίων μυριάδας ἑβδομήκοντα ὀκτώ.

There is no ancient authority for the exact methods employed by Eratosthenes, but he is presumed to have used the observation that the sun cast no shadow over a belt three hundred stades across at Syene at the time of the solstice. (Fr. 167)

F. Hultsch, "Poseidonios ueber die Groesse und Endfernung der Sonne" (Goettingen, 1897), mentions Eratosthenes in passing. He considers (p. 5 note 2) that he wrote a sepi dvoperphoeux täx yäx and probably a sepi dvoperphoeux toù hhiou, and follows Maass (Aratea: Phil. Ant. von Kiess und Wil. XII, p. 380) in ascribing to him a sepi nóopou nai sotótatoc täv paivopévov, On p. 18 of the same work he also gives a somewhat misleading construction for the size of the sun, based on Gleomedes II, 1, 79-80.... b H. tsobépevoc pupioshaofova eïvai tóv hhiandv núnhov toù tặc yặc núnhou, dad toútou bopuápevoc beinvooiv,

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heavenly bolles. Hes late, pt. 122-122. the same measurements are also retained to antisethones by Johannes Lydus, de Mossinad 22, and 52, basus, Bol. Phys. P. 366. In Plas. M11. II, 31; the two measurements are concessioned ball. II, 31; orbive, 5' deformer are concessioned back for the floor back, o' deformer and billes 'E. riv floor backgess rife rife oraction parailed the back for the backgess rife rife oraction parailed the back for the

There is no analest estimating for the exact setuads employed by Sratestimenes, but he is presumed to have used the observation that the sun cast no similar over a balt three hundred stades surple at Space at the

there of the solution. (r. 167) r. Haltach, "reactionics mober the preserve and balferming der hanse" (destringen, 1897), anninges herbant her wrote a set braner, (near (to 5 miss 2)) that he wrote a set braner, (near (to 7), and ball has be wrote a set braner, (near (to 7), and ball has be to more a set braner, (near (to 7), and ball has be to more a set braner, (near (to 7), and ball has be to more a set braner, (to 7), be to more to 1000 to 200) he secretize to has a set brane with the or to more her to 200) he secretizes to has a set brane with the or to more her also gives a somewhat misteriating construction for the size of the secretizes of the or the more with the black of the secretizes to the secretize in the or to more her black of the secretizes to has a set brane with the or to more her to 500 her secretizes to the secretize in the or to more her to 500 her secretizes to the secretize in the or to more her black of the secretizes to the secretize in the or to the secretizes in the first of the secretizes in the secretizes in the black of the secretizes in the secretizes in the or to the secretizes in the first of the secretizes in the secretizes in the secretizes in the first of the secretizes in the secretizes the intervence in the first of the secretizes in the secretizes the intervence in the first of the secretizes in the secretizes the intervence in the first of the secretizes in the secretizes the secretizes the intervence in the first of the secretizes in the secretizes the intervence in the first of the secretizes in the secretizes the secretizes the intervence in the first of the secretizes in the secretizes the secretiz ότι μυριάδων τριακοσίων είναι δετ την του ήλίου διάμετρον.

.For other references to this and other measurements.

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information. In VI 5171 he mays Eratosthemes "used

Berenice as his starting-paint" for his earth-mainars-

mont, perhaps manifing that he truvelind to fyone by the

pan-route to Derechte. The district of the Tregiodytes

of the earth's alrounference and Istrol. & likelit.

AB is the diameter of the 300-stade circle inwhich the sun is overhead.

CD is the diameter of the Sun. O is an imaginary observer at the centre of the earth. <u>Assuming</u> that the sun's orbit is 10,000 times the earth's circumference, the radius SCs 10,000 OA; and in the similar triangle OOD, OAB,

OD = 10, 000, AB = 3, 000, 000 stades.

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Hultsch, of. oit. p. 5 note 3, points out that as Macrobius says Posidonius multiplied the earth many times in his measurement of the sun, the 27 times of Eratosthenes must refer to volume, not diameter; in other words, that the sun's diameter is treble the earth's.

aspetit por alle les les entre appendier angpidant ing 167. See In detruct electe ensite-oot and to research eds at the 1 bredigvo až mus ods the state of a second OF is the discretor of the Smit, O is an inertain observer at the contre of the earth. Manuality . . . "since and perits COC. OF al estre a one and soil directifurenee, the redites for 10,000 04; and in the statiar triacts 003, 023, 10 = 10, 000 AB = 3, 000, 000 stades. 106. Bultoon, of. 011. p. 5 note 3. points out that an Haurobius says Foridonius Sultalian the outlouvel an the sould The bid and of the man old al could instanth for souldy of telet further and dispirit

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See Introd. pp. xlvii-xlix.

Sir J. Heath: Greek Astronomy, pp. 109 . . . Ivor Thomas: Greek Mathematical Works, II, pp. 267-73

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For other references to this and other measurements of the earth's circumference see Introd. p. lxxx111. Pliny gives some further interesting but unreliable information. In VI #171 he says Eratosthenes "used Berenice as his starting-point" for his earth-measurement, perhaps meaning that he travelled to Syene by the sea-route to Barenice. The district of the Troglodytes and of Merce, he says, for 45 days before and after the (summer) solstice has either no shadows or shadows falling to the south, and the same happens (II #183) at Ptolemais (Epitheras) 4320 stades from Berenice. At Syene no shadow is east on the actual day of the solstice, as is proved by a well dug on purpose- whether by Eratosthenes himself is not stated, but it is not unreasonable to suppose that it was. For Merce, of. op. cite is p. 149 note el Strab.C. 77.

Amm. Marc. XXII, 15; 31 gives the information about Syene and the 90 days more briefly. Marc. Gap. VI #596 seems to confuse Merce-Syene (Assuan) with Syene-Alexandria.

Though not explicitly ascribed to Eratosthenes, this

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method of checking his measurement (similarly to that of measuring the inclination of the colliptic) is almost certainly his. The fraction 1 of the great circle would have been expressed in degrees by Hipparchus or anyone later.

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Berger (Erdkunde der Griechen, vol. III, p. 46) remarks that the previous measurement of 15 for the inclination of the ecliptic must have been known to Dicaearchus, who was a schoolfellow of Eudemus. Eudemus (see Ivor Thomas, op. eit. I, p. 149 note e) atributed its discovery to Cenopides of Ghios.

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method of obsories his measurement (aintiarly to that of measuring the inclination of the solicits) is almost desitately his. The frestion & of the stat otrole would have been expressed in tegreed by Hippershap or around later.

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Berger (Erdinade dar Gräedhen, vol. 121, p. 65) remarks that the vrovinus measurement of 5 for the inditation of the existic must have been income to blonearchus, who was a acteolfslier of anisotim. Sodemus (see Ivor Thomse, op. 510, I. D. 140 date a) strikingted its discovery to Comption of Ching.

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ther in the opposite half of the same hemisphere; "antipodes" to a land-mass "opposite" in the other hemisphere. of. fr. 13 1. 17.

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A possible explanation of this fragment is given in Introd. pp. li-lii.

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For diagrams and explanations of this passage see Introd. pp. 1-11.

The calculation of diameter as exactly 3 of circumference was current practice in Eratosthenes's time. (cf. Plin. II 8248) For the division of the circumference into sixtieths, see Introd. p. 1xxvii.

This passage is not quoted explicitly with the name of Eratosthenes, but it can hardly come from any other source in its essentials. The same description is given by Achilles Tatius, isag. Uranolog. p. 154 D, f., where the zones are named as follows: () Northern- zone of Gronos (2) Summer- zone of Zeus (3) Equatorial- zone of Ares (4) Winter- zone of Aphrodite (5) Southern- zone of Hermes. Also see Naorob. in somm. Scip. II, 6.

Strabo attributes directly to Eratosthenes the measurements (1) Merce to the Ginnamon parallel, 3000 stades, and from there to the equator (1. e. half the torrid zone), 8800 (C. 95); (2) from the equator to

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birebo attributer directly to inktostintes the meabirements (1) Mores to the dimensis parallel, 2000 stadee, and from there to the equator (1. e. half the boreid some), 8800 (2. 99); (2) from the equator to the summer tropic, four-sixtieths or 16,800 (C 113,114). It is particularly important to note that the Marctic circle" is N. 54°, not 66° as might be expected from the 24° of the tropic. See fig. 9, but of, fr, 182 for the Arctic Circle in the modern sense.

Although this passage is not explicitly ascribed to Eratosthenes, the general method of approach is unmistakably his. The comparison of the truncated cone left after removing the tropics and the arctic circle to a "spinning whorl", and of the inhabited world to a "chlamys" (Intr. p. lxix)) are similar to that of Mesopotamia to a ship (fr. 205) and his general use of popular language.

of. Gemin. isag. G. 12 Uranolog. p. 56 A: των δέ εύπράτων δύο ζωνών την βόρειαν ύπό των έν τη παθ' ημας οίπουμένη οίπετσθαι συμβέβημεν, έπι μέν τό μηπος οδσαν ώς έγγιστα περί δέπα μυριάδας σταδίων, έπι δε το πλάτος ώς έγγιστα το ήμιου.

Strabo (C. 118) deliberately rejects detailed consideration of zones as irrelevant, and particularly questions of ov at septoinairas. It is, he says, oredible that there is another inhabited world (America) on the far side of our zone, but the business of the practical geographer is with of sap'haiv; as Geminus puts it, h act had had of our world".

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Although this passage is not explicitly anomined to instouthenes, the peneral method of approach is mumistalably bis. The comparison of the transated comleft after removing the tropics and the arotic disto a "spinning vice tropics and the arotic disto a "spinning vice is at of the inhubited ports to "absorbed to a ship (in. 205) and his general dedist of popular largeage.

ος, θαυτο, tang. 6. 12 βρασμέσει σ. 36 21 των 62 εδαράτων όδο μυτών την βέρεταν δυό των δυ τζ ποδ' δρώς σταυοράνη σίκττσθου σομβάβημαν, έστ μέν τδ τηθμος οδοαν ώς έγγιστα παρί δέκα μοριάδας σταδίων. έστ δε τό ελάτος ώς έγγιστα το ξμικο.

Strabo (0, 118) delliborately rejents detailed comsideration of somes as irrelevant, and particularly questions elev el se rerefrat. It is, he aure, aredible that there is another incabited world (imarica) on the far aids of our some, but the business of the prestickl compositer is with of as "gify; as desime pute it, i and had of successing, "our morid".

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of. fr. 164, n. and fr. 158. This fragment appears more relevant here, where the situation of the single inhabited land-mass is described, than in Book One, where the general principles of uphericity and the history of research are concerned.

Additional references for this doctrine of Eratosthenes are Eustath. ad Dionys., Geog. Min. II, p. 217; Schol. in Dionys. perieg. 1, Geog. Gr. Min. II, p. 428 B.

175.

It appears certain thatEratosthenes accepted the assertion of Patrocles that the Gaspian Sea opened northwards into the Ocean, although Strabo says (G. 518): ody δμολογούσι 8', ότι περιέπλευσάν τινες άπό τῆς 'Ινδιμῆς ἐπὶ 'Υρμανίαν, ὅτι δὲ δυνατόν, Πατρομλῆς εἴρημε.

See fr. 226, and notes.

At this period there appears to have been a gulf opening from Khiva Bay in the Caspian towards the Aral Sea, and the River Oxus may have flowed into it. The Oxus was used extensively as a trade-route with India. It is thought that the story about the con-

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di. fr. 165, n. and fr. 138. This fragment appears nore relevant here, where the disaction of the single definited land-mone is descripted, then in 300k 0ns, where the general viscoities of advertisity and the blatory of reasonable are conderned. Additional reference for this doubries of Scators theore are Sustain, at Mange, May, May, M. 217

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It appears contain the tireboothenes accepted the appears tion of Patrooise that the Jaspier for counci conthemarks into the Ocean, although Strabo says (4. 510); ody baoleyofor 5', bat see takende rivet deb ric 'ivonde del 'Y soutor, bat 18 baurde, lint make signe.

See it. 226, and notes. At 1116 period there appears to have besuld gulf opening from Notve Bay in the Gassian towards and arel See, and and Alver Once may have flowed into it. The Once was used entermively as a trade-route with Shida. It is converts that the story about the comnexion of the Caspian and the Ocean arose from the stories heard by Patrocles when exploring this Gulf: he did not explore the north end of the Caspian at all. ("Ancient Explorers", pp. 151-2, quoting W. Tarn, J.H.S. XXI, 1901, pp. 10 ff; Hyde, p. 172 n.) Herodotus (I, 202) says correctly: 4 62 Kaosia Odhaccá žori žz'žcovijc, od coupicyouca tj žićpa Oahdooa.

Berger, curiously, includes in his fragments nothing abox the Winds but the remark of Ach. Tat., isag. Uranolog. p. 158 B: Exparparedoare & sept &vépov wal 'Eparocoevac; but on this slight foundation he builds up the theory, referred to in Intr. pp. XXXVII-XXXVIII. that Eratosthenes used a wind-rose, its centre at Rhodes, in some way to construct his map.

Vitruvius (de Arch. I, 6, 6-7) repeats the method given here in detail as that used in the construction of the Tower of Winds (Introd. fig. 3), and also as useful for the construction of wind-screens inhhouses and gardens. He goes on (I, 6, 9) to say that, as Eratosthenes makes the circumference of the earth 252, 000 stades, each of the eight winds has $\frac{1}{8}$ of this to play about in, and hence "inclinationibus et recessionibus varietates mutatione flatus faciunt", a curious jumble of the old disc earth and the individual winds with definite districts of origin with

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the latest scientific discoveries.

For general discussion of the Winds see Introd. III A and figures.

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- 1. 2: tov néopov. Again, a confusion between direction and place.
- 1. 4: τους πρώτους. The 4 "cardinal" winds- the old originals.
- 11.6-11: Even in this passage the names of the winds are not consistent: in 11. 39-51 Eurus, the S.W., becomes Euronotus; Apeliotes, the E., becomes Eurus, and Caurus,
- the N.W., becomes Argestes. Which are the names used by Eratesthenes himself is impossible to decide finally; especially as the writer goes on to explain, in a manner quite inconsistent with the division into eight equal segments, that there are three easterly and three westerly winds because the sunrise and sunset vary in direction, and introduces the Aristotelian names Gaecias, Meses and Phoenicias (Introd. fig. 4)
 11.11-39: The geometrical construction, although it is clear enough, what is to be done, appears to have suffered in transmission. It is difficult to imagine a real geometer giving instructions for the bisection of an angle in the words % at of β σημείου καὶ τοῦ γ γεγράφθω κατὰ χιασρὸν γραμμά, ἀφ'οῦ τὸ § (11. 19-20;

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or, without intermediate steps, writing λαμβανέτω δέ έξης όλου του κύκλου το δεκαεκτατον μέρος και τίθεσθον το κέντρον έν τῷ μεσημβρινῷ γραμμῷ, ặπερ τοῦ κύκλου ἄπτεται κατά το ε, καὶ ποιητέον σημετον ἀπ'ἀριστερῶν καὶ δεξιῶν, ἀφ'οῦ το η καὶ το θ.

- 1.38-39: TOV dvépov TE Hal sveupátov. ävepos are the original four "cardinal" Winds, sveupata any subsequent additions.
- 11.39-53: This appears to be an attempt to fit former windroses into the Eratosthenic division. See above, 11. 6-11. note.
 - 1. 47: AVTIAVET. This clearly cannot mean "blows from a diametrically opposite direction," but "blows on the other side of the diagram" the circle being divided into right- and left-hand halves (1. 26). So also 1. 48: bç AvTl τοῦ εὐρονότου κνεῖν φαίνεται. The Greek Government have recently issued a set of eight stamps illustrating the Winds represented and named on the Tower of the Winds at Athens (see Introd. fig. 3).

sλάτος. To the Greek geographer "breadth" is always to be measured north and south by distance between parallels, "length" east and west; whence come our words latitude and longitude. Here Eratosthenes takes the breadth of the inhabited world "correctly", by the distance between the parallels bounding its northern

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and southern limits; not, it must be noticed, by the arctic circle and the tropic, beyond which it was formerly thought that life could not exist.

For table of measurements on the "prime meridian" see Introd. p. 1xxii. The meridian itself is again mentioned and defended by Strabo, C. 114.

of. Flin. V #132: sed pulcherrima et libera Rhodus . . distat ab Alexandria Aegypti DLXXXIII M, ut Isidorus tradit, ut Eratosthenes GGOGLXIX M (at 8 stades to the Roman mile).

For this distance, one along the "prime meridian" on which the whole scale of the map depended, and for the general vagueness of sea distances, see Introd. p. 1xxx. 1. At 10 stades to the geographical mile Eratosthenes is only slightly in excess. (Bunbury I p. 665, note D).

179-181. See Introd. p. 1xx1ii on "parallels".

Strabo (0. 133, 4) quotes also, without reference to Eratosthenes a parallel passingτỹ μὲν διὰ Κυρήνης καὶ τῶν νοτιωτέρων Καρχηδόνος ἐνακοσίοις, μέχρι μαυρουσίας μέσης, τῷ δὲ δι'Αἰγύπτου καὶ Κοίλης

Eupiac mai tặc ẩww Eupiac mai Baßuhwwiac mai Eousidoo Repsidoc, Kappawiac, Fedpwsiac tặc ẩww péxpi tặc 'Ivdinặc The mention of Gyrene makes it tempting to ascribe this to Eratosthenes, but it must be remembered that his recorded observations are all related to Ale-

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and southern lists; not, it nust is antibudi he she arothe chois and the trucks, beredd which is whe formerly throught that life could not cales. Not table of measuremeans on the "prime meridian" and thread of assauremeans on the "prime meridian" antibuned and defended by Strabe, d. 118. A. Fitn. V Fits; and related on the list is again distat ab Alexandria Asgrabi MARKII M. ut Isterna the forman atta). The this distance, one slow the "prime meridian" in antich the whole stale of the meridiant and the forman atta).

I 2. 665. 2010 1).

Walella. See Introd. p. Lunit on "parallela".

Birabo (0, 135, 4) quates also, ultiout reference to Aratosthenes a parallel panaindre pir 6:d kundvac ani rov vortartiev hopgebiret framericit, pirget gaugeuolot pirate, rå 62 61'Alyderes ad Estage

interestinger is only alightly in exceeded (Sumbury:

Euglae nal rije dva Euglae nal Babakavia nat Eugerdeed Repoldee, Rappaviae, Fedguadee ele dra piger vie 'Ivbinite The mention of Cyrene makes it trapiting to avorite this to Eratosthenes, but it must be remembered that his resourced observations are all related to the xandria. This parallel is not mentioned in his measurements along the "prime meridian", and on the whole it is unlikely to behis.

The fact that Strabo ascribes the Byzantium-Massilia parallel explicitly to Hipparchus seems to rule out the likelihood of its use by Eratosthenes, although Hipparchus based his line on an observation by Pytheas. (0. 115) The parallel used by Eratosthenes in this neighbourhood is that through the Hellespont. (of. fr. 187)

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According to fr. 177, Eratosthenes certainly took Thule as the northern limit of the inhabited world. How much of what Strabo quotes direct from Pytheas can be taken as having been also used by Eratosthenes is by no means certain; see fr. 271 and note, and Introd. pp. lxiv-lxv.

Caleo the to phuse crakesy tos, sh

For Thule, see fr. 282 and notes.

δ αύτός έστι τῷ άρκτικῷ δ θερινός τροπικός κύκλος. i.e. the path of the sun, on the day onwhich it reaches its highest point, does not dip below the horizon at all. For "arctic circle" see fr. 172, Introd. p. 11;, and figs. 8 and 9.

There were exaggerated stories current about this phenomenon: e.g. that quoted by Cleomedes. Cycl. Theor., I, 7, 37, that there is " a day a month long" modela. This parallel is not matimate in his case
muserais along the "prime meridiat", and as the analy
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According to fr. 177, Servicetheness containly took Haule is the northern limit of the inhobited world. Hav such of whet Strabo quotes direct from Sythese and be taken as having been also used by Sentosthemen is by no means certain; see fr. 272 and note, and introd.

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There ware anaggerated stories surrent shout this phenomenon: s.c. that quoted by Gleosedes. Gysl. Theorem, I, T. T. that there is " a day a conth loos"

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when the sun is in the Grab; and that by Eustathius, ad Dion. Perieg. 581 (Geogg. Gr. Min. II, p. 329), that the year in those latitudes is divided into a single day and night."

of. also fr. 283 and notes.

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ος, Agathem, I, 2, Geog. Gr. min. II, p. 471: πρώτος δέ Δημόκριτος, πολύπειρος άνήρ, συνεϊδεν ότι προμήκης έστιν ή γη ήμιόλιον το μηκος του πλάτους έχουσα. συνήνεσε τούτω και Δικαίαρχος δ περιπατητικός. Εδδοξος δέ το μηκος διπλούν του πλάτους, δ δέ 'Ερατοσθένης πλεΐον του διπλού. For a possible explanation of this belief see Introd.

p. xxxiv . The idea that it should be possible to reach the far

east of India by sailing westwards across the Atlantic was ultimately reponsible for Golumbus's voyage of discovery and the present name of the West Indies. It is noteworthy that it is Strabo himself (fr. 173), not Eratosthenes, who suggests the likelihood of a "balancing" land-mass or dvtfx8wv on the far side of "our" zone.

184.11.1-4: This was not really a matter of "known" length and breadth, but a preconceived idea. See fr. 183 and Introd. p. xxxiv.
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when the starts is in the starts and that by Rostatidus. ad Oism. Pertion. 301 (Congr., Or. 314, 7. 200), that the year in those latitudes in divided into a unight day and might."

of. also fr. 265 and noton.

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ος, δημάρου, Ι, 2, 3000, 30, μπο, ΙΙ, ρ. 471: «κότας δι σημάριττος, πολόσειμος άτής, πονείδαν στι πισμάτιστος δοτίν ή τζ ήμιθλιον το μξαος του πλάτσος έχουσας συνήνους τούτοι ποι Δικοίσμασο δ περιποτητικός βό²οδος το το μξαος διταλούν του μλάνους. δ 82 'δματοσθέτης πλεξοι του δικλού.

p. wixir .

the idea that it should be possible to reach the file farshot of india by mailing woodmants annous the addaute who ultimately represent the for folumbus's vogene of the novery and the present the of the Week Indian. It is not everythy that is it itself the Meal Indian. Not destorthenes, who suggests the likelihood of a "allowing tone.

Develtioner and not really a matter of "move" longth and breadth, but a predonostred time. dee fr. 103 and latend. p. scatt. 1. 4. molesdre Jonate, for diant.
az': inserted by Meineke. 1. 6:

Strabo adopts the parallel of lerne (Ireland) in-1. 6: stead of that of Thule (Norway?) as the northern boundary of the inhabited world.

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to per the 'Iroinhe : : : . . Strabo, C. 69, says 1. 10: that Hipparchus says Eratosthenes prefers avaypaçã Ticto both Patrocles and Megasthenes on the length of India because they disagree, giving 15, 000 and 16, 000 stades respectively.

TPICHOSIOVC: GOBBELLIN, for sevtenesiouc. 1. 16: 11. 16-18: of. Pling V #40: "Polybius et Erstosthenes diligentissimi existymati ab oceano ad Carthaginem magnam XI M passuum, ab ea Canobum, Nili proximum ostium, XVI XXVIII M passuus ferunt." Strabo (C. 93) says that as Eratosthenes put Carla, aRhodesdes and Alexandria, Carthage and the Sicilian Strait, respectively on the same meridians, and as "all agree" that from Caria to the Strait is not more than 9, 000 stades, Eratosthenes had exaggerated the distance from Alexandria to Carthage by over 4000 stades. Actually, both "meridians" are very wrong and the distance remarkably near to the truth; Caria to the Strait being in the order of 900 miles, Alexandria to Carthage 1300 miles. odder spoc to physic ouvreivovta. Brittany and Ushant do not add to the "lengh," as they lie north, not west. They were, of course, not figuents of Pytheas.

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For tabulation of these measurements see Introd. p. 1xxii. It seems likely that, in adding the 2,000 stades at each end, Eratosthenes really was, perhaps unconsciously, under the influence of preconception.

The point is much the same in both these passages, that broad divisions either of tracts of country or of groups of mankind can only be arbitrary. The division into continents dated from the time when Asia was merely Asia Minor and Libya a vague tract to the south, both separated from Greece by sea; while the division into Greeks and foreigners was a relic of days when Greeks were, or rather thought themselves, the only civilized people. Both were now obsolete, and particularly out of place for a Greek born in Gyrenaica and working in Egypt.

In these ideas may be detected (1) the effects of Alexander's policy of blending east and west (2) the vague brotherliness and "pantheism" of the Stoic (3) the maturally greater cosmopolitanism of Alexandria than of Greece proper.

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187. 1.2: For the "diaphrags" of the inhabited world see Intr. pp. xxx111-xxxv1, 1xviii-1xsit, Strab. C. 78 and 84 and frr. 189-191. includes larias, which includes This,

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See fr. 188. the lines to the south-casts 1. 8:

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TOU Taupou. The name "Taurus", originally that of the mountains of Cilicia in S.E. Asia Minor, was extended westwards with Greek exploration. The diaphrage according to Décasarchus ran (Agath. I, 5) "through Lycia, Pamphilia and Taurus right through to Mt. Imaus (Himalayas in Kashmir)". This suggests that Eratosthenes was probably the first to use "Taurus" as a convenient general name for all the groups and ranges running in something like a straight line across Asia.

of. Arrian, Hist. Ind. II, 2; Anab. V, 5, 2. 11. 16-19: See fr. 190.

81"'ABAVEV: Kramer, for 812 GIVEV. 1.18:

> The city of Thinge is mentioned in the "Periplus of the Erythraean", 64, and in Ptolemy, 7, 3, 6. According to the Periplus it was the capital of This, under the very north, and exported silk. Schoff, p. 261, identifies This as Ts'in, or China, and Thinas as

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The dity of Taines is somblosed in the "Feriples of the Erysterass", 64, and in Ptolony, 7, 3, 6. According to the Feriples it was the capital of This, under the very north, and exported alls. Schoff, p. 261, identifies This as Ta'is, or Gains, and Taines as Hien-Yang, on the Wei near its confluence with the Hoang-Ho. Direct dontact with it was not established until the 2nd centruy A.D. ("Ancient Explorers", p. 83, 84, where Thinae is placed in the Salween valley in Burma). Ptolemy, according to Hyde ("Ancient Greek Mariners" p. 223) confuses Serica, which includes This, and the land of the Sinae to the south-east: Tsin, Chin, or This is to the north-west, Tartary and Tibet.

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It seems that the name of Thinae must have crept into this passage much later. It is unlikely that Strabe could have feferred to the main "parallel" as "that through Thinae", a vague unlocalized city at the ends of the earth, and inconceivable that Eratosthenes should have done so. Kramer's emendation &: "Adaywav is now generally accepted. of. fr. 188.

11.20-21: tôv ápxatov sívana. the traditional Greek maps of the disc earth with the Mediterranean conveniently dividing the "northern and southern halves" and dating frombefore Dicaearchus. (See Intr. 3 A.) St.-Martin thinks (Histoire de la Géographie, p. 152) that it refers to Dicaearchus himself.

Hiso-Yangs on the Net near its and luence with the Hoang-Ho. Diruct doniant with it was not established "", "evenoint fanions") .C.s yurfaen ing off liters 85, 84, where Thinks is placed in the Salvess whitey in Burna). Feelany, cocording to Byde ("anglant Cornel Mariners" p. 223) contuces Series, which includes This. and the land of the liters to the south-dash. Tain, Obing or This is to the north-wood, Tardary and Thiste. "It sooms that the man of Things much into even tito this passage week inter. It is mailing the distant to dould have forested to the sain "parallel" as "first show and de wells bealing and an and the south descents or and sares, and incorporation that the course out to "Bygela"'''' done so. Ereser's emendation by'' Abgydy is now remaining accorded. of. St. 188. 11,80-211 Thy dryafor strong. of evelow videsucery eldr the traditional Greek same of the disc entities with lediterruneas convectorily dividing the "northern and . audousseld encloser: galdeb has "newled credition "Al ab autodelli) aduitat attantim. de (.A.E .usol eec) Geographie, p. 152) that it reform to Dissearchus him-. 2100 .10 ranges wold wold the rai addition the terden

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auraiperv. In the "old maps" this would mean to be in a corresponding position in the northern and southern halves in accordance withthe prevailing belief in symmetry, as were the rivers Danube and Nile. Eratosthenes extends the meaning here to include being in a corresponding position on the other side of another sheet of water, the Indian Ocean, in an east-west direction, on the same "parallel", not "meridian".

1.26-27: από τε των άξρων τευμαιρόμενοι. This mothod of judging latitude from climate was afterwards adopted by Hipparchus, theoretically as a method of checking astronomical observation. It would lead to curious results, the cold weather in southern Russia tending to place it too far north, and the similar conditions leading to confusion of the Indus with the upper waters of the Nile. For the differences of opinion possible even in elementary observation of "celestial phenomena" see fr. 194. " the belt of the

11.23-51:

This whole example of the use by Extosthenes of measurement and climate for "checking" parallels is an excellent compendium of his method.

11.36-37: In fr. 177, Sratosthenes says the Hellespont is 8, 100

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stades north of Alexandria, or 4350 north of the diaphragm. Here he says Sinope is 3000 stades from the Gulf of Issue, on the diaphragm, and that the "line through Sinope westwards passes through the Hellespont". This confusion of a basic measurement makes it impossible even to begin reconstructing the "northern half" of the map.

188, 189, of. Strab. C. 91: τοῦ Ἐ. ἐν πλάτει λαμβά-190. νοντος τὰς εὐθείας, ὅπερ σἰμεῖόν ἐστι γεωγραφίας, ἐν πλάτει δὲ μαὶ τὰς μεσημβρινὰς μαὶ τὰ ἐπὶ ἰσημερινὴν ἀνατολάν

> The argument appears to be that the real division of the world is effected by a parallelogram (or rectangle) 3000 x 70, 000 stades, and that it does not matter and certainly cannot be helped that the imaginary line of the diaphragm follows a somewhat zigzag course so long as it keeps approximately to the middle of this restangle. The difficulty then arises that, whereas the Mediterranean is a clear and definite division between north and south, there are many peoples living partly or wholly within the belt of the Taurus. Eratosthenes arbitrarily solves this difficulty by taking the latitude of Gaspian Gates as the dividing line, which means that tribes and districts <u>within</u> the belt count as northern.

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For expayTeec see Intr. p. 1111.

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190.1. 5: N.B. Strabo's vague use of whipera in regard to Eratosthenes: cf. fr. N and Intr. p. 1xx:11. teivovta. Kramer suspects, Meineke ejects. 1. 6:

be taken of position, not direction, See. Intr.

191,192. Eratosthenes appears to have made it quite clear that his contribution to the science of geography was theoretical, not practical; that of fitting the discoveries and measurements of the best authorities into the frameworkkprovided by his own mathematical discoveries. In these two fragments he distinguishes between (1) facts vouched for personally by reputable witnesses (2) traditional notions unbacked by evidence.

Exourac TI EUREPErpayor. A naive and probably true explanation of the origin of "Seals". of. Strab. C. 84: nat rov voriou pépous à pèr "Ivoing repropiotal rollote. nal ydp oper nal rotapo nat Balarry nat evi svopart, as av evoc Edvous. ώστε και τετράπλευρος δρθώς λέγεται και βομβοειδής. Also Plin. VI #56; Arrian, Anab. V, 6, 2.

> For Deimachus and Megasthenes see fr. 163 and Intr. p. 1x11.

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11.3-4: DET must 1 pp. x 11.6-7: Tàc path conce. 11.9-10: Per 1ts s êv 1.14: but a no re Book It "no d natha 195.11.8-9: Par E. al thes main an a note 1.19: 45 sout

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11.3-4: perago neTodai Xeipepivov. Evidently this must be taken of position, not direction. See. Intr. pp. XXX11-XXX111.

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11.6-7: The owide dytisistery. i.e. periodically the sun's path is to the north, indicating that the district concerned is south of the tropic.

11.9-10: Perhaps Deimachus was thinking of the sunrise on its southward journey!

1.14: ἐν τặ ἀναμετρήσει. This can hardly refer to anything but a previous section of this work, and there seems no reason why it should not refer to the whole of Book Two as a sub-title. See Intr. p. xxvi. It is noteworthy that Strabo (G. 77) says that "no one, not even Eratosthenes himself, records the xλīµa in India."

195.11.8-9: Paropamisus - Hindu-Kush; Emodus and Imaus : E. and N.W. Himalayas. Eratosthenes, while keeping these separate names, regards them all as parts of his main "Taurus"range: cf. fr. 189 n. For the Macedonian attribution of the name "Gaucasus" see fr. 162 and note.

 1.19: ἐξ ἴσης ἐφ'ἐκάτερον: 1.e. an equal distance both south and east, or south-east.
 1.21-23: The straight distance from the Himalayas to the Indian Ocean along the Indus is about 800 miles.

11.27-33: Patna is about the same distance, 800 miles, from

the I 1. 241 mouth 1.29: OX01V for 8 The 1.42: port brate are I of "1 point Al 0088 down In t expe ther for due Ar give Stra 196.1.11: piàv time lat

1.12: 800i out

bill path in to the north, indicating that the district a second is asymb. of the invalu. 11.9-10: Forburs Seisechas and invalian of the auguites and its southward journey!

1.16: Iv vi & Avapavidari. This can partic rater to dividing the second bill bill be provide constant of this work, and there are a second in this work, and there are a second and and rater to the whole of 1000 the second model and rater. Do navi.
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10.11.8-9: Exceptions - Hindow-Rush: Endous and Emma z E. and B.V. Himsinyss. Endoutiement, while heaving these separate means, requids them all as parts of his main "issurus" ranges of, fr. 189 n. For the Handonian attribution of the mane "innoceus" as fr. 162 and mote.

1:19: 6[Ford de'Endreger: 1.e. an equal distance both soluth and exat, on south-east. 1.21-23: The straight distance from the Himilares to the Indist Cossen along the Indus is about 500 miles. 1.27-33: Nature 1s about the same distance, 500 miles, from the Indus in a straight line. From Patna to the mouth of the Ganges is some 400.

1.29: σχοινίοις. Gorais σχοίνοις; μυρίων, Gasaubon for δισμυρίων.

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195.11.8-9: Faror

1.42: The Conlaci were the people of Golchi Indiae, a port on the Malabar coast N.E. of G. Comorin, celebrated for pearls. This, Goliacum and other names are probably confused from Golchis. The passage of "Peripl. Mar. Eryth." is very corrupt at this point.

> Although aware that most of the west (or south) coast of India was south of the Tropic, no one down to and including Eratosthenes realized its direction In the absence of gnomonic readings this was only to be expected: with the sun roughly overhead every day there was nothing to indicate clearly to sailors that for much of the voyage they were proceeding almost due south.

Arrian, Ind. C. 3, 1; Ind. C. 2, 5; Anab. V, 4, 1; gives somewhat more concisely the same information as Strabo in this and the following extract.

196.1.11:μίαν ἐκβόλην. The Ganges Delta was known by the time of the Periplus Maris Erythraei", some two centuries later.

1.12: Suoi orópaouv. There are really three main outlets.

1. 14: Patale 11. 15-21: of. St TIC "1 8 (000) ELROY Spola 11. 22-25: It was that Nile. Suppl 1. 24: Onesi the I a mis Colou 11. 25-29: by Ar (Geo(1. 30: Tapro Tapr "cop 1. 32: hus igno a ge poss 14. 13. 23. W. C. Indi 1. 33: sev XIX

the indus in a straight line. From Sature to the mouth of the Oscient is some 600. 1.29: dyorviore. Generals dyofvore: popler, Camulton for 5 quopter.

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port de bis Selebor const N.1. of C. Conoris, Soldbrated for pearls. This, Collecte and other damas are probably confused from Oplahis. The placing of "feripl, Mer. Styin," is very sorrupt at this point.

Although among that must of the work (or mouth) seart of India whe south of the tropic, no one down to and indiating kretositance realized its directly is the absence of geometric readings this was only to to superted with the sum roughly eventsed every day there was nothing to indiate disariy to selimin that for much of the veytage they were preceding along the south.

Arrian. Ind. 0. 3, 1; Ind. 0. 2, 5; Anno. V. 4, 1; gives somewhat more concisely the same information as Strabs in this and the following extract.

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 8100 of the "supplie Karls Strathmal", some two benturies
 3000 of the "supplie Karls Strathmal", some two benturies
 1.12: 000% stopsesy. Shere are really three main.

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1. 14: Patalene, from Sanskrit "patala" = leaf.

11. 15-21: of. Strab. C. 693: Μεγασθένης δε την εδδαιμονίαν της 'Ινδιμής έπισημαίνεται τῷ δίμαρπον είναι μαι δίφορον· μαθάπερ μαι 'Ερατοσθένης έφη, τον μεν είπων σπόρον χειμερινόν, τον δε θερινόν, μαι δμβρον δμοίως. Also Arrian Ind. 6, 5.

384

11. 22-25: It was these similarities that led to the old idea that the upper waters of the Indus were those of the Nile. (Arrian Ind. 6.,8) (cf. Aesch. Prom. 807-12; Suppl. 284-6)

1. 24: Onesicritus was with Nearchus in his Periplus from the Indus to the Euphrates. He appears to have made a mistake about the hippopotamus.

11. 25-29: Colouring and straightness of hair are mentioned also by Arrian, Ind. 6, 8, and Eustath. ad Dion. 1107.

(Geog. Gr. min. II, p. 399)

1. 30: Taprobane (Ceylon) = Palaesimundum (Perip. Mar. E. 61). Taprobane is derived from Sanskrit "tamraparni"= "copper-leaves" (Hyde, p. 219).

1. 32: huspov Esté shoëv. Whether this is a case of "omne ignotum", of simple, deliberate exaggeration, or of a genuine record of an unfortunate voyage it is impossible to say. The actual nearest distance from India to Ceylon is about 100 miles.

1. 33: πενταμισχιλίων. Groskurd and Meinske for δиταμισχιλίων.

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.L. 14: Satalone, from Sanakrit, "patala" # last. This p 197. 11. 13-21: af. Strab. C. 693: Mayaobévac 55 the aboutovier This f 198. Tox roule vongente or reversion of stagence alver all The Steapor naddrep nal "Eparachtruc Eva, Thr her (Whita elsör enöpev geipepivér, tév és Gepivér, nal épéper ascrit buoloc. Also Arrian Ind. 6, 5. and 40 IL 22-25: IS was those einilarities that led to the old then that the worse waters of the Indus were those of the Ariane 199. 1210. (Arvian Ind. 6. 8) (or. soudh. From. 607-12; Alth Sappl. 284-6) stric 1. 24: Onestoribus was with Meanshing in his Fertingen from being the Indus to the Explorates. He appears to have ande avoid .sumatogoogild eds twode edetals a behin 11. 23-29: Colouring and Utralghtness of hair are wantioned also 5: Parop 200.1. by Arcian. Ind. 6, 8, and Rustein. ad Dion. 1107. 1. 5: Caspi (000g. Gr. min. 11, p. 599) the H 1. 30: Reprobens (Ceylon) = Felsesimustus (Ferin, Mar. 1: 61). a rar "inversions" similarit fort Device al anadorunt" 11. 6-8: 1. 0. "conter-heaves" (10/28, p. 219). 1. 8: share 1. 321 head's to a show. Whether this to a date of "dama lying in the delighter elevels, deliberate emergenetion, we or W. CI -di al si esserer essererant de la latertaria estudes a 800 point econtail tenness inter and assessed distance from 11. 11-12: "Sta India to Caylon is about 100 miles. pani 1. 33: sevene ogelieve, Groanned and Belades for Suranter XVII . AWARY

197. This point is also mentioned in C. 698.

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11. 22-23: 75 wee

This fragment amplifies fr. 196, 11. 29-33. The actual area of Geylon is 25, 500 square miles (Whitaker's Almanac). According to the measurements ascribed to Eratosthenes it would be between 300,000 and 400,000.

199.

Ariana is the second "Seal", approximately Iran. Although he "defends" Eratosthenes against the strictures passed by Hipparchus on the Seals as not being accurately geometrical, Strabo himself cannot avoid feeling that there is a geometrical intention behind them.

200.1. 5: Paropamisus: see fr. 195, n.

1. 5: Caspian Gates - Sirdar Pass. This does not lead through the Elburz mountains to the Caspian Sea, but through a range at right angles to the main range.

6-8: 1. e. Parthia and Carmania are included in Ariana.
 1. 8: ελάτος δὲ τῆς χώρας. . . . The Indus is taken as

lying along a meridian. Actually it flows slightly W. of S. The distance in a straight line is about 800 miles.

11. 11-12: "Stages of Asia": apparently by Amyntas, who accompanied Alexander. (Ath. XI, 500D; XII, 529E; Aelian XVII, 17)

1. 15: Ortosp wir This which he also bentioned in 0. 658. 1. 16: Bactra This fragment amplifies fr. 196, 11. 29-33. 1001 11. 21-24: As the the source area of Corlon is 25, 500 aquare miles Arioru (minitaless of allegood . (concerts of the manufaction) 2000 1 000,000 required of bloow if spontfootant of bedinbes deduct and Aco. Col. actual 11. 24-30: The di Andana in the second "Smal", spherical hit makes 1978 Marin much (" "entrates and a second of the test and the second in the very ' the as along end no endowangly of basan semicolula exact County advantation . Instrument vistants himself mannet seems estimated feelinger a bit energy that patient blows ter o silves att a straight when a shirt of a straight the total Erato 20.1. Br Humogenians new Tr. 1994 N. cont1 he 51 Gassian Catos * Sinder Face. This dees not lead through 201. denoted and test not not of an antainer annoth add Caspi A denies all right divises to the main immed. Hecat 11. 5-6: 1. C. Darthis and Carmenta are included in Arthma. Alex Propi lighter along a southing. Astually it Theys alightly Arac sucha at eall impleate a at entereth off . 8 '10 . 8 Orto sonlin 008 ". Held: "stages of Asla"; apparently by Argutta, who accom-It panied timester. (Ath, MI, 9000; MIL, Start Asling WII. IT?

1. 15: Ortospana, or Cabura.

1. 16: Bactra = Balkh.

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11. 21-24: As the 1500-1600 stades (see fr. 202) from Alexandria Ariorum to Prophthasia is almost due south, while the 2000 from Arachoti to Ortospana is almost N. E., the deduction of 1300 seems a little conservative. The actual distance in a straight line is about 1200 miles.

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11. 24-30: The distance along the coast can hardly be made as much as 1000 miles at the utmost, though it is left very vague by Strabo (and presumably by Eratosthenes) exactly where Ariana ends. The factor of language seems hardly to be considered consistently in a matter of physical geography, but it is in line with Eratosthenes's general attitude to divisions into continents. cf. frr. 186-7.

tos This magnification she part of th	Stades	(approx)
Caspian Gates to Hecatompylus	1960	200
Hecatompylus to Alex. Ariorum	4530	460
Alex. Ariorum to Prophthasia 1500	-1600	150
	4120	210
	2000	290
	1000	150
10110	-15210	1460
Prophthasia to Arachoti and and	4120 2000 <u>1000</u>	210 290

It will be noted that the first three measurements

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203.11.9-10: Th Selet sult to Pi W28 thro Se the 312hime 1.13:

1. 16: Bastin + Dallas. n. 21-241 As the 1900-1600 stades (see in. 202) then Llessoning artorus to frephthada is simos due south, while the and ... I there is an any and the interpose of the second the Store deduction of 1330 scene a little conservative. Hos " .esile 0082 decisit 15ne 1 states is about 1800 alles. in as when 'wo thinks one sease only you's seastable be and in 24-30. dief at 21 decests duration and in seiler 0001 an done they vague by Stanbo (and prequently by Santostheory). exactly where Artaga main. Doo factor of Language when a an eligendetenet houshhenet of of giband should w dote soil of ad at their yearstroom factoric to that continents. ar. tru. 18547.

1. 15: Ortospapa, ar Cabara.

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are remarkably near to accuracy, whereas the last three are almost equally wild. Even following the course of the river Stymander, the distance from Prophthasia to Alexandria Arachesiorum cannot be much more than 300 miles.

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The voyage of Nearchus is fully described in Arrian's "Indica". of. fr. 200, 11. 24-end.

These are almost certainly the figures selected by Sratosthenes as the most reliable, being "not much less" than the land distance of 14, 000 stades. There is a certain but unimportant discrepancy between Strabo's (or Nearchus's) statement that the Arbies are part of India and Eratosthenes's adoption of the Indus as the boundary: this is explained in fr. 203, 11.6-10, Stoxfliel. Edd. for Tpioxfliel.

203.11.9-10: This negotiation was part of the treaty between Seleucus and Sandracottus (Chandragupta) as a result of which Negasthenes went as resident ambassador to Falibothra (Fataliputra) and wrote the book which was the chief authority not only for Eratosthenes but through him for Strabo himself.

Seleucus Nicator, son of Antiochus and founder of the Syrian monarchy, was born about 358 B.C. and reigned 312-280. He was with Alexander and distinguished himself in the Indian campaigns. "Apartor. Kramer for

204.11.2-3: xap 1. 4: xo 1. 6: žv miles

The m 205. 0. 81 1. 4: 001 1,12: fiv the l must 1 recogn 11.13-14: aal own m over-188 a 1.19: บัสา toal tempel world s1: 1.23: av, 1.27: 11.29-44: Cas stral from (

The voyage of Secretaria is fully described in Arvien's "Dates", of, fr. 200, 11. 25-000. These are almost cortainly the figures balacted by Aratostheses at the seat reliable, boing "not and have then the land distance of 14, 000 anotes. They be's (or Heardone's) exclassed that the Arbies are part of India and Aratostanad's edeption of the Arbies are part by bow dary: this to exclassed that the Arbies are part the bow dary: this to exclassed to the SO, 1.6400.

MOLLING-10: This megotistics was part of the treaty between Selevane and Sendemonsters (Chaotraguyta) is a fresult of which Hegerbheuse want so realded mathematike to fulloothem (Estaliputes) and wrote the book which was the objef authority not only for Hestevinese but through inte for Strain bissoif.

Belevaue Micator, con of Antibohud and functor of the Syrkan monarchy, was been about 350 M.C. and enigned 3124280. I He was with Alexander and Sintiscritiched / bimeelt in the Indian campaigne. 'Aparen for Spiercpor. 204.11.2-3: sapakiac - The Tot Ivoor isomitted by most MSS.

1. 4: zoihoaca. Kramer, for zoihoac.

1. 6: év ázóýzi ošoav. The nearest point is some fifty miles away.

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The main measurements are given more concisely in C. 81.

1. 4: ούκ εύκρινώς άφώρισται. See fr. 199.

1.12: Iv votion pèr maleï sheupár. Presumably this means the <u>length</u> of the southern side: the side itself must be the coast-line, which refuses to fall into a recognizable geometrical shape. See.11. 46-47.

11.13-14: sapáλληλον δ'ού λέγει τῷ βορείψ. In spite of his own misgivings, Strabo "defends" Eratosthenes against over-geometrical critics such as Hipparchus. of, fr. 188 and note.

1.19: ὑπηρεσίψ παραπλήσιον. of. our likening of Italy to a boot, and Eratosthenes"s own comparison of the temperate zone to a spinning-whorl and of the inhabited world to a cloak. (fr. 173).

1.23: sizeTvinserted by Meineke.

1.27: &v, inserted by Gorais.

11.29-44: Caspian Gates to Thapsacus is about 600 miles in a straight line. The route described is not very far from straight or, on the average, far from parallel to

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the "d of 001 11.47-50: From bound measu 1.48: EWC. 11.57-60: Eac 11.62-63: cf. again Takir of Ba aa a: Pelu then 11.64-69: Fr and 11.69-end: In Yão 1 Oéva แป้หม่ง TYP Baive Osta er. 11.75-79: 11.79-81: cf.

L. As motificers. Enchange For motifice. 1. 61 for dadget odenv. The shires point is some fifty Tank ablan al glestones over nevir eve educeroneses dies off 0. 51. Le de dére sérepe voie égéleseres. Bas les 199. the source will average . Proceeding this waite "Alegsi "ente"ent toble consideres one to divers edd. a cont fint of persons doing this to the of the Sunland anosizedist? "bicated" dering assistance and .45 .36 . endonecett en dens coltins laodribusorerere 188 and soto, glast to milmoiti un . 20. . vorafilanger givigant to a boot, and dratestions and a man southeriden of the bud manual and he has Province and and and an another world to a close. (fr. 173). .emented of hustoanavianis if all Av, inserted by Jonita. 1 Red

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a al maite 000 fueda al ascengant of estat matgash 100-02.11 straight line. The route described is not very far frem "straight or, on the system of the free parallel to

the "diaphragm". The mountains themselves are not, of course, in a straight line.

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11.47-50: From Babylon through Susaand Persepolis to the boundary is about 650 miles. The two distances as measured are about the same.

1.48: ἔως, Gobet, for καί. 11.57-60: Each distance is about 300 miles.

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11.62-63: cf. G. 82 and G. 77, where Strabe defends Erepsthenes against criticism by Hipparchus on geometrical grounds. Taking the latitude of Pelusium as 2, 500 stades 5. of Babylon, "taking Eratosthenes's distance of 4,800 as applying to parallels, he shows that Thepsacusato Pelusium must be 8000 figt 6000 as stated by Eratosthenes (C. 88).

11.64-69: From the sea to the Median border is some 450 miles and on to the Caspian Gates about 170.

11.69-end: In C. 82 Strabo again opposes Hipparchus: sapá te

γάρ τόν Εύφράτην φησίν είναι την δδον ταύτην δ Ερατοσ-Θένης, και την Μεσοποταμίαν συν τη Βαβυλωνίς μεγάλφ κύκλφ περιέχεσθαι λέγων ύπο τε τοῦ Εύφράτου, και τοῦ Τίγριδος, τὸ πλέον τῆς περιοχῆς ὑπὸ τοῦ Εὐφράτου συμβαίνειν φησίν· ὤσθ'η ἀπὸ Θαψάκου εἰς Βαβυλῶνα εὐ-Θεία οῦτ'ῶν παρὰ τὸν Εὐφράτην εἴη

11.75-79: of. Strab. C. 529.

11.79-81: cf. Strab. C. 746 621 pinoc 62 ouxydy aposéatumev

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boundary is about 630 miles. The two distances as

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11.62-631 . of. 0. 82 and 0. TT, where Strate defands Brabathanos

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11,57-601 Sach distance is about 300 miles.

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βαίνειν φησίν· 208°η άτο Βαφάκου είς Βαβαλώνα εδ-Θεία οδτ'δν καιό τον Εδφιάτην είη 11-73-791 π. 3trub. 0. 529.

U. 79-811 of. Strab. 0. 746 621 pileot 52 ouxyby speederamey

ή συναγωγή τῆς Μεσσεσταμίας, καὶ ελοίφ πως ἔσικε· soiet δὲ τὸ ελείστον τῆς περιφερείας ὁ Ἐδοράτης. These distances supplement those in fr. 205. Babylon to the Caspian Gates is about 500 miles, from Babylon to Carmania about 550 miles; from Babylon to Susa about 240 miles, and from the Caspian Gates to Susa just over 300. These are all straight distances, whereas those of Eratosthenes are itinerary.

The arguments of Hipparchus, if Strabo reports him correctly (C. 86, 87), are again based on false interpretation of Eratosthenes. Taking Eratosthenes's measurements and assuming that the Babylon-Susa line to Carmania is a parallel of latitude, he proves to his own satisfaction that Eratosthenes misplaces the Caspian Gates by 4400 stades and that the Indus (as in the "old maps") flows S. E.

In the case as prefers (Ptolony 5, 13, 6) and Areans,

(Hipparchus's version in brackets)

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Strabo himself here appears to employ the terms "length" and "breadth", strictly confined by ancient geographers to distances east-and-west and north-andsouth respectively, the wrong way round.

208.

Even in his "Geography" Eratosthenes is still ypappatinóg: cf. Eustath. ad Dionys. v. 775 on the same point, and also

209-210. Lake Thopitis, called Thospites by Ptolemy and Pliny, is identified as the lake of Van, which is salt and over 5000 feet above sea level. According to Strabo it contains potash and is good for washing clothes: he adds that the Tigris receives its name from its speed, as "tigris" in Median means "an arrow". Pliny (6: 127,128) repeats the story with slight variations, the chief of which is that he takes the lake of Van for two lakes. The name of his eastern lake, Arctissa, is the same as Arsissa (Ptolemy 5. 13. 8) and Arsene, which Strabo gives as an alternative for Thopitis, and which still exists in the name Ardjish. The source of the Tigris is very close to the lake,

The source of the fights is very close to the land, but there is in fact no connexion between them. There is potash, and the fish cluster round the mouth of the stream mistaken for the Tigris. (Tozer, pp. 267-270)

211.1. 2: 1 ward Hépoac Gálarra: "the sea by the Persians".

4: EE A 1. time Tozer ànp and 6: The c from 1. The n east 1. 13: 'Av8p 1. 14: naí: 1. 15: HINDO ava11 half 1. 19: Neard drost 1slan the h 11. 29-30: Arist 1. 30: Gerrh 11. 34-5: These taint Islan cians 1. 41: Krame Ort

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Strato Simmett Dare Annaare to employ the terms : "langth" and "hreadth", strictly confired by anotant geographers to distances exit-ant-west and nurth-costnouth respectively, the wrong way rough.

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NON-210. Lake Theopities, salied Theopites of Feelang and Tier, is depicied as the Lake of Fee, which is sale and over 5000 frost above and is good for multiple to tends is contained rotach and is good for multiple alotadi is contained rotach and is good for multiple about, as "signis" is rotate mount "as arrow". This (6: 137,139) reveate the story with aller variations the chief of which is that he balas the lake of the is the store of which is that he balas the lake of the and which Strains gives as as altermative for the and the and which strains gives as as altermative for the is and which which is the the man and the form is, and which strains gives as as altermative for the is and which which is the is the man and the is and which which is the man and the form is, is and which which is the man and the is and which which is the man and the is and which of the Tigris is very show to the the lake the source of the Tigris is very show to the the lake the source of the Tigris is very show to the the lake the is and which is the start of the tigris is very show to the the lake the source of the Tigris is very show to the the lake the is the source of the Tigris is very show to the the lake the is the source of the Tigris is very show to the the lake the show the the lake the show the lake the the show the the lake the show the show the lake the show the show the lake the show the s

but there is in fact an composing bothers the many many is potent, and the first cluster round the mouth of the stream minimum for the Vignio. (Commer pr. 267-270) 21.1. 2. 5 word Tilpong Gilarte: "the and by the foreigner". 4: ἑξ 'Appójωv: later Ormuz, the whole district; at that time a small island called by Nearchus Organa. See Tozer, p. 142.

392

aupurapiou: Cape Mussendam.

 6: The coast of Garmania is curiously said to turn "away from Garmania" (presumably the "capes of Garmania"). The northern coast of the Gulf does not in fact turn east at any point.

1. 13: 'Avôpogeéva: see 1. 19, note.

1. 14: noi: Tyrwhitt inserts.

- 1. 15: pimply droke(setai: a not unreasonable estimate on the available data. The Black Sea is rather more than half as large again.
- 1. 19: Nearchus stopped at the mouth of the Euphrates; Androsthenes continued the voyage round the gulf. The island is not now identifiable owing to silting-up at the head of the gulf.

11. 29-30: Aristobulus: see Intr. p. 1x111.

1. 30: Gerrha = Adjer (?) (Jones, Loeb Strabo, vol. VII, p.303)
11. 34-5: These islands also cannot be identified with any certainty, but are most probably taken as the Bahrein Islands. Herodotus (I, 1; VII, 807) says the Phoenicians came from here.

1. 41: Kramer Gyupiv, Gorais "Gyupov, for Tupivav. Orthagoras (date unknown) wrote 'Ivbol λόγοι (Ael.

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1. 89-301 Artatobolus: see Intr. p. 1x141.
1. 30: Gorda * Adjer (7) (Some, Leep Strabo, vol. 711. p. 303)
2. 30-3: These islands also cannot be identified with any containty, but are nost probably taken as the Shirein falands. Rerodotus (1, 1; VII, 807) size the Phoenix
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N. A. XVI, 35; XVII, 6; Strab. 766; Philos. Vat. Apoll. III, 53).

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Arrian (Indic. 37) says the tomb of Erythras is on Caracta, 300 stades from rocky Ogyris. Vincent (Voy. Nearch. p. 348) thinks the island meant is Arek, not Hormuz.

393

11. 42-45: There have been many theories to account for the name of "Red" applied to the sea: this is the typically Greek method of the eponymous here (cf. Icarian Sea, etc.). Gessellin puts up a good case for the reddish reflexion in the water of the barren Arabian hills.
1. 45: 'Apoirtou. Meineke for 'Apqivou.
11. 50-54: These are perhaps mangrove trees.

Strabo (G. 83-86), though defending Eratosthenes against the geometrical criticisms of Hipparchus, very strongly criticizes his divisions into "Seals" on the grounds that, when breaking up countries and districts for separate discussion, the geographer should proceed like a surgeon and detach at the "natural" joints $\tau d \mu \delta \rho \eta \dots s \epsilon \rho i \gamma \rho a \phi v \delta i u \delta v,$ $d \rho \theta \rho \omega \sigma \epsilon i \tau i v i u a i \tau u m o s s \rho i v \rho a \phi v \sigma i u \delta v,$ to him that opinions may differ on what is "natural", as in the difficulty over the continents (See fr. 186). He goes so far as to say that Eratosthenes would have done better to bound his third Seal by the coast of the Bersian Gulf up to the Euphrates, the frontiers

of Mes Nile I Arabis and wo meridi ward t fourth Here cism o the "] wise. HINOG NOR 213. Apart saous across actual 214. It set about Lamps the "C Poly Rhino Coele thieve by Act

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Apoll. III, 35). Arrian (Laile. 37) ange the tent of Arriani is an Garacta, 300 stades from posty Series. Manual (Vop Rearch, 30 stades from posty Series. Manual (Vop Rearch, 30 stades from posty Series. (Vop Rearch, 30 340) thinks the island meant is and at Reiman. 1. 40-45: More have toon wing theories to account for the name of field aroited to the scat this is the indentity of field aroited of the scat this is the indentity ato.). Occast method of the scat this is the indentity ato.). Occastlin pate with an aroit one for the indication ato.). Mained is the water of the scat this is the indication ato.). Apoirton is the water of the scat the scatter of the indication 1. 45: Apoirton Mainele for Apiron.

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Strato (2, 83-86), though derending tratestance equinat the sconstriant orticizies of diponetime, very strengly orticizies his districtions into "seals" on the grounds that, when breaking up nountries and districts for separate discussion, the congradue war" joints for separate discussion, the congradue unal" joints for separate discussion, the congradue defeders tori well the e surgeon and detain at the "arts to him that opinions may differ on what is "meture", defeders to be distribute over the continuent is and the the she distribute over the continuent is and done better to bound his third seal of the source of the forman to bound his third seal of the source of the forman to bound his third seal of the source of the formation to bound his third seal of the source of of Mesene and Babylonia and across the isthmus to the Nile Delta: the fourth Seal would then consist of Arabia Felix, the Red Sea, all Egypt, and Ethiopia, and would be bounded properly by the parallels and meridians through its extremities. In putting forward this suggestion he omits to say what in fact the fourth Seal was.

Here, and again in G. 88, he agrees with the criticiss of Hipparchus that Eratosthenes does not take the "length" of his Seal along a parallel, but slantwise, ώσπερ εί τις παραλληλογράμμου την διάμετρον μηκος αύτου φαίη.

213. Apart from being drawn "aslant", the line from Thapsacus to Pelusium cannot be straight without cutting across the S. E. corner of the Mediterranean. The actual distance is in the neighborhood of 400 miles.

> It seems likely that Eratosthenes took the material about lakes and subterranean rivers from Strato of Lampsacus, whom he used extensively in Book One of the "Geography". of. frr. 156, 157.

Polybius (V, 80) and Ptolemy (IV, 5, 12) assign Rhinocolura to Egypt, making Rophia the last city in Coele Syria. It was said to have been founded by thieves who had their noses out off and were expelled by Actisanes of Ethiopia when he conquered Egypt.

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- 215. 11. 5-8: Heroopolis to Babylon is some 700 miles. Petra is in fact a little south of the straight line between them.
 - 6: Corais and Meineke emend to έστιν έν τῷ πρός τῷ Νείλφ μυχῷ.
 - 1. 10: It is hardly possible to determine an exact border, but Arabia Felix may be taken as stretching over 1000 miles southwards.
 - 1. 19: sapashaoiwe Th Ivoing. of. fr. 197 and note.
 - 1. 26: Sabaeans: roughly Yemen.

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- 1. 30: XatpaparTtic = Hadramaut.
- 1. 34: vopof: an Egyptian term Hellenized, presumably suggested here not only from the fact of being on the side of the Red Sea facing Egypt but from the fertile seaboard civilization reminiscent of the Delta.
 - 47: ἐν Θατέρφ μυχῶ: i. e. the gulf at the northern end of the Red Sea on the eastern side of Sinai, opposite to that on which Heroopolis stood. (1. 5)

49: Γερραΐοι: from Gerrha near the Persian Gulf coast.
 See fr. 211 1. 30. Some MSS. give Γαβαΐοι.

 53: Anaxierates was with Seleucus Nicator in his "Periplus of the Red Sea". (cf. Tzetz. Chil. VII, 174) He wrote a topography of Argos (Schol. Eur. Andr. 224).
 53-4: Not a great exaggeration. The distance is some 1300 miles in a straight line.

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sites in a straight line.		
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11. 56-59: The distance down the west coast is slightly greater, about 1400 miles. Both distances would be much increased by coasting.

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1. 67: xápať = a stake; hence a camp fortified with a palisade, as the Roman "vallum". cf. the many prehistoric forts in England ascribed to the Danes.

1. 69: Tà narà Aciphy orevá = Bab-el-Mandeb.

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11. 72-73: Et vijoo: ouvexeit: These seem more likely to be the "Six Brothers" just outside the narrowest part now, rather than the Darmabah Islands some distance inside, where the sea is much wider.

1. 78: Door seventoxidiar - about 700 miles.

All the main measurements given in this passage are also given very briefly by Agathemerus, II, 14.

216.1. 2: At its nearest, about Thebes, the Nile is about 100 miles from the Red Sea; at its furthest, up to Merce and beyond, well under 500 miles. Hence Groskurd's évvaxosious à xilious seems a reasonable emendation for évaxisxilious.

 3: This double bend (the Dongola bend) of the Nile was lost, and did not re-appear in modern maps until the nineteenth century.

of. Schol. in Dionys. 242 (Geog. Gr. Min. II, p. 441): έν τῷ πίναμι τῷ ματ' Ἐρατοσθένην μαὶ Διονύσιον οὐμ ἕγμειται τὸ τῆς Αἰγύπτου σχῆμα, εἰ δεῖ αὐτὴν λαβεῖν

ούτως τρίπλ 11. 5-13: These follo From:

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1. 55-59: The distance down the wash comet is slightly granter, about 1400 miles. Both distances would be much inoreased by cometing.

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1. 12-73: &{ v@co: coveye?c: These seen note likely to be the "Siz Brothers" foot establish the marrowest part new, inther then the Darraisch Inienda some distance inside, where the see is acch wider.

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All the main measurements given in this passage are also given very briefly by Agethemorus. 11. 14.

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I. 3: This double band (the Someola band) of the Hile was lost, and did not re-appear is modern maps until the alsotoesth contwry.

er. Sobol. in Dianya. 242 (Goog. Gr. Mar II, a. 642): by th strans th nat" Brazio66vay not diav6ator abs. Systerat to the Alyderoa origin, et det adriv lagety ούτως κειμένην, καθά και δ Διονύσιος έκφράζει, τρίπλευρον ίσοσκελή.

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11. 5-13:	These distances are roughly, i	n straight	lines, as
	follows:	Milos	Stades
	From: Merce to the S. W. Bend:	200	2700
	5. W. Bend to N. Bend:	200	3700
1, 191	N. Bend to Syene	450	6500
	Syene to the Sea	500	5300

The nearest measurement is naturally the most accurate, but the others are much nearer to the truth than might be expected, although Eratosthenes does somewhat exaggerate the S. K. deviation. It appears as though he were fitting the reports of boatmen; which would be fairly uniform in their exaggeration of distance (see Intr. p. lxxxi.) with gnomonio readings for Merce, Syene, and Alexandria.

11. 16-18: Astaboras * Atbara; Astasobas * Blue (or possibly White) Nile; Astapus * Blue Nile.

 21: τούς Θερινούς δμβρους. αΓ. Procl. in Plat. Tim., P. 37 Β: Ερατοσθένης δε ούκετι φησίν ούδε ζητείν χρηναι αίτίαν της αύξήσεως του Νείλου, σαφώς και άφικομένων τινών είς τάς του Νείλου πηγάς και τους δμβρους τούς γινομένους έωρακότων, ώστε κρατύνεσθαι την 'Αριστοτέλους άπόδοσιν.

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- 1. 26: Espôpita:: called Astónolos, or "Desertars", by Herodotus, who places them (11, 30) in Ethiopia.
- 28: τὴν 'Epuθράν: here evidently the "Arabian Gulf", or our Red Sea.

The Megabari, or Megabarri (Slin. VI, 30) had a town of Apollo.

- 29: Bléppvec = Blépvec (Steph. Byz.) and Blemyae (Plin.
 8. 8.). Ptolemy puts them 3. and 2. of Egypt, but in earlier times they were more dispersed.
- 1. 30: These Troglodytes inhabited both shores of the Red Sea, and are the best known. There were others in Mauretonia (Strab. 828) and N. of Gaucasus (Strab. 506)
- 1. 33: The Nubiana were semi-nomatic negroes, so called by the Egyptians. There was no country of Nubia.

1. 38: Somewhat under 170 miles. xilioi: Edd. for Tricxilioi.

217.

Neither Strabo nor any other authority gives any detailed information of any Seal beyond the fourth. It is, however, possible to conjecture that/the fifth was Egypt and southward, the sixth comprised the rest of Africa. This would be as much of a right-angled triangle as India was rhomboidal (fr. 194), and would fit in with the idea of a Seal according to Eratosthenes. Strabo's figures in the latter part of the passage are based on those of Eratosthenes: "breadth" -

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1. 26: Leph/Trol: 0011ed AGrégioLos, 00 "Dresobilité", 27 Serodobue, vice placage them (11, 20) in Thiskeyda. 1. 20: Thy "D, voc du: here exidentity the "Arabien Sulf", 07 1. 00: Thy "D, voc du: here exidentity the "Arabien Sulf", 07 1.

Ine Replaced, or consistents (star, 22, 30) and a total of the of Amelia.
An 39: Bhépapet e Bhépapet (start, 1976.) and Rempe (Riter and S. 61 Amelia).
A. 80: All a follows there the black is and the of Amelia, but in a solution there there are the black isoth above each of the black is and the of Amelia and the black isoth above each of the black isoth above each of the black isoth above each of the black is and the black isoth above each of the black isoth above each of the black isoth above each of the black isother each isother each of the black isother each isother each of the black isother each of the black isother each isother each of the black isother each of the black isother each isother

Matther Mtrobe nor any other exchantly gives any detested information of any deal beyond the founds. It is, however, possible to conjecture their was kypt and southered, the stath computed the rest of africal fints would be as much of a right-angled briancie as india was righteredial (rr. 194), and would the in with the idea of a feel amounding to instertion in strabe the idea of a feel amounding to instertion and the state of a feel amounding to insterAlexandria to Syene, 5,000 stades; Syene to Merce, 5,000 stades; total, 10,000 (fr. 178): "length" -Alexandria to Carthage, 13,500 stades; Carthage to the Pillars, 8,000; total, 21,500 (fr. 185). Strabo objected to the measurement from Alexandria to Carthage, himself making it not more than 9,000 stades (0. 93). This makes the total "a little loss than double the Syrils was the culchoand, the dread of all breedth".

What is not made absolutely clear is where Eratosthenes placed the Delta itself. In fr. 214 the boundary of the fourth Seal is made to terminate in the "districts round Canopus and Alexandria", while in fr. 215 the distance is given from Pelusium to Thapsacus, and in fr. 185 the measurement, for the Diaphragm, 10 given from Canopus to Carthage; in fr. 220 apparently Strabo takes the same measurement as from Alexandria to Carthage. In the present passage the boundary is given simply as "Egypt and the Mile", the "breadth" being taken from Alexandria itself. Though possible, it is not really likely that Erstosthenes took the Delta as a separate Seal, or left it unattached like the City of York in the midst of three Ridings. The final words of fr. 218 sees to establish with reasonable cortainty that the northern boundary of Sgypt (the fifth Seal) was from Pelusium to Canopus. del Haches. It'is also spalt

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- approximate to Synony, 5,000 methods appoint of stringers 218. This S.000 stades total, 10,000 (fr. 578): "Issueth" + esti Alexandria to Cartings, 13,000 states three in arthouse it "The 219. ofende, 8,000; total, 21,000 (fr. 103), Stable Th objected to the measurements from algomethics to farthere, mile .(62 .0) and its cot more than 9,000 and the 10. 20). at e this makes the total "a little than that the bains The "sid hoursel ship -bodants product dat sando gistuicoda ober jon at sude -could all the standing theath and the stands and 220. The (0d. in and the straight the second of a backer and south and the star "Glathing a rivers Caroovin and Alexandrian", Maile da. for and 215 the Atetace is given from "otening to Tolynomer, ama1 with and an ended the production of the base of the base in d14 riterandon dan and in temperation of anyonet morth riskin poun statements for an ensurement of a state state drin to Cartingo. In the present passage the boundary in Th "Minered" and "office and had devis" as glents cavis have index taken from Alexandria disell. Channel measured IV. allow and mont constant that that the book show the bills bour and a second deal, or last it photical the stores and the City of This in the side of these Reads The shift of the when aldamon pri dil dall'defen es sens 810 .st to abuch and tainty that the morthern boundary of Sound (the first 221. Calp inel) was from Pelunium to Campun. del 1

This distance is almost right, being a slight underestimate.

"The Hesperides" - Ben Ghazi.

The length of the Syrtis is altogether about 600 miles, not including the journey in of over 100 miles at each end, which is presumably included in the winhoc. The Great Syrtis was the quicksand, the dread of all shipping in antiquity from Aeneas to St. Paul.

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The land of the Lotus-Eaters, visited by Odysseus (Od. IX, 94-7), has been located by the Lesser Syrtis, and is described by Polybius (XII. 2): the lotus is a small tree, with a white fruit the size of an olive, with a small stone; the inhabitants in ancient times did in fact live on it, preserving it for food by pounding with spelt, and making of it a mead-like drink. (Toger p. 28)

There is no obvious reason why Eratosthenes should have assigned it, against all tradition (e.g. Herod. IV, 177-8), to an island, though in the right neighbourhood; but Polybius also twice mentions Máviyš as the island of the Lotus-Eaters (I, 39, 2; XXXIV, 3, 12), and Agathemerus once (V, 22).

Calpe = Gibraltar; Abilyx = Jebel-el-Mina or Monte del Hacho. It is also spelt 'Aβύλη and 'Aβυλυξ.

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The land of the Letus-detere, visited by Olymests (00. II, 90-7), had been loosted by the Lenser Gyrtin, and is described by Folynine (XII. 8); the letteris is small tree, with a white fruit the size of an olive, with a small stone; the invabitants in sector tite and is fact live on it, preserving it for food by pounding with spalt, and making of it a med-live drame. (Texar p. 88)

There is no covious meson why Ersterinanes should have acciented it, against all tradition (o. 8. Norod. 17, 177-8), to an Maland, though in the right might bounded; but folyping also twice mentions Mévry? as the infant of the Latur-Satere (I. 39, 21 Likiv, 5. 12). and agathematus ones (V. 22).

> Calpo = Gibraltary Abilyz = Jobel-el-Mina or Monte del Hacho. It is sico spelt "A6daq and "A6oavě.

ος. Ο. 825: πλησίον δε και πολίχνιον μικρόν όπερ της Θάλάττης, όπερ Τίγγα καλούσιν οι βάρβαροι, Λύγγα δ'δ 'Αρτεμίδωρος προσηγόρευκε, 'Ερατοσθένης δε Λίξον.

401

The river Lixus, mentioned by Hanno (Periplus #6), as a great river flowing from Libya, is assumed to be the Wady Draa, which enters the sea opposite the Ganary Islands and is said to be longer than the Shine. Perhaps Eratosthenes transferred this name to the town of Lynx or Tinx near to it, as he was apt to alter names to his own etymological taste. (of. fr. 210, etc.) In later times the Phoenician posts in these parts fell into disuse, though $\pi \delta \lambda \epsilon \iota \zeta \ldots \pi \alpha \mu \pi \delta \lambda \lambda \alpha \zeta \tau \iota v \dot{\alpha} \zeta$ has the appearance of exaggeration.

"Western Ethiopians" appear in Herodotus (III, 114) who held that the Ethiopians stretched right across Africa. Here it must refer to the negroes of that coast. See diagrams of Ephorus and Timosthenes, Introd. 3A, and figg. 1 and 2.

On the atmospheric effects, ef. Strab. G. 138 of την δέ τοῦ μεγέθους φανthe setting sun at Gadeira: τασίαν αῦξεσθαι μὲν δόμοίως κατά τε τὰς δύσεις καὶ τὰσ ἀνατολὰς ἐν τοῖς κελάγεσι διὰ τὸ τὰς ἀναθυμιάσεις κλείους ἐκ τῶν ὑγρῶν ἀναφέρεσθαι· διὰ δὲ τούτων ὡς δι ὑάλων κλωμένην τὴν ὅψιν κλατυτέρας δέχεσθαι τὰς φαντασίας.

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Sec. Sec. alt. G. Bress sharing the set for the setting back stands oft This frag 223. on the ci "Apressionpog apoggyépevne, "Sparodévage he Affer. to the Pa 470 B. C " The river Linus, sensioned or Hemo (Feriplus #6). Cerne od of heeren of angle, month palvalt revir, facers a an Herne in the dady lines, which exters the set opposite the test the date Accordin while and is and to be longer that his biss of the its dist to many put of onen alds berrelanard percentered and Pillars tona or Time near to it, as he was app to ant to any Tezer, p to bie own etymological teste. (of. fr. 210, etc.) In Inter time the theoriestan posts in these parts with Presumat 224. into figure, through solers maunoling rivic tosthene the appointance of examples of and from eas (All , III) superconder at manager "analgeld%" madash" and repo anoras insid bodowerse enalgoid's and inde bled adv Tempting Articles. Here it must refer to the negrood of that arrange second there of Barrens and Timetas and Timethones. for any .S has I .gall bas . M. . bouint tions o to det .0 .detto .to .treato alterate of . Strate of 0. 86: -vap youddyay for 50 vir the setting aun at Gedeiner and C. דתמומע מטננסטמו אבי ומטומע אמדם זה דפר הטכור אחד "Innap the bratehas by role readyaut bid to the bradenigrate TOV NO ale for the the by dy dy dyage solar. Bid be tobur de Baives die ballen wherefor all dies andarvere bereauste Both payrad fac. times] Sea of

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This fragment is assigned by Berger to the discussion on the circumference of the Ocean: it evidently refers to the Periplus of Hanno (Geog. Graec. Min.), of about 470 B. C.

402

Corne is identified with a small island now called Herne in a deep bay at the mouth of the Rio de Auro. According to Hanno it is "opposite" Carthage, i. e. its distance from the Pillars is the same as from the Pillars to Carthage. For the rest of the voyage see Tozer, pp. 104-109 and fr. 222.

224.

Presumably, although there is no definite proof, Eratosthenes described the "Seals" of the "Southern Half" from east to west, and then returned to the far east and repeated the process for the "Northern Half". Tempting as it is to theorize about the number and arrangement of the northern Seals, there is no evidence for anything but the slightest of hints. The only mentions of them in Strabo are for adverse criticism-c. 86: oùn eð 62 od62 al 6:aßóps:o: haußdvovta: µepí6ec; and G. 92: &v 62 tŵ 6:evtépý 6:souvípat: dvahaßdv (6 "Isxapxoc) sáhiv thy aùthy gátagiv thy sepi tëv 8pov tëv metd tov Taŭpov, sepi &v isaväc cipímanev, petaβaíve: spòc tà βóps:a µépa tặc oinoupévac.

Both the rivers Oxus and Jaxartes were in ancient times believed to flow into the Caspian, not into the Sea of Aral as they do now. There appears to be reason

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This fragment is continued by Hanger to the discussion of the directorence of the Content is evidently refere to the factor the Content for the Partyles of Hange (Geog. Grand. Min.), of About 470 3. J.

Gerne in identified with a moull inited now ealled Herie in a deep bay at the would of the Hie do Auro, Associating to Hanno it is "opposite" Continues in a the distance from the Fillers is the same as from the Fillers to invance. For the rest of the voyage see Tomor, yp. 104-109 and Tr. 222.

Τσυπιπείτη, είτασοφή τουνε με πο δοτίπετα πτοσή, Έποτου του δουστέθαι του "δασία" οι του "δουτίσετα Παίτ" έπου σασό το νοσέ, από τόσα ποτυπταί το του έστ σασί από τοματόσό το στοσασο έστ του "ποιτίσετα Παίτ". Τουρτίπη και το ίε το τόσοσταο αδούς του "ποιτίσετα Παίτ". Αυτοπροποιά οι τόσο ποτύσετα 1931ο, τόσετο τα πο αντίσετου παταπροποιά οι τόσα ποιτίσετα 1931ο, τόσετο τα πο αντίσετου ατάπας απητείας βυί του τόσοστασ στ' πίπτα. Του απή του τόστα από το φαι το δέ σόλξι αι διαφόρετοι λαμβάτονται μαρίδος από το, φαι έν δε του δευτόρο δεομνήματι άναλαβόν (δ τόν κατά τών Ταύ, ον, κερί δυ Ισαφόρετοι λαμβάτονται μερίδας "Σικαρχος) πόλιν τήν αστάν ξήτασιν τήν κερί του του τόν κατά του Ταύ, ου, κερί δυ Ιπανός εξημαριν, μετα δαίνει πρός το βόρετοι μέρη της ολουμάνης.

Son of Anal an they do now. There appeare to be reason

to believe that the Oxus at least actually did so in Alexander's time, and that there really was a traderoute between Europe and India by way of the Black and Gaspian Seas and the Oxus (cf. frr. 225-6; 175, and n.)

Whether this fragment describes a single "Seal" cannot be determined, but the measurements with which it concludes look like one of the "length" measurements of Ariana (fr. 200) or the third Seal (fr. 205).

The straight distances are about:

R. Cyrus to Caspian Gates	500 miles
Caspian Gates to Alexandria	520
Alexandria to Bactra	300
Bactra to the Jaxartes	260 " (through mountains)

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See frr. 224, n., 175, n. Hyrcanian Sea = the Caspian, from one of the tribes to the south; see fr. 226.

for it by the marky sucharary, Starfr. 162.

άνέχων έκ τοῦ ώκεανοῦ: cf. fr. 175, where this is mentioned in support of the theory of "circumfluence". The reputed expedition of Patrocles from the Indian Ocean to the Gaspian is also mentioned by Pliny (II, 167; VI, 58) and Marcianus Gopella (VI, 619). The distances and names are given with slight variations by Pliny, VI, 36: Eratosthenes ponit et mensuram ab exertu et meridie per Gadusiae et Albaniae



oram quinquiens mille GGGG stadia, inde per Atiacos, Amarbos, Hyrcanos ad ostium Zoni fluminis quater mille DGGGG stadia, ab eo ad ostium Iazartis MNGGGG, quae summa efficit quindeciens centena LXXV mil. passuum. of. also Strabe G. 508: tò pév toi shéov tặc sepi thy ôpeivhy sapahíac Kabovoioi vépovtai, oxeddy dé ti isi sevtanioxihíouc otabíouc, ắc enoi Hatponhặc, bc nai sápicov hyettai tò séhayoc toũto tệ Hovtinệ. Albania stretched on both sides of the eastern end of the Gaucasus.

404

Strabe (C. 518) gives the distance between Oxus and Jaxartes, according to Patrocles, as 80 parasangs.

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The range still called the Gaucasus; not that mistaken for it by the early explorers. See fr. 162. The Gaspii are also mentioned as in eastern Media, near Hyrcania, by Herodotus (III, 29) and Strabo Epit. XI.

229.

Hipparchus infers that the Caspian Gates are the same distance from Thapsacus and Mt. Caspius; that, as it is much less than 10,000 stades from Mt. Caspius to the Caspian Gates, the measurement of 10,000 that Eratosthenes gives (fr. 206, 11. 30-1) must be taken by a roundabout way.

Strabo goes on to point out that in order to oppose

sacostos man plat, attara 0000 efila costapalap acos Anarison, Byrassan ad oneithe Look filminia quater Hills pepp. . DECOME attracted mutane be on da .attaan 20000 aft, also Breado G. 308: ab phy not shifty aft, werk . the dresvip rapallar Kaboboros vénovras, azedde 66 vi this sevremiegalfour orabiaur, Sc aner Horpenhile, Be wal adoreov freitar to adore totto ad Hoverad. Albania accessing on both sides of the eastern and a anti-the Canademan Strabe (0. 518) gives the Cletaros between Omis and is a societies to instruction, as 30 minutes. The rouge addit sailed the Jacobaut and bollet 11288 epart off for it by the early arohered and the list to . Wholl proceed at an hearthroom oute are thread and constitute (28. LII) and about if yalantary and ALL SECH

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Eratosthenes Hipparchus not only perverts his meaning by applying direct distances as though they were distances between parallels and meridians, but even falsifies his figures (as in fr. 230). The middle of the Caucasus is in fact some five degrees east of the Bosphorus.

405

Schol. Ap. Rhod. IV, 259 repeats this, confirming it with a quotation from Artemidorus that τόν Φάσιν μΆ συμβάλλειν τῷ 'Ωμεανῷ, ἀλλ'ἐξ ὁρέων ματαφέρεσθαι. According to Pindar (Pyth. IV, 26-7) the Argonauts sailed up the Phasis to the Western Ocean, and by way of the Erythraean Sea to South Libya. The town of Phasis was at the mouth. The Golchians themselves, who in fact had many Egyptian traits, were reputed to be remnants of the army of Sesostris (Herod. II, 104; Diod. I, 28).

The lines to which the scholiast refers are: Enduov of mai sollov Ende Titaviõee aige (or Aige) Kolgiõa yäv Evépovto sapà spogojoi Aúnoio.... Aea was an early name for Golchis, after the king Aeetes, father of Medea.

Berger (p. 328) gives up this passage altogether. It might, however, be possible to hazard some connexion, either (1) with the Prometheus myth and the Caucasus-

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Sobel. Ap. Hood. IV. 259 reparts this, configures it. the visit a quotation from Arcontdorus these they offer and eoupdillerv ap "Encarp, 53". 65. Spear Harayéperder. According to Finder (Fysh. IV, 26-Y) the kreeneutic andled up the Phanis to the Western Commen, and by way of the Erychester Sea Seath Libra. . The soun of Massis and at the eviter. tenne Bed Spat el ore seeviened contralob erten this to admanant bd of bedunen oran addiant theighter army of Secondria (Hered. II, 104; Blod. I, 20).

the line to which the selecter referred south of (sala any sale sally prit shid vidion for so youing ;-Kolyiba yay évépovre sapà spoyader Admess. Ante and methy anthono for detable, after the anti-Austina, father of Madea. Manager (p. 338) gives up this passage altergetion. inclusion sees bises of sldisend of inveved interst estimate (1) with the remainment and this (1) worldress the land at the east end of the Euxine being distinguished from that on the south side, or (2) with Circe, who was the sister of Asetes and herself lived in an island Aeses. Both Prometheus and Circe were Titans and might entitle Colchis to be called Titavic aia (or Aia), the river Titen being invented to explain the name. " alag the morthers limits of habits-

406

There were in fact two rivers of Pontus, Thermodon and Lycus, flowing into the south side of the Black Sea at no great distance from each other. The Lycus was much the larger. Gover the state atoms total of

The mouth of the Thermodon is about 150 miles west of Tropegus, that of the Lycus 170. For the Lycus, see quotation in fr. 231, n. of. fr. 137. the black Ben, which he likely to be

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In V. 47 Pliny says: "ab ore autem Ponti ad os Maeotis 100 more, not less.

The distance is about 500 (English) piles. As Eratosthenes made the whole length of the sea 8,000 stades (see fr. 235), which is not far from the truth, something must have happened to both figures, which are those of the Teubner text.

it and Soutoothered who prists Panticapacum is the modern Kerch, at the entrance to

234.

the land at the year and of the horizon being then tingulated from the that on the doute alds, or (8) with Girao, why who the stores of Lastes and bereadly lived is an island locat. Both Househbook and Girao who there and sight contitle Goldsin to be dolled forgets of (or Als), the river fitte both bills forcested to any plate the mate.

Share ware is fact two wirese of fontune Sharedon and Lyones flowing into the south while of the Jacks de at no great distance then while wither. The Lyons was wood the larger. The booth of the Streedon is shout 150 wires wort of Propagne, that of the Lyone IVO. For the Lyone, as quotation in fr. 231, n.

In V. V? Pling anyor 'ab are autom Ponti ad an Neesta Aratostheres IF XLT & pade, "--- 1. a. about 100 more, root long. 200 Alarahes is about 500 (Sagilish) wilso. As antostheres make the about 500 (Sagilish) wilso. As anbatabes (are the about 500 (Sagilish) wilso. As anot batabes (are the about 500 is not far the the test, doubting must intro intropod to both Figures, wilso are those of the Teshere test. Lake M climat believ climat ther r Erat Two, r bilit; The le Fhasi that M

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Lake Macotis or the Sea of Azov. The coldness of the climate in south Russia led the ancients generally to believe, since they were ignorant of the effects of climate of the Atlantic Drift, that it was much further north than it is in relation to western Europe. Eratosthenes may have quoted this epigram in Book Two, when discussing the northern limits of habitability. cf. fr. 182, etc.

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The length of the Black Sea is about 700 miles; from Phasis to Dioscurias 60 miles. Strabe goes on to say that Hipparchus "cut down" the 9000 stades total of Eratosthenes to 6,600, allowing only 5,600 for the Black Sea.

Strabo himself (G. 124) gives a more detailed description of the Black Sea, which is likely to be based to some extent on Eratosthenes.

236.

A coasting voyage would amount to something under 2,000 miles. If Hecataeus really gave this figure, it is remarkably close to the truth; but it must be remembered that he showed considerable acquaintance with the tribes of the Black Sea, and as far as the Gaspian (Hec. frr. 153-4).

It is unfortunately not possible to decide whether it was Eratosthenes who originated the comparison

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with 1 stands of. Th Συνορ TOV B The tion ONONI Ews 1 sétpo TOE anapl "Neque sed o praet et pi navi mihi adna fall fini St then Th Medi

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Late Massels on the See of Aner. The collings of the olinets is social durate het the sectorial guarantic to bolieve, show they were browned of the estude of alimate of the folketic best t, that if and much the blar north them it is is relation to southers involvtor, when discussing the marticeles blatte of both het inter, when discussing the marticeles is and the bility, or, fro 142, sta

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The Length of the Diset Des is shout 700 siles; from Jhosis to Diseturing 60 miles. Strobe and on the str that Hipperstee to 4.500; siles the 9000 states total of Erstestbenes to 6.500; silesing only 5.500 for the High Sec.

Strate binably (d. 12%) gives a nore detailed description of the Black See, which is likely to be based to some extent on Statestanes.

A constitute voyage would annount to compthing under 2,000 miles. If Recotterus really gave this figure, it is remarkably close to the truth; but it must be remarkably close to the the truth; but it must be vith the tribes of the Higgh Des, and as far as the comptan (Heg. Fir. 153-6). It is unifertumetely not powelble to decide whether it is unifertumetely not powelble to decide whether with the bow, but it is worthy of note that his name stands first, and cf. fr. 205, fin., etc.

of. Tzetz. ad Lycoph. v. 1285: 8 58 'Eparoceévac Συνορμάδας καλετ. κεκρυμμένας δε και λεληθότας περί τόν Εύξεινον πόντον φησίν, ή τοι περί το στενόν. The same idea is put forward, though without mention of Eratosthenes, in Etymol. magn. p. 718, 30: σκολιδν πόρον λέγουσι και τον άπο Βυζαντίου πλούν έως του στομίου του κόντου, ένθα είσιν αι Κυάνεαι πέτραι διά τὸ σκαμβόν είναι καὶ ούκ ίσον. ἔσικε δὲ to E ototxeiw nal Oaply Eprovet; and by Dion. Byz. anapl. Bosp. Thrac. (Geog. Gr. Min. II, p. 65 b): "Neque vero, inquit (Dionysius), Bosporus directus, sed continuus et parallelis promontoriis fractus; praevertunt enim et tanquam se invicem supplantant et propemodum se decipiunt promontoria prohibentia navigantes ulterius progredi. Unde, ut ipse ait, mihi videntur Symplegades nominasse petras, quoniam adnavigantibus modo aperiri, modo claudi videntur, fallente aspectu opinionem: id enim quod videtur finis, statim principium esse apparet." Strabo, though quoting the measurements of Eratos-

Strabo, though quoting the measurements of indicate thenes, calls them simply the "Blue Rocks". (fr. 229) The Planctae, or "Wandering Rocks", of the western Mediterranean, mentioned in Od. XII, 59, 70-72; XXIII,

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they . with the bow, but it is worthy or note that his and stands fires, and of, dry 205, fire, see. 2111 of. Toets. ad Lycoph. v. 12051 5 55 "Spercoolfver .770 Dovopuddae naket. neupoppérae of nat kekydorae nept 238. " The same then to put " several, though without same of tion of Mantostinnes, in Strapl, magn. p. 758, 301 whale astronges but ros ias rought regar vorlaw increased in with a new Even shirt of Andreas user and the first and the real addition of his regress the states and been prevented which the property of anapl. Beep. These. (Seeg. Sr. Min. II. p. 65 b); ", superio errores (astreneza) stunnt . erev eppen" and continues of parallalia productorizie fraction; constructions maching as machines to allow scottoreast at proposoine as docipient (monotheria problem a devigantee ulterine progredi. Unde, ut inas att. white videotur franciose enteres petres, quantant . uninenty thesels about 11 note antituanty adde in mutably boup wine bi inempiates stoegan etnolist ".terrege enne mulchenist mitate .einfi 239. -actain To atnewsureaux and galfoup depends . cdarfd thenes, calls them staply the "Blue Rooks", (rr. 229) The Flanctes, or "standering Hooks", of the version Mailtorraness, sensioned in Cd. All, 59, To-Tel Lilli.

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327, were in later times confused with the Symplegades (Clashing) or Synormades (Rushing Together) of the Argonauts. They appear originally to have been associated with the Lipari group. (Hyde, pp. 57 & 82).

409

The original Taurus range being in the 5. E. corner of Asia Minor, it follows that Asia Minor lies in the "northern half", not improbably as a Seal by itself. The Bebryces were a pre-historic tribe of Bithynia and Mysia, often mentioned in legend (e. g. Ap. Rhod. II, 2 and 794). There is no other ancient reference to the Colycantii, who may perhaps be associated with Cilicia.

The Leleges are associated with the Pelasgians and are frequently mentioned in Greek pre-history: in Asia by Steph. Byz. (Marala sólic, Nivón and Milatoc), in connexion with Greece by Strabe (G. 322, 401) and Steph. Byz. (Acmaba incov).

The Solymi were a people of Pisidia (Steph. Byz., Higidia) associated with Zedc Echupedc. There is no other ancient reference to the Tripsedi.

239.

Gangra was a town in Paphlagonia, S. of Mt. Olgasys. It was the royal residence of Deiotarus, the last king. (Strab. 564) Steph. Byz says that it was originally built by goatherds, "gangra" in Paphlagonian meaning "goat".

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endos (Jianhing) ar Jimanendos (Denotine focutier) al the Argonauta. They amour originally to have been associated with the Liperi group. (Hole, pp. 57 & 62), the eriginal faurus mage baiss is the 5. 5. conner of Asia Hinor, it follows bast as a set the 1. 5. conner faurthers holf", not improbably as a least of itabir, dad spate, etter mentioned in logend (or c. 57. 85c). its 2 and 704). There is no other existent notered to the following any partenet is another to the status.

Jory were in later times confored with the Braple-

The Leloges are accepteded with the Polassians and are frequently mentioned in Greak pre-minipulation in Lais by Seeph. Bys. (Maydia addic, Nivéq and Milarco), in connector with Greace by Straba (J. 300, 401) and Steph. Bys. (Acaebe(pov).

The Solgest were a propie of Platcha (Stoph. 192.). Bierbiel ansocheted with Sede Robupade.

There is no other enclosi reference to the Brighedi. Gauges was a town in Paphiagonia, 5. of 45. Oleanys. It was the royal residence of Determine, the last king. (Strab. 554) Steph. Byz ears that it was originally built by quatheris. "sumpro" in Farminguntas mension

· "daon"

There is no other reference to Amaxa (Pauly).

Eustath. ad Dionys. v. 867 contradicts this: 'Ερατοσθένης δέ φησι την πλησιν τη πόλει είναι άπο Διός Τερσίου τοῖς ἐκεῖ παλουμένου. οἱ δέ φασι Τερσόν τὰ πρῶτα διὰ τοῦ ε στοιχείου δνομασθηναι την πόλιν, διὰ τὸ τοὺς ἐκεῖ πρώτους συναγαγόντας παρπόν χλῶρον τερσηναι, ὅ ἐστι ξηρηναι, καὶ εἰς χειμῶνος ἀποθέσθαι τροφήν.

410

If the name Taponvóc was used by Eratosthenes it would suggest that he inclined to the derivation from tspon(vsiv.

In expressing his preference for the sense "Artemis of the Blazing Gountenance" $(\alpha^{2}\theta\omega)$ Eratosthenes presumably mentioned the place-name as well.

The river Hyllus is a tributary of the Hørmus in Lydia. It was also called Phrygius (Strab. C. 626).

Magarsus was a city in S. Cilicia, near the mouth of the Pyramis (Strab. G. 676). Alexander sacrificed there. (Arr. An. II, 5).

This Teucer was the son of Telamon and Hesione, stepbrother of Ajax. Telamon would not receive him home to Salamis after the Trojan War, because he had not avenged Ajax. He was given Cyprus by Belus of Sidon and founded Salamis there (Serv. ad Aen. I, 619).

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然在华 There is no other reference to smann (fault). Agap Sustath. ad Disays. v. 867 soutrodicts midst "Lororof Are 100 Agan ober out eavly rathe for wropics the rate of period to the Tepoton role that makouptron. of 66 part Tepoty at and to apara did vou a creixeles évapacedquei vir aber did Anaple to tobe buer sporose ourayayayara magady ghaper This repolivat, 6 fort Engliver, and ele gendlivee Geobéeller (Pauly A DODIE and the many for orysic and most by Arabadaan in an In C. 244. could endowing and of beatings of test decrease blucy 3,420 this : V, 12 In expressing his protecone for his sense "triants which of the Maging Countersance" (ofSu) School points For alley as amer-opeld one benolines yldames the S The river Hyllus is a tributary of the Herman in of th Adda. It was also called Fargelus (Strab. J. 525). was 1 Str Ingerence whe a dity in 7. Clitets, mean the momental on th the Franks (Strate, 9, STS). Alamader sacrifted The there, fare, and the star she 00% "Tota Toucor vis the non of Teluvon and Heatens, atenevópa brother of Atax. Telanon would not reacted big him As to splants after the Trojan Wirry buowing he had to belo avanast A tax. He was state Oyores by Dolum of Siden apply and Founded deleads there (Serv. of Ann. I, 619).

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Agapenor, grandson of Lycurgus, son of Ancaous, king of Arcadia, founded Paphos (Paus. VIII, 5, 2).

Adamas, son of Theseus and Phaedra, gave his name to the promontory Adamas, to Adamentium in Phrygla, and to the Attic "tribe" Adamantis. (Steph. Byz. 'Anapávitov; Paus. I, 5, 2).

This is the only reference to Praxander and Cepheus. (Pauly).

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In G. 682 Strabe gives the circumference of Gyprus as 3,420 stades, but there is no positive evidence that this figure is taken direct from Eratosthenes. Pliny V. 129, however, gives 4272 miles as from Timosthenes, which may well have been used by Eratosthenes.

For the clearing of forests for smelting, compare the S. E. of England and the consequent transference of the iron industry to the north when coal smelting was introduced.

Strabo himself, and Pliny, V, 130, put Hierocepia on the west of the island.

Theophr. (Hist. Fl. V. 8, 1) says: ἐν Κύπρφ γοῦν ούκ ἔτεμνον οἱ βασιλεῖς, ἄμα μὲν τηροῦντες καὶ ταμιευόμενοι, ἅμα δὲ καὶ διὰ τὸ δυσκόμιστον εἶναι. As Eratosthenes counted all within the "Taurus" as

belonging to the "northern half", he would doubtless apply the principle to all the islands of the Medi-

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Acceptation, guardiage of Lynnagent, con of Acceptation (conof Accordia, founded Impires (Raus, VIII, 5, 2). Access, con of Theorems and Presence, gave his and to the presenter Access, to Accessive in Stricts. and to the Attic "tribe" Accessive. (Access, NYS. "Acceptive ov; Parm. 1, 5, 2). "Acceptive vipera. 1, 5, 2).

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In 0. 582 Strain styres the directorrende of Sppram as 3,560 stades, but there is no positive evidence that this figure is taken direct from instructions. Film 7, 129, bawever, gives 4276 siles as from Timosthenes, with any well hade been used by Erstechenes. For the electing of forests for eaching, astron

the 3. 2. of England and the concequent transformer of the iron industry to the north when coal analting whe introduced.

Strabe hisself, and Filey, V. 130, put Missedonath

on the weet of the felend. Theorhr. (Hist. R. V. B. 1) anges iv Edap yetv obs frapvor of parkets, the piv repotives not reprtopic you, the 66 not but to boondprover sives. As the technological will within the "Jeures" as belonging to the "northern helt", he would dentetions arely the principle to all the telends of the lediterranean: in any case, Cyprus is N. H. of the line bounding the fourth Seal.

412

This disputed passage seems most likely to belong to the description of Samos. The text is beyond any but the most conjectural emendation, but evidently refers to the temple of the "Gaping Dionysus". According to Pliny, VIII, 57, 58, this was dedicated by a Samian, called Elpis, who climbed a tree to escape from a "gaping'lion and called on Dionysus. The lion (as in the story of Androcles) made it clear that it was asking for help, whereupon Elpis descended and removed a bone which was wedged in its teeth. Afterwards the lion brought its prey to him in gratitude. Samos may well have been treated by Eratosthenes

as part of Asia Minor.

246.

In G. 92, where he is discussing the criticism of Eratosthenes by Hipparchus, Strabo gives the three promontories as: piav pév, éç'hç h Helosóvvysoc, deutépav dè thv 'Italinhv, tpítav dè thv Aiyuotinhv, dv' dv nólsouç dsolapßdvesses tóv te 'Adpiatindv nal tov Tuppavinóv. Whether the confusion is that of Hipparchus or Strabe it is hardly possible to say with certainty, but the meaning of this passage is clear: thv natd Maléac means the whole Balkan peninsula, from

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This disputed massage denses much likely to belong the the description of Names. The text is belond any last the seat conjectural emeridation, hat evidently return to the temple of the "daping Dicopres", according to Sling, Vill, 37, 39, this was delicated by a Semian called fight, who elimbed a true to accept from a "gaping" him and called on Nampans. The like is in the stary of androdies) rade is close the like is able atory of androdies) rade is close the like is being the balo, "disremped is the test whole is and atom brought its proy to him is gravitation. Since any well have been the test of mathematics is part of Asta Proy to him is gravitation.

In d. 92, where he is discussing the collidered Erecotheres by Ricearchus, Strabe cive the three presentences as Afer ply, by he h Rikesburger, herther bir strates as Afer ply, tyley birth aryorrady, he for addance beolophdreeder tor to "signariady as the drades of the institution is the internation toppyrady. Another the conductor is that of Rippersonal as the herdig possible to any with personaty, but the months of this passage is clear the active area the whole fills passage is clear the active area the whole fills of any the second doddes the whole fills of any the second the active area the whole fills of a fills of any the active area the whole fills and the passage is clear the active area the whole fills of any the second the Adr by the Pelopor souther project The Mel. I

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This (Ptol S. he Gin Ant. the Adriatic to the Bosphorus, bounded on the north by the Don. Gape Malea is the eastern prong of the Peloponnese, regarded by the ancients as the most southern. The central, Taenarum (Matapan), in fact projects slightly further.

The three promontories are also mentioned by Pomp. Mel. I, 3; 2, and Dionys. Periog. 331 f.

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"ostium Oceani" # Straits of Gibraltar.

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In modern usage "Tyrrhenian" and "Tuscan" are still applied to that part enclosed by Sicily, Sardinia, and Italy; "Sicilian" is confined to the Strait between Sicily and Tunisia, and "Gretan" to the part north of Grete. "Sardinian" is not found in most modern maps.

248.

This is scarcely a specific dogma of Eratosthenes. Naturally when measuring the "length" of the Mediterranean along the diaphragm he would hardly take it to any other point than the Gulf of Issus, while Strabe is taking the Black Sea as part of the Mediterranean.

249.

This "Ram's Forehead" is the S. W. cape of Grete
(Ptol. III, 2, etc.). The same name was given to the
S. headland of the Grimes (Strab. C. 124, etc.).
Gimarus - a northern cape of Grete. Kiepert (Att.
Ant. V) gives it as Káßoc BoSga. &sl Taivapov,



Meineke inserts; Müller Est Maléac, but Cythera does not lie between.

Samonium (Ealport, Acts XXVII, 7, etc.) was the E. promontory of Grete--probably not Salomon, but Sidero. (See Mus. Class. Ant. II p. 302)

The Claiming is neerly 70 miles.

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Cf. Seymn. orb. deser. 785 f. (Geog. Gr. Min. I, 227): έχει δέ και νήσους έν αύτῷ κειμένας πολλάς τε και μεγάλας μεγέθεσιν, ώς λόγος, ών ή μεταξύ τῆς Θαλάττης κειμένη καί των στομάτων ούκ έστ έλάττων μέν 'Ρόδου, Πεύκη δε λέγεται δια το πλήθος ών έχει reat secular talles produces (re. 207). It is given

The same points are also attributed to Eratosthenes in Schol. Ap. Rhod. IV, 310. benerally salled "Melsesse", in Melsus.

Strabo mentions this in connexion with the winds "blowing from Thrace" and Eratosthenes's criticism of Homer, Il. IX, 5. See fr. 143 and note.

There is no other mention of Ichnae or Achnae. 252.

253.

The name "Sintians" occurs again in Od. VIII, 294, οίχεται ές Λήμνον μετά Σίντιας άγριοφώνους, referring to old inhabitants of Lemnos, skilled in sorcery and medicine. Eratosthenes appears to derive it from ofvopat, "I tear, mangle".

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30. Βογπο, ανά, δαφαι, 783 1. (δαόξ. Ττ. Πλα. 1. 2471)
δχει δέ και νήσους έν αύτζ κειμένος
πελλάς τα και μεγάλας μεγάθεστν, ός λύγος,
δν ή μεταξό τζς δαλάττις κειμένος
μεί τών στομάτων εύκ έστ' έλάττων μέν "Ρόδος,
Πεάμα δέ λέγεται διά τζ πλξθος όν έχει

The area points are also attributed to Instantaness in Sobel. Ap. Hod. IV, 310.

stropo sontions this is demosion sith the tinks "closing from Throne" and Erstoothense's oriticlus of Hoper, 11, 11, 5. See fr. 103 and note.

There is no other mention of Tehnae or Adhned.

The name "Distions" ecoure again in 04. VIII, 294, ofgeres it Afprov perd Efvired dyprophysic, referring to old isombiftants of lemmon, shilled is screer and maticine. Emitosthemes appears to Garive it from ofveper, "I tear, mangle". Berger, relying on Steph. Byz. $\Sigma_1 v_1 i_0$ (district) and $\Sigma_1 v_1 i_0$ (people) places them in Thrace, traditionally the land of sorcery and witcheraft.

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Ithaca to Corcyra-an extraordinary underestimate. The distance is nearly 70 miles.

The straight distance from Epidamnus to Thessalonica is about 200 miles, so that the later estimate is much better.

This measurement looks like one of those for the "length" of a Seal: perhaps it may be taken as a hint that Greece itself formed a Seal separate from the rest of the Balkan peninsula (fr. 247). It is given also at C. 92 in connexion with Hipparchus's criticisms.

255.

251.

Generally called "Molossis", in Epirus. Neoptolemus, son of Achilles and Deïdamia, was fetched from Soyros with Philoctetes to conquer Troy. After its fall he received Andromache, Hector's widow, as part of the spoil.

256.

Charax of Pergamum wrote 'Exlavind and Xpovind, mixing history and fact. (Suidas and Steph. Byz.). His date is unknown, but he mentions Nero.

257.

Repeated in Servius ad Aen. II, 7. The Myrmidons were the Thessalian tribe led by Achilles.

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Garage of Forgamin wrote "EALqvied and Liovied; mining bistory and fact, (Suides and Steph. Byz.). His date

Nopented in Service of Aen. II. Y. The Myreidane were the Thesealist tribe let by son111.00s There were two Greek tribes of Agraeans, in Actolia and Acarnania respectively. (Strabo G. 338; Steph. Byz. s. v. "Εφυρα.)

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of. "Cypriots", "Sideliots", etc., for descendants of settlers.

πρώτψ. Ancher thought that this fragment was detached from an account of the residence in Athens (see fr. 42) in the first book of the "Geography". The more likely view, however, is that of Seidel (p. 146), Bernhardy (p. 85), and Berger (p. 352) that it belongs to the third book and that πρώτψ should read τρίτψ - a fairly early copying error. For Athens in Euboes see Strab. C. 446 and Steph.

For Athens in Euboea see Strab. C. 446 and Stepn. Byz. 'A0ffval.

260.

Of. Theophrastus. Hist. Plant. III, 16, 3: b bè mahofoiv ol 'Apmadec gehlédpuv toidvôde Exei thy gúoiv & pèv àshác eisetv àvà péoov spivou mai dpuóc éotiv mai Evioi ye bsolapfávouoiv eivai Offluv spivov. The cork-tree has a greyish appearance, with serpentine boughs and bark and narrow leaves.

261.

The disappearance and reappearance of rivers is fairly common in limestone districts and unusually frequent in Greece. The Alpheus is one of the few Greek rivers containing water all the year round: it disappears in

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there were two Greek trithes of agraving, in Actolia and Atarmania respectively. (Strate G. 536; Storm. Bys. 5. W. "Equpe.)

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or. "dynatote", "Stoollote", stor, for destondents of mattlers.

spond, andres thought that this incoment was her backed from an ecocust of the methanes in abhore (see in. 40) in the first nook of the "headrooky". The nore litedy view, however, to the the "headrooky". Mol, Remonstry (s. 63), and herer to 2001 thes it balance to the third hoat and that "with about nood with a training early constant and that "with about nood tring - a training early constant and the stress.

00. Musselinantus. Miss. Fladt. III. 26, 31 0 58 mer hodert el "Apundac palliddeor verdydde Exer afr gderv: de pêr balde elsefr bud ploer spiwo nal brode deriv: nel Evrof ys dashapdrovery elvas stins spiwor.

The contretive has a grayich appearance, with carpentine boughs and bark and marrow leaves.

The disappearance and responsione of stress is fairly common in lineatone districts and unusually frequent in Greeco. The Alphana is and of the few Greek rivers containing water all the year round: it disappears in the district of Asea, and probably for this reason was formerly called Nyctimus (river of darkness). See Tozer, p. 10.

1. 3: Jépespov: Arcadian for Bápaspov.

1. 6: Addwyala see fr. 2, and note.

1. 13: ôtocquía: "A sign from Zeus", especially thunder or rain in large quantities. of. Arist. Ach. 171.

262. The Hylli, or Hyllini, were an Illyrian tribe. Hyllus was the son of Heracles by Delaneira; here apparently confused with his companion Hylas.

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The city itself was later known as Dyrrhachium. Gadmus was the legendary founder of Thebes and introducer into Greece of the Phoenician alphabet. Zeus gave him Harmonia, daughter of Ares and Aphrodite, to wife, and among their children was Illyrius. According to Hyde (pp. 39, 40) there are no Phoenician objects in the palace at Thebes, and perhaps Cadmus was an Achaean who brought the alphabet (alpha * aleph) from north Syria.

264.

Pharos, or Pharia. It is difficult to say whether Eratosthenes means that the island off the Dalmatian coast was colonized from that by Alexandria. It was in fact colonized from Paros in the Aegean as late as 385 B. C. with the assistance of the elder Dionysius.

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It 16 III, 3 Berger Strabo entert deal o Stre h nate nai tà vóv, λεγόμι Hábov oubév Th1s with itsel of th "mart own: and 1 bound

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the district of ison, and probably for this reason. Whe formerly called Nystimus (river of darknose). See Tozer, p. 10.

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 3: [des@pov: Areadian for @des@pov.
 5: 6: Addugte and fr. 2. and mits.
 1. 13: Storgete: "A sign from Loui", correctally thunder or rain in large quantities. of. Arist. Add. 171.

The Hyllis on Hyllini, were an Illyrdan tribe. . Eyllus was the sen of Hermoles by Delansing pers Apparently confrond with his sequenter Hyles.

The olty local was later more as Dyrementation. Gadama was the Legendary founder of Theorem and introducer into Greece of the Decendent alphabet. the gave his Hermonia, despiter of tree and Aduration is wife, and among their objicters was Digratue. Aspending to drive (pr. 39, 40) there are no Theoris details abjects in the paleos at Theorem, and particus details abjects in the paleos at Theorem, and particus details by an advect the brought the alphabet (alpha 4 alars) inter morth Syria.

Horros, or Fhorid. It is difficult to any whother Simtouthenes manos that the island off the Galietian doubt was colorized from that by Alexandria. It was to test colorized from Daros in the jegoto is late as 355 5. 6. with the messetance of the elder Dicarches. It is frequently mentioned: e. g. Diod. XV, 13; Plin. III, 30; Ptol. II, 17, 14. The last two call it Pharia.

Berger argues (p. 356) that some of the legends which Strabo expressly omits were probably included (for entertainment) by Eratosthenes, and there is a good deal of probability in this view.

Strado says (0. 215): τὰ δὲ πολλά τῶν μυθευομένων η κατεψευσμένων άλλως ἐᾶν δεῖ, οἶον τὰ περὶ φαέθοντα καὶ τὰς 'Ηλιάδας τὰς ἀπαιγειρουμένας περὶ τὸν 'Ηριδανόν, τὸν μηδαμοῦ Υῆς ὅντα, πλησίον δὲ τοῦ Πάδου λεγόμενον, καὶ τὰς 'Ηλεπτρίδας νήσους τὰς πρὸ τοῦ Πάδου καὶ μελεαγρίδας ἐν αὐταῖς' οὐδὲ γὰρ τούτων οὐδέν ἐστιν ἐν τοῖς τόποις.

This passage fixes the alignment of Carthage and Rome, with the Straits of Messina, and presumably Sicily itself, between, neatly dividing off the western third of the Mediterranean. It seems likely that this "meridian" was based no less on guesswork than Strabo's own: the currents in this part of the sea are so strong and variable that any kind of dead reackoning was bound to be misleading.

Gf. Strabo G. 22: τὰς γοῦν Σειρῆνας τοὺς μὲν ἐπὶ τῆς Πελωριάδος καθιδρύειν (Gape Faro, Sicily), τοὺς δὲ ἐπὶ τῶν Σειρηνουσσῶν πλείους ἡ δισχιλίους διεχουσῶν

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III, 301 (2011, II, 17, 10. The list two call it. there, increase anymous (p. 356) that some of the legenda which strate anymous (p. 356) that some of the legenda which strate anymous) by restautiones, and there is a good deal of probability in this wire. Strate anyo (b. 313), 76 bi relied off poly poly in arreferention the bill off, offer an any followin it waveferentions (be allow bat, offer an any followin hai the 'Huddoe the dealy bat, offer an any followin wai the 'Huddoe the two, sugely the 'Spelor you, the massard yie fore, sugely the date wire and the 'Spelor

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herdnevov, nat täc 'Hhenrethec viscos täs sed tod Udbou nat pehearethec iv abrote: obhi yäp tobnum odbiv korsv kv vote tosose.

"Like parange fixes the eligencess of Cartinge and Hone, with the Straits of Reseice, and presentably Maily itself, boween, needly dividing off the vestime this of the Meditorraneon. It seems likely that this "scridies" was based as less on guesmont the Strain"s was the ourrents in this part of the out as a strong and variable that any kind of ded readoning and bouch to be staleading.

dr. Strabo G. 22: 184 yadv Esiphyac 1000 pir ini vic Halapidooc mabibpiert (Japa Faro, Sistir), 7000 02 isi röv Laiphyacoodiv shafarç à bigyiklore bisyoodiv σταδίους. είναι δ'αύτὰς σκόπελον τρικόρυφον διειργοντα τὸν Κυμαΐον καὶ Ποσειδωνιάτην κόλπον (Gulfs of Naples and Salerno). (fr. 140). There can be no doubt that Eratosthenes mentioned this in his passages on Homer, but it is also probable that he would refer to such an important feature as the Bay of Naples in his description of Italy.

419

The name "Sirens" is said to be derived from overys " i. e. the wall of the wind in a ship's rigging.

At their nearest points Corsica is something over 50, Sardinia about 150, miles from the mainland. Corsica is frequently visible, but if the normal state of visibility is taken Eratosthenes may be held justified.

The Noric Alps, S. W. of Vienna.

The Hereynian or Oreynian Forest was a vague name for most of central Europe; in legend it was bounded to the north by the Rhipaean Mountains (fr. 137 and note). The Black Forest is only a small remaining piece of it.

Pytheas was at this time, and indeed until Strabe's own time, the only authority for N. W. Europe. It seems reasonable to suppose that Eratosthenes adopted his remarks more or less word for word after a critical appreciation (Starophoavia) of such stories as that of

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Maria de la orebiout. sivas 2'abrès mérekov rendrugov érerer the ' eries To election vertine revell for vologed vor brever See a Maples and delerse). (cr. 100). There can be no doubb the second sectored this is his placed on It 10 272. Honor, but it is also prebable that he would refer to of Py and at actual to yell out as enstart instruction in doub where description of Italy. time Syraba month hevined of of these of "energic" eman eff mount -I. c. the well of the wind in a diffe wingther. south The At their measure points Corsies to constitute over the Marse defende apout 190, willow the wainland, for the faithfail, Pyren Is frequently visite, but if the normal state of where is the tail of the posterior set in 1016 of this of 273. Tarra the Hords Alpas 5. 7. of Victors. .039 274. Latin witho The Scroyntan or Oreyntan Forest una a value nere Diony adds of contral Suropet in Legend 16 and branded to form the parth by the shiphen Houstaine (Dr. 137 and mana). "Gadd The Elect Forest is only a mail densing place of it. Dector a of a star is a star in the second and a ser used of and the only authority for H. F. Europe. It "haspole benefiteotand" fact enoyoue of aldanoneer acces 275. Tarte inside a sette bior dot bior and to pipe alerent sta sis X no seit as astante dom notarveckonsts) nettateone

the "sea-lung" (fr. 284). The geographical discoveries attributed to Pytheas are therefore given here. See also Intr. pp. lxiv-lxvi.

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It is difficult to decide whether Eratosthenes thought of Pyrene as a city. It so appears in Herod. II, 33, where Gaul is still a land of mystery, but by Strabo's time it was known that the Pyrenees were a range of mountains, although taken as running due north and south. (Strabe C. 177).

The distances given by Eratosthenes are very close: Marseilles to Gibraltar is about 800 miles, from the Pyrenees about 650.

273. Tarragona, N. of the E. coast of Spain.

274.

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Latin Gades, modern Gadiz. The same remark is given, without reference to Eratosthenes, in Eustath. ad Dionys. 65, and again at 1. 451. The more common form is the neuter, 7d Fádespa, from the Phoenician "Gaddir". Gf. Avien. Ora Marit. 267: Gaddir hic est oppidum:

Nam Punicorum lingua consaeptum locum Gaddir vocabat.

275.

Tartessus, or Tarahish, is recorded as early as Genesis X, 4, and I Kings X, 22. It took its name from

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The distances given by Erstoothones are very closed Mandoilles to Cibrolitar is about 600 miles, rich the Fridades about 650. Estrogena, 3. of the 3. genet of South

Latin Gedes, moders Galis. The acres remark is divinwithhest reference to Presservates, in Spackets of Didays. 65, and again at 1. Whi. The more domain from is the neutor, of Riberge, from the Honologies "Godif". St. Atten. See remark 2021

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Tartessue, or Tarabiels, is recorded as easily as long-

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the inhabitants of the hinterland, the Turdetani. It was visited by the Phocasans before their foundation of Massilia in 600 B. C. (Herod. I, 163). It is mentioned by Hecataeus. Like the Land of Punt (Somaliland) it was a fabulous land of wealth.

421

Erythea was identified by some with the actual "Isla de Leon" of Gades. Geryon was supposed to feed there the exen stelen by Heracles. (Hes. Theog. 287, 979; Herod. IV, 8).

From Gibraltar to Cape St. Vincent (Sacred Cape) is rather over 200 miles. Broche (ch. IX) explains the five days by a long detour to avoid the Phoenician garrison at Gadeira; but he took four days from France to Cornwall.

Mai to the description of the fides of Ocean not penetrating into the Mediterranean.

coast of Spain, resulting from the Atlantic Drift, which assists the coasting voyage west to east.

By "Gauls" it is likely that Eratosthenes meant nothing

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the inhabitabile of the frinteriant, the Tundelant, It more th and visited by the Freekans before their foundation Intr. 1 of Massilla in 600 3. 0. (Herod. I. 163). It in mon-Gf. C. 277. cloned by Hoessaus. Like the the Lond of Funt (Semilisépav · . ind) it was a fabilous hand of woalthe and Sta Sigthes was identified by some with the setting "Inits wneavo de Loon" of Cades. Service was successed to food then 'Doria the even stelen by Seconder, (Nes. Throat. 207, 979; The ACC IV . Dornell projec From Oitceliner to Game St. Vincent (Seared Game) in Broc outher over 200 silver. Receive (ch. IX) explains the noring restated by a long detour to avoid the Phoenistan BUTING gerrison at Gedeici but he took four days from France that P .1[smmol of down t .indo de ale distric perce de la separado de fam these associate an Poster revente (p. 307), and arbaniderus Britta steph al bas even accession in the series and in Here the co Dogs . This can hardly refer to the tides" bains "limit. 278. Diedor the the the second of division the course in the sec Gaesar dellar, but to the this this of Costs not persenting forte the hi the second s Olymp1 an sistion wit manne a sit events the address the was a and of Saular neuriting from the Action 10 damage Caesar and th in "Gente" it is likely that Fint methodes have a the

more than "Celtic peoples", in the old sense: see Intr. p. xxxiii and fig. 1. 422

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Gr. G. 63: καὶ τὰ περὶ τούς 'Πστιμίους δὲ καὶ τὰ πέραν τοῦ 'Ρήνου τὰ μέχρι Σκυθῶν πάντα κατέψευσται; and Steph. Byz. s. v. 'Πστίωνες: ἔθνος παρὰ τῷ δυτικῷ ώκεανῷ, οῦς Κοσσίνους 'Αρτεμιδωρός φησι, Πυθέας δ' 'Πστιαίους.

The Ostimii were the inhabitants of Brittany, whose projection westwards Pytheas was the first to report.

Broche, connecting these passages with others, ignoring the force of Mal $\pi \epsilon p i$ to "Pavev, dismissing buting as the mistake of a "mere compiler", and assuming that Pytheas was the only authority for northern Europe down to the time of Pomponius Mela, tries to show that these 'Gotiwecor' Gotietei have nothing to do with Brittany, but are the Aestii of Tacitus (Germ. 45), the the collectors of amber, and are in fact Esthonians.

Diodorus Siculuss wrote nearly 50 years after Julius Gaesar, but he made use of Timaeus of Tauromenium, the historian who introduced the system of dating by Olympiade which was perfected by Eratosthenes. Timaeus was a little junior to Pytheas and used his material. Gaesar did not visit any of Britain but the south-east, and this account, which reads like that of an eye-witness,

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01. 0. 63: nel vé mul voic "lorigiouc 22 nel vé népav voi "Páveo vé péxes laudos eduro sarégeocrai; and diema. Byz. s. v. "loriouxec: lovoc sapé vé burnet éstavé, obe koveívouc "épreprincié vent, iloséa, E

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the historian who introduced the system of deting by Olympiade which was porfected by instationes, dimagn was a little junter to Fythese and geed his material. Geeser did not visit any of Sritels whit the south-seat. and this second, which reads like that of an eventues. lem of imposi beria Graec 30): dieru didum navig The entre and t favor the " Warmi Irels as fr corad Pythe not (thin Th 13 t is almost certainly that of Pytheas, whose interest in tides is to be remarked here too.

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Lotis: Pliny has two statements which make the problem of identifying this island with certainty almost impossible. He says: (H. N. IV, 36): Ex adverso Celtiberiae complures sunt insulae, Cassiterides dictae Graecis, a fertilitate plunbi (albi); and (H. N. IV, 30): Timaeus historious a Britannia introrsus sex dierum navigatione abesse insulam Mietim, in qua candidum plumbum proveniat. Ad eam Britannos vitilibus navigiis corio circumsutis navigare.

These three passages have led to the placing of the entrepôt for British tin in the Scilly Islands, Thanet and the Isle of Wight in the past, whereas the present favorite is St. Michael's Mount (Gary, p. 215, who says the "six days' sail" is due to confusion with Thule; Warmington, p. 172, who says that it was confused with Ireland (Ierne, Iris)). Broche explains the six days as from Cornwall to the Isle of Wight, measured in coracles, and suggests that perhaps the Solent in Pytheas's time was dry at low tide (ch. XIII). He does not explain "introrsus", which could hardly mean anything but towards "home"--the Mediterranean. The only explanation which seems to cover everything is that, either simultaneously or, more likely, at

Securities of the second property interest whome, whome differ and the states in the research backs there are not seen to the sibly and la Jotigs Filing has two statements which make the proisthe of bacals additions doly basish alif galaithed to cal ficult impeneities. He mayne (H. H. IV. 36): He mavered Golds-Acc bories complement and insulace, Constitue distant ("Rom Gracoita, a fartilizate plante (albi); and (N. M. IV. and 2 30): Timenin olectrone a preisents interprete whose ater my at Haute include same and the the the or "P diding plumping or the sublate of the bedance of the states given .ensities alduseronic offen attriven reat there change one have have had to the planting of the Bel entressed for heitigh the te the Vellig Telender, Theorem Dunda and the Inte of skrint in the many, warrand the present G. WI Earderizes in St. Elimet's Dunne (Jury, D. 225, Who says The the "aix days' sail" is due to confusion with made: actu strive been too even the deat aven one affer to another been lines real and antaluxo edgens. . [[alv1 . convol imalant (3. (at Demunon . toply to also the filments, monument as side 18 8 Prinous a time was dry of low slds (on, MIII). He does Caes wine and will have all a which and a bard of the second son tion thing but terards "hand" -- the Mediterant due anide Irel CODY . Is that, either other contractionely or, many likely, at

different periods, different places were used: possibly the Scillies for a direct sea-route to Carthage, and later, in Pytheas's time, St. Michael's Mount for the channel-land-route across Gaul, obviating the difficult and dangerous carriage of lead in coracles. According to R. G. Collingwood and J. N. L. Myres ("Roman Britain and the English Settlements", pp. 31 and 282; Oxford, 1936) the Britanni were a Belgic tribe whose name was confused by Gaesar with Welsh "Pretani" or "Priteni" ("painted" = Piot), which had already given rise to the Greek Hpettaving, a more nearly correct form.

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Belerium # Land's End; Gantium # S. Foreland; Orca * Duncansbay Head (John o'Groats) more probably than G. Wrath.

The distances given here are well over double the actual, the perimeter of Great Britain in straight lines amounting to about 1600 (land) miles. Gaesar (B. G. V, 13) gives S. side = 500; W. side = 700; N. side = 800; total = 2000, all in Roman miles, which is a very close estimate. It is noteworthy, too, that Gaesar makes Britain lean over in the opposite direction to Diodorus, making the east side the north, with Ireland on the West. These facts point strongly to the copying of the whole passage from Pytheas, and confirms

Adog these owne starts fabrants , aborter lastering supprised of edges-ass forning and selling of distinger and later, in Fythene's time, St. Missingl's Mount for the channel-land-route aeress dank, chvistlag the diffreal ond the proving or real to the there are the the track of the tra IC . top g"admentelessed Matthink out the closing haven's and 282; Oxford, 1936) the Brithman ware a Bolgit tribe "instead was was confused by Gassar with Melan "Presant" · "Pritent" ("putnied" = "lointig") "impirite stvon rises to the Gradi Herravisi, a nore marily cor-With the second of the second se Holorium = Land's Hail Canting = di Marsland; Cros = - cada vickowić wor (adecib'e adol) Scoli jećenscovi and the second and aldred news first and even double the addanse of minister of Great Instants in straight Ildon anothing the Missish 1600 (Intel) willow. Ganage (S. G. Y. 13) stype S. side = Sola . Santa (CI . Y . 5 .E) side # 8001 total # 2000, all in Monan wiles, which te a very sloop estimate. It is noteriorday, too, that deads, sakes Brinkid less over in the enginette direct ting divide and only duce and the battles , muchold as make Indiand on the West, these facts point strongly to the acoring of the whole remains from Typhane, and confirm

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the me most : and in ditio Beler days would exten cordi Tavis neph TIC reman he " the ever a de on ther tost The Di 8150 and St dat; the measurements given as being his own record. Almost all these measurements are grossly exaggerated, and in his case there were very unusual tidal conditions; in his passage from Ushant or Brittany to Belerium he must have had bad conditions to take four days over 100 miles or so; and the circumnavigation would, as Broche points out (ch. XV), be enormously extended by coasting and making many landings. According to Strabe (C. 104). . . . Shav per the Bretτανικήν (την) έμβατον έπελθετν φάσκοντος, την δέ Περίμετρον πλειόνων η τεττάρων μυριάδων άποδόντος της vήσου. . . This may be (Cary p. 35) a sarcastic remark by Polybius, from whom Strabo is quoting, that he "visited all Britain on foot"; or (with or without the thy inserted by Berger) it may mean that he landed everywhere that was accessible. In any case it implies

a detailed story.

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One measurement not included among the fragments, as there is no evidence which version was adopted by Eratosthenes, is that from "the continent" to Cantium. The incompatible texts are:

Diod. Sic. V, 21: το μεν ελάχιστον από της ήπείρου διεστημός αμρωτήριον, δ μαλούσι Κάντιον, φασίν απέχειν από της γης σταθίους ώς εματόν;

Strab. C. 63: καὶ τὸ Κάντιον ἡμερῶν τινῶν ελοῦν ἀπέχειν τῆς Κελτικῆς φησί (Πυθέας).

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The m is th recor de+Ca Diodo (ch. (even the t dissi miles think aoros perfe The accor to r Ther 280. It h Blaz real blow by P Ph11 tide that

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One monstreatest not findlated among the frequents, as there is no exidence which vocator and adopted by Datoutinness, is that from "the continent" to Centum. The incompatible toxis are: Statistic field, V. 21: eduit Midgeorov ded vic firefou tectade departure, 3 monster Edverov, and vic firefou ded the vic orabiene de teachy; Statistic vic continue de teachy; Statistic vic teacted; to Edverse firefor statistic dedgery ric teacraft and the Edverse firefor statist dedgery ric teacraft and firefor. The most obvious explanation, though by no means final, is that Strabo's version is taken from Pytheas's actual record, and that he did not go straight across to Pasde-Galais, but made a long leg to east and north, while Diodorus's version comes from a later source. Broche (ch. XIV) suggests that the channel was much narrower (even under 12 miles) then, and has been enlarged by the tidal erosion since: he ignores Gaesar's "commodissimus traiectus" (B. G. V, 2) of about 30 (Roman) miles. In fact, on a clear day, it is difficult to think it impossible for the ordinary person to swim across, and Diodorus's authority may have given a perfectly honest estimate.

There is no means of knowing how accurate is the account of British life, but it may not be out of place to remember the idyllic Hyperboreans of Greek legend.

There is no convincing explanation of this measurement. It has been suggested (Gary p. 36, who quotes also Blazquez, "Pyteas de Marsella", pp. 28-30) that this really refers to waves in the Pentland Firth when a gale blows against the tide. In view of the interest shown by Pytheas in tidal phenomena (of. fr. 278, and Plac. Phil. III, 16, where he is credited with connecting tides with phases of the moon), it is almost impossible that he should himself have confused waves with tides.

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There is no convincing explanation of this seconvenient. It has been suggested (Onry p. 36, who quotes also Manques, "Pytems de Marcella; pp. 20-30) that this really refere to waves in the featland Firth when a gold clove equinet the tide. In view of the interest energy by Pythese in tidel phenodene (ci. 10. 375, and Fied. 1111, 16, where he is credited vith connecting tides with phases of the moon), it is annet inposeding that he phoneic there ourfood waves with the although ""intumescere" may suggest something more than a normal rise; the greater likelihood is that Pliny failed to understand what he did say, having never seen a tide himself.

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Diodorus says of Ireland (V, 32): ἀγριωτάτων δὲ ὄντων τῶν ὑπὸ τὰς ἄρητους κατοικούντων καὶ τῶν τặ Σπυθίς πλησιοχώρων, φασί τινας ἀνθρώπους ἐσθίειν, ῶσπερ καὶ τῶν Βρεττανῶν τοὺς κατοικοῦντας τὴν ὀνομαζομένην ³Ιριν. There can be little doubt that Strabo's account is from Pytheas, although his oὐδὲν ἔχομεν λέγειν σαφές, πλὴν ὅτι shows that he cannot bring himself even to mention him as a source.

Gaesar (B. G. V, 13) also mentions the "small islands", and names Mona (Man).

1. 3: spónquec: Jones, for sponquqc. Other editors, after Corais, insert 4 after pallov.

1. 6: solugáyou: Some editors read songáyou.

By the objective weil the pedapatingly despiced strabe means much the same as the whipete (see Intr. p. lxx);'.), involving the observation of weather, temperature, and agricultural conditions to supplement primitive astronomical calculations (cf. fr. 196). This detailed account is still useful, if only negatively, in disproving the hypothesis that Thule is Iceland. The

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preser (Tozei Aco per ti apuro' direl p. 37 that howev claim does alaou days seems some 1slan Shet1 hours matte relat possi 2: Jones for 8 6: πόμα

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presence of bees is not known north of latitude 61°. (Tozer, 2nd ed., p. XXII, note by M. Cary)

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According to Strabe (C. 63): Goulav anot Hudeac and μέν τῆς Βρεττανικῆς Ἐξ ἡμερῶν πλοῦν ἀπέχειν πρός aparov. From this and the assumption that the Arctic Circle passes through Thule, Cary ("Ancient Explorers", p. 37), Marmington (p. 173), and Hyde (p. 130) agree that Norway is the most likely identification. It must, however, be remembered that Pytheas does not (fr. 284) claim to have been to Thule himself; while even fr. 282 does not explicitly identify tore to mare yoyneva joya algoid out with Thule itself. If it took Pytheas four days to sail from Brittany or Normandy to Cornwall, it seems not altogether impossible that it should take the some one (natives?) (five or six days in amongst the islands and tides from (say) Wick to Mainland in the Shetlands; while its official shortest night of five hours consists largely of twilight. In such dubious matters, where unreliable writers report what Pytheas related at second hand, final identification is not possible. i absert boyle" by 80

 2: Jones inserts äv, others after imavaç, or emend béget for bégete.

sevencefore) wold philor tobre replainers is it will

1. 6: sópa évtetéev. Presumably both beer and mead.


It is worthy of note that Geminus does not say that Pytheas went further north than the 18-hour belt, or that Pytheas measured the length of the day with accuracy himself; indeed, without a minimum stay of over two years and accurate calculation of the solstice, even supposing him to have a really reliable water-clock intact in his ship, he could not have done so. The only actual quotation extant from Pytheas himself is this somewhat cryptic remark about the sun's resting-place. It is difficult to imagine that this can mean anything but a general indication that, further north, there was a region where the sun did not rise at all for one or more days -- 1. e. the Arctic Circle and further. In connexion with the length of the longest day in northern latitudes, Strabo guotes Hipparchus as follows: (Strabo, C. 75): ... estimate the time and

429

Φησί δέ γε δ "Ικκαρχος κατά τον Βορυσθένη και την Κελτικήν έν δλαις τατς θερινατς νυξί καραυγάζεσθαι το ήλώο φως του, περιιστάμενον άπο της δύσεως έπι την άνατολήν, [τατς δε χειμερινατς τροκατς το πλετστον μετεωρίζεσθαι τον ήλιον έπι πήχεις έννέα έν δε τοτς άπέχουσι της Μασσαλίας έξακισχιλίοις και τριακοσίοις (ούς έκετνος μεν έτι Κελτούς ύπολαμβάνει, έγω δ'οίμαι Βρεττανούς είναι, βορειοτέρους της Κελτικής σταδίοις δισχιλίοις πεντακοσίοις) πολύ μάλλον τούτο συμβαίνειν έν δε τατς

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οφαί δά γε δ "Ιεπαρχος κατό τον Βορυσθάνη κηι τη καλτικήν έν δλατς τοτς θερινατς τοξι ασμαστάζμοθαι το σός τος κεριτοτόμενον άκδ της δόσους έει την άνατολην, [τατς δε χειμερινατς τραπατς το ελείστον μετευρίζεσόση τον βλιον έει εάχεις έννάσι έν δε τοτς δεέχουση της μέν δει μελτοδο δεολαμόδνει, ένο ε' σήμαι δρεττανος είναις βομετοτέρους της Κελτικής στοδίοις διοχιλίοις αντεπασίοις) πολό μέλλον τοθτο συμβείνειν' έν δε τοίς XESHE τέττο σταδί éxéne åputi ната TIG I 8éna HETE Evva TOV ! FO and of t thel olea in c afte him, then of t parc to 1 500 Harv

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χειμεριναζς ήμέραις δ ήλιος μετεωρίζεται κήχεις έξ, τέτταρας δ'έν τοζς άκέχουσι Μασσαλίας ένακισχιλίους σταδίους και έκατόν, έλάττους δε των τριών έν τοζς έκέκεινα, οζ κατά τόν ήμέτερον λόγον κολό ζν είεν άρκτικώτεροι τῆς 'Ιέρνης.] ούτος δε Πυθές πιστεύων κατά τὰ νοτιώτερα (άρκτικώτερα, Μοίποκο and Βrocho) τῆς Βρεττανικῆς τὴν οἴκησιν ήμέραν ἀρών Ισημερινών δέκα έννέα, ὅκτωπαίδεκα δέ, ὅκου τέτταρας δ ήλιος μετεωρίζεται κήχεις: οὕς φησιν ἀκέχειν τῆς Μασσαλίας Έννακισχιλίους και έκατὸν σταδίους. ὥσθ'οι νοτιώτατοι τῶν Βρεττανῶν βορειότεροι τοὕτων εἰσίν.

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For some reason this has been taken by Broche (ch. XX) and others to show that Pytheas himself took the lengths of the longest days mentioned, and Broche remarks on their great accuracy; an accuracy not surprising, as clearly Hipparchus worked out the times and elevations in connexión with his framework of whipara, fitting in

afterwards the data and measurements in stades left him, more or less correctly, by Fytheas and Eratosthenes and contradicted by Strabo. The all-night glow of the sun in northern latitudes is evidently not Hipparchus, ad may, with the 19-hour day, be attributed to Fytheas. It must be remembered that Hipparchus seems to have followed Eratosthenes in placing the "arotic circle" bounding the frigid zone (fr. 172) at

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χετρεριναίς φρέρατο 5 φλιος μετερρίζετοι είχεις έξ. τόττορος 5'έν τοϊς δεέχουσι μποσιλίας ένομισχελίους υποίζους καί έκατό?, έλάττους 56 τών τριών έν τεξ έκάκενο, οι κατό τὸν φρέτεραν λόγον πολό δν είεν δρωτικότεροι τζε 'ίδενης.] σύτος 56 μαθές ειστείαν κατό τό νοττώσερο (δρωτερότερο, μεταφού άλλο πουσι τζε δρεττανικής τζν είποριν φρέραν δράγ Γσημερινών πόμα έννέα, δυτεπαίδεκα δέ, δεσι τάττορος ό βλιος δνοπισχελίους και έπατάν σταθίας είσαν το τών δρεττανών βορειότεροι τούτους φαθ'οι τετιώταται τών δρεττανών βορειότεροι τούτους στάτος.

and others to show that by these bineshi took the langung of the longest days mentioned, and broche remains as their greet sectored in seconday as incode remains an otherig Hippersine meriod out the these and structure is in consector with the frequencies of referer, firther is ally, wore on less correctly, by sythese and balance the the second constant of states. The allocate plan of the sum is remained by States. The allocate plan defines, all mays with the frequencies is extended, and the interacts and constant of states. The allocate plan of the sum is remained by States. The allocate plan defines is have with the frequencies as extended, and the states and constant by states is extended to the states and interacted of states is extended to the frequence of the frequence of the interaction of the states and to have with the frequence of a states of the interaction of the remainder to the interaction to freque state for states and the interaction is allocating the interaction of the states be the interaction of the states of the states and interaction in allocating the "arctic states" counting the frequencies in allocating the N. 54, which in fact passes through Harrogate,, slightly north of York.

Sir Walter Scott's note on chapter 19 of "The Pirate" may have some relevance to this and the foregoing fragment: "From the hill of Hoy (an island of Orkney, not Shetland) at midsummer the sun may be seen, it is said, at midnight. So says the geographer Eleau, although, according to Dr. Wallace, it cannot be the true body of the sun which is visible, but only its image refracted through some watery cloud upon the horizon." Cf. also Tec. Agric. 12, on the shot, light nights in north Britain.

Broche, who believes that Pytheas sailed to Iceland and beyond, holds (ch. XXVI) that this passage refers to pack-ice of the "Mare Gronium" which prevented further advance. This does not seem to cover "earth, or sea, or <u>air</u>". The most convincing explanation appears to be a really thick, cold sea-fog (Cary, p. 37).

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Pliny quotes Timaeus (H. N. IV, 13): Excundum deinde est, ut extera Europae dicantur, transgressisque Riphaeos montes litus oceani septentrionalis in laeva, donec perveniatur Gadis, legendum. Insulae conplures sine nominibus eo situ traduntur. Ex quibus ante Soythiam, quae appellatur Raunonia, unam abesse diei cursu,



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According to Broche (see Introd. p. xlv1), Fytheas sailed right into the Baltic Sea (aestuarium Oceani), which was formerly called Men, or Tunum (p. 214, n. 3) to Samland in Esthonia. This was Abalus, Basileia, or Raunonia, the great amber island.

The word "abalus" is Geltic for "apple" (Gary p. 38). and the reasons for its metamorphoses seem impossible to fathom. It does, however, seem unlikely that anyone could mistake the Haltic for an estuary, even nearly 700 miles across, or that Samland could be reached in one day from the entrance. The most credible explanation seems to be (Gary p. 78) that the "estuary" is the Frisian Bight, though this is not anything like 6000 stades across, and the amber island Heligoland. This is supported by Hyde (p. 133), but Broche says the amber deposits on Heligoland are negligible in modern times, and conditions could not have changed so much; although the Isle of Wight may have been a peninsula, the Channel under 12 miles across, and there may have been bees in Iceland.

in quam veria termore Clusticus electrum sicintur. Cimena procidit.

According to Scoole (see Inked. p. 201), 1722000 estied right into the Alitic on (assimution Oseeni), which was formerly called Nen, or Theme (p. 234, p. 3) to Samland in Saturnia, This was Abalus, Sachleis, or Rousenis, the great ambar inland.

The word "statue" is delived for "ands" (here r. 36), and the reasons for its retemperators ever invocable to fathor. It does, herever, ever whitely that annous words mistake the fatitic for an estury, even nearly for allos across, or that fashed could be reached in one day from the estimate, fin deat and indice andarstate seare to be (dary r. 73) and and anothing mise the restand to he (dary r. 73) and and anything like the restand to he (dary r. 73) and and anything like allow abases across, and the mater island former of this is exported by Refs (r. 133), but from any inter these, and constituted and and medicable in anothe although the fate of first and have been a semiant, the fate of first and and medicable in anothe although the fate of first and have been a semiant, the fate of first although the semiant, the fate of first although an there and anothe although the fate of first and and have been a subs, the fate of ander 12 although an there an invested in fatights in fate although an there and anothe is been in fate is alter another is an indicable in anothe although the fate of although and have been a fatight inves been have in fate is alter another, and there any Adhilles Tati Adland Annlanes Har Administa Pak

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