‡3 Astronomer in Wonderland: Historians-of-science

The technically&ethically-rockbottom brand of "research" skewered in the following pages recalls DR's sardonic summary during NatGeogrSoc's 1989/12/11 doomed presser-launch of NGS'amateur [Rawlins 2017B] *data-juggling defense of its dying Peary North Pole hoax*:
Orchestrates more fiddle factors than the New York Philharmonic.

A physicist-astronomer examines the integrity, refereeing, technical skills, & ***evaluation-criteria*** of history-of-science archons, taking ancient astronomy as a test case. His qualifications for this review include such researches as: long-world-standard edition of Tycho's Star Catalog, www.dioi.org/vols/w30.pdf, *DIO* vol.3; efficient eigenvector method for finding a star's manybodies-induced tidal ellipsoid in 3 dimensions, www.dioi.org/gjr.pdf, *G.J.RoyAstrSoc 69*:265-271 (verified *Sky&Tel* 2000 Sept pp.14-16); asymptotic planetary perturbation-amplitude as function of relative distance, *MNRAS 147*:177-186; Great Pyramid orientation star 10i Dra, *Nature 412*:699 (2001/8/16); 1st simple zenith-to-horizon formulae for atmospheric refraction&extinction, *PASP 94*:363; solutions of Greek Earth-sizes' errors, Pharos' height, & stade's length (*Griffith Observer* 2018 Aug); closest pre-1976 Pluto-mass (*AJ 75*:856). (For his further scientific discoveries and historical reconstructions, see fn 109, back cover, & www.dioi.org/cot.htm.) Relevantly, *DIO* is also a veteran hoax-investigator: *NY Times* 1996/5/9 p.1, 1998/11/26 p.1, and 2009/9/8 science page.

Universities' science departments deserve to know the kind of mis-math (fn 13), herd-think (fnn 8&10), data-tampering (§§B-G), & idea-grabs (fn 10, §C8) too often passing for scholarship in prominent but joke-refereed (‡2 fn 3; Rawlins 1991W fn 6) & coverup-prone (fnn 10, 11, & 97) journals in history-of-science, a field rife with smearings (fn 8), shunnings (fnn 5&116; Rawlins 1991W fnn 171&173), threats (fn 109), & rejection of normal ***science*** (bizarre details: *idem* & §I26; fn 100) if favoring heterodoxy, with research-advances' acceptance ***contingent upon whose clique the discoverer belongs to***. (Repellant examples: Rawlins 2017E §G3.) Further, there's mitey evidence that archons teach, value, or even understand (§§G5 & J1 [f], fnn 42&106) exploratory hypotheses' use, *tempered by Occam* (§I25, fn 33, ‡1 §A, ‡2 fn 49), to expand&refine knowledge. The result (p.45 & §§B5&C-G) regarding advances in ancient astronomy, is inevitably more destructive than constructive.

However incomplete, the following cronyology is a start towards top academic institutions' enlightenment re contemporary history-of-science's frailties. (***Even while*** *DIO* values the field's finds [e.g., fnn 42&127&§I14, ‡2 §F2&fn 42], from which scientists have learned. Despite wan reciprocity.) **Mathematical scientists' scrupulous verification encouraged**.

Volunteer referees welcome (since the perps lack the will&skill): dioi@mail.com.

Continuing the history-of-science cult's staunch tradition of exiling and/or gang-smearing such math-competent, even eminent intruders as van der Waerden, R.Newton, H.Thurston: despite physicist D.Rawlins' half-century of astronomical-history researches (samplings above & p.2), a staid version, www.dioi.org/qjo.doc, of the following please-clean-your-house paper (with amiable cover letter), was inflexibly (fn 100) spurned in 2017 by the **History-of-science** Society's *Isis* (ultimo US hist-sci forum), which refused to evaluate **its History or its Science**, while unable to deny its accuracy, relevance, or multiple demonstrations of ***the most prominent historians-of-science ALTERING DATA*** (esp. §§C-D&F-G), uncorrected-unretracted math-botches (§B4, fnn 27&97), dreadful science (§C5), even weird science (fn 2). (And see fn 4's conclusion, for the *Journal for the History of Astronomy*'s **DEFINITELY**-original idea of refereeing.) Not to mention shunning of competent heretics' scrupulously refereed research advances (§I), and systematic non-citation of the scientific-history journal *DIO*, though for over 25y it's been easily the most mathematically and astronomically competent journal in the science-history field, vol. 10 even highly-exceptionally co-published (with the University of Cambridge), long supervised by boards composed of that rare minority of scientifically able historians (e.g., astronomer-legends E.M.Standish, emeritus CalTech-JPL, & Chas.Kowal, late of STSI), so seethingly feared by the democratically-ruling majority, whose mathematical and ethical shortfalls *DIO* has

been patching-up for decades without the slightest discernable (positive) effect on the field. E.g., three cornered History of science journals cut contact with *DIO*, when, e.g. (fn 97), asked to print the embarrassing but unquestioned fact that their icon Ptolemy's four Sun "observations" were **FIFTY TIMES** closer to Hipparchos' 280y-old indoor tables than to the outdoor sky, none doubting (‡2 §N8) Neugebauer-Gingerich-*Science*'s decree that an astrologer & clumsy faker ***whose frauds damaged&retarded predictive astronomy for 1000***y (‡2 §A) was "The Greatest Astronomer of Antiquity" (fn 1 here). Have shunning, censoring, data-fudging, & viciously (‡4 fn 2) **defending naked fraud by a cult-glorified pseudoscientific superstition-peddler** (long notorious among scientists) devolved from merely-tolerated to insistently-normative? Simultaneously with *Isis*' resistance to the below history, it was learned (see ‡1 here for links to all papers) that: [1] a 7y-old *DIO* discovery (Rawlins 2008Q fn 6) had been unattributedly published, www.dioi.org/cev.pdf, as *Isis*' 2015 LEAD article (*repair request repulsed*), and [2] *Isis*' pseudo-refereed final 2016 LEAD article had extensively attacked Rawlins 1985G (Greenwich Meridian Centenary paper) on ancient longitude accuracy (refereed *on its mathematical merits* by a panel of prominent *scientists*), calling such accuracy a "delusion" — due to the critic's own amazing delusions (fn 97): [a] Treating a *solar eclipse as lunar*, neither author nor *Isis* ***even yet*** realizing it sorta matters. (See hist.sci icon Neugebauer's able 1975 analysis at ‡1 §D; so *Isis*' cascading scientific innocence gauges hist.sci-decline since.) [b] Putting Spain into the wrong hemisphere. Rather than print *DIO*'s temperate Letter-to-the-Editor (‡1), www.dioi.org/islg.doc, *Isis* Ed. H.F.Cohen fled ("I will not read, let alone respond to, any further messages on your side."), ploy **unanimously endorsed by his 30 Adv.Editors**, www.dioi.org/isb.pdf, as *Isis* ducked refereeing the history or science of Letter or paper.

If this is the ***top*** of history-of-astronomy, one can imagine what's going on underneath. But, then, actually, one need not imagine, since scores of examples of the field's too-ordinary amusing scholarship are cataloged at www.dioi.org/jhb.htm, the oddest being "science" as credible as the Earth's East Pole (*Winnie the Pooh* Chap.9): [a] the 1976 *Dictionary of Scientific Biography 13*:321 discovery of the ***Autumn Solstice*** and [b] *JHA 22.2*:119's 1991 discovery of the ***Winter Equinox***. See §§C-G for data-tampering by top pols, incl. the NYU Institute for the Study of the Ancient World's Director, fitfully brilliant Alex Jones.

Isis' 2017 coverup of its 2016 sham-refereeing disaster (p.8 here: 7 largely-obvious undetected errors, 2 of them crippling) is just the latest example of the level of equity, ability, and openness at history-of-science's most eminent&incestuous forums, which now exist in a state of such evidence-immunity and no-consequences self-rule that they have for a 1/2 century been **tragically & punitively insisting** (awful details: ‡2 §N8) on the very opposite of the manyways-obvious (§I10) truth of ***an issue as central as Greek astronomical empiricism***, meanwhile becoming ever-more-incapable of self-righting the field's ship.

After decades of observing science-shy historians-of-science and watching limited mentalities (fnn 8&96) like careerists Noel Swerdlow and Owen Gingerich be elevated to an eminence that empowers their dementedly vicious smears (e.g., fn 34 & photos linked at fn 6) of those merely disagreeing with them, one may wonder whether historians' too-frequent encounters, with scientists appalled at also-too-frequent technical-goofiness by history-of-science archons, have led to a defensive pattern (gameplan?) of curling-up into a self-insulated world? (Classic turfish history-of-science-think quoted, Rawlins 1994S §C4: "We don't want the history of physics to be written by senile physicists.")

It's pathetic enough that the history-of-astronomy cult's overarching vision of ancient astronomy hasn't advanced for decades. But when we find it's actually retrograded, aggressively undoing long-accumulated perceptions of wise scholars, e.g., P.Tannery, R.Newton, plus eminent astronomer & pioneer Ptolemy-exposer J.Delambre (2 *centuries* ago last year), then we might ask: [a] whether universities should keep implicitly endorsing such a field's leashed research, and [b] if historical investigation in the mathematical sciences would be more openminded & technically able if it were hence to proceed within, or sometimes in supervisory association with, the relevant science dep't's of those universities that value it.

History-of-science — Data-Tampering, Idea-Theft, Seminumeracy, Smearing, Shuns, Club-Prefereeing

Wellspring of a Projective Myth: Greek Science as Fumbling, Fabricating, and Unempirical

Muffia Cult's 84^{y} War On Greek Astronomers' Cornucopia of High-Accuracy Achievements

Current Historical Advances Endangered

Summary: Ptolemy's Apologists as The Greatest Alibiers of Academe

Carefully crafted and refereed advances in the history of ancient astronomy and ancient mathematics:[1] [a] have long been exiled by centrist-journal editors who shamelessly flee (fn 100 below) whenever they cannot justify their actions, as observed 34 unprogressive years ago by Robert Newton (Johns Hopkins University Applied Physics Laboratory); and [b] are being smothered by a chauvinist battery of destructive, data-disrespecting — even ***data-fudging*** — papers, whose logic ranges from desperate to supernatural,[2] displaying scant evidence of refereeing or such epistemic canons[3] of scientific evaluation as simplicity, minimal-premises, fruitfulness, and predictivity. Auto-rejection has been inspired by durable grantmagnet (Diller 1984 fn 26) orthodoxy that the famed ancient data-faking (§I8), bumbling (‡1 §E) mathematician-astrologer Claudius Ptolemy was "The Greatest Astronomer of Antiquity" (like hype at, e.g., fn 9) whose allegedly-outdoor solar observations' hugely contra-reality super-adherence to 280^{y}-old indoor tables, is uncriminal since Greek astronomers were theorists not empiricists, who *suppressed — i.e.,* ***destroyed*** *— data inconsistent with prevailing models* (fnn 8&9 below). The Princetitute's iconic O.Neugebauer (*Science* seconding), "It makes no sense to praise or to condemn the ancients for . . . accuracy or . . . errors in their numerical results. What is really admirable in ancient astronomy is its theoretical structure", a view defied by physicist R.Newton's 1977 Johns Hopkins University book, *The Crime of Claudius Ptolemy*, and by D.Rawlins' scientific-history journal, *DIO* (www.dioi.org/dioind.htm), which has fitted to attested ancient data scores of new heretical reconstructions (many evaluated below, esp. §I, with selected links), meanwhile asking how ancient astronomers *copying predecessors* could advance to their surprisingly numerous but heretofore remarkably unappreciated high-accuracy Greek measures. (Below, compare §I10 [& ‡1 §D] to craniolithic cult-insistence on Greek inaccuracy: fnn 1, 8 [!], 69, 93, & §B4.) Also investigated: ahistorical myth of "theoretical" Greek non-empiricism & data-selection; Occamite resolutions of such problems as ancient Earth-measure by Pharos flame & double-sunsets; the method explaining all 3 Greek-adopted monthlengths becoming undeniably accurate to 1^{s} or better (!); how all 3 hitherto-unsolved lunar speeds were based on classical-era use of 13^{th} century BC Babylonian eclipse data (§I34); pseudo-Aristarchos' daily retrograde Moon & Archimedes' degree-use (both obvious, yet ***unnoticed for 2000***^{y}: §§I1&I2 below); Ptolemy's celestial fakes; Hipparchos' elaborate and $1''$-accurate calculations, effected by $1''$-accurate trig tables; his use of spherical trig; Archimedes-admired pioneer in heliocentricity & ***spatial***-vastness, Aristarchos: P.Tannery's and *DIO*'s quadruply-verified (fn 88) reconstruction of his ***temporally***-vast 4868^{y} Great Year, 1^{s}-accurate monthlength, and pre-Hipparchos discovery of precession.

One of R.Newton's favorite expressions for counter-revolutionary mis-scholarship:
A subtraction from the sum of human knowledge.

A Advances in Understanding Greek Science Endangered by Fudge Germinating Out of a Moated, Bloated Network's Heresy-Phobia

A1 In the contemporary history-of-ancient-astronomy subfield, numerous coherent, mathematically-copper-fastened, expertly refereed, but archon-offending progressive discoveries have appeared for decades, elucidating hitherto-mysterious ancient data. When these offenses cannot be undone frontally, certain careerist serial knowledge-subtractors, — compactly called the Muffia or the JHAD (fn 1) hereabouts — have themselves made a discovery, to wit: that their network of politically centrist captive journals will help wage JHAD against heterodoxy by publishing effectively unrefereed[4] articles that:

[1] New early spherical trigonometry date, 2^{nd} century BC (fnn 16-17&24 below); the same era's $1''$-accurate trig tables & $1''$-accurate calculations (fn 37); 3^{rd} century BC Greek scientists' use (fn 42) of order-of-magnitude (ordmag) and their adoption of degrees (fn 94). [Superscript glossary: §I32.] JHAD = cartel of *JHA* (*Journal for the History of Astronomy*, O.Gingerich principal editor for 40^{y}) & HAD (Historical Astronomy Division, Gingerich long-dominant co-founder) of *the American Astronomical Society, whose Ethics Statement has just demoted* [2017/10/11] ***research*** *ethics three notches: now behind [1] race&gender, [2] sex-triggers, and* **(ironic in present context)** *[3] bullying.* *DIO* argues evidentially for high Greek accuracy (§I10; Rawlins 2017E) vs Hist.sci reverence for alibiing inaccuracy, to ameliorate Ptolemy's gross fabrications, e.g., ***inverting relation of theory&evidence*** (Ragep **crudely**: fn 9), & focusing on Greek "theoretical structure, erected in spite of the enormous difficulties that beset the attempts to obtain reliable empirical data" prominently quoted by Gingerich 1976 p.477; see fnn 8, 62, & 97 here. Neugebauer 1975 p.931 crowned indoor astrologer (Rawlins 2003X) Ptolemy "the greatest astronomer of antiquity", echoed verbatim by Gingerich 1976 [AAAS!] & Gingerich 2002. Since Ptolemy's *Almajest* contains much of what survived from ancient mathematics & math-astronomy, it has become accepted-in-practice that grantmanship requires continuing pretense that this invaluable astronomical ***handbook*** (the 1^{st} great modern translations call Ptolemy's *Almajest* and *Geographical Directory* "handbooks": see each's title in References below) was primary science (fn 9), not derivative (which it obviously was: ‡2 §§M2&N20 here, or Rawlins *op cit*), whatever the cost to plausibility and ethics. Another JHAD promotion of derivative science as primary: fn 120.

[2] Consistently invincible auto-rejection of high-odds, perfect-hit solutions, which have the effrontery to contravene current orthodoxy, encourages vulnerability to adopting embarrassingly unlikely alternate theories, and thus (effectively) escaping into the miracle world of the supernatural, palming off — as valid scholarship — notions unworthy of a rational enterprise. For a JHAD-wayouthouse of ultra-outré occultisms, see here at: §§C11, D2&D3, E2, G7-G9, G11, H4, I22; fnn 12, 33, 44&45, 55, 68&69, 89.

[3] *DIO*'s principled approaches to knowledge are brought together below, at §J1 [g]. See, too, fn 10.

[4] Wikipedia's article on the virtually unrefereed *Journal for the History of Astronomy* [*JHA*] actually claims the journal is "peer reviewed"! (See fn 109 below, also re Wikipedia's 2008-2014 war upon Rawlins' Wik-biography.) Meanwhile, the best-refereed journal in the field, *DIO*, is repeatedly, aggressively classed by Wikipedia as Unreliable (not deserving an article, with bio-references to Rawlins as "publisher" persistently suppressed), though neither Wikipedia's CSICOP-soldier administrators and associated threatening cult-vandals (repulsive details also at fn 109) nor *JHA* have in years of trying and seething, managed to find incompetent scholarship anywhere in *DIO*'s score of volumes. Meanwhile, by a contrast that would be embarrassing to honest forums, *DIO* has (without even having to try) discerned ***dozens*** of flagrant examples of prominently-published history-of-astronomy catastrophes that nobody refereed with care (or cared to referee): see fnn 50&86 below and above at ‡1's *POSTSCRIPT*, also www.dioi.org/jhb.htm, www.dioi.org/fff.htm#sxrg. Historians-of-science seeking ready buddy-publication (to convince their universities and funders that they're academically contributory) evidently *prefer* such laxity vs being refereed scrupulously, since *far more vitae get padded by indiscriminateness than by care*. Given the spectacular muff-frequency of the history-of-astronomy cult and its captive *JHA*, plus its distaste for wasting time on alien authors or on the bother of serious refereeing (fnn 97&100), *DIO* from its inception has dubbed this incestuous, ***self-perpetuating*** cartel: "The Muffia". (Considering the history laid out in the current paper, who could resist such apt appellation?) A secret of maintaining eternal muffery is *JHA*'s riggorous refereeing of sufficiently

[A] Noncite the heretical paper primarily targeted. ***Deliberately***: §§C10, D6, G11, fn 10, twice more at fn 121. (This pattern goes back at least to the prominent *Sky&Tel* attack on R.Newton by dutiful Muffiosa Janice Henderson 1976, without citing his name or papers.)
[B] Exhibit daring proclivity for the inherently improbable over the probable (even the most remotely of each: fnn 33&36&45), whenever seeking apparent evidential support for any cult-in-too-deep position threatened by new findings.
[C] Effect sterile destruction by demeaning ***or even outright altering*** (e.g., §D5 item [C]; §F10 fnn 25&85 [& see fnn 30&11&58]) the data upon which an offending discovery is based, decreeing that whatever version of said data was previously accepted (right up until rebel forces **fudgelessly** found the 1st reasonable potential resolution of them) has only now — of a convenient sudden — become suspect of unreliability, often requiring the subtractor's own Expert revision or doctoring to have any hope of the data ever attaining cult–Acceptability. In-balance is the possibility that one or two or dozens of valid potential advances might languish indefinitely-unrecognized, wasted.

A2 Below, we analyse, in §§C-G, a flock of recent instances of such data-fudgery-for-orthodoxy, aimed at submerging competently proposed, compelling, but still-little-known heretical historical advances. We also append, in §I below, a score of potentially-heuristic examples of such advances where those, governed by agendas, shunning,[5] & cliques — ever-attended by denigration[6] of outlanders — instead (of resorting to data-alteration) just impunitively ignore mathematically and logically solid but cult-displeasing findings for decades. This transparent behavior continues even despite 2002 national attention to "unprofessional" acts characterizing the Ptolemy Controversy (ancient astronomy's hottest).[7] Are debate-averse conservatives justified in unprofessional contempt towards unprofessionally uppity heresy? That question is explored below, along with the field's domination by dissent-intimidation & shunning, which has only solidified (fn 125) since 2002, perhaps from scientifically-shy historians-of-science hanging shy of scientific critics.
Which suggests several questions that may lurk behind superficial arrogance:
[1] *Are historians of mathematical scientists the only historians who fear their own subjects*, defensively driven to slanderously, if ironically, fake (fn 34, ‡2 fn 35) higher expertise?
[2] Are their depts like French depts staffed by profs who don't speak French very well? *And pretend it doesn't matter*. (It does: §I7; Rawlins 2017E §K2; Rawlins 2018V end.)
[3] Is this why too many historians-of-science cannot (e.g., §B4) admit mistakes (*as scientists routinely do*: R.Newton, B.L.van der Waerden, *DIO 11.2* [on cover!], S.Goldstein, etc) & can be 100% sure teamplayer fellow historians-of-science won't ***ever*** ask them to?
[4] Does that relate to the inverse: science-historians' endemic reluctance to acknowledge non-club-members' vindications? — a reflex which can reach such extremes (fn 17 & §F5) as to defy any known academic ethical code. (Outside sororities: Rawlins 2008R Epilog.)

B Hiding Modern Empirical Data: Boomerang Irony & Lawlessness

B1 When today's Ptolemists are determined to justify what they already knew before "investigating" — the unscientific but cult-approved[8] deed of destroying data needn't be ancient. Apologists, for Ptolemy's "observational" ordmag 1° errors, claim it was normal for Greek astronomers' to compute outdoor "data" indoors. Or to fudge alleged observations to agree with positions that were "theoretical" (i.e., computed indoors — so how does fudging differ from fabrication?) and throw away any that didn't agree.

archon-osculating contributors. One *JHA* Advisory Editor privately estimates no real refereeing is occurring, while another (who wanted *DIO* to stop refereeing at all, realizing it was the only way to compete with other Hist.sci journals!) believes papers by *JHA* favorites aren't refereed, but rather *prefereed*: straight-to-press unread (flagrantly, laughably clumsy *Centaurus* example written by *JHA* boardmember: fn 50 below), a practice additionally eased by *JHA* insistence on printer-ready (Rawlins 1991W fn 6) and wordprocessor (www.dioi.org/pm3.htm) submission. (Such conveniences are only exacerbating a trend already underway [as DR warned *JHA*, 38y ago: *DIO 1.2* fn 6&§B4] whereby "editors" become little more than printers. Note *DIO*'s typical insensitivity, www.dioi.org/isb.pdf, in asking an editor to edit.) And it shows. Lucky for us, *JHA* refereeing's judicious deliberateness is self-extolled by proud 1970-2013 Editor M.A.Hoskin, www.dioi.org/pm3.htm, emph added: "***it is quite common for an article received at breakfast to be refereed during the morning . . . and the verdict sent to the author by lunchtime***." For about 60 cases of thus-inevitable *JHA*-published odd and/or miscomputed scholarship, see: www.dioi.org/jhb.htm, samples here at fnn 10-11&86. No like list of botches debuting in *DIO* has been or can be compiled. Maybe due to scrupulous *DIO* refereeing?
At least until afternoon tea.

[5] Shunning R.Newton: Gingerich 1990 p.364. Shunning DR: fnn 109&125 here. Hoskin 1983 blackball: *DIO 1.2* §§B2-B3 (1991). Shunning's reality acknowledged by Schaefer 2002 p.40 while carelessly relaying **nationally** in *Lie&Telescope* yet-unretracted previously-private false slander (original shunning-justification) that DR long pestered Hoskin with abusive letters; *DIO* urged observers to phone the libel's publisher, 617-864-7360, for copies of said persistent abuse ***that is in fact pure fantasy***. What institute did? Or asked who'd let even real insult kill dialog for 1/3 century? [Gingerich's condition for 1999/7/3 UND debate: bar DR from the podium. Such establishment unprincipledness guarantees: #1 response to this *DIO* will be fresh irrelevant smearing. Same timing at www.dioi.org/stb.htm#ffpd. (Like Assange, suddenly a "rapist" upon publishing forbidden data.) Purely punitive aim. (Rawlins 2000A fn 172: world's richest mud-mine? A controversy's last ditch.)]

[6] O.Gingerich, longtime head of Harvard's History of science Dep't, defames Ptolemy-skeptics, www.dioi.org/pm2.htm, in private communications. E.g., his 2000 referee-report to *Isis* innumerately broadbrush-libelled the now-substantial (if largely silent for professional reasons) Ptolemy-doubting party as just a tiny "paranoic" bunch (‡2 fn 5), merely for objecting to communal shunnings he and everyone in the field knows are real, even attested: fn 5 here; and www.dioi.org/pm1.htm, www.dioi.org/j43f.pdf, "Naked Came the Arrogance", Rawlins 1994S §§B5-B8; Gingerich, *loc cit*; and cult echo-slander sampled at www.dioi.org/j111.pdf, *DIO 1.1* ‡1 §C7; also see fnn 16&20, as well as *ibid* ‡3 §§D2-D3, vs ‡3's fn 7. Establishment-servant Gingerich's whackamole campaign to contain heresy is detailed at www.dioi.org/j43f.pdf, 1994. His referee reports on skeptics often pretend (between slanders) that it would be ever so good to have the other side heard (‡4 §A2). Were this not sham, his *JHA* would hardly have gone decades printing just Gingerich's side of the Ptolemy pseudo-controversy, protecting readers from exposure to *DIO*'s too-dangerous evidence&reasoning, and (especially scary) competence.

[7] Schaefer *loc cit*. But how "hot" is a controversy where virtually all prominent print is on one side? The cowering side.

[8] Historians-of-science remain impenetrably loyal to the idea — which *DIO 1.1* p.10 fn 24 deems *mass-slandering of ancients* — that it was (inevitably?) normal for ***crude*** *Greek science* (§C14; Rawlins 2018U fn 3) to indoor-fake empirical data. Or (Gingerich 1976 p.477) to fudge such. (Same thing, when the value which a datum is fudged to agree-with is not observed but fabricated.) This Ptolemy-alibi concoction was promoted nationally (*though supported by not the slightest ancient attestation*) through *Scientific American*: inspired by its Editor, mentored by Harvard's Gingerich & MacArthurian Swerdlow, who (fnn 6&34) actually slander **OTHER PEOPLE** as con-men and/or kooks, even ***while*** hawking faker&astrologer Ptolemy to funders&public as an immortal scientist. (Items at ‡2 fn 8, or www.dioi.org/jhb.htm#dmcq, assist in weighing Swerdlow's qualifications for such judgements & his capacity for determining which scholars to condemn and/or banish. Likewise for Gingerich at Rawlins 1987 n.35 & Rawlins 1996C fn 66.) The article (ScAm 1979) states ***as fact*** the baseless ***speculation*** that ancients ignored (destroyed) data discordant with the theories they ***inherited***. (Explicit in fn 9.) As *ScAm* was vainly informed before publication, Hipparchos reports observations clashing with theory, even with each other (*Almajest* 3.1, 4.11, 6.9): here, in fn 97. (Oxford University Press was equally vainly warned of problems with the largely useful textbook, Evans 1998, by phone and 1997/7/17 letter.) In spite of massive — though disgracefully-long-unrecognized — evidence of high-accuracy Greek science (overkill-detailed here at §I10, more at Rawlins 2017E), the ubiquity of the modern history-of-astronomy cult's insistence on its eccentric fantasy of ancient astronomy as non-empirical, data-forcing, disorganized, inaccurate, and/or observationally clumsy ***prominently persists to this day*** (fn 13) and is obvious from the sheer volume of without-exception-fallacious & pseudo-scientific effusions arguing it & its variations. Besides earlier in this note, see: compact string of citations in above Summary, as well as fuller and more specific listing here (& even fuller above at ‡2 §N8); fn 1 (on Neugebauer 1975 & Gingerich 1976); below fn 62 (on same & Evans 1998); §H4 (on Jones 2002E); Rawlins 2018U §§B2-B3 (on HamSwerdlow 1981, Swerdlow 1989, & Van Helden 1985); §B above (on Evans 1987 & Evans 1998); Rawlins 1991W fn 99 (on Swerdlow 1989 & Graßhoff 1990); Rawlins 2002V §§I2-I11 & fn 57 (on Gingerich 2002); below fn 97 (on Shcheglov 2016 Dec, the latest).

B2 In 1987, in order to justify the modern Ptolemist vision of antiquity, *JHA*-Editor-in-progress J.Evans published an unexceptionally polite, technically pathetic, but politically brilliant Step-One towards becoming a Muffia Maid-Man by assassinating R.Newton's credibility — anticipating full well the boost he'd achieve towards his ultimate Editorship by attacking *JHA* Editors' *bête-noire*-Newton, i.e., telling 'em what they wanna hear, regardless of the cost to truth and to the reputation of one of ablest scholars ever to grace the field. (And regardless of whether Evans' paper was valid. All that mattered to *JHA* was the attack's teamwork-contribution to the pretense that Newton was as crazy as its cult's unanimous goosestep-slander was insisting: fn 34. Which is why the parties soon proven right [‡4 §B4] about Ptolemy's Star Catalog theft were exiled, while those who were impenetrably wrong were elevated — the most-impenetrable lifted into the field's politically-ultra Editorship. No surprises.) Evans' paper tried alibiing Ptolemy's ridiculously huge errors to his and his cult's satisfaction, by adducing three instances of grossly erroneous outdoor placement of a star's position, from measurement of its angular elongation from the known-position Moon at mid-eclipse: Evans' own 1981 Seattle observation of the star λ Sgr — the record of which has since disappeared without explanation — and two ancient observations of the star Spica vs the eclipsed Moon (*Almajest* 3.1) by Hipparchos in -145 and -134. The errors were all ordmag 1°: respectively, $-40'$, $-33'$, $+33'$.

B3 After in 1991 *DIO* showed (fn 10 below) these were not observational errors at all, a 2009 Rawlins paper detailed[9] the precise explanation which shows that Evans' three data ultimately support his conclusion's opposite.

[9] Rawlins 2009E §A (emph in original), critiquing Evans 1987, http://journals.sagepub.com/doi/pdf/10.1177/002182868701800401, also Evans 1998 (appreciatively reviewed for its considerable merits by Thurston 1998D in *DIO 8*). Overview-question-in-passing: is there any reason other than ambition that would lead a scholar to look for a way to defend Ptolemy's honesty where (as for the Moon-star case at hand) the evidence is too obscure for non-specialists to understand, when the defendant has already for at least 1200^{y} (§I8) been known to have simply, clearly, uncomplicatedly, high-schoolishly, arithmetically indoor-computed his four alleged "observations" of the Sun: §I8 below. A textbook case of politics overwhelming reason — as it has, for ordmag a century of history-of-science's ubiquitous, *naked promotion-for-grantprofit of a known scientific criminal*. (See, e.g., ‡2 or Pedersen 1993 p.559's justification of Ptolemy's massive indoor plagiarism of Hipparchos' stellar coordinates, after initially denying it at Pedersen 1974 p.258 by assuring us that Ptolemy had too much "integrity".) Further history-of-science contributions to ethical philosophy are announced from the field's heights by NYU's A.Jones (who knows Ptolemy faked science [‡2 fn 2], but ranks true *history* [vs JHAD status] in canny political order): the Jones-edited 2010 Springer volume *Ptolemy in Perspective* (CalTech [!] 2007 conference, arranged by CalTech's Swerdlow), is prefaced by Swerdlovian prose, "Among the SCIENTIFIC authors of the Greco-Roman world, none gives us such a strong impression of writing for posterity as Ptolemy. . . . no reference to himself except as an OBSERVER, scholar, and theoretician . . . . Nor is there anything meretricious in Ptolemy's efforts to give his SCIENCE a public face. . . . he . . . made astronomical OBSERVATIONS [vs below at §I8] between the mid-120s and the early 140s of our era" (caps added). The same Jones-edited collection calls Ptolemy's fakes "observations of the Sun" with mere "errors" (Swerdlow 2010 p.151), adding that Tycho "took the observations . . . of Ptolemy seriously" (*ibid* p.154), though Tycho deemed Ptolemy a thief&fraud and so dumped his fake data, ***epochally discovering accurate precession thereby***: ‡2 §A; Rawlins 1993D fn 141. In this same *CalTech* collection, we're told (Ragep *op cit* p.126, emph added), in a typically (‡2 fn 18) condemnationless history-of-science clique "reply" to the fatal-for-*scientists* revelation that Ptolemy indoor-faked allegedly outdoor data: "But let us look at this another way. Ptolemy decided *not to tamper with* the year[length] he had inherited from Hipparchus" (the very datum used to fake all 4 of his solar data): the historian-of-science here acting as if *a faker's tampering with data is the scientific&ethical* ***equivalent*** *of real scientists' tampering with theory when improving same*: just two O.K.-options for resolving theory-vs-data conflicts! *Consider the revelation*: this **CALTECH-SPONSORED** expression of inside-out-science is considered the epitome of DEEP non-judgemental thinking, in the history-of-science commune, where no one in authority seems able ***even to tell a real ancient scientist from an occultist fraud***. And see ‡1 §§H&T on the field's robo-brushoff of Ptolemy's connexion to astrology, believing *in reckless defiance of the awful truth* (§I11) that only unenlightened, "paradigm"-insensitive scientists could suppose it reflects negatively on him.

B4 We quote from this 2009 *DIO* paper, which so *precisely* (& ironically) solves *JHA* Editor J.Evans' 3 boomeranged eclipse-based star-longitudes that, during the near-decade since, no historian of science has ever acknowledged that the *DIO* paper even exists:

> Among the gymnastic hysterical-astronomy pratfalls enlivening *JHA*'s hefty (64pp!) James Evans double-lead-paper attack [Evans 1987], upon (then-minority) Ptolemy-doubters, was Evans' lordly illustration of [skeptics'] dumb overestimation of ancient [observational] accuracy . . . . [Evans *op cit*] n.50 (p.275) presents his own non-telescopic (cross-staff) 1981 July 16 Seattle observational determination of the longitude of a star (λ Sgr) by using a lunar eclipse (as Hipparchos had) [measuring the star's angular distance from the Moon when [it was] 180° from the Sun's already-tabulated position] — which after Evans' reduction produced a longitude erroneous by $-2^\circ/3$, thus according to him (*idem*) showing that the huge errors in some ancient observations were so ordinary that such were a poor basis for learning anything about ancient science [i.e., condemning Ptolemy's gross errors]. As further examples, Evans specifically mentions (*idem* & p.235) Hipparchos' two hugely disparate Spica data [also eclipse-based] . . . which disagree by over 1°. He then draws for us a [Ptolemist] lesson (emph added): "***No better demonstration could be wished*** of the uncertainty attached to the method" of fixing stars' longitudes by eclipses. However, when instructor Evans ***repeats the very same sermon*** (on Hipparchos' eclipse-star errors) 11^{y} later [in manyways-valuable J.Evans, *History and Practice of Ancient Astronomy* (Oxford: Oxford Univ., 1998)] p.259 ("This shows the size of the possible errors in ancient measurements of absolute star longitudes"), he slyly deletes mention of his formerly prominent 1981 eclipse-star measures — which shows that (during the 1987-1998 interim) Evans had read [the 1991 revelation][10] . . . that DR had discovered

[10] A 1999/4/2 Evans letter boasted of ashcanning *DIO 8*, allegedly not reading it (& its p.2 exposure of his citation-integrity's consistency; also fn 127 below). [Equally honest Peary dodge at Bryce 1997 p.602.] Groundwork for further bibliographical sins? E.g., Carman & Evans 2015, www.dioi.org/cev.pdf, prominently published *as original*, ***without attribution***, Rawlins 2008Q fn 6's discovery, www.dioi.org/je01.pdf, of a parallactic explanation of Eratosthenes' Earth circumference 252000 stades, which coverupper *Isis* is refusing to even correspond on much less undo (‡1 here), while Evans hides from his obligation to own up re who 1^{st} discovered the theory Carman&he have published as their own. [Recall: J.Bode appropriated "Bode's Law" though it was actually 1^{st} published in a footnote to a non-astronomical work by J.Titius.] Specifically, Carman & Evans 2015's proud Pb-paper's central equation, Eratosthenes' Sun-distance $S_{\text{E}} = 102^{\text{r}}$ [102 Earth-radii] (fn 42 below), was already discovered & published for the 1^{st} time 7^{y} earlier at Rawlins 2008Q's waystation eq.9, which *Isis*' leashed authors couldn't see past. (To connect to a new world of Greek scientists' ingenuity & precision which *DIO*'s paper delights in exploring: curious readers will enjoy sharing this journey into the previously unknown, far past where Carman & Evans 2015 stopped.) Incredibly or typically, the authors reveal to readers no hint of: [A] Airbending's effect on geodesy (§I25 below; Rawlins 2008Q). [B] Pseudo-Aristarchos' ["p-A"] factor-of-four giveaway slip (§I2 here). [C] Archimedes' contradiction of p-A (*idem*), saying Aristarchos' Sun-diameter was 1/4 of p-A's (correct half-degree vs ridiculous 2°), which C&E certainly knew about since it appears on the very Archimedes page cited (for other cause) at Carman & Evans 2015 n.1. (Shades of other knowing archonal non-citations noted here at fn 121.) [D] And p-A's lunar 3° parallax's follies (§I2; Rawlins 2008R §C1). [E] Also p-A's ***daily-retrograding Moon*** (*idem*), caused by lunar distance 1/3 of reality. (Which Carman & Evans 2015 p.9 claim "would not have seemed outrageous" for the time!!!) [F] The p-A solar disk's angular area was 14 times reality. [G] Multiplying 40800 stades by 2π yields 256000 stades (fn 42 below), the very C found 36^{y} ago from Eratosthenes' Strabo-relayed Nile Map. (Carman & Evans 2015 n.10 cites the map but not its centrally deduced 256000 stades.) [H] *Ibid*'s innocence of the ancient context: intelligent Greek astronomers rounded the solar distance (in Earth-radii) to powers of 10 (fn 42).
I.e., classic JHAD immunity to Greek scientific progress & modern historical progress, cult-obediently (fn 8), heroically repelling wave after wave of such. Evans insists (above top line) he won't read *DIO* (with its Rawlins 2008Q §C1 catalog of all five pseudo-Aristarchos farces), and none in this cringing

that Evans' and Hipparchos' errors. . . . ***WERE NOT OF MEASUREMENT BUT OF BASIC SPHERICAL-ASTRONOMY MATHEMATICS***. . . . [Yet] when ineducable educator Evans' 1st-hand evidence somersaults, ***he just pretends he was right anyway***, unable to admit *DIO* scored & "premier" *JHA* bellyflopped . . . . Contra Evans, neither his own nor Hipparchos' problems were observational. Both simply miscomputed . . . valid observational data by using invalid math: ***the wrong sign*** for their parallax corrections . . . . the [1981 Seattle] longitudinal lunar parallax p_λ was virtually $1^\circ/3$. . . . the sign mixup would naturally cause an error of . . . $-40'$, [&] the laughably impossible [vs here in fn 12 & §I10 #1] "observational" longitude he reports is indeed (Evans 1987 *loc cit*): "too small by about $40'$ ". (Typically, Evans has had no comment since, despite [Rawlins . . . face-to-faces] & Hugh Thurston [by letter] directly bringing the matter to his attention.)[11] After correcting for this Muff, we [see] the admirable smallness of the 1981 observational error of Evans (a dedicated student of ancient instruments & possessor of a steady hand, since the cross-staff requires it): merely 1 or 2 arcmin, just the sort of accuracy DR has consistently[12] ascribed to the best ancient . . . observations.

field has a word to say in criticism. Parallel Evansiana: despite denial of reading *DIO*, Evans' clumsy unannounced sly-try 1998 eclipse switch (unsubtle details: fn 11 below, or ‡2 fn 47) shows he'd read Rawlins 1991W fn 288, *DIO*'s detection-revelation of Evans' 1987 parallax-miscue, ever-uncited by him during 3 decades of hiding from publicly facing this central demonstration of his cult-engendered fallibility. Also ever-Evans-uncited: *DIO 3*, www.dioi.org/j301.pdf, **the standard critical edition of Tycho's 1004-Star Catalog**, Rawlins 1993D (fruit of *DIO*'s 7 years of scrupulous investigation & math-reconstruction: 1987-1994): flagrantly deliberate citation-avoidance in Oxford U.Press' Evans 1998 pp.271-272 & n.28 thereon (p.459), 5y after *DIO 3* appeared. (Will scholars not following suit offend The Editor's obviously hyper-tender sensibilities?) Is the Tycho catalog shunned because published by a journal correcting an Evans mistake he pretends was never made? (*But doesn't say so.* [Indeed, doesn't say anything.] ***And no historian-of-science asks***. A field ruled by fear for decades. But note that B.Schaefer has admirably broken ranks on *JHA*-shunning of *DIO 3*.) More Evanscience appreciated in Rawlins 1992T §§H1-H7 & fn 65, and at Rawlins 1993D §L8, where Evans is shown to unwittingly require Ptolemy saw 12th magnitude stars. (Ptolemy-Flamekeeper Evans in 2013 succeeded Hoskin as *JHA* Editor. Utterly aptly.) Intermittent listing at www.dioi.org/jhb.htm#vjcr, of ten further examples of ***deliberately-ignored*** (recall 1999/4/2 letter, above) revelations of undeniably erroneous but never-retracted Evans scholarship. See also *DIO 8* ‡4 fn 4 on the unsubtly-arbitrary & inadvertently non-empirical→empirical argument at Evans 1998 p.72, ultimately adopting (non-citationally) yet another DR original discovery (§I4, *DIO 1.1* ‡7 §C1; Rawlins 1991W §R9, fnn 263&272; Rawlins 2008R fn 17): Aristarchos' 87° half-Moon elongation as not precise but a lower limit. And don't miss www.dioi.org/jhb.htm#cdqm, on Evans twice copying J.Dreyer's prose without quotation-marks. Irony: *DIO*'s Tycho star catalog & the differently-important Hipparchos parallax-sign discovery, were both triggered by Evans' own mis-apologia for icon Ptolemy. At Rawlins 1992T §H8 & Rawlins 2009E §A6, find our gratitude to Evans&Hoskin for each of these gifts. (Like thanks to Jones&Toomer at *ibid* fnn 207&292; to Duke, §C14 above & Rawlins 2012V fn 22; to the whole Muffia at Rawlins 1991W §S3.) Evans' modesty precludes him from citing any of these thank-yous. Compare to *DIO*'s rule of always correcting its errors — for both integrity and refusal to mislead readers: www.dioi.org/err.htm, as well as below at §I14 & fnn 98&110, also *DIO 1.1* ‡4 §A2 (1991) & *DIO 11.2* (2003) front cover & p.30. JHAD's perverse reaction to the contrast neons its priorities for all to see. And eyeroll.

[11] Rawlins 2009E fn 4: "Both inquirers were told by [now *JHA* Editor] Evans that he would look into [*DIO*'s correction to his eclipsed-Moon-vs-star experiment]. But he never communicated what he found. Except by implication" when in 1998 (weird details: *ibid* fn 7) he *1984*ly suppressed [***without notice to readers***] his 1987 paper's 1991-*DIO*-outed observed&bungled 1981 eclipse-star measure, then [emulating infamous con-man Dr.Cook: www.dioi.org/jl03.pdf, §C8] nervily subbed, into the same ***Greek-accuracy-demeaning Muffadvocacy***, a nonmeasured 1977 eclipse instead. *Historians*-of-science know of this conscious *historical* distortion. None objects. None felt it bore on Evans' 2013 apotheosis to *JHA* Editor — the #1 political office in the history-of-astronomy field. Kult über alles. With predictably-degenerate Evans history-of-science surfacing yet again in 2015: fnn 10&42.

[12] Rawlins 2009E fn 5: "E.g., Rawlins 1982G p.263 & n.17 [dissed by Swerdlow, rejected by 1st referee Toomer], Rawlins 1985G *passim*, [Rawlins 1985H.]" Pro-Greek-competency: *DIO 1.1* (1991) ‡1 fn 24. Hipparchan measures of lunar limb-vs-Sun separation (*Almajest* 5.3&5), mean error 0°.1: Thurston 1998A ⊙11. For Rhodos equinoxes, Hipparchos' scatter (mean single-datum error) was $2'$: fn 70 here. With error $0'\pm1'$ (Rawlins 1994L §G3), he found his geographical latitude L, presumably from polestars, knowing stellar parallax was negligible. His L is inferable from his star-declinations, which show merely $5'$ scatter (here in Table 2). Regulus-restoration: Rawlins 2009E eq.8. Correcting the four star-places discussed here, for proposed parallax-sign-slips & for Hipparchos' PH orbit's shortcomings (at that era, primarily an error wave of amplitude 0°.4), the above-§B's exact before-correction-vs-after data are found here at §B7 (or at Rawlins 2009E fn 22). Evans' refusal to recognize that *DIO*'s analyses have ordmag-shrunk all 4 of his and Hipparchos' longitude errors (each from 1° to 0°.1 or $1'$: chance odds ridiculous) implies that he suspects scientifically-irrelevant dark magic, behind treasonous dirty-tricks [‡4 fn 48], & unprecedentedly insufferable quadruple-lèse-majesté.

[13] Familiarity with klimata is vital to understanding the disgraceful ordmag 1° inaccuracy of Ptolemy's geographical latitudes. For the ***purely astrological Hipparchan*** cause, see, e.g., here at ‡1 §R, or Rawlins 1985G pp.260f. Both sources analyse evidence consistent with the self-evident theory that organized ancient scientists had corresponded for lunar eclipse local-time comparisons (accuracy limited mostly by ruling-fineness of sundials&astrolabes used for timing eclipse-start&end), to find longitudes to a mean accuracy of ordmag a degree (§I11 below). See Hipparchos' advice at Strabo 1.1.12. A very recent *Isis* lead paper, Shcheglov 2016, attacks this old 1790 theory as a "delusion", with Rawlins 1985G counter-chronologically designated as repeatedly-1st-cited prime hallucinator. Shcheglov tries to prove that ancients were so incompetent that eclipse-based longitude-differences, as reported in Kleomedes&Pliny, were "badly overestimated". But see *DIO*'s 2017/3/20&4/1 Letter-to-the-Editor (published here as article ‡1), which dishonest *Isis* refuses to print or even evaluate since it shows that *Isis*' editors & referees didn't notice that Shcheglov achieves his denigrations of ancient competency

B5 (Do years of not admitting parallax-mismath by now equal a kind of data-alteration?)

B6 The above-quoted 2009 article added: [i] detailed proof of *DIO*'s 1991 contention that the 2 superficially awful-looking Hipparchos lunar-eclipse star-placement measures cited above were accurate to ordmag $1'$ if his parallax-corrections were correctly signed; [ii] further, if Hipparchos' hitherto-unexamined only other eclipse (−140/1/27) was used to fix nearby Regulus, undoing the very same parallax-sign-error shrinks the same apparent ordmag 1° error (common to all 4 mis-longitudes) down to just a few arcmin ($7'$, mostly rounding error), yet again.

[Note: All data are subject to trivial error from ordmag $10^{\rm m}$ uncertainty in that era's ΔT.]

B7 Exact data (Rawlins 2009E fn 22): *JHA*'s acceptance of the unchallenged record leaves −145, −140, −134, & 1987 errors of, respectively, $-33'$, $-35'$, $+33'$, $-40'$. *Idem* shows that removing proposed parallax-sign confusions, as well as accounting for the serious systematic errors of the solar orbit Hipparchos used for his estimation of mid-eclipse time, leaves errors in empirical Moon-vs-star gaps of, respectively, just $-2'$, $+7'$, $+1'$, $+2'$.

B8 The former amounts are obviously less credible than the latter, when set in the context of Hipparchos' other known observations' mean single-datum scatter (fn 12): 0°.1 for 3 lunar-limb-vs-Sun measures, *Almajest* 5.3&5; $2'$ for 17 solar equinoxes on Rhodos (mean's traceable error $7'$, mostly non-observational: Rawlins 2018U §B4), *Almajest* 3.1; $5'$ for 17 stellar declinations (mean's error $0'\pm1'$: Table 2 below), *Almajest* 7.3.

B9 The ore-refinement findings by *DIO* for the three star-vs-eclipsed-Moon data raised by Evans have shock-vindicated *DIO*'s longtime position that Greek scientists were empirical and accurate — and the Regulus case constitutes classic coherent theory-fruitfulness.

B10 Has Evans produced his 1981 written record, to refute *DIO*'s 1991-2009 stimuli? No, he keeps hiding it (fn 127 below); and colleagues' cooperative averted gaze (fn 11 above) is consistent with the dreary theory that they prefer their own flubs be granted like silence, in return. Mutual consequence-free lawlessness.

C SphTrig's Debut: A.Diller's #1 Discovery Mobbed by Half-Fits

C1 Expressing them in stades north of the Equator, Strabo preserved a dozen-plus Hipparchan geographical latitudes L corresponding to what ancients called "klimata".[13] narrow

Table 1: Diller Sph Trig Proof: Hipparchan Longest-Days in Hours ⇒ Latitudes in Stades

Klm	Longst Day M	L Calctd Sph Trig fn 14 eqn	Round Nearst Degr/12	Conv Stads §C3	Round Nearst 100 St	Strabo	Princ Insttt Neug	NYU *JHA* Jones
Eqtr	12^h	0°	0°	0	0	0	*1500*	
Cin	12^h3/4	12°36′23″	12°7/12	8808	8800	8800	*10200*	8800
Mer	13^h	16°35′04″	16°7/12	11608	11600	11600	*12800*	11600
Sye	13^h1/2	23°59′43″	24°	16800	16800	16800	*17600*	16800
EgL	14^h	30°33′49″	30°7/12	21408	21400	21400	*21800*	*21300*
Pho	14^h1/4	33°31′04″	33°1/2	23450	23400	23400	*23700*	23400
Rho	14^h1/2	36°15′25″	36°1/4	25375	25400	25400	*25500*	*25300*
Hell	15^h	41°07′34″	41°1/6	28817	28800	28800	28800	*28700*
Mas	15^h1/4	43°16′44″	43°1/4	30275	30300	30300	30300	*30200*
Pon	15^h1/2	45°15′40″	45°1/4	31675	31700	31700	*31600*	*31600*
Bor	16^h	48°45′50″	48°3/4	34125	34100	34100	34100	34100
Tan	17^h	54°14′53″	54°1/4	37975	38000	38000	38000	*37900*
SBr	18^h	58°12′31″	58°1/4	40775	40800	40800	40800	*40700*
NBr	19^h	61°04′56″	61°1/12	42758	42800	42800	42800	*42700*

constant-L strip-regions extending east-west around the Earth, sharing the same longest-day M — which is mathematically[14] determined by L. Since klimata were used for Hellenistic horoscopes' house-divisions, ancient astrologers tabulated them for every quarter-hour or so of M. (Klimata tables are found, e.g., in *Almajest*[15] 2.6. And phenomena are tabulated according to klimata at *Almajest* 2.8 for rising-times, at *Almajest* 2.13 for parallax.) In 1934, the eminent philologist Aubrey Diller made two connected, unexpected, epochal discoveries: [1] all Hipparchos' klimata were computed via spherical trigonometry[16] (which in 1934 scholars doubted was available as early as the 2nd century BC), [2] using an obliquity[17] unattested but the most accurate anciently adopted: 23°2/3.

C2 ***Mufftypically seeing Diller as competitor not colleague***, Neugebauer attacked these findings by 1934 letter, later publicly branding them "absurd" and not even to be "taken seriously",[18] proposing his own typically Babylonian-in-the-woodpile arithmetical solution fitting only about half the data, claiming commonality of Hipparchos' klimata with primitive arithmetical schemes, an *idée fixe* also mis-applied by him to Pliny's circuli (fn 90).
[Reliable test, by which one may discern a scholar confident in his creativity & ability: reacting to aliens' successes not with jealousy and-or destructiveness, but with genuine collegial appreciation. How many JHADsters have? Not zero, but too close to it.]

C3 Rawlins tabularly[19] and satirically noted obedient shunning of Diller's theory by every one of the Neugebauer-mob's altarboys[20] (for 5/6 of a century now), though it fit roughly twice as many data as Neugebauer's, while *DIO* introduced[21] into Diller's analysis the following irresistible improvements (Table 1 here): [a] Ancients' standard 5′ rounding of L and — after conversion to distance north of the Equator, at 700 stades/degree (Strabo 2.5.7) — applying customary 100-stade rounding of said distance, accounting for which converted all Diller's near-hits to on-the-nose[22] hits. [b] Finding several further Hipparchos-Strabo klimata unknown to Diller, which turned out to fit his proposal (not Neugebauer's) in every case: ***SEVEN-fold fruitfulness*** (Diller 1984 §D3), showing[23] that while Neugebauer's theory is indefensible, Diller's fit Strabo's data perfectly[24] for each&every klima: 14-for-14.

C4 See step-by-step calculations, left→right, in Table 1, where Diller-*DIO*'s values (col.6) match every attested klima (col.7). (Neugebauer's [col.8] or Jones' [col.9] don't. Both scholars' thesis-killing misfits [*italicized* in Table 1] are a *MAJORITY*.)

How often does such success occur in this kind of reconstructive work?

C5 Enter soon-after-*JHA*-boardmember&NYU-tenured A.Jones' prominent 2002 *Journal for the History of Astronomy* [*JHA*] brief,[25] in which Strabo's data — previously agreed-upon by Diller, Neugebauer, and Rawlins — were abruptly decreed, on the authority of Jones himself, to be henceforth considered unreliable, requiring re-do according to his judicious perception of the situation, as he rejects all three men in favor of his own new theory. All klimata data at issue were obviously from a single Strabo table. But, exceptionally well-read in the literature, Jones compared sources, noticing that 2 or 3 Strabo klimata seemed c.100-stades-discrepant vs corresponding (*non-klimata*) data in other works

only by his own ironically hilarious mathematical mis-steps: details in fn 97 below.
From H.Buckle *History of Civilization in England* 1873 (1:318-320): In medieval times "the credulity of men had reached a height which seemed to ensure to the clergy a long and universal dominion. . . . A book . . . sanctioned by [the most eminent] judges" recorded that the Carolingian hero Roland fought the Moors' towering goliath Fenacute to no-decision until he "engaged his adversary in a theological discussion. Here the pagan was easily defeated" and, thus confounded, was quickly slain by the sword. When, despite being repeatedly informed of contrary evidence, our era's equally eminent whistleblower-resenting **SCIENCE** journals (‡2 fn 11) dissentlessly trust for decades Mennonite Jesus-hugger Gingerich's insistence that his fellow occultist&courtAlmaJester was The Greatest Astronomer, of an antiquity on whose ingenious empiricism (§I) Gingerich remains invincibly clueless, can we regard contemporary academe's forums as any less deliberately mythmaking-for-the-cause than those of accurate history's prior Dark Ages?

[14] $L = \arctan[-\cos(7.5M)/\tan\epsilon]$ (L in degrees; M in hours); *Almajest* 2.3, Neugebauer 1975 p.38; further sample klimata tables, *ibid*, pp.706-736.

[15] There are 2 scrupulous modern translations of the invaluable *Almajest*, aka *Mathematike Syntaxis.* German: K.Manitius, *Handbuch der Astronomie* (Leipzig: Teubner, 1912-1913); English: G.Toomer, *Almagest* (London: Duckworth, 1984; NYC: Springer, 1984; Princeton: Princeton Univ., 1998).

[16] Diller 1934.

[17] Diller fits' perfection easily verifiable here at Table 1, or at Table 2 of www.dioi.org/jg03.pdf, Rawlins 2009S. ***No JHADist agrees***. Yet the truth is plain to all but those controlling discourse, lockmawed even after 5/6 **of a century** of invincible non-innocence.

[18] Contra Hipparchos' access to sph trig, Neugebauer 1975 p.734 n.14 decrees Diller's solution an "absurdity". Woodpile & arithmetical-Babylonian: *ibid* pp.305-306&334. Commonality: *ibid* p.306.

[19] Rawlins 1994M Table 1, augmented in later printings, as previously unnoticed Strabo klimata surfaced, each unfailingly consistent with Diller's theory.

[20] Most Neugebauerians received the 1st Diller-Rawlins klimata table (Rawlins 1994M p.56). All ducked, with an unwillingness to acknowledge Diller's vindication (or even a minim of merit) that was unabashedly, unblemishedly unanimous, even Britton: *DIO 16* p.2 (2009). (See also Dicks 1960 pp.192-194, written ere Dicks escaped the Neugebauer cult.) Neugebauer 1975 p.334's half-fitted theory is directly promoted by Toomer 1984 p.19. (F.Ragep 2010 pp.128-130 omits Diller and *DIO*.) Do those obscuring Diller's 1934 insight even care about the dirt done a refined, dedicated scholar? During decades of insisting on fitless joke-mathematics, to deny him credit for his most brilliant strike, did any feel a tremor of human pathos? — when reading (Rawlins 1994M fn 7) of Diller's late-life lift (at age 76) when his shunned discovery was "rescued 45 years later [***most of his life having passed***] by a phone call from a stranger [Rawlins] in San Diego." See Boltzmann parallel at fn 108.

[21] Rawlins 1994M fn 10 and Table 1.

[22] Table 1 col.3 = Diller 1934 theory's unrounded L, nonfits (ere col.4's 5′ rounding) there underlined.

[23] Rawlins 2009S, www.dioi.org/jg03.pdf, Tables 1&2.

[24] Diller 1984 Table 0. The 14 klimata: Equator, Cinnamon Country, Meroë, Syene, Lower Egypt, Phoenicia, Rhodos, Hellespont, Massalia, Pontos, Borysthenes, Tanais, South Britain, North Britain.

[25] Jones 2002E. Scattered: p.17 n.9. Jones' cited Strabo 2.5.38 Alexandria gnomon ratio 5:3 is just a common textual *alteration*: the original Greek is 5:7, which E.Honigmann&Neugebauer realized (uncited by Neugebauer-protégé & eulogist Swerdlow 2010 p.151) wasn't a gnomon shadow-ratio at all, but the Alexandria klima's shortest:longest-day ratio, $m{:}M$ (Neugebauer 1975 p.336); ignored (favoring Neugebauer 1975 p.101 n.1) by Jones *op cit* n.3, but the H&N idea's fruitfulness is independently confirmed via Carthage *GD* latitude (Rawlins 2009S fn 35): where same $m{:}M$ mixup with shadow-ratio (in same Strabo 2.5.38) caused 1000^y of north-Africa latitudinal map-distortion. (Rawlins *op cit* §F4; similarly durable longitude-disaster for Arbela eclipse: Neugebauer 1975 p.938.)

of Hipparchos. Jones does not merely pollute Strabo's klimata with these alien data from scattered other works of Hipparchos, but uses them as an excuse ***to shift the entire dozen***, suggesting Strabo's data could have been anciently corrupted by addition of a constant, A = 100 stades (meanwhile Jones consistently miscomputes Syracuse' latitude by 200 stades), which he argues must be corrected-for — thereby justifying-excusing his replacement of already-perfectly-fitted unmanipulated data, with **sub-50%-fitted** (Table 1) revised data. Seeing Jones extrapolating from a very few exceptional klimata to the whole set, atheist DR is reminded of creationists who generalize from rare, anomalous geological strata to rejecting natural selection entire. Obvious point against the significance of Jones' disparate data-injections: he well knows[26] that Hipparchos changed adopted parameters over time.

C6 Further, Jones (ignoring 23°2/3's confirmations: §H4; Rawlins 2009S fnn 23&54) accepts Ptolemy's *Almajest* 1.12 testimony that Hipparchos' obliquity was Eratosthenes' $\epsilon = 23°51'20''$, a value which Jones imaginatively attributes to a speculative Hipparchan computation from a conjured-up non-Hipparchan Alexandria $L = 31°$, without realizing that obliquity ϵ would already be known since ancients found it concurrently with L — and via solstices, not (as Jones curiously assumes)[27] equinoxes.

C7 Jones also-traditionally alters[28] the *Almajest*'s text for Hipparchos' Marseilles latitude, from $L = 43°04'$ (consistent with 43°1/12 of the Ptolemy *Geographical Directory* [*GD*]) to $L = 43°01'$, in order to reconstruct (using Eratosthenes' ϵ) 2nd century BC Hipparchos' Jones-speculated indoor calculation-invention (for unstated reasons, and counter-chronologically) of Pytheas' well-known longago (c.−300) solstitial noon gnomon ratio, $\frac{41\ 4/5}{120}$ (whose precision argues it was an outdoor[29] datum); and, to force the speculation's success, Jones begs tolerance of an odd-but-convenient Hipparchan miscalculation,[30] yet another *ad hoke* wrenching of ancients' data. [While rejecting Table 1's normal roundings!]

C8 Jones' promotion[31] of such jigsaw juggling seeks at least a half-share of Diller's discovery. Worse: by fantastically alleging that Diller used invalid data, Jones (Neugebauerianly: §C2) lodges his half-fitted theory — unvetted (§C10) and untabulatedly-whimsical — as SUPERIOR to Diller's ultimately-perfectly-fitting one. Though willing to reference Diller's 1934 paper (with 2 nonfits of 11 listed klimata, until *DIO*'s 1994&2009 upgrades: §C3 [a] & fn 34 end), shunsoldier Jones dutifully, consistently refuses to acknowledge the bare existence of Diller's 1994 vindication: *DIO*'s initial near-perfect 12-hits-out-of-13 table[32] (though its merit is prominently recognized by H.Thurston [*Isis*] & by G. van Brummelen's meticulous standard history of early trigonometry [Princeton University]) — or the final *DIO 16* ‡3 update distributed in 2009, where the ultimate blemishless-fit perfection (Table 1 here) of Diller's 14-for-14 victory is too irrefutable to deal with. Except by fleeing.

[26] Jones' 2000 *Encyclopedia of Astronomy&Astrophysics* Hipparchos article, or Tihon 2010.

[27] Jones *loc cit*. Syracuse miscomputed: Jones 2002E n.10. He also controversially if traditionally altered a key Alexandrian datum: fn 25 here. His highly Creative obliquity-speculation: *op cit* p.16. His preference for equinoxes over solstices for L: Jones *loc cit* (spotted by Thurston); and below fn 96 vs Britton 1992 p.29. Non-Hipparchan Alexandria L: Rawlins 2009S fn 30. Obliquity ϵ found concurrently with L via solstices: *ibid* §§F2-F3 & eq.8, and *Almajest* 1.12.

[28] Original-text Hipparchan Marseilles $L = 43°04'$ (*Almajest* 2.6), rounded at *GD* 2.10.8 to 43°1/12, often altered to $43°01'$ (defying *GD*'s consistency with $43°04'$). See Rawlins *op cit* §H. Achronology: Jones 2002E p.17. Pytheas gnomon ratio: Strabo 1.4.5&2.5.41. Rawlins 2009P eqs.2-3.

[29] *Ibid* Summary [1a] and Rawlins 2009S §F4.

[30] Jones *loc cit* requires Hipparchos rounded 41.713 (41;42,47) to 41 4/5 (41;48), though 41 2/3 (41;40) is rounder & almost twice as nearby. F.Ragep 2010 p.128's Jones-promo sees no-problem here.

[31] E.g., Jones' foreword to recent (long overdue) reissue of Pedersen 1974.

[32] Initial Diller-Rawlins table of Strabo data compared to Neugebauer's: Rawlins 1994M p.56 [aptly augmented in later renderings, as noted at fn 19], *JHA*-uncited for 24y now, but noted by Thurston 2002S p.67, and by van Brummelen 2009 p.65. Final 13-for-13 version of Diller-*DIO* klimata table: www.dioi.org/vols/w50.pdf, Diller 1984 Table 0. The table's subsequent 14-for-14 expansion: here in Table 1 or www.dioi.org/jg03.pdf, Rawlins 2009S Table 2.

C9 JHAD's 2002 switch from Neugebauer's half-fit, to Jones' even-worse-fit (fn 33): a cornered cult *flexibly* changing-its-story (& data) to continue ***in****flexibly* rejecting Diller.

C10 *JHAD-unrealized*: Hipparchos-Strabo's data have unexpectedly ***SPECTACULAR*** sensitivity to even the most minuscule[33] imperfection in the ϵ or the constant-shift A assumed for testing fits, which renders it especially astonishing that the Diller-Rawlins theory (even without help from an arbitrary [Jonesian] crutch-resort to a constant-shift) accords with all 14 data. (Superior even to the mathematically best-fit solution found by least-squares, which fails at klima $14^h1/4$.) Jones' 2 premises, [i] Hipparchos' ϵ was Eratosthenes', and/or [ii] Strabo's data need alteration by $A = 100$ stades, overkill-wreck any chance of Jones ever fitting his klimata data. A difficulty he was innocent of, only because he didn't know how[34] to run the required least-squares (a disability seemingly near-universal among historians-of-science: fnn 34&100) — much less the multivariate version. We have attempted enlightenment by devising a simplified method of estimating bivariate-probability loci (fn 33 here), comparing the klimata analyses of Neugebauer & *DIO*: www.dioi.org/sta.htm#xmxw. Even accepting one of Jones' two premises & using least-squares to adjust the other unknown, several non-fitting klimata ensue, as emphasized to him by phone immediately upon his 2002 publication. The reality is rendered particularly obvious by his failure — unique to this controversy — even to supply a table of data. (Diller, Neugebauer, & Rawlins all tabulate.) This, because neither his ϵ nor any other can fit his own fiddled version of the data. *JHA*'s intensive breakfast→lunch refereeing (fn 4) inexplicably never noticed the omission of a Jones table, or his non-citation of the undeniably better-fitting 1994 Diller-*DIO* table well known to him via *Isis* (Thurston 2002S) & direct communications (www.dioi.org/biv.htm#jphn). Question: why persist for 16^y to nonretract & actually promote (Duke same at §D5) a pet theory so inferior (fn 33) *Jones knows he can't even tabulate it without revealing its worthlessness*? Given his long evasion of this obligation, we've tabulated his theory for him, in Table 1, where all non-fitting latitudes (Princetitute or *JHA*) are *italicized*. The crusher (fn 33): *Neugebauer 50%-misses via 4 unknowns, Jones via 2*; ***but Diller-DR 100%-hits with just one***. No legit debate here. Just jokers hiding, Princetitute&NYU self-disgracing, **revealingly sure** academe won't act.

C11 Since 2009 April (when Diller's last apparent non-fit unexpectedly was found to accord), Jones has kept contending over his shoulder that the data are to blame for

[33] Sensitivity: caption to Rawlins 2009S Fig.1, graphing Strabo's 14 klimata (Equator & $12^h3/4$-19^h). *DIO* method of estimating multivariate-probability loci: www.dioi.org/biv.htm#xmxw, comparing Neugebauer vs Diller-*DIO*, shows that above Table 1's col.5 "Conv/Stads/§C3" (for Diller's $\epsilon = 23°40'$, $A = 0$, with L rounded to nearest $5'$) counter-intuitively fits the data (col.7: "Strabo") over 25% better than $\epsilon\&A$ produced by least-squares (where also klima $14^h1/4$ fails). Neugebauer 1975 uses 4 unknowns (Rawlins 2009S fn 7); Jones, 2 (*ibid* §J3). Do shunners note ***Diller needs only one*** (ϵ)? — to produce column 6 ("Round/Nearst/100 St"), the Diller-*DIO* theory's predictions which anyone (but clenchjawed Muffiosi) can see exactly match column 7 ("Strabo"), the attested Strabo-Hipparchos data, via 2 tiny, normality-predetermined (§C3 above) roundings. As these 2 standard nudgelets inject the finishing-touches, converting Table 1's near-fit col.3 into perfect-fit cols.4→6, who but a cult-priest could see ultimate theoretical col.6's exact matching to attested col.7 as but a demonic illusion by the forces of darkness, requiring heroic interventive exorcism by the farces of dorkness? Specifics useful to the competent follow, for all 14 klimata. Derived from $\epsilon = 23°2/3$ & $A = 0$, Diller's numbers (col.3) fit Strabo's data (col.7), with squares-sum $S = 88'^2.9$ [or 88.9 arcmin-squared]. Applying bivariate least-squares finds $\epsilon = 23°39' \pm 2'$ & $A = -10 \pm 25$ stades, & improves to $S = 82'^2.9$. But for nudged col.4 (Diller-DR) vs col.7, $S = 62'^2.2$. Fitting col.6 to col.7, $S = 0'^2$. With 13 klimata, for Jones' $\epsilon = 23°51'20''$ & $A = 100$ stades (col.9), $S = 540'^2$, less than Neugebauer's (col.8) S. (Unrounded stades & S for both men: www.dioi.org/biv.htm#dzqs.) But Jones only fits 5 of 13 data vs Neugebauer's 6, so cultish-cling to nonadmission of Diller's triumph takes *JHA* from bad to worse.

[34] Similar non-use of least-squares by ubiquitous MacArthur-Genius Swerdlow — who, in terror that academe will read revelations (www.dioi.org/jhb.htm) of his bumblings — smears competent scientists as cranks: *DIO 1.1* ‡3 §§D2-D3; like *ibid* ‡1 §C7. See Rawlins 1992V §§C11-C14 on curve-fitting (vs Evans' notably accurate comparable curve [regardless of subsequent misuse]). For impossibility of Jones fitting the fiddled: Rawlins 2009S §I3. Elimination of last Diller-Rawlins non-fit: *ibid* eq.3.

his theory's doubtless-illusory woes: *they* are the unreliable party, having committed the offense of disagreeing with the theory of the most authoritative expert (here, in fn 86), adding that Hipparchos' trigonometry tables are suspect of a parallel disloyalty. Meanwhile, DR contends that the glad & enlightening opposite is recommended — both for Strabo's klimata data[35] and for Hipparchos' trigonometry tables — by Table 1's 14-for-14 fit, cited above (fn 24). Jones is doing a convincing imitation of one who imagines those astronomical-odds-defying 14 perfect hits merely[36] constitute a paranormal or religious miracle, with no significance or status in his people's idea of the real world of science, where Occult's Razor slices an illusion like a 14-hits-out-of-14 table completely out of that special bubble, consigning it to the Orwellian-Goebbelsian flames it deserves.

C12 Note: it's been obvious since [the Rawlins 1994M investigation] that $1''$ accuracy is crucial[37] for the 18^{h} klima's fit (Table 1 above; or Rawlins 2009S Table 2), suggesting that the historical process of refinement of high-accuracy trig tables goes back further than generally believed, as successfully presumed throughout an earlier[38] (1991) trigonometric *DIO* reconstruction of Hipparchan lunar orbits, discussed below, in §D and fnn 38&39. ***NB***: We now have consistent confirmatory *double*-evidence for Hipparchan $1''$-accuracy: [a] Table 1's 18^{h} klima, as just noted (fn 37). [b] Below fn 46's neat hits for attested e&r.

C13 Ironically, D.Duke's rejection (fn 69 below) of that reconstruction unintentionally highlights the Hipparchan trigonometry tables' accuracy. It just seemed incredible to Duke that *DIO*'s analyses (précised at §D here) of Hipparchos' *Almajest* 4.11 eclipse-trios could possibly be reliable, from sensitivity to tiny uncertainties. Yet we have multiple-verification of those analyses' validity, because Hipparchos' calculations (fnn 24&52 here) & trigonometry tables were more accurate than previously believed by Duke or anyone else (including DR, before 1991 testing). So his&others' now-punctured doubts thankfully just emphasize the shocking newness of the discovery of Hipparchos-era $1''$-accuracy computation & trigonometry tables: [1] the two eclipse trios (customarily called "A"&"B") confirmed each other by both producing Hipparchan orbits based on Kallippic motion (period $365^{d}1/4$) [2] new papyrus testimony vindicated in 2005 (§F4) both of the novel inductions of *DIO*'s 1991 analyses: [A] Hipparchos' search for a -157 Summer Solstice, [B] his contemporary passing adoption of Kallippic solar motion.

C14 None of these confirmations could have succeeded unless Hipparchos' trig tables were indeed (as already indicated: fn 37 below) accurate to $1''$, as later were Ptolemy's (*Almajest* 1.11). Specifically, if *DIO*'s 1991 elicitation of lunar eccentricity e from Trio A had computed with a key trig function off by $1''$ (from slightly unreliable trig tables), Hipparchos would have found other[39] than $e = 327'2/3$, the correct value, which is attested (§D1 below) & is found to agree (§D3) with calculation via $1''$-accurate trigonometry tables. To repeat (§C12): [i] the Diller-klimata table's 18^{h} entry (here, in Table 1 & fn 37) and [ii] *DIO*'s eclipse-pair-based orbit reconstructive matches, both consistently establish the 2^{nd} century BC as the earliest date we know $1''$-accurate trigonometry tables existed.

Concluding this section's revelations, of sph trig & $1''$-accurate trig tables & calculations, ***3 centuries before Ptolemy***: we recall the mentality that long ago locked-in establishment-wisdom here, Gingerich 1976 p.477 in *Science* (!), blaming his hero Ptolemy's huge errors on (caps added) "CLUMSY mathematics invented only a generation earlier" (‡2 §M1 [b]).

[35] Strabo's numbers are being repeatedly vindicated here (universally-accepted restoration noted in Jones 2002E n.9 conclusion), though his interpretations are fertile ground for reconstruction: e.g., above, in fn 25. Trigonometry-table "imprecisions": Jones *op cit* p.17.

[36] This, in a familiar chauvinist tradition we keep encountering here, e.g., in fnn 25&85, and even more astonishingly at www.dioi.org/thr.htm#csqv, and below in §J. Computing odds against Jones' theory (& Neugebauer's): Rawlins 2009S §§J1, J3, & J6.

[37] At the 18^{h} klima in above Table 1, $58°\,12'\,31''$ rounds to matching $58°$ 1/4; but $58°\,12'\,29''$ wouldn't.

[38] Rawlins 1991W §N11[a] eqs.12-20.

[39] *Ibid* §N14. Further deep thanks (not necessarily facetious) to our loyal royal cavilliers: here at fnn 10, 51, 71, 73, & 98; also ‡2 fn 42, and www.dioi.org/jb12.pdf, "Gratitude to Opposites" p.10.

D Lunar Orbits' Plausible & Implausible Solutions — Hipparchos' Mechanical-Computations' Reliability

D1 As recounted in *Almajest* 4.11, Hipparchos investigated two lunar eclipse trios, both of which had occurred well before his era, usually called Trio A ($-$382-381) and Trio B ($-$200-199). Ptolemy reported that, for Trio A, Hipparchos had computed lunar orbital elements from the time-interval and longitude-interval between eclipse#1 & eclipse#2, and the same intervals between eclipse#2 & eclipse#3. And then did the same for Trio B. Hipparchos' computational findings were, for Trio A ($-$382-381) orbital radius $R =$ 3144 units, eccentricity $e =$ 327 2/3 units; for Trio B ($-$200-199), $R =$ 3122 1/2 units, epicyclic $r =$ 247 1/2 units. G.Toomer tried an ingenious and daring reconstruction[40] to recover these numbers, wrongly assuming (like *Almajest* 4.6&11 and modernly D.Duke) that Hipparchos had used Ptolemy's sophisticated mathematical procedure (*idem*). Toomer combined this attractive and seemingly plausible theory with a more speculative one: proposing Hipparchos' use of a 3438-based trigonometry table (as used later in India), presumably[41] figuring that the crude proximity of 3438 to Hipparchos' R values (above) was meaningful and that the R were not fixed at the outset but occurred during the math development and were never normalized, hitherto-unheard-of procedure. But ultimately Toomer couldn't match any of Hipparchos' 4 numbers.

D2 *DIO* instead started with the normal, conservative assumption that both orbit radii R were adopted at the start of Hipparchos' lunar researches. A known (e.g., *Almajest* 3.1) user of Aristarchan data, he could have computed the R via Aristarchos' famous $87°$ half-Moon elongation and a typically ordmag-rounded[42] solar distance of 1000^{r}, as follows:

[40] Toomer 1973; Duke 2008W p.286 also assumes Hipparchos used Ptolemy's deft trio method.

[41] Rawlins 2012V §I4. Vs conservative assumption of outset-fixed orbit radius R: Thurston 2002S p.60. For Trios A&B, Toomer's & *DIO*'s fits are compared for all 4 parameters at Rawlins 1991W §P2.

[42] Ancient ordmag-rounded Sun-distance estimates: Rawlins 2008R §§D-F. Sun-distance as historical origin of order-of-magnitude: Rawlins 2012V §D. Reconstructed distances: [a] $S_{E} = 100^{r}$ Eratosthenes (Rawlins 2008Q eqs.6-13; nearly same at Carman & Evans 2015); [b] $S_{H} = 1000^{r}$ Hipparchos (§D2 here; Rawlins 1991W eqs.22-24; Rawlins 2008R eq.12); [c] $S_{A} = 10000^{r}$ Aristarchos & Archimedes (*ibid* eq.15, which §E shows was ***empirically*** verified as a lower limit in antiquity). Obviously-heliocentrist Poseidonios also proposed at least 10000^{r}: *ibid* §F2, *probably on solid observational grounds*: *ibid* §E4. ***Wise Greek realization that the Sun had such tiny parallax that its distance could be but crudely estimated*** was obviously reflected in ancient scientists' repeatedly ([a]-[c]) setting the ratio of solar distance to Earth-radius at a power of 10. [Interlude for exceptions: [1] Hipparchos tried a variety of solar distances, at some point halving his 1000^{r} solar distance to 500^{r}, thus solar parallax $7'$, later the inverted basis of $3438'/7' = 491^{r} \doteq c.490^{r}$, Swerdlow's valuable & original discovery, *ibid* fn 39. [2] Arab astronomer Al-Battani foolishly used 1146^{r} [$180{\cdot}60/3\pi$], plainly overexactly computed [*idem*] via round $3'$ parallax. [3] *Almajest* 5.15 has non-empirical 1210^{r}.] It is a reflection of the state of current history-of-astronomy and of history-of-science that the History of science Society's *Isis* (toppe history-of-science journal) so failed to understand such a simple and fundamental aspect of Greek empiricism that it could publish as its Pb paper for 2015 an analysis co-authored by Evans (fn 10 above), Editor of the *JHA* ("premier" history-of-astronomy journal according to Schaefer 2002 p.40), deliberately-narrow-focus-arguing that Eratosthenes had a solar distance of 102^{r} (fn 106) — a transparently overexact value — rather than 100^{r}, as realized years earlier at Rawlins 2008Q (eqs.9-12) through common sense, antiquity-sense, & consistency with Eratosthenes' long-available actual (Rawlins 1982N) Earth-circumference, 256000 stades. What does it say about the exploratory open-mindedness of history-of-astronomy's current #1 archon that, when he figured Eratosthenian solar distance $= 2\pi{\cdot}4080000$ stades/252000 stades $= 102^{r}$, he allegedly never thought to explore-test by dividing (into same numerator) the 2 alternate C-candidates: Kleomedes' famous 250000 stades (yielding solar distance 103^{r}: Rawlins 2008Q eq.8), or DR's provably-known-to-Evans-but-uncitable 256000 stades, which yielded 100^{r} ***within 1/10th of 1%*** (*ibid* eq.11). To obscure his 1987 mismath (§B above), Evans has also *for 27^{y} now* refused to withdraw his claim that he [& Hipparchos ***twice*** — **MOST**-atypically (§B8)] mis-saw the Moon outdoors by *more than its own diameter*, & will keep on (fn 11) ducking (like *Isis*: fnn 13&100), trusting that academe lacks the integrity to reveal

$R = 1000^{r}\cot 87^{\circ} = 52^{r}24'$, or, in 60^{ths}, $3144'$ — thus matching[43] Trio A's R (above). Now, a common slip (ancient & modern) is confusion of unit-fraction (inverse integer) & arcmin, since each is signified by a prime-marker; so if we test the hypothesis that a Hipparchan-school computer later misread $52^{r}24'$ as $52^{r}1/24$, we find, in 60^{ths}, $3122'1/2$ — exactly matching[44] Trio B's R (above). Unable to counter the math, centrist pols (faces eternally, irrevocably invested into shun: fnn 125&127) have, during the decades since 1991, had no reaction to this *minimal-premises* double-match of both $3144'$ & $3122'1/2$, besides implicitly contending[45] (by pushing incompatible fudge) that this is all PURELY COINCIDENTAL. Any wonder the above Summary was forced to confront the supernatural? — see fn 2 here.

D3 *DIO* also found double-consistency with its theory that Hipparchos' calculations [1] had used eclipse-pairs[46] not trios (the trios-approach has never yielded unmanipulated data-matches) & [2] had sought only one unknown, eccentricity e (or epicycle-radius r), not apogee-at-epoch $A_{\circ}$ or mean-longitude-at-epoch $\epsilon_{\circ}$. Thusly computing $e\&r$ produced $327'39''$ & $247'30''$, respectively, each a neat match to the above (§D1) corresponding attested Hipparchan data: 327 2/3 & 247 1/2. (Finding no mathematical error, Duke regards these matches, too, as just ANOTHER spooky double-accident.) H.Thurston & John Britton carefully verified all the 1991 paper's supporting math & recommended publication. In 2005 soon-after-*JHA*-boardmember D.Duke defied those recommendations (despite Toomer's honest acknowledgement[47] of his 1973 speculation's dubiousness), resurrecting-recycling it by altering — **explicitly** altering — Toomer's numbers, to ensure its success by inventing teleologically convenient calculations. DR, recently expanding[48] his 1991 orbit-reclamations, compares *DIO*-vs-Duke simplicities:

D4 *DIO*'s reconstructions [A] are consistent in method (for both trios); [B] are rife with ancient-typically round-number elements (Rawlins 1991W eqs.5, 8-9, 11, 21-23); [C] change no *Almajest* 4.11 numbers, these already long-established by Newton's learned 1977 analyses (§E below), & invent no convenient Hipparchan mechanical miscalculations.

D5 By contrast, Duke: [A] like Toomer, calculates R first for Trio A, then reverses course[49] to satisfy Trio B, which doesn't work, anyway, unless an extra variable d (hitherto not in evidence, in Ptolemy, India, Toomer, *DIO*, or elsewhere) is arbitrarily brought in to rescue the situation; [B] finds no round elements; [C] alters extremely precise numbers like $51^{\circ}30'23''$ and $8^{\circ}48'28''$ to instead become extremely precisely $51^{\circ}19'37''$ and $8^{\circ}44'08''$, respectively, though there's no resemblance of ere&aft, or any independent justification of fudgeries so shamelessly explicit, besides riggorous issuance of The Right Answer. All to smother *DIO*'s natural-flow-multifit coherent solution under a pillow fluffy with special assumptions&tampering, resurrecting the spirit of co-subtractor Jones, above (in §C) & below (fn 85). Like Jones (§C10), Duke has refused DR's request to withdraw the paper.

D6 The non-manipulated Rawlins 1991W fourfold-fit reconstruction (above, in §§D2-D3) is never cited throughout Duke's prank (did hypothetical referees even know of it?), **though his paper originated as a challenge to that very reconstruction**, vying for a *DIO* prize, www.dioi.org/pri.htm, but evaluated and rejected by *DIO* prize-judge Thurston. It was later published by *Centaurus*. (After refereeing whose superficiality is shockingly obvious for math and even text.)[50] Contra Duke's attraction to committing fudgery: throughout Rawlins' researches, it proved unnecessary[51] to "correct" any of Hipparchos' calculations in order to draw coherent results from his data, so a historically new conclusion[52] emerged:

Hipparchos' purely mechanical computations are dependably flawless.

E Robert Newton's Foolishly-Ignored Discovery of Hipparchos' One-Degree Eclipse-Fudge

E1 *DIO* shows (fn 56 below) Hipparchos' −157 Early solar orbit "EH" was succeeded by his −145 prime-years' orbit "PH", in turn replaced by his −134 Ultimate orbit "UH". He adopted EH&PH when computing lunar elements from long-earlier lunar-eclipse Trios A&B (§§C13&E2, fn 55). In 1977, physicist Robt.Newton detected[53] a hitherto-unsuspected 1° error in Trio A's 3rd eclipse, warning that data-restoration here is demanded (fn 91 below) or "incredible" consequences will flow from analysis. The orbital elements derived by warning-rejectors Jones and Duke inadvertently double-confirm[54] Newton's "incredible" prediction. Like Jones, Duke does not notice Newton's 1° warning, & deliberately (§D6) acts as if the carefully-refereed (§D3) *DIO* paper that did heed it does not exist, though it was unsuccessfully challenged (§D6) by Duke to arbiter Thurston and (fn 32 above) précised in *Isis* in 2002. Duke's paper independently computes[55] best-fit $e\&A$ of the Trio B-accordant EH orbit, & of the inevitably weird unrestored-Trio-A-accordant orbit, as if original, though

that History-of-astronomy's present Ultimo Archon mis-signed his 1981 parallax-correction (§B4), but won't admit so ***since silence helps keep alive the JHAD sacred cow of Greek inaccuracy***. So far, his gauge of academe's honesty has proved perceptive. Ability-consistency of *JHA* Editor Evans' record here (faithfully carrying-on the exemplary tradition of 1970-2013 Editor Hoskin's grasp of mathematical astronomy: www.dioi.org/fff.htm#ffcy): [i] 1981-1987 failure to sign parallax correctly, and [ii] 2015 failure (on solar-distance) to understand that if Greek observing accuracy was on the order of 1° as Gingerich insists (Rawlins 2018U fn 3), and *as Evans echoes* (item [i] or §B4 above), then since Eratosthenes' parallax is given as ordmag 1° (0°.56 at Carman & Evans 2015 p.14), solar parallax's uncertainty ***was ordmag 100% of its size*** [like ‡1 §E]. (Rawlins 2008R §C5 argues that Aristarchos suspected an even higher ratio.) So only non-scientist pols like Ptolemy or JHADists wouldn't realize that the *JHA-Isis* 102^{r} distance's ordmag-1% (!) precision is way-larfably too exact — *when uncertainty is 2 ordmags looser*. All this reveals an even looser grasp of *Greek astronomy* (& elementary mathematical astronomy) by two of the world's most deliberately-eminent history-of-science journals. Among famous classical Greek astronomers, only faker Ptolemy insisted on solar-distance numbers of such naïve wayoverprecision, e.g., *AlmaJest* 5.14-16, which Hartner 1980 p.26 justly deemed a "fairy-tale" (like R.Newton 1977 p.198); yet another case where seeing Ptolemy as typical of his era, or even its dominant Greatest, has warped history-of-science's perception of actual science in antiquity.

[43] Rawlins 1991W eq.23.

[44] Rawlins 1991W eq.24. Confusion of arcmin & unit fractions: *ibid* fn 251; Neugebauer 1975 p.166 n.3, & p.729 n.15; Thurston 2002S p.60. Only *DIO*'s theory (or an incantation?) explains the odd but Muffia-uncited circumstance (Rawlins 2012V §I5) that *Almajest* 4.11's two R ***differ by less than 1%***. For Toomer and Duke, that must be yet-**another** longshot-coincidence.

[45] Pure chance: Duke 2005T, http://onlinelibrary.wiley.com/doi/10.1111/j.1600-0498.2005.470204, and see fn 68 below.

[46] Pairs: Rawlins *op cit* §N7f. This should be obvious since [a] *Almajest* presents the data in pairs, after all!, & [b] pairs-analysis yields matches to the trios' attested elements, while other approaches don't. Inducing that $A_{\circ}$ and $\epsilon_{\circ}$ were pre-assumed, not sought: Rawlins 2012V §J. Pair-calculations' matches of $e\&r$ to Hipparchos' attested values: *ibid* §§F2&G2, & Rawlins 1991W §N14, & Thurston, *loc cit*. (Doubling double-occultism: implicit in Duke 2005T.) Summaries in Thurston *op cit* pp.60&66-67.

[47] Toomer 1984 (fn 15 above) p.215 n.75; Dicks 1994 fn 42. Recycling: Duke *op cit*.

[48] Augmenting 1991 analysis: Rawlins 2012V §§C-G. *DIO*-vs-Duke contrasts: *ibid* §K2 (or here at §D4). Reconstructions: Rawlins 1991W §§N7-N15, & above in fnn 41, 43-44, &46. Round-element cornucopia: *ibid* eqs.8&9, and §§K9-K10, M4, N10.

[49] Jones 1991H likewise treats Trios A&B quite inconsistently: Rawlins 1991W fn 209. Ptolemy rigged numbers to "verify" parameters: Thurston 1998A pp.3, 13, eq.1, perhaps (§D5) inspiring the approach found in §D4 item [C], among other ploys hereabouts.

[50] Rawlins 2012V fn 17, and *especially* fn 22, where we find that no referee even read the Duke paper's TEXT. For practices & business enterprises that lead to similar disasters, see fn 4 & ‡2 fn 47.

[51] Below fn 72. The 1° shift, discussed below in §E turns out not to be a mistake but (worse) a deliberate Hipparchos-school fudge, as shown in Rawlins 2012V §G & fn 11.

[52] *Ibid* §A3.

[53] R.Newton 1977 p.119; consenting to warning: Rawlins 1991W fn 206.

[54] *Ibid* §M3 discusses the problems which Jones 1991H — Duke 2005T & Duke 2008W later following — encounters from ignoring Newton's 1° perception.

[55] *Ibid* p.293. The $A\&e$ for Trios A&B, which are independently computed and presented at Duke 2005T fn 5 and Duke 2008W *loc cit*, were published years earlier at Rawlins 1991W fnn 205&162, respectively. Half&half discovery (§E2 below): *ibid* §M5; and §M6 discerns that the 2 elements

all 4 solutions had appeared earlier in the very *DIO* paper he is non-citing while trying to exile & replace it.

E2 Nonciting Newton's and *DIO*'s analyses protects readers from learning that, after application of Newton's unexpectedly productive-predictive 1° correction, Trio A is satisfied by unzany elements, which turned out — as discovered 14^{y} later — to be half from the EH Sun orbit (already known from Trio B) the familiar prime PH Sun orbit. Unless utterly coincidental (as Duke and Jones judge reasonable) or an evil miracle, the result reveals, that, at the time of his Trio A calculations (PH's −145), Hipparchos' adopted Sun orbit was transitioning from EH to PH, so he temporarily retained EH's eccentricity and Kallippic mean motion (until their new PH tables were computed & prepared), while immediately adopting PH's zero-point & apogee (neither needing tabulation). Subtractors must see as further mere-coincidences both the correctly-paired split (between tabulated and table-irrelevant parameters) — AND the temporal order matching §E1's chronology, above. Coincidence piled on coincidence? Or shall we turn for guidance to *Saturday Night Live*, where ChurchLady's Faith-Based epistemology at last unmasks who's behind sinister *DIO*'s outrageously incredible, still-accumulating concatenation of impossible accidents: *could it be — **SATAN**?!*

E3 We return-to & lodge an obvious (& hereabouts typical) potential question to the 2008 article's author, journal, & putative referees: should the reader be censorially denied the opportunity to decide for himself whether or not §E2's astonishing but *Centaurus*-uncited half&half upshot is meaningful? — and thus whether R.Newton should be credited for a finding that triggered unanticipated progress, as valid discoveries will.

F Solar Orbit Reconstructions and Fruitfulness

F1 Hipparchos' −145 Prime PH solar orbit (§E1) is famous, because adopted by Ptolemy (*Almajest* 3.2&6) & still worshipped by Julian over 500^{y} after creation. But *DIO* reconstructed[56] two other Hipparchos orbits: his −157 Early EH orbit (§E1) & −134 Ultimate UH orbit (*idem*), each seriously differing from PH & previously unknown. (**NB**: Hipparchos' use of a late non-PH orbit was presciently induced a half-century ago before anyone by Britton 1967 pp.45-47.)

F2 Discovery of Hipparchos' final UH orbit arose from calculations,[57] refereed and supported by Thurston[58] and Curtis Wilson,[59] based on realization[60] that cuneiform text BM55555 [ACT #210] (c.−100) bears a yearlength computed from ***Greek*** solstice data, an unexpected, shockingly-contra-orthodoxy discovery: 1st definite proof of what must have been substantial Greek influence on Babylonian astronomy (e.g., fn 120 & ‡2 §N13). Backed immediately by Britton and long accepted near-universally; but lately unnoted, except opposed by Duke (non-citationally), using a faked *Almajest* 3.1 report: fn 70 & §F9.

F3 Recovering the UH orbit cleared up a half-dozen mostly-longhanging mysteries simultaneously (resulting *DIO* papers never cited by *JHA*):

[1] Why the Aristarchos −279 and Hipparchos −134 Summer Solstices are the only[61] two among the twenty-eight solar records[62] of *Almajest* 3.1&7 where Ptolemy (who abhorred discrepant data) suppressed the hour — which we'd never have known, absent Babylonian cuneiform text BM55555.

[2] Hipparchos' final three calculated positions[63] of the Sun at *Almajest* 5.3&5 generally conflict with PH, but are all consistent with UH. (Jones appears to accept this analysis.)

[3] When Ptolemy recomputes those true longitudes (via the PH orbit he adopted throughout the *Almajest*), he twice finds disagreement with Hipparchos' reported values (all computed

(eccentricity & speed) that had to wait for adoption 'til tabulated were naturally those that temporarily stayed EH, while the 2 swiftly-adopted PH elements (zero-point & apogee) were constants thus needing no tables. Perfect manifold correlation-confirmation? Or more *DIO* witchery?

[56] Rawlins 1991W §K9 & Rawlins 1991H eqs.13, 17-18, 28. Prescience: Britton 1967 pp.45-47, noted at Rawlins *op cit* §H2. Hipparchos (& Ptolemy) cited by Julian 1:429 (in "Hymn to the Sun").

[57] Hipparchos' ultimate improved data (−142 Autumnal Equinox, −134 Summer Solstice) caused his orbit-recalculation, thus shift from PH to UH: Rawlins 1991H §§C6-C13.

[58] Thurston 1995. For *JHA*'s rewrite of this note to falsely credit Jones for a Rawlins discovery, see *DIO 6* ‡3 §D9. For *JHA* subsequent insistence on précising Thurston's followup, to again avoid crediting the shunned discoverer, indeed entirely deleting his name from Thurston's note: see *ibid* §H. Alex Jones' retraction late but exemplary.

[59] C.Wilson on Thurston 1995 (fn 58 above): "I am glad both that the meanderings of Jones' argumentation [Jones, "Computations" — see below, in fn 86] can be set aside, and that Rawlins will have a little bit of recognition for the discovery of UH. . . . I have checked his calculations and found nothing to quibble about. I hope your article will trigger some important re-evaluations." (From letter, Wilson to Thurston, 1994/12/29, copy to Rawlins, with added handwritten note: "I hope there are some reverberations from Thurston's article.") Verbally, Wilson's views on the state of the astronomy-history community (of which he was long the doyen and conscience [***WHO NOW IS?***]) were stated more explicitly on occasion.

[60] Rawlins 1991H eqs.1-31. Babylonian astronomy specialist Britton helpfully added that *DIO*'s estimated date, -100 ± 35^{y} (*ibid* eq.9), fit BM55555's writing style.

[61] Below, §F9; or *ibid* §§B3&B4. BM55555's revelation: *ibid* eqs.6&8. I will ever be grateful to the late Willy Hartner, who was 1st to suggest (letter to DR 1980/8/15: *ibid* §A5) that scholars (including DR) were ignoring Ptolemy's hour-omission for two of the *Almajest* 3.1&7 solar data.

[62] See, e.g., the bizarre attempt at Neugebauer 1975 p.284 (followed by Evans 1998 pp.273-274 & n.32, etc., contra *ibid* p.209, as noted below, at fn 127), to claim that Ptolemy was a BETTER observer than Hipparchos, oblivious to their relative errors, random & systematic (Rawlins 1999 §E — the section of this paper which was suppressed by *JHA* Editor Hoskin, without showing error of any sort). This joke-inversion is based merely on roundings in Hipparchos' semi-popular *Commentary* which are cruder than for his regular longitudes (*Almajest* 3.1&7.2) or declinations (*Almajest* 7.3). Neugebauer 1975 pp.642-643, deems Aristarchos' data nonempirically faked (similarly Evans 1998 p.72) vs Rawlins 2008R §A, sardonically at §A3, condensing the most unexceedable of JHAD fantasies (emphasis in original), "rebel & heliocentrist-pioneer Aristarchos was a non-observing fabricator, while go-along-geocentrist & data-faker Ptolemy was antiquity's ABLE observer. . . . If some oddities are more unique than others, then this one is uniquely unique." Bringing the foregoing up to 2018: JHAD perception is that 1st known heliocentrist Aristarchos — who discovered precession and the scale & mechanism of the Solar System, knew the stars were at least thousands of times more remote than Ptolemy did, fixed the monthlength and sidereal year to high precision — was a minor, confused figure. But a fabricating, handbook-generating astrologer was the Greatest Astronomer of Antiquity. Or, as our counter to *S&T*'s gratuitous 2002 Feb smear noted, www.dioi.org/sti56.htm, "Aristarchos was (among other credits) a heliocentric pioneer in promoting realization of the Earth's place in a huge universe. (Also, he evidently was aware of precession well before Hipparchos: www.dioi.org/jb24.pdf, *DIO 11.2* [2003] ‡4 Appendix 2 §L8.) He is not known to have been into astrology or theft. He bucked the establishment of his day, which threatened him for his new findings — an ancient prototype for the Galileo affair. Meanwhile, Ptolemy stole, mutilated, and fabricated data in order to fake the truth of the geocentric astronomy of the governmental (Serapic) religion which employed him [‡2 §N8]. Given their relative merits, one would think that the modern science establishment would admire Aristarchos and condemn Ptolemy. One would think." Pondering history-of-science's pollution of even scientific forums' consenses, a hypothesis suggests itself which is consistent with this grotesque historical-distortion-by-historians-of-ancient-science: in a grant-grubbing era, public history's accuracy and balance *is now determined by which figure left the most works*. By lawyerly fake-justifying the superstitions which powerful institutions (religion, astrology, gov't) wanted to promote, go-along-conservative Ptolemy's Aquinianly-enormous pandering to power-institutions and their brainwashed victims, ensured his works' massive preservation — thus, historians-of-science today can make a living by writing theses and holding conferences on a fat corpus. Revolutionary pioneer Aristarchos, by fighting the same institutions in honest and principled defense of emerging valid but upsetting scientific perceptions, ensured his works' near-extinction, so there's virtually nothing (explicitly — for those who cannot induce beyond the texts) left for moderns to fiscally exploit. Isn't the history-of-science profession inspirational?

[63] In the 1991 May *JHA* Jones 1991H p.117 claimed it's impossible to find a Greek orbit that satisfies these Hipparchan data, though all 4 elements of such an orbit had already been published by *DIO* (sources: fn 56 above).

by him from UH, unbeknownst to Ptolemy); however, the 2nd alone agrees (by chance, as it happens), though the underlying mean longitude he lists for it is discrepant by 5′ vs PH — even while tellingly agreeing[64] **to the arcmin** with UH.

[4] PH orbit periodic error has amplitude 0°.4, so it formerly seemed odd that the Sun-based Ancient Star Catalog's periodic error is 0°.2 — until recovery of UH, whose periodic error's amplitude is 0°.2.

[5] Hipparchos demonstrably used the young waxing crescent Moon to fix his fundamental stars' longitudes (as earlier realized by M.Shevchenko 1990); fixes' average Moon-Sun elongation was roughly +30°.

[6] UH's epoch, the −127 Autumnal Equinox, follows Meton's sacred −431 Summer Solstice by exactly $304^{y}1/4$, so 16 or 2^4 such intervals just equal the 4868^{y} "Great Year" of Aristarchos. And perhaps of Hipparchos himself: if the latter invented a version of the 4868^{y} cycle at 1778021^{d} (not Aristarchos' 1778022^{d}: §G5 below) *it embedded an astounding quintuple of geometrically expanding cycles*.[65]

Previous analyses never got past the 1st cycle of the five, e.g., Swerdlow 2010 p.174.

F4 From fitting EH to eclipse-Trio B, *DIO* mathematically induced (Rawlins 1991W §§K4-K9) in 1991 that Hipparchos' earliest Sun orbit, EH, [a] used a −157 summer solstice, [b] adopted Kallippic solar motion, $360°/365^{d}1/4$ for Trios A ***AND*** B. Findings [a]&[b] were both previously unsuspected. But, 14^{y} later, papyrus *P.Fouad* 267A was examined by A.Tihon (paper 1st presented: Peking 2005) & was found[66] ***to explicitly verify*** 1991 discoveries [a]&[b]. (Tihon has further shown that, c.−150, Hipparchos experimented with previously unknown versions of solar motion, epoch, & precession.)

F5 Reaction to *DIO*'s vindications has been less than inspirational — but valuably revealing, nonetheless. While still under the influence (fn 59 above) of the late Curtis Wilson, Jones graciously assented[67] to UH; but nowhere has it been acknowledged that (repeating for emphasis) Rawlins 1991W and (fnn 27&96) Rawlins 1985H revealed, years in advance of *P.Fouad* 267A's surfacing in 2005: [a] Hipparchos' search for a −157 solstice; [b] his tables' use of Kallippos' way-out-of-date solar motion; [c] ancient solstices were accurate to ordmag 1^{h}.

F6 ***NB***: These *DIO* induction-predictions aren't side-issues. They are central to understanding the early years of Hipparchos' evolution from amateur-observer-astrologer into an immortal empirical scientist. And subtractors have been uniformly oblivious to a central steel connexion, revealing his original resort to calculating not observing his earliest, grossly erroneous Summer Solstice in −157, indoor-computed using the obsolete Kallippic calendar: this is the most conspicuously odd building-block of the lopsided EH orbit, accounting for most of why EH's *e*&*A* were so flagrantly awful: $e = 3^{p}1/4$ (vs $2^{p}1/2$ PH, & $2^{p}1/10$ actual), $A = 44°$ (vs 65° PH, & 66°1/2 actual).[68]

F7 In 2008, Duke, in yet another unrefereed Pb paper for *JHA* (whose board he had earlier silently joined while *DIO* Editor), scales new pinnacles of ancient-empiricism-denial, as he tries razing the entire basis of Greeks finding accurate orbits (such as PH&UH), claiming[69] that their equinoctial solar declinations' error averaged c.15′, nearly equal to the angle from solar center to limb!

F8 This is but a jawdropper case of confusing systematic error with random. The Duke paper's Table 1 displays admirably well-computed times of Hipparchos' equinoxes, whose errors are clearly sprinkled ordmag 0°.1 positively&negatively on either side of zero. Undoing Duke's historian-usual (‡4 fn 43) listing of C−O as "error" (O−C), we see he more crucially overlooked that the Vernal Equinox O−C errors are all negative, while the Autumnal O−C are all positive, since the Rhodos equinoxes were subject to 7′ ***systematic*** error (found independently by 4 different scholars)[70] which corrupted all these equinox

[64] Thurston 2002S pp.65-66. Error-amplitudes compared: Rawlins 1991H §§F1-F3. Waxing crescent Moon: *ibid* §§G1-G2; Shevchenko 1990's priority: Rawlins 2009E §E1. UH orbit epoch: Rawlins 1991H at eq.28. Proposed Hipparchan 1778021^{d} variation on the yearlength of Aristarchos' 4868^{y} Great Year: Rawlins 2002A (its fn 17) presented 2001/6/27 at British Museum conference, "Under One Sky" — condensed version published simultaneously in conference proceedings (2002).

[65] Quintuple succession of doublings (Rawlins 2002A at fn 14's conclusion): $304^{K}1/4$ (1^{d} difference between Kallippic & Hipparchan calendars); $608^{K}1/2$ (1st return [360° advance] of saros cycle); 1217^{K} (1st return of Sun); 2434^{K} (1st return of Moon); 4868^{K} (integral number of days) — every one successively featuring a fresh characteristic cyclic-return, where each of these includes (like the unfresh song, "The 1st Day of Zmas") all the features of the smaller cycles preceding it in the quint-succession. Check it out: you'll be fascinated at Hipparchos' hypothesized cleverness. And (*idem*) successively halving the 1st interval yields, very nearly, sidereal (152^{y}), Kallippic (76^{y}), & Metonic (19^{y}) cycles, where the 4868^{y} Great Year encompasses about 2^8 of Meton's (Easter) 19^{y} cycles. Details: *ibid* fn 17.

[66] Tihon *op cit*. The papyrus' solstice-day −157/6/26 (correct) seriously differs from Hipparchos' original false indoor-computed S.Solstice (−157/6/28), as reconstructed at Rawlins 1991W §K8, a point precisely resolved when Rawlins 2018U §K5 discovered both [1] the solstice's hitherto-unknown hour, 18^{h} (missing on the papyrus), and [2] the exact origin of the previously-unaccounted-for remainder of the papyrus' Tihon-discovered novel tropical-Metonic yearlength, $365^{d}1/4 - 1^{d}/309$. On 2015/4/8, the community was alerted to all this by email to a participant — and to the posting of *DIO* volume 20, containing the 2015 version of Rawlins 2018U presenting these solutions, plus the 1st formula ever developed for finding solstice observations' small ordmag-1^{h} systematic errors (from Earth-orbit eccentricity), *ibid*: eqs.10-13. Not to mention *DIO 20*'s lead paper, with its important fresh discovery (§I1 below) of Archimedes' 3rd century BC use of degrees. There has been no engagement on any point as yet, except for a somnambulist-refereed *JHA* paper, Duke 2008W, which (at its pp.293-294) doubts Greek observational accuracy by centrally confusing systematic error with random error, causing misfire by a factor of ordmag 10 (see §F8 here, or Rawlins 2018U §B4). The paper's author, though unable as usual to find mathematical error in the shunned proposal, nonetheless earns his place on *JHA*'s board in traditional (fn 116 below) fashion by attacking it, albeit frustratingly reduced to merely non-quantitatively implying that §F4's three hits (upon the right year, and twice on the right solar motion) must have been just another trio of §D3-like big&big&big coincidences! (Now do you understand the advantages of dispensing with real refereeing? Another at fn 4.) This Duke claim appeared soon after Tihon 2010 was presented at CalTech in 2007, timing which suggests the possibility that the JHAD perceived danger right away: the nightmare of general recognition of the foregoing triple-miraculous papyrus-vindication, of a banishee's paper which had also satirically-advertised such typically-refereed *JHA* discoveries as the Velikovskian 360^{d} yearlength by Duke's *JHA* co-boardmember Jones (Rawlins 1991W §G9,a *DIO 4.1* ‡4, 1994) — so the usual bungled lead-paper denigration (equally well-refereed: see challenge here at fn 70) was adduced to head off that hideous eventuality. (And without even citing Rawlins 1991W, the very paper whose thesis is being trashed! — a wise precaution, to prevent anyone from checking anything — also without mentioning that *idem*'s math has been endorsed by various experts, specified at Rawlins 2018U fn 10.) No surprise. For a shun to keep working (fnn 116&125), such intermittent commando operations are simply *standard-maintenance*. And, unlike for a military attack, you can completely screw up, but — to your own outlander-resenting mob (§J2) — *it's still a successful kill*. Because, besides *DIO*, no known reader — surely no mythic *JHA* referee — of the paper in question (Duke 2008W) has yet read beyond its bald claim (that the Hipparchan eclipse trios [analysed in Rawlins 1991W] are worthless), to evaluate its credibility or that of the multiply-misbegotten case brought forth against Greek accuracy. (See Rawlins 2018U §B4&N and fnn 10&19, for the three main errors of Duke 2008W.) So, since the defamation of heresy is uncritically accepted by all, it's completely effective for its purpose. Why take the trouble to question any of the paper's assertions? After all (fn 4 here) if they're in the *JHA*, they must be true.

[67] E.g., Thurston 1995 added note by Jones & (also creditable) Jones 2005. But here, in the neighborhood of above §C, and fn 85 below, there is double-irony in Jones 2005's perfectly chosen titular quote from brotherfudger Ptolemy.

[68] EH&PH elements compared at Rawlins 1991W: §K9 vs §K10. Duke 2008W pp.293-294 calls *DIO*'s reconstructions not "conclusive" due not to *DIO* errors in the underlying math but because said math is too "sensitive", implying (fn 66) that §F4's double-vindication by papyrus was merely spooky-lucky. These inexcusably (esp. §D6 here) citationless attacks are met in fn 37 above, and indeed had been anticipated decades ago in Rawlins 1991H §H3 & Rawlins 1991W fn 205.

[69] Duke *op cit* pp.284-289 (vs fnn 70&96 here). Solstices' immunity from refraction, etc: Rawlins 2018U §G1. Without sneaky *DIO* black-magic, odds against EH's three chance-hits within 20^{m} of the three distinct cardinal-points: 8000-to-1 (*ibid* §N4[d]).

[70] Systematic error +6′1/2 or 7^{h} Rawlins *op cit* §B4. Same results years earlier: Britton 1967 p.24, R.Newton 1977 p.78, Swerdlow (Rawlins 1991W fn 280) accurately confirmed by Swerdlow 2010

observations by that amount on average (while not affecting his solstices), an ordmag higher than his actual 2′ ***random*** solar-declination single-datum rms error (or scatter).

F9 For *Almajest* 3.1, Duke's Table 1 lists a UH-contradicting Hipparchos −134/6/26 Summer Solst at near-PH-accordant noon. Pure invention. There is no such *Almajest* entry. (See fnn 61&70 here.)

F10 Though fully aware of inconveniently-existing *P.Fouad* 267A, the same Duke paper nonetheless pretends that *DIO*'s now-papyrus-confirmed predictive hit-[a] & double-hit-[b] (§F5 above), are ENTIRELY ACCIDENTAL — occultist shades of himself and Jones (fnn 45&36, respectively).

F11 He calls the EH orbit "neither conclusive nor satisfying" since (emphasis added) "parameters deduced from trio analyses [fn 46 above], are very sensitive to small changes in the input data." CHANGES?! It appears that orbit-challenged Duke explored resorting again (as at §D5 above, item [c]) to data-alteration, but STILL couldn't find alternate orbits [i] which fit all the relevant data of *Almajest* 4.11 and 5.3&5 — which Rawlins 2012V calls successively Trios A, B, and C — as do the EH→PH ("Frankenstein"), EH, and UH orbits, respectively; ***AND*** [ii] whose underlying cardinal points (Vernal & Autumnal Equinoxes and Summer Solstice) uniformly hit upon Hipparchos' standard $1^{d}/4$ precision — dawn, noon, evening, midnight — as all 9 cardinal points for EH&PH&UH (not to mention *P.Fouad* 267A: fn 66 here) conspicuously do. Duke has been publicly challenged (fn 70) to produce his alternate orbits. Nothing has come forth.

G Aristarchos' Yearlengths, Pre-Hipparchos Precession, & Pre-Babylonian Accurate Monthlength. History-of-science Archon's Talibanishment of Evidence.

G1 The mystery of the superficially-nonsense ancient yearlengths[71] found on Vat. gr. 191 fol. 170v and Vat. gr. 381 fol. 163v lay unsolved through decades of fruitless disagreements (fn 87 here). The name of Aristarchos of Samos is written beside two of these yearlengths: τ ξ ε δ′ κ′ ξ β′ and τ ξ ε δ′ ι′ δ′, or 365 4′ 20′ 60 2′ and 365 4′ 10′ 4′.

G2 Taking the numbers ***exactly as they stand*** and allowing signage-flexibility,[72] Rawlins in 1980 treated[73] both Aristarchan expressions as continued fractions, and swiftly sent the results to the *Journal for the History of Astronomy*.[74] Listening to Neugebauer's perceptive recognition that 60 could signify 60^{ths}, Rawlins saw that the 1st expression could be viewed as $365^{d}\,1/[4 + 1/(20 + 2/60)] = 365\ 1/4 - 15/4868$, a classic Metonic "tropical" year, quite close[75] to the known (also seriously false) tropical yearlengths of Hipparchos & Ptolemy. The 2nd expression suggested $365^{d}\,1/[4 - 1/(10 - 1/4)] = 365\ 1/4 + 1/152$, differing but ordmag 10^{s} from the actual sidereal year then (fn 114 below).

G3 Both results' implicit periods, 4868^{y} (Great Year) & 152^{y} (2 Kallippic 76^{y} cycles between iconic Meton's and Aristarchos' S.Solstices, −431 & −279, respectively), are among the EXTREMELY[76] few numbers long known to be relatable to Aristarchos, and the difference between the 2 induced yearlengths **IS** precession, the very discovery traditionally mis-ascribed to Hipparchos. Said difference is close[77] to 1°/century, which presumably later influenced Hipparchos to treat 1°/cy as a lower limit, though Ptolemy eventually adopted 1°/cy exactly (*Almajest* 7.2-4). Note that Aristarchos is the only astronomer on the Vatican mss ***cited for two different yearlengths***, obviously suggesting precession. As the 1st astronomer we know was a public geomobilist, he is an apt candidate for true discoverer of Earth's precessional wobble.

G4 To measure the Moon's mean motion & apogee, ancient scientists wisely chose (*Almajest* 4.2) the 4267 month eclipse cycle for its $126007^{d}01^{h}$ interval's felicitous near-constancy (due to near-perfectly-integral return in 4573 anomalistic months), regardless of ecliptic position. That interval's tiny inconstancy-amplitude[78] of $c.1^{h}/2$ guaranteed the deduced monthlength's accuracy to one part in ordmag 10 million. (Divide 4267^{u} [4267 months] by $1^{h}/2$ to see this; the result is merely an upper bound on the better accuracy attainable by round-the-zodiac averaging.) *DIO*'s exploration of the 4267^{u} cycle vindicated Ptolemy's oft-doubted contention that it was the historical source of the ancients' highly accurate monthlength M, commonly miscalled the "Babylonian month". Rounding at the 10s-place of the 2nd sexagesimal term (as we find on cuneiform texts: fn 80) yields the M attested at *idem*: $126007^{d}01^{h}/4267 = 29^{d}191°00′50″ = 29^{d}31′50″08‴20⁗ = 29^{d}12^{h}44^{m}03^{s}1/3 = 29^{d}.530594$, correct (even today!) to a fraction of a timesec. Aristarchos' 223-month saros expression (*idem*) will, if divided[79] by 223, yield $M = 29^{d}12^{h}44^{m}03^{s}.2$, which agrees with above "Babylonian" M, to one part in tens of millions (fn 81 below) — decades before its first known appearance in Babylon, which favors his pre-Babylon authorship of M, as does the ***chronologically ordered*** Vatican mss' long-overlooked listing of Aristarchos prior to anything Babylonian. TWICE. [See www.dioi.org/j913.pdf, Tables 1&2.]

G5 We know[80] that *Almajest* 4.2's saros of $223M$ agrees[81] to 1 part in 24 million with *idem*'s deceptively-round-looking saros expression, $18^{K} + 10°2/3$ or $18^{K} + 4/135$ (where superscript K signifies Kallippic Years of $365^{d}1/4$ each) — which, times twice 135, so

p.199. Invented *Almajest* −134/6/26 noon solstice: Duke 2008W Table 1. Challenging him to produce 1/4-day-cardinal-point Hipparchan orbits with (§F11 & fn 69) distinctly alternate elements: Rawlins 2018U §N2. Awareness of the *P.Fouad* 267A papyrus that confirmed *DIO*'s uncited §F4 discoveries: Duke *op cit* n.9. For the −145/3/24 11 AM equinox observation (*Almajest* 3.1) of the refracted Sun, measured on the large κρικος (ring, originally set into the equatorial plane via [refracted] polestar light), which stood for centuries in Alexandria's Palaestra: given that actual V.Equinox was 15^{h} & accounting for refraction, there was a 1′-2′ error of observation, some of even that perhaps from over 100^{y} of the ring's settlement (§I10 & fn 122 below). See Rawlins 1982G fn 17 & Rawlins 2018U §B4.

[71] Yearlengths tabulated: Neugebauer 1975 p.601. Scholars' unproductive decades of disagreements: sources at http://link.springer.com/book/10.1007/978-90-481-2788-7, Jones 2010B p.21 n.28.

[72] Discussions: Rawlins 1999 §B5 & Rawlins 2002A fnn 13-14.

[73] Rawlins 1999, with welcome 1982 assist contributed by Owen Gingerich (cited *ibid* fn 7), regarding the utility of negative signs in continued fractions.

[74] Mathematical details: e.g., *ibid* & Rawlins 2002A fn 15 & eq.12. Both *JHA* referees W.Hartner & K.Moesgaard recommended publication of Rawlins 1999 — Editor Hoskin's written acceptance in principle 1981/9/17. (Advertised as forthcoming in *Isis* 1982 March, under altered [*JHA*-viewpoint] title. Cited as in-press at Rawlins 1982G [*Isis*] n.14.) Some of paper's results relayed supportively by Moesgaard 1983 p.57 & n.14, citing original title. Credit for 1st perception that ξ (60) indicated sexagesimal notation belongs to Neugebauer 1975 p.602. For Rawlins 1999's ultimate fate, see fn 97 below, and *DIO 1.1* p.11 fn 25, 1991.

[75] Metonic "tropical" year: *Almajest* 3.1; Rawlins 1999; Tihon *op cit*; origin 1st rightly suspected by T.Mayer in the 18th century; later by, e.g., Swerdlow; cause of ancient tropical yearlengths' large common error traced by a stimulating paper, Moesgaard 1983, and by Rawlins 1999 §D4 & Rawlins 2018U §P7.

[76] Censorinus 19.2&18.11 connects Aristarchos to 1623^{y} & 2434^{y}, which are 1/3 & 1/2 of 4868^{y}, resp; see fn 79 below, & Rawlins 2002A fnn 14-15 & eq.7.

[77] *Ibid* fn 14 shows that, whatever one's sign-choices for the latter digits of the Vatican mss' Aristarchan expressions, implied precession will still be near 1°/century, Hipparchos' lower limit (Rawlins 2018U §K5), verified by Tihon *op cit*.

[78] The 4267^{u} cycle's crucially&conveniently trivial inconstancy: 1st roughly quantified by Rawlins 1996C fnn 18&56, *en route* to verifying it's the empirical source (*Almajest* 4.2) of ancients' discovery of the key relation $251^{u} = 269^{v}$. Note revealing Muffiotic inversion at Toomer 1984 p.176 n.10.

[79] *Ibid* eqs.5-8. Aristarchos' $4868^{K} = 1778037^{d}$ Kallippic Great Year simultaneously ensures integrality in days, months, Kallippic years, saroi. Paper delivered 2001/6/27 at the British Museum conference "Under One Sky" a condensed version of which appeared simultaneously in the conference's 2002-published proceedings. Aristarchos' Great Year recovered by P.Tannery in the 19th century (fn 76 above and Heath 1913 pp.314f).

[80] *Ibid* eq.8, with the deft capstone-contribution, pointing out the conventional rounding-point, thanks to the long-experienced advice of John Steele and John Britton (Rawlins 2002A §A8), neither concurring with our conclusion.

[81] See www.dioi.org/jb11.pdf, Rawlins 2002A §A6.

precisely produces day-integral 1778037^{d}, Aristarchos' Kallippic Great Year of 4868^{K} — results which yield:

Discovery #1: The Vatican ms' Aristarchos-marked year, $365^{d}1/4 - 15/4868$, is certified as Aristarchos' by its denominator's match to his 4868^{K} Great Year, as already identified by P.Tannery.

Discovery #2: Merging [A] Aristarchos' Great Year, [B] his M (§G4 above), & [C] Meton's famous lunisolar relation[82] $235^{u} = 19^{y}$, we next arrive at a vindication for the kind of exploratory hypothesizing (§J1 [f]) that can occasionally move knowledge ahead: 4868 years of $235M/19$ each equals Aristarchos' Metonic Great Year, 1778022^{d} (15^{d} less than his Kallippic 4868^{K} Great Year). Dividing by 4868 to find the cycle's yearlength[83] produces $365^{d}1/4 - 15/4868$, perfectly matching the figure (Discovery #1) independently found (§G2) two decades earlier from Vat. gr. 191 fol. 170v: *classic predictive success*. Nonetheless, Muffiosi typically *refuse to cite* (e.g., §G11 below) the confirming evidence. Jones even goes out of his way to ***destroy*** (§G8 below) evidence for Aristarchos' multi-obvious possession (c.280 BC) of a monthlength accurate to a fraction of a time-sec, the better part of a century before Greek-conquered Babylon is known to possess such (c.200 BC) — possibly, just possibly, because pan-Babylonianists have made a living contending or pretending that the origin of such wisdom and precision is to be found only in the cuneiform tablets of a plainly inferior, scientifically-unsophisticated ***and trigless*** civilization (fn 120; ‡2 §N13), which their cult has become permanently, undeterrably in-love with?

G6 We can also merge both cycles found from the Vatican mss (§G2) by noting that 152^{y} is virtually 1/32 of 4868^{y}, which allows us to see [2017/6/6] that Aristarchos' Sidereal Great Year is 32^{d} longer than his Kallippic Great Year, thus 1778069^{d}. (Heath 1913 p.315's reconstructed year, showing Aristarchos toyed with a day-rounded exeligmos, is an admirably clever revelation, but not sidereal.) The sidereal year must therefore be $365^{d}1/4 + 32/4868 = 365^{d}1/4 + 1/(152+1/8)$, or about $365^{d}1/4 + 1/152$ (which of course matches §G2's Vat. gr. 381 fol. 163v's yearlength). [Since $15^{d} + 32^{d} = 47^{d}$, we see (2017/12/27): by Aristarchos' Great Year scheme, precession is $47^{d}/4868^{y}$, roughly a degree per century.] Summarizing: the two continued-fraction solutions we found to be embedded in the Vatican mss' data, were derived by him from his Metonic Great Year of 1778022^{d} & his Sidereal Great Year of 1778069^{d}, resp. The latter's obvious parallel to the former just adds to the astonishing multiple-vindication[84] of the two solutions drawn from the Vatican mss.

G7 *But* **pre**-*knowing* that such redundant success is just superficial *DIO* witchcraft, teamplayer Jones volunteered to confront an awesome challenge:[85] how to alter evidence, to undercut a paper that doesn't, and how to trash into chaos coherent&untampered inductions which twice accurately extract cycles (4868^{y} & 152^{y}) connected to the very astronomer — Aristarchos — *explicitly named in each instance right on the Vatican documents*.

G8 Though Rawlins' math is ineluctably rigorous, subtractor Jones won't be denied & so nimbly sidewinds to a sly Gordian tactic: ***erase all accents on the mss*** (the cripple→triple ploy of fn 88), which automatically, **deliberately** wrecks the data-basis for Rawlins 1999's refined, precious, precise inductive journey from Vatican mss to [1] ancient science's ingeniously constructed (Rawlins 2002A §A) & modern induction's 4-way (fn 88) ***re***constructed 4868^{y} Great Year [itself from superaccurate M: §§G4-G5, www.dioi.org/jb11.pdf, eqs.5-7], & [2] Aristarchos' sidereal year $365^{d}1/4 + 1/152$. How does such holy warfare differ from the Taliban's? [Query *en-passant*: **would ancient astronomy historians accept NYU-InstStudAncWorld Director Jones' deleting all accents from the mss of the *Almajest*?!**] Like-Talibanish is his authoritarian **justification** for across-the-board wipeout: decreeing *accents on Greek* ***mathematical*** *data are* **destroyably** *worthless* ***in*** **HIS *expert judgement***.

[82] See Moesgaard 1983 or Neugebauer 1975 pp.354f.

[83] Derivation at Rawlins 2002A, www.dioi.org/jb11.pdf, eqs.5-13.
Dozens of similar *DIO* vindications are collected at www.dioi.org/vin.htm.

[84] *DIO*'s exact confirmatory hits here are akin to R.Newton's also-years-later fruitful success: §E3.

[85] Jones 2010A p.21. Counterhexing by eliminating accents: *ibid* n.27.

(Which expert mathematician[86] Jones tends to treat as a kind of evidence.[87] Whenever out of the real kind.) From Islam to Aquinas to the *JHA* to *Isis* to the Berkeley vandal-shouters: heretical material is valueless junk, so why not cage or destroy it?

G9 No other academic combatant ever previously thought of explicitly defending such manuscriptic vandalism. (Though see Rawlins 2000A ⊙ 13.) I.e., it's the kind of originality that explains why pioneer Jones adorns *JHA*'s elite Board of Advisory Editors.

G10 Jones finds space to rummage through several admittedly shaky (utterly unproductive) data-alterations by a spectrum of previous scholars — but just can't spare room for alerting readers to the existence of *DIO*'s fruitful analyses & matches, none of which require the emendation of a single digit. So, while suppressing mention of *DIO*'s known reconstructions, he is further sterilizing (fn 85) the attested ancient evidence they match.

G11 Though Jones' paper **does not even recognize the existence** of *DIO*'s inductions (based upon the very material he's Talibombing!), he is fully aware of them: [i] According to a Jones→Rawlins 1999/7/14 letter, he was reading the very *DIO* issue that 1st disseminated DR's continued-fraction analysis (of the now-Jones-de-accented Vatican mss data) resulting explicitly in Aristarchos' Metonic yearlength, $365^{d}1/4 - 15/4868$. [ii] Jones was an active listener when Rawlins' 2001 British Museum talk presented his now-fully-developed series of astronomical-odds, digit-for-digit matches to UNTAMPERED data, e.g., 1778022^{d} & the multiple confirmation of 4868^{y} (i.e., §G5's Discoveries #1 and #2), the culmination of a century of scientific analysts' ultimately ***quadruple***-confirmation[88] of Aristarchos' 4868^{y} Great Year. The out-of-the-gate after-lecture commentator was Jones, denying their slightest possible significance. To the immortal discoverer of the Winter Equinox (fn 86 here), it's all mere Luciferan ***quadruple*** (fn 88) coincidence, though his 100% rejection's plausibility may be gauged from his 2010 paper's silence on *DIO*'s Aristarchan numbers (no claim of *DIO* mis-calculation), even while (fn 85) he defaces the ms data they match.

[86] Jones 2002E p.17 (as he chooses his own calculation that doesn't fit, over Diller's which does): "I BELIEVE we have to regard the shadow-ratio [which Neugebauer and others rightly argue is not even a shadow-ratio: fn 25 above] as the more trustworthy datum" (emphasis added). Jones has also **believed**, in *JHA* print: [a] There are Winter Equinoxes (Jones 1991H p.119). [b] That $128 - 65 = 65$ (not a mere typo). [c] Hipparchos-Ptolemy's mean solar motion from V.Equinox to apogee was 1°/day (Velikovsky's 360^{d}/year calendar). [d] A trio of longitudes (e.g., *Almajest* 5.3&5) cannot be satisfied (fn 63 above) by a 3-element orbit solution. (Items [b]&[c]&[d] all at Jones 1991H p.117. See *DIO 4.1* ‡4 §A [1994] for 360^{d}/year recognition.) [e] Hipparchos' Alexandria city geographical latitude L was 31° (Jones 2002E p.16, contra fn 27 above & Neugebauer 1975 pp.305&1313). [f] Hipparchos' latitude L was found from the "equinoctial shadow-ratio" (Jones *loc cit* contra fn 27 above). [g] Hipparchos' Marseilles klima L was $43^{\circ}01'$ (*ibid* p.17, contra the text [fn 28] and Rawlins 2009S fnn 40&41). [h] The Diller-Rawlins 14-for-14 fits, in an ***ultra***-sensitive case (fn 33 above), are *yet 14* ***MORE*** *magic accidents* (fn 55 here). [i] Hipparchos didn't use celestial tables (Jones 1991H p.120; discussed at Rawlins 1991W §E4), contra direct testimony of 2005-revealed papyrus *P.Fouad* 267A. [j] Hipparchos' Syracuse was 200 stades from where Hipparchos placed it (fn 27 above). For one with a trifle less than an entirely perfect judgemental record, to issue overrule-decrees dispensing with coherent solutions, in favor of his own incoherent ones, might suggest nonsurfeits of appropriate humility and caution.

[87] Like confusion: fn 28, or Rawlins 2009S §H. Rummaging: Jones 2005 pp.21-22; fnn 24&27-28.

[88] Keep in mind that we have mutually-confirmatory *quadruple* evidences of the 4868^{y} Aristarchan Great Year. (But not enough for Jones, who at §G8 ***destroys*** one of these evidences — [3] below — apparently figuring that, if he can cripple the fourfold-case down to hohum-mere *triple*-confirmation, he might yet swing observers to sharing his occultist rejection of Tannery-Heath-DR reconstructions.)
[1] Censorinus' testimony (fn 76 above, and item [2]).
[2] *Almajest* 4.2 saros or exeligmos expression (fn 81 above); developed at Neugebauer 1975 p.603, where 1,21,8 is sexagesimalese for 4868.
[3] Vat. gr. 191 fol. 170v→$365^{d}1/4 - 15/4868$ (fnn 72-73 above.)
[4] $4868 \cdot 29^{d}31'50''08'''20'''' \cdot 235/19 \doteq 1778022^{d}$, thus (fn 83) matching the remainder-numerator of item [3]'s Great-Year yearlength $365^{d}1/4 - 15/4868$ (§G5).
(See parallel fnn 83&84 above. And carefully check the galloping successes reviewed at Rawlins 2002A, culminating in its eqs.10-13.)

H Pliny's Circuli: Deft Ancient-Trig Approximation-Inventiveness

H1 Now for a case of ancient data-tampering that actually happened! — the very sort which modern-chauvinist tamperers have, with dedicated persistence & Creativity, tried misprojecting[89] onto valid data (above §§C-G) that commit the crime of being inconvenient to prevailing Muffia preconception.

H2 Neugebauer classified the seven "circuli" of Pliny 6.39.211-218 as a primitive "arithmetical"[90] scheme, deeming their superficial inaccuracy to be supportive of his contra-reality (fn 8 above) insistence on "the absence of any scientific organization in antiquity", a conviction which he thought helped (along with his reasoning as covered in fn 1 here) to exonerate accuracy-challenged Ptolemy. But the 1st — and still only available — coherent solution (fn 91 below) ever devised for the circuli indicated they are no more arithmetical than Hipparchos-Strabo's klimata (which Neugebauer deprecated similarly: fn 18 above), proposing that Pliny's circuli are instead trigonometric (as are Hipparchos' klimata) and a case where it is reasonable to test[91] for possible ancient data-alteration, since all seven circuli are clearly a version of the traditional Seven Klimata.

H3 Fit-probes upon them initially produce ridiculous, yet trending obliquities. Experimentally shifting all circuli M by the same simple round constant,[92] 1° (or 4^m), finds gratifying consistency with the same accurate Hipparchan $23^\circ 2/3$ obliquity discovered by Diller and insubstantially & cementally rejected by Neugebauer&Jones (fnn 18&25, resp).

H4 Rawlins' 1984 paper (invited for the Greenwich Meridian centenary Longitude Zero Symposium), featuring its 1°-constant-shift solution (fnn 91-93 here) of the circuli, has never been cited by Jones, though his own pale constant-shift ploy for the Hipparchos-Strabo klimata (§§C5-C10 above) is either suspiciously or parapsychologically similar, with the difference that Rawlins' constant-shift solution for circuli turns chaos into coherence, while Jones' constant-shift for klimata is subtractively designed to accomplish the very reverse, leaving such a poor fit to the data that he doesn't dare even tabulate them (fn 34 above). Jones mentions Pliny's circuli but simply calls them "crude"[93] (in the Neugebauer tradition, fn 18 above), never telling readers that Rawlins' restorative-correction procedure — which is just as elementary and trivial as his own failed (fn 34) klimata-echo of it — reveals a trigonometric scheme whose cleverness is crudeness' antithesis. Nor does Jones' circuli-putdown tell readers that these restored Pliny data are consistent with (fn 92 here) the very same accurate Diller-discovered $23^\circ 2/3$ Hipparchan obliquity Jones is busy trying to replace (§C6) elsewhere in the same paper, a paper which qualifies as a pinnacle of JHAD-subtractivity, *simultaneously managing to deny Greek accuracy on all available fronts* — obliquity & klimata & calculations & trig-tables & circuli (& Diller & *DIO*) — thereby obediently according with predecessors' orthodoxy (just-as-reliably as did just-as-careerist Ptolemy's "observations": fn 8), ensuring Jones' rapid elevation to *JHA* boardship.

H5 Our next chapter presents dozens of new perceptions, all rigorously JHAD-uncited, possibly due to the history-of-astronomy cartel's relative ranking (§J1) of cult-discipline vs knowledge-advancement.

[89] Conversely, our tamper-projectors staunchly spurn restoration for either of our cases here where its need is screamingly obvious: Trio A's 3rd eclipse (fn 54 above) and Pliny's circuli (present chapter). An awesomely perfect psi-missing record for perceiving when data-correction is and is not appropriate, and, as ever, implying that *DIO*'s simple, neat fits are mere déclassé sorcery.

[90] Pliny 6.39.211-218. Neugebauer 1975 p.747. No ancient scientific organization: *ibid* on pp.367, 667, 748, 938; recent History of science Society 20 pp echooooooooooooooooooo: Shcheglov 2016.

[91] Rawlins 2009S Fig.1 & fnn 46-48&50 belatedly weigh indicia that Hipparchos himself probably designed the circuli (contra this: one would expect Pliny to have attributed), which are more accurate than one might expect from their numbers' roundness, a familiar ancient circumstance (e.g., §D4[B] above) & see evaluations at Rawlins 2002A §§A6&A11.

[92] See Rawlins 1985G, comparing eq.11 vs eq.12, where an ancient scholar's well-intended but uncomprehending 1°-shift-of-M-data is explained at p.263. All of the circuli shadow data are expressed in feet except for the Rhodos shadow, which is listed as 100 inches. Resolution (*ibid* n.15): 105 in Latin was written "cv". The "v" was mis-taken by an ancient scribe as an abbreviation for "vnciae" [inches] thus 105 corrupted to "c vnciae" (100 inches), as we now find in Pliny. Once this is realized, and other data are checked, it's obvious that 105 is the common denominator to all seven shadow ratios (but Rome) & is key to the equation (*ibid* eq.11) that originally generated the Pliny circuli (ere ancient alteration to eq.12).

[93] "Crude": Jones 2002E fn 11. Or clever? See restored circuli's smoothly and flawlessly sphtrig-tracking curve, graphed in Rawlins 2009S Fig.1, in hollow dots: close proximity to the curve of the dark filled dots (Diller-Rawlins klimata values), over the restricted Mediterranean range (much smaller than Diller's) for which the circuli were designed.

I Unmet Challenges — Advances in Understanding Ancient Science Endangered by Hate: JHAD Braves Glimpsed Shunning for Cover

I1 Though numerous scholars have doubted 3rd century BC Greek scientists' adoption of Babylon's degree-division of the circle, it was unexpectedly revealed[94] in 2012 that Archimedes' original unprocessed measure of the Sun expressed its diameter sexagesimally as in the range between $27'$ and $33'$, later conventionally published in his *Sandreckoner* as rightangle/200 and rightangle/164. Hard to believe (given the ultra-simplicity of the math): no one has noticed this for the last 2000^y.

I2 For centuries, scholars have accepted *On the Sizes and Distances of the Sun & Moon* as by Aristarchos of Samos, **numbly missing the significance of Archimedes' accurate contradiction** — by a factor of four — of *Sizes*' farcical[95] fundamental empirical data (2° solar&lunar diameters!), & in spite of its ludicrously contra-reality requirements that: [a] total lunar eclipses last 12^h (Neugebauer 1975 p.642), & [b] for Mediterranean observers, the Moon (at distance c.20 Earth-radii) visibly moves in-**REVERSE** among the fixed stars every day around culmination. Item [b] earns a truly special place in the Bizarrity-Hall-of-Infame, by the astonishing fact that, again: no one has noticed this for the last 2000^y.

I3 In the 27^y since publication (Rawlins 1991P fn 6), no modern scholar has yet cited *DIO*'s discovery of the elementary cause of §I2's 4-factor-overestimate: pseudo-Aristarchos misinterpreted Aristarchos' lunisolar diameter of $1/15^{th}$ of a "part" or μερος of the zodiac as: $1/15^{th}$ of a zodiacal sign. But μερος (*meros*) was just an ancient unit = circle/48 = $7^\circ 1/2$, of which $1/15^{th}$ exactly agrees with Archimedes' correct half-degree testimony.

I4 Aristarchos' famous 87° half-Moon elongation wasn't empirically a precise figure, as moderns (and seemingly Hipparchos: §D2 above) assume, but a lower-limit.

I5 From tiny solar declination-motion near solstices, uninformedly sneering[96] amateur-astronomer-Ptolemists (incl. MacGenius Swerdlow: ‡2 fn 8) doubt ancient solstices could

[94] Rawlins 2012T, www.dioi.org/jk01.pdf, §E (prior opinion: *ibid* §B1), DR's discovery of obvious sexagesimal source perceived c.30^y after his contra-consensus 1983 Dec *Isis* Letter (& Rawlins 1991W fn 53) arguing 3rd century Greeks used degrees. Note Neugebauer 1975 p.590's just caution.

[95] *Sizes*' 5 farces & Aristarchos' 1/2-Moon-elongation 87° lower limit: www.dioi.org/je02.pdf, Rawlins 2008R §§C1-C3 & fnn 17&29. [By proportions, Aristarchos-Archimedes' shift (Rawlins 2008R fn 37 vs eq.15) from Sun-distance 1000^r to 10000^r altered limit to $89^\circ.7$ (nearer actual $89^\circ.85$).] For "part" (μερος or meros) ≡ circle/48: see Neugebauer 1975 pp.652&671, or Rawlins 1991P fn 6.

[96] Those wondering whether Swerdlow&Gingerich are primarily scientists or careerists, cannot miss their amusingly indiscriminate alibis for Ptolemy's fakes, at www.dioi.org/jk02.pdf, Rawlins 2018U §§B2&B3 and fnn 2&3. (And Duke at fn 69 above, vs Rawlins *op cit* eqs.5&21 Table 3, & §§E-J. Alleged solstice-inferiority: fn 27 here, Evans 1998 p.206, & Swerdlow 1979 [Phi Beta Kappa] p.527. Noel Swerdlow, though occasional valued discoverer [e.g., fn 42], is a prime contributor to *DIO*'s catalog of *JHA* scientific larfs: www.dioi.org/jhb.htm.) Besides *scientific* indicia (***see ‡4 §B3*** on Swerdlow's & Evans' innocence of equal-altitudes, the obvious ancient solstice-finding method), there are unambiguous *historical* points they're equally (and, as purported historians, less excusably) unaware of (unlike non-politicians such as Toomer 1984 p.12 & Britton): ***all known ancient scientists found yearlengths via solstices not equinoxes***: Meton, Euktemon, Kallippos, Dionysios, Aristarchos, Hipparchos, BM55555. And these doubters of ancients' solstice-accuracy (plus fn 27: Jones) are now confronted with recently recovered papyrus *P.Fouad* 267A, testifying to a Hipparchos solstice accurate to ordmag 1^h (‡4 fn 20 [C]). Preferring solstices over equinoxes for year-length-determination becomes

be good to ordmag 1^{h}, which invites equinox-vs-solstice accuracy-comparison (‡2 §N7).

I6 Rawlins 1991H found the Babylonian yearlength on famous Astronomical Cuneiform Text 210 was (§F2) based on well-known Greek solstices (−431/6/27 & −134/6/26), the 1^{st} datable transmission of an orbit-element between Babylonian & Greek astronomy, going Greece→Babylon, thereby gutting the Muffia's holiest tenet (§I37&fn 120).

I7 Aristarchos&Archimedes put minimum solar&stellar distances at 10000^{r}&10000 AU, resp, **because** humans can see (as no historian-of-science seems aware) to c.1/10000 rad. Rawlins 2017E §K2: "For advancing history of science, knowing ***science*** matters."

I8 Ptolemy's allegedly-outdoor 4 solar "observations" (132-140 AD: *Almajest* 3.1&7) averaged over 1° error (*not even 1 shot encroached anywhere on the solar disk*) and were **fifty times** nearer Hipparchos' 3-century-old indoor tables than to outdoor reality (as known for 1200^{y}: F.Ragep 2010 p.121): undeniable but also (for over 30^{y}) *JHA*-unprintable.[97] Despite null ancient attestation of their speculation, Ptolemists insist (fnn 8&127) this is because ancient scientists kept only observations agreeing with theory. (I.e., they cheated.)

A. How could Ptolemy's solar "data", all off by ***a degree*** happen in the 1^{st} place, outdoors?

B. How did it happen that Hipparchos' Sun observations' average disagreement with reality were merely two or three times their disagreement with his tables, vs Ptolemy's fifty?

C. How could Greeks ***just copying predecessors*** achieve their many accurate discoveries? (E.g., Greek vs real ancient monthlengths, Rawlins 2017E §§B2-B4: **startling proximity**.)

However, most scholars (A.Pannekoek, R.Newton, Y.Maeyama, J.Brandt, & P.Zimmer among the welcome exceptions) reject ancient high scientific accuracy (fnn 1&35 here), undeterrable 2016 subtractor D.Shcheglov even (fn 13 here) calling it a "delusion."

I9 Aristarchos discovered precession 150^{y} before Hipparchos: §G3.

I10 Rawlins' order-of-magnitude estimates, of too-unheralded Greek accuracy (‡1 §F): 1′ for lunisolar diameter; 1% for moon distance; 1^{h} for solstices; 1′ for equinox taken on Alexandria's ring (fn 70 here; *Almajest* 3.1); 10^{s} for sidereal year (fn 114 here); 1′ for observer latitude (see fnn 39&100 here and ‡4's Table 1 & fn 38); 1′ for 500-mile North-South arcs on Earth (fn 111); 0°.1 for star declinations (fn 100); 0°.1 for lunar-limb-vs-Sun gap (fn 12 here); 0°.1, even 1′ for star-vs-eclipsed-Moon gap (§B7); ocular error 1′±1′ (fn 97 here) for Hipparchos' mean equinox, with 2′ scatter (fn 12); 1% for Earth-circumference-measure precision (fn 108); 10^{m} for lunar eclipse-prediction (fn 97 here); 1^{m} for lunar eclipse observation (Rawlins 1985G pp.258&265); 1′/century for mean motion of Mars (and maybe Venus); 1^{s} for all three adopted months (synodic, anomalistic, eclipse), each correct to better than one part in a million. Historians-of-science like Shcheglev show no sign of awareness of any of these Greek achievements.

obvious from, for instance, Britton 1967 p.29. More generally, §I8's key Obvious Question C jokifies fn 8's Swerdlow-Gingerich-*Scientific-American*'s Ptolemy-exculpation-theory.

[97] On 1982/7/17, ever-Ptolemy-worshipping *JHA*, unable to argue facts or math, nonetheless belatedly excised Ptolemy's sensational 50-to-1 indoor-vs-outdoor ratio (§I8) from a projected Rawlins paper (fn 74 here; precensored text at Rawlins 1999 §E), along with nonselector outdoor-observer Hipparchos' parallel ratio of just 2-to-1 or 3-to-1. (Even that tiny ratio reflects just that his tables were founded upon his own slightly imperfect solar data. His UH tables' eclipse-prediction accuracy was ordmag 10^{m}: Rawlins 1991H eq.32.) The 7′ mean error of Hipparchan equinoxes is mostly not due to eyeball inaccuracy: when one removes the effects of his presumed solar parallax and (like fn 70 above) the errors from refraction in the Sun's zenith distance, and his instrument's setting-tilt from polestar-refraction, there's only 1′ (±1′) unaccounted-for: see Rawlins 2018U §B4. Mars (and Venus?) mean motion accuracy c.1′/century: Rawlins 2002V fn 26. Contrast to fn 1 here, and to the $umpteen^{th}$ fruitless metrological analysis of Eratosthenes' Earth-circumference, Shcheglov 2016, www.dioi.org/shc.pdf, which massively contends that high-accuracy Greek longitudes are mythic, his entire assault *upfront*-promoted by History of science Society (and post-protected by HsS stonewall-noncorrection), ultimately undone by his crucially confusing a solar eclipse with lunar and falsely putting Spain into the eastern hemisphere (and China's Xi'an & Luoyang into the western). Yet another history-of-science journal's all-too-common Pb-paper duffer-science: details of these latest *Isis* disasters can be found here at ‡1 (§D), *DIO*'s Letter-to-*Isis*' hiding-since-receipt Editor H.F.Cohen.

I11 At the 1984 Greenwich Centenary, DR presented evidence countering Neugebauer's denial (above: fn 90, vs fn 13) of the existence of organized science in antiquity, by 3/4-unstretching the longitudes of the naïvely 4/3-stretched map of Ptolemy's 160 AD *GD*, the *Geographical Directory* (often called just *Geographia* or *Geography*), finding that Greek mean longitude error was well under 1°, thus indicating that ancient scientists had cooperated in comparing (as recommended by Hipparchos: Shcheglov 2016 n.7) local times of lunar eclipses at even far-distant sites (fn 105). E.g., the unstretched 42° longitude-difference between Carthage and Persepolis is correct to ordmag 1%. ***NB***: The distorted remains of accurate ancient geography in Ptolemy's *GD* were ruined in *two widely separated stages*, and in two very different ways (*but sharing an* **astrologer**-*source in each case*): [1] Latitudes were semi-*randomly* wrecked by Hipparchos (contra Rawlins 2009S fn 18): his discrete tabulation of them (*GD* 1.4.2) for professional reasons. (See sources here at fn 13 for details; Hipparchos was publishing tables [Tihon 2010's valued direct revelation] which served 3 astrological traditions simultaneously, sidereal (or anomalistic), Kallippic, & Metonic, looking as professionally gain-oriented as today's astrology, whose practitioners yet cater to 2 of the 3.) [2] Longitudes were *systematically* ruined by isolated astrologer Ptolemy's ignorant stretch of correct eclipse-based longitudes by 7/5 or 4/3 (‡1 §§F&M).

I12 By successive approximations, mathematician Hugh Thurston in the 1940s detected previously un-noted evidence that Ptolemy had fabricated planet-orbit elements by backwards-calculation, later publishing the analysis in *DIO 4.2*, www.dioi.org/j426.pdf, ‡6 (Thurston 1994P). Its logic, though obvious, remains uncited by historians-of-science.

I13 For decades, historians-of-science argued (e.g., fn 18) against Hipparchos' possession of spherical trigonometry, a position now indefensibly obsolete: for a pioneering all-inclusive compendium of four plain evidences (& fn 103 here) that Hipparchos had full spherical trigonometry, see www.dioi.org/cot.htm#tvvc.

I14 Rawlins long insisted that the *Almajest* Mars mean motion was based on ratio $152145°/329621^{d}$. Inspired by Duke's skepticism, Jones in 2002 discovered it was based on a different cyclic ratio that Rawlins had carelessly neglected, residing, ironically, in the *Almajest* itself. In the same article, Rawlins gave a similar explanation of *Almajest* Jupiter mean motion, equally false historically, reflecting even less-excusable overconfidence. The correct cyclic Jupiter solution was simultaneously realized by Jones and Duke. Rawlins faxed double-congratulations to Jones the hour he heard of the finds, announcing them in 2003 on *DIO 11.2*'s cover, establishing for years a $1000 prize for each overturning of himself (www.dioi.org/pri.htm), thus retroactively sending $2000 to Jones (no reply).

I15 Generalizing from the bases of mean motions of the planets, the Moon, & (partially) the Sun, *DIO* created a General Theory of Ancients' Cyclicities, proposing it was preferred ancient method to found mean celestial motions upon empirical integral-return ratios.[98]

I16 It's long been assumed that Hipparchos rounded the time of dawn or evening to the 1/4-day, even near solstices. But, in 2015, *DIO* showed that Tihon's papyrus is consistent with Hipparchos using exact time for each when gauging yearlength, thus revealing (fn 66) the origin of his hitherto-unexplained $365^{d}1/4 - 1^{d}/309$, which Tihon was 1^{st} to reveal.

I17 In 2002 K.Pickering discovered[99] that original locations of dozens of erroneously placed stars in the *Almajest* 7.5-8.1 catalogue can be reconstructed (occasionally via spherical trigonometry), but it was repeatedly found that repairs could only work with coordinates from Hipparchos' era, not Ptolemy's; sixteen years later, Ptolemists have yet to produce a collection of such reconstructions based upon the opposite theory, leaving the independent implication that the catalogue was observed by Hipparchos, later plagiarized by Ptolemy.

[98] See www.dioi.org/pri.htm, for *DIO*'s longtime $1000 prize for each wrong solution among a proposed set of DR discoveries, which Duke&Jones won by overturning DR's historically false solution of Mars' & Jupiter's *Almajest* mean motion bases, Rawlins 2003J §§G&H, cover, & fn 21. (Both men agree to Rawlins' period-relation solutions for Mercury, Venus, Saturn.) "General Theory of Ancients' Cyclicities": Rawlins 2002B §H. Non-planetary cyclicity examples: *ibid* & Rawlins 1996C.

[99] Pickering 2002C.

I18 In 1982, Rawlins sought the epochs E, as well as the errors x in the observers' assumed latitudes L, and their standard deviations, for all 4 known ancient stellar-declination observers — Timocharis, Aristyllos, Hipparchos, Ptolemy's anonymous observer — through bivariate least-squares testing upon these observers' star-declination data.[100] In 1994, examination of nulls in declinations' fractional-endings profile revealed observers' assumed L, subtraction of x from which produced actual L. All four observers' L were ordmag $1'$ accurate. (Vs ancient astrologers' geographical tables' ordmag-1° L-errors; see ‡1 §R on Ptolemy's *Geography*.) *DIO* repeated its solutions in 2016 — see results at Table 2 — inspired by J.Brandt's idea to use satellite-based declinations; though (vs 1994's table), no improvement exceeding 1^y in E or even half of $1'$ in L was effected.

[100] Rawlins 1994L §§F3-F8, where nulls show Timocharis (known observations c.−300-271), earliest of Alexandria's 3 observers of extant star declinations by surveying instrument, alone knew his exact L. Later studies get virtually the same E for each observer. Maeyama 1984 finds thusly, but instead of *DIO*'s bivariate least-squares (Rawlins 1994L Table 3 results), he independently finds observers' epochs E and latitude-errors x by double-monovariate, noncalculus trial-and-error, and graphs — gauging E's standard-deviation by eyeballing, and x's by confusing it with that for a single datum. More recently, in the mathematically-challenged *Journal of Astronomical History & Heritage* [*JAHH*], Brandt *et al* 2014B, www.dioi.org/bzj.pdf, says most of Rawlins' geographical latitudes L "are close to our values". But their L are merely assumed, so *DIO*'s *JAHH*-requested 2014/8/26 referee report, www.dioi.org/jau8q.pdf, asked that the paper notice *DIO*'s entirely original 1994 nulls-method of ***non***-assumptively determining L (Rawlins 1994L *loc cit*), a discovery neither available ***nor even cited anywhere else — a quarter-century later***. A few referee-recommended corrections were fortunately applied by *JAHH*, e.g., Aristyllos-epoch's standard-deviation (compare www.dioi.org/bzj0.pdf, p.5 to final www.dioi.org/bzj.pdf, Brandt *et al* 2014B p.331). But the request for showing how L finally could be found (not guessed) was, among others, not met by *JAHH*. See ‡4 §C16 below for the weird details. Also and more importantly unmet was the *DIO* referee's urging the Brandt *et al* 2014B paper to take note that Ptolemy arithmetically reduced (*AlmaJest* 5.12-13) his transit "observations" to declinations using a seriously false Alexandria latitude L, from Vitruvius 9.7.1 (plagiarism unmentioned at Swerdlow 2010 p.151), $L = 30^\circ 58'$ (arctan 3:5; above, in fn 25), erroneous by $-14'$, which obviously is much-too-large for a regular outdoor observer, and also is in $17'$ conflict with latitude $L = 31^\circ 15'$ which is indicated (by nulls) to be the virtually-correct value that was adopted by the stars' actual observer. Brandt *et al* 2014B's standard deviations σ were allegedly calculated bivariately; but, actually, after each E's was found monovariately, L's "accuracy" was found by averaging the remaining residuals, original but invalid procedure, making L's uncertainty too small by an ordmag, as referee-specified. ***NB***: Had Brandt *et al* 2014B done the reverse, finding L's σ first, and then again meaned leftover residuals to get the other variable's (E's) "accuracy" similarly, the result would have been informationless zero! (See ‡4 §C11.) There are further oddities. *Ibid*'s eq.1 sets O−C equal to C. The paper's O−C graphs are rendered C−O. Two strange *JAHH* attempts to undercut skepticism by splitting Ptolemy's 18 stars differently from R.Newton (and, by-the-way: Ptolemy and Pannekoek and DR — i.e., **every**one else), innocently omit those low-declination-speed stars which are most-informative regarding L (dropping them simply because least-informative for E), and then, *average the rest — improperly weighted* (‡4 §C17 below). Summation: [1] In 1982 Rawlins' pure bivariate least-squares gave accurate values simultaneously for E and for x, with each's σ, also providing single-datum σ. [2] For the last [36^y], no historian-of-science has ever duplicated that complete solution. [3] Upon its receipt by *Centaurus* in 1982 and by *JAHH* in 2014, both journals instead published solutions seriously mistaken in part (due not to miscalculation but to invalid methods). Coincidentally, their authors defended Ptolemy, while Rawlins insisted on citing long-journal-suppressed evidence he didn't observe his suspect *Almajest* 7.3 declination data, namely: adopted-L's clash with reality AND with these declinations (see just above, here in this note), evidence crucial to the controversy, known for forty years, but (as also in fn 97) never-ever found in centrist journals. Same for Ptolemy's solar observations' 50fold closer adherence to old tables than to the real sky, re which three journals have severed correspondence (1983-2016) rather than print. In 1983, *JHA* lawsuit-threateningly cut contact over the 50-factor issue (Rawlins 1991W §B, 1991; *DIO 6* ‡3 §I, 1996; Rawlins 1999 §§E-F). In 2015, faced with DR's request to print the same 50-ratio, likewise-cornered *JAHH* unilaterally ended contact with *DIO*, www.dioi.org/oww3l.pdf, and in 2016, as we see from www.dioi.org/isb.pdf, *Isis* Editor H.F.Cohen suppressed the same 50-revelation by cutting *all* correspondence — including in regard to *Isis*' 2015-2017 unattributed (fn 10 here) appropriation of a *DIO* discovery and an undeniably twice-miscomputed (fn 13 here) 2016 attack on DR — on the irrelevant excuse that www.dioi.org/qjo.doc, our gentler version of the present paper (a separate matter from *Isis*' two **lead**-paper academic offenses, 2015-2016), was insufficiently self-censored. (Since *DIO* can't read editors' minds to do censorship to their exact tastes, *Isis* was invited [www.dioi.org/isb.pdf, like *JAHH* before it] to edit-out whatever it liked from the paper's political discussion, with the *DIO* promise of no complaint since we'd asked for such assistance. *Censorial journals instead inefficiently demand the author keep guessing what needs elimination in order to finally satisfy "editors" too scared [or lazy] to edit*; ‡4 fn 13.) The intent of such exilings is to intimidate pushback-scholars into silence. And, in current grant-hunger-corrupted academe, it nearly always works. Nearly. None of these three *purportedly-refereed* journals (vs above & fnn 4&97) encourages non-closeted investigation of *DIO* accuracy or of their own behavior. None of *Isis*' bunkered editors' emails on what ultimately became www.dioi.org/qjo.doc, nor *Isis*' 2017 March "referee report" ever mentioned the paper's history or science or mis-math or factual errors. Not what really matters anymore in history-of-science. (After demanding the paper's muting, Cohen finally sent an earlier unmuted version to his referee, ensuring the negative verdict he sought.)

Table 2: Ancient Observers' Epochs E, Adopted and Actual Geographical Latitudes L

Obsrvr	$E \pm \sigma_E$	Adop L	Its Error x	Actual $L \pm \sigma_L$	σ_o	σ_r
Timoch	-294 ± 11^y	$31^\circ 12'$	$-1'.8\pm2'.7$	$31^\circ 13'.8\pm2'.7$	$\pm9'.0$	$\pm8'.8$
Aristyll	-258 ± 10^y	$31^\circ 15'$	$+1'.0\pm2'.7$	$31^\circ 14'.0\pm2'.7$	$\pm6'.1$	$\pm4'.2$
Hipp	-131 ± 05^y	$36^\circ 08'$	$+0'.2\pm1'.2$	$36^\circ 07'.8\pm1'.2$	$\pm5'.2$	$\pm5'.0$
Anon	$+159\pm09^y$	$31^\circ 15'$	$+4'.4\pm2'.0$	$31^\circ 10'.6\pm2'.0$	$\pm6'.0$	$\pm5'.6$

I19 The main Hipparchos observatory's deduced[101] latitude, $36^\circ 08' \pm 1'$, was just-recently supported independently by 2016 realization of the mutually confirmatory reality of his computing reliability (§D3) together with his trigonometry tables' accuracy (§C14) which jointly bring $1''$ precision to a 1997 exploratory finding[102] of brackets for observatory-latitude, $36^\circ 00' 22'' < L < 36^\circ 09' 09''$. This rules out frequently assumed $L = 36^\circ.4$ (Rhodos City) and barely conflicts with commonly rounded 36°, while consistent with above $36^\circ 08'$, indicating Hipparchos' permanently fixed instruments were near Rhodos Island's Lindos ($36^\circ 05'$).

I20 Latitude L of the perhaps-portable (inferior) transit circle of Hipparchos' most southern observation-spot has been reconstructed[103] by:
[1] Thurston-inspired spherical-trigonometric transformation of the *Almajest* star catalog's southern ecliptical data, restoring originally-observed equatorial coordinates, then
[2] testing the declination data thus recovered, to learn which L produces (in implicit zenith-distances) the dramatic, R.Newtonian excess of $00'$ endings expected[104] for raw ancient instrumental observations. That L ($35^\circ 50'$) suggested the southern stars' observer worked on Rhodos Island's south tip, Cape Prassonesi (altitude over 200m), $L = 35^\circ 53'$ — intentionally ensuring an unobstructed southern horizon, to see as far south celestially as possible from the island. (Unobstructed southern sea-horizon was also chosen by Eudoxus at Knidos, Pytheas at Marseilles' Cape Croisette, Tycho at Hvin Island.)

I21 Using Alexandria or Cape Verde Islands as 0° longitude, did far-apart scientists organize to compare each others' Moon eclipse data, thus fixing longitudes of sites to

[101] Table 2 here.

[102] Rawlins 1997A eq.1.

[103] Rawlins 1994L §E4. Enjoy chronology of Thurston's felicitously-persistent inspiration of dullard Rawlins' eventual discovery: *ibid* §A. The transformation's statistically unequivocal success (*ibid* §§E5-E7: overkill standard deviations) is the strongest proof of Hipparchos' possession of full spherical trigonometry. For by far the smartest and most comprehensive case for Hipparchos' observership of the *Almajest* star catalog, see Pickering 2002A; also, importantly, Duke 2002C.

[104] Excess of $00'$ endings (crucial fractional-endings test) discovered by R.Newton 1977 p.247. Cape Croisette: Rawlins 2009P §B.

ordmag 1° accuracy, before Ptolemy's fateful stades/degree scale-shift[105] (§I11) stretched the map East-West, inflating longitude-differences?

I22 In 1982, it was shown that Eratosthenes' original Earth-circumference C was neither of the long-accepted (variously rounded) stade-values, 250000 or 252000, but instead was 256000. In 2008, 26^y later, all 3 were checked[106] against Eusebius' long-neglected Eratosthenian Earth-radius $r = 40800$ stades, and 256000 was the only one of the 3 that fit this r. (How will Carman & Evans 2015's authors explain not mentioning this match, *to 1 part in a thousand*, when their own cited sources show they knew of 256000? See fn 10 above.)

I23 It was simultaneously found that Earth-radius r was the empirically primary datum, consistent with being based on Sostratos' non-astronomical Pharos method (§I24), which directly[107] finds r from his Pharos Island lighthouse (in Alexandria harbor), built near Sostratos-Eratosthenes' time and place. Again, our deliberately silent (§§I22&I26) JHAD-center — which accepts no discovery if not from its own network — must regard the temporal&spatial coincidences as completely without significance. (Like unrecognized confluence in another sphere: www.dioi.org/shg.pdf, "Kit Marlowe's Perfect Crime" §G3.)

I24 Proposed Sostratos ingenious idea&achievement: mount Pharos' flame **precisely** $h = 300$ feet or *half a stade* above sealevel, so the apt equation, $r = v^2/2h$, becomes just $r = v^2$, thus Earth-radius r **in stades** can be found by ***just squaring*** the flame's coastal oversea visibility-distance v **in stades**. At first the trick seems suspiciously overeasy & dimensionally impossible. But it works. Note that squaring 202 stades, and rounding conventionally, yields Eusebius' $r = 40800$ stades (§I22): a 3-to-1-unlikely chance-hit (Rawlins 2008Q §I1; Rawlins 2018V).

I25 Taking the stade's length to be the generally-accepted value, 185 meters, Sostratos-Eratosthenes' $r = 40800$ stades is 19% or about 6/5 too high, while Poseidonios' $C = 180000$ stades, the other anciently standard Earth-size, is exactly 5/6 too low. It is an Occam-*DIO* dream-come-true to perceive that since horizontal light rays' curvature = 1/6 Earth's, atmospheric refraction would cause observed errors in C of 6/5 and 5/6, respectively, for two simple, clever, low-physical-labor never-leave-home methods[108] of measuring the Earth: the Pharos-flame method (6/5) virtually attested by Pliny 2.65.164; and the also-physically-easy (& obvious!) double-sunset method (5/6). So *DIO*'s refraction theory at once satisfies both Sostratos&Eratosthenes&Hipparchos' C (6/5 high), as well as

[105] Rawlins 1985G p.265, taking an idea due to (*ibid* n.22) Gossellin 1790, suggests an ancient, adjusting for the 700 stades/1° →500 stades/1° switchover, stretched longitudes by 7/5, mis-assuming they were based on land-surveys (‡1 §F). Or by 4/3 via Poseidonios' $C = 240000$ stades→180000 stades. Proposing Greeks organized to compare eclipse observations (fn 13): Rawlins *loc cit*, vs fn 90 above & Shcheglov 2016. Cape Verde Isles, westernmost known land, chosen as Marinos' 0° longitude (www.dioi.org/j501.pdf, §A5), to kill longitude sign-muffs like those (fn 97) cursing Shcheglov 2016. [Speculation 2018/7/15. Marinos = pseudonym, like "Ptolemy"? Or map-title from maritime Tyre?]

[106] $C = 256000$ stades 1st induced from a Nile map's latitude intervals: Rawlins 1982N pp.212, 214, 216-217; Rawlins 1985G p.259; Thurston 2002S p.66. For which C fits Eusebius' $r = 40800$ stades: just multiply r by 2π !: Rawlins 2008Q eqs.8-11&18, esp. eq.11's solar distance = 100.1 AU. Fn 10's 102 AU is overexact (fn 42), even while fitting 252000 less well than 100 AU fits 256000 fits.

[107] Rawlins 2008Q eqs.2&21&28; eqs.14-15&17-18 for r as Sostratos' direct empirical measure.

[108] See *ibid* §A4 [a] for the Pharos-flame method and Pliny's semi-attestation of it. Double-sunset method: Rawlins 1979 or *Scientific American* 1979 May. Interval between times of sunsets seen from Pharos' top&bottom exceeded a time-minute, unmissably-enormous alert and gauge of C's size. (Elementary illustration-by-extremes that different results ensue for flame vs sunsets: Rawlins 1992V §A5.) To inerts needing direct attestation: among the many roboshunned matches cited here, the foregoing utterly original&successful atmospheric-refraction theory — tri-neatly solving the INTERMINABLY-contended ancient Earthsize mystery — cannot legitimately be ignored. But it is: fn 111 below. Unbelievably worse: fn 109! One recalls not only JHAD shunning of Diller (fn 25), but the case of L.Boltzmann's kinetic theory of gases, which E.Mach & others spurned because (though theory neatly fit evidence) *no one had ever seen a molecule*. Did this trigger Boltzmann's 1906 suicide (just ere vindication by Wilson-cloudchamber)? We don't know. What we know is: certain pols cited hereabouts wouldn't care. Past perhaps praying for history to repeat. Ever so vainly.

Poseidonious&*Geographical Directory*'s C (5/6 low), ***AND*** the 185 meter stade: triple-vindication for this neat-fit & totally fresh *DIO* idea. I.e., shockingly, Greeks' 40%-disparate C are EACH solved to 1% by the *same* airbend theory & the *same* unfudged stade.

I26 Though the atmospheric-refraction solution, explaining erroneous C, has been repeatedly published (fn 108) in the scientific literature — and featured (with generous credit to the author) for years in the 1990s as opening-page demonstration of using physics, in the long-standard physics textbook Halliday, Resnick, & Walker — historians-of-science either [a] cannot follow the math or [b] regard it as mere scientists' intrusion onto grounds best adjudicated by the real experts. Thus, the reaction, decade after decade is: no reaction at all in *JHA* and fellow captive journals, which doesn't help communal awareness[109] of the airbend theory that (to repeat) produces the only match to both attested C values and to the 185m stade. F.Ragep 2010 (p.124) and two recent (2015&2016) *Isis* lead articles — all on closely related ancient geographical subjects — cited Rawlins papers which explained the atmospheric-refraction theory, yet each of the three *Isis* authors, in concert with all their colleagues for decades, refused (see also fn 111 here) to mention the theory's very existence, even when it was right before their noses (details here at ‡1 §§W&X). Do not ordinary readers of history-of-astronomy journals deserve the opportunity to make up their own minds on the airbend theory's plausibility? HsS archons exhibit zero concern at the spectacle of assertively-totalitarian shutdown of their own people's access to a theory so solid that (to emphasize by some repetition) it has appeared in the *American Journal of*

[109] On 2011/11/26, a long-persistent *JHA*-debtor (Rawlins 2009S fn 24) vandal, ever-*JHA*-protective, http://en.wikipedia.org/w/index.php?title=Dennis_Rawlins&diff=263054615=&oldid=256011510, determinedly — & achronologically — eliminated mention of *DIO*'s refraction theory even from popsite Wikipedia, http://en.wikipedia.org/wiki/Talk:Eratosthenes, just to help out centrists' ensurance that the public and academe remain totally — totalitarianly — protected from access to this too-successful solution. It was also removed on 2015/4/28 from Wikipedia's Stadion article [its n.8] and currently resides nowhere on Wikipedia. As desired, i.e., *consistent with hermetic communal shunning so thoroughly detailed here throughout*. (***NB***: No *DIO* posting on Wikipedia has ever dislodged a competing academic theory.) Since Wikipedia looks superficially like the prime potential leak in broad shunsnuffing of *DIO*, right-thinking's unsubtle vandal threatened anyone connected to Rawlins: http://en.wikipedia.org/w/index.php?title=User_talk:Dihydrogen_monoxide&diff=next&oldid197202695, http://en.wikipedia.org/w/index.php?title=User_talk:Consequencefree&diff=prev&oldid196285291, threat made-bad by for-years smearing the integrity of *DIO* Board members, world-standard Sun-Moon-planets-ephemeris creator, E.M.Standish, http://en.wikipedia.org/w/index.php?title=Dennis_Rawlins&diff=183177760&oldid=173784061, http://en.wikipedia.org/w/index.php?title=Talk:Dennis_Rawlins&diff=263054615&oldid=256011510, and world-acclaimed discoverer of Chiron & two Jupiter satellites, C.T.Kowal, http://en.wikipedia.org/w/index.php?title=Charles_T._Kowal&diff=224561000&oldid=186668652, & http://en.wikipedia.org/w/index.php?title=Charles_T._Kowal&diff=405442827&oldid=397176359, & on 2011/7/6. Diller expertise belittled, http://en.wikipedia.org/w/index.php?title=Dennis_Rawlins&diff=463307651&oldid=463306024, incredibly. For a decade, whistleblower Rawlins' Wikipedia biography has predictably been trashed by forces his researches have exposed, though not a single censorial deletion has been justifiable by inaccuracy. Trace the bio's History from a full balanced 2008/10/2 version (including DR-recommended ***insertions of refs to his own mistakes as well as a long list of articles attacking his findings***) to today's stub, fixated on his passing involvement with CSICOP, & on newspapers (which Wikipedia Administraitor Vsmith ***persistently&censorially*** insists are more reliable than an academic journal refereed by world-class scientists: fn 4 above). Among DR accomplishments eliminated 2008/3/10 to 2014/9/12-29 (besides those already cited at p.44): asymptotic planetary perturbation-amplitude (*MNRoyAstrSoc* 1970); ending British Neptune-discovery sham (*Scientific American* 2004 Dec p.98); solving BM55555, thus revealing Hipparchos' last Sun-orbit (§F2 above); epochs&latitudes of 4 ancient astronomers (*DIO* 1994); ocular basis for Aristarchos' expansion of the universe's radius to over 100 million Earth-radii (*DIO* 2008); revealing Archimedes' solar diameter was sexagesimal (2012); organizing the prominent citizens committee establishing Baltimore's internationally known 2004 Rachmaninov memorial, www.dioi.org/rar.htm, also composing its text; recent book and play, www.dioi.org/sha.htm, asking if C.Marlowe died 1593/5/30 — or debuted as Shakespeare 13^d later.

Physics, *Scientific American*, *Archive for History of Exact Sciences*, even a well-known physics-textbook, & currently is the cover article of the 2018 Aug *Griffith Observer*.

Question #1: Is there yet the slightest visible evidence that any — ANY — one of our ***unanimously*** deaf&dumb shunners even understand the physics here?

Question #2: Do archonal cynosurae realize that the 6/5 factor has been standard among navigators&astronomers for over 100^{y}? (All scientific navigation manuals have horizon-dip shrunk by $\sqrt{5/6}$ [vs straight-line geometry] and horizon-distance expanded by $\sqrt{6/5}$ [vs straight-line geometry], both due to atmospheric refraction. See, e.g, the Bowditch.)

Question #3: Would it matter?

Hypothesis-discoverer Rawlins' own 1996 case[110] for re-evaluation (emphases in original) follows. *DIO*'s new PHYSICAL — not standard kneejerk-metrological — theory

> (ascribing both ancient [Earth-C] values' error to [atmospheric] refraction) simultaneously solves . . . . *both* the (very discrepant) Eratosthenes & Poseidonios values . . . ([through] a *single* value for the stade: the same . . . 185m value . . . found even in most dictionaries.) No other simple, coherent theory does so. [Classic Eratosthenian stade-scruncher J.Dutka][111] . . . claims that the reason for the 180,000 [stade] value's lowness is not known. He might've instead noted: [i] a coherent explanation exists for both figures, but [ii] he prefers the theory that explains only one of the figures [— Eratosthenes'].

Can there ever be rational discussion here when the only theory that fits all 3 data (both C, as well as the standard 185m stade) is not even understood by those who keep prominently churning out forced metrological retreads (as recently as late 2016! — fn 97 here), none of which can fit more than one of the 3 desiderata; and even that single fit is often several times worse than 1%. Hint to metrapologists: your century of stade-tweaking ***has been obsolesced — simply no longer needed*** to explain disparate C. Note 3 hyper-ironies here regarding Eratosthenes' Earth-*Circumference* experiment, often seen as the most enduring *astronomical* legend of all, and the subject of centuries of failed *metrological* speculations.

[110] Quote from Rawlins 1996C fn 47. Those who have spurned the 185-meter stade include F.Hultsch, E.Lehmann-Haupt, A.Diller, C.Sagan (more at ‡2 §N10). The *ad hoc* nature of the durably mythic runty "Eratosthenian" stade is obvious to most specialists, e.g., P.Gosselin, E.Bunbury, D.Dicks, O.Neugebauer, D.Rawlins, J.Berggren, A.Jones (more at *idem*). (Who creditably did not jump indiscriminately at a poor solution, but waited for a valid one to come along. So far so good. But now that *DIO*'s airbend theory is here, no historian-of-science is claiming the math doesn't work. Or that anything works better. Has the-catatonia got the JHAD-tongue?)

[The dwarf-stade myth is efficiently, consistently, bluntly, and utterly evaporated by Engels 1985 p.309. Sexagesimally-defined stade: Rawlins 2012T fn 2, self-contradicting the titular contention of Rawlins 2008Q (& note *ibid* §A4[a]) that early-Ptolemaic survey-based Earth-circumference determination was just legend. This can be seen as showing DR's poor judgement. Or desire to learn. Or both.]

[111] Dutka 1993 p.64 cites Rawlins 1982N — whose App.A explicitly links 6/5 to lighthouse and 5/6 to sunsets — without (§I26) citing the paper's atmospheric refraction theory that explains these felicitous fits to the 2 respective ancient C-values at issue, & with no sign whatever of understanding the paper's physics. Strabo's arcs (where Earth-curvature is apt to a meridian circle of circumference 39870000 m): 5000 stades Alexandria-Aswan & Aswan-Meroë, each good to ordmag 1′ for 700 stades/degree: $7^\circ 1/8 + 7^\circ 1/8 = 14^\circ 1/4$. (Rawlins 2009S §C notes Philo's solar work at Meroë, presumably for an imperial survey.) Testimony for early-Ptolemaic meridians in 60^{ths}: Strabo 2.5.7 (Eratosthenes); also Geminos, etc.: Neugebauer 1975 pp.590 (n.2), 733, & 1364 (Fig.43). Is a Ptolemy I survey's memory embedded in Kleomedes 1.10's famous legend? (Rawlins 2008Q §A4[a].) Dinsmoor 1950 pp.250-251, cites 5 ordmag-10%-disparate Greek stadiums' stade-long race-courses. (Shcheglov 2016 pp.696f lists even more.) The only post-Ptolemy-I course (Athens, rebuilt +143) is also the 185m one. The ancient stade was 1/8 of a Roman mile (1480m): Engels 1985 p.308. Updated compendium of ancient Earth C-values, in stades: Aristotle 400000, Dikaearchos(?) 300000, Timocharis(?) 216000?, Sostratos-Eratosthenes 256000, and Poseidonios-*GD* 180000. Correct circumference $C = 216000$. (Meter $= C/4/10/10/10/10/10/10/10$. Nautical mile = 1852m $\doteq C/360/60 = C/21600$ = 5/4 of the Roman mile.) Further speculation on the pharaonic stade's history is found at www.dioi.org/cot.htm#kchg. Relating attested meridian-60^{ths} to 185m is another JHAD-uncited completely original *DIO* revelation.

Yet the right solution is: [1] directly for radius (fn 107), not circumference; [2] geographical (§I23), not at all astronomical; [3] physical (§I26), not metrological.

I27 But whence arose the linchpin 185m stade? Before imperial standardization, stades varied ordmag 10% from locale to locale, the smaller among the early ones now naïvely, selectively, anachronistically used by Eratosthenes' mod-groupies to rig right-on correctness for his too-big C. In 2014, it was seen for the 1^{st} time that the much-attested (fn 111) early 3^{rd} century BC Greek rule of dividing terrestrial meridians into 60 parts (not 360) — step-one of C's potential ***sexagesimalization, conventional Greek fraction-practice*** — could've led naturally to the Ptolemaic empire's regularization of the "stade" by defining it, parallel to our definitions of meter and nautical mile (fn 111), as C/60/60/60 = 40000000m/216000 = 185m. This is the best — the ***only*** — available scientific theory explaining modern-consensus-185m's Greek origin & durable adoption, which survived even influential Eratosthenes' soon-after insistence on a 19%-larger C.

I28 This inevitably-uncertain speculation implies that, c.300 BC, presumably while surveying the new Egyptian empire of Ptolemy I (Greek pharaoh −323-284), Greek scientists astronomically determined accurate Earth-circumference C, before dividing it by 60^3 to "define" the 185 meter stade (‡2 fn 49). Who earlier had the required science? Gradual-grade topography? (Camels?!) Was the measured arc along 29°.9 E longitude, Alexandria to Meroë's latitude (*nowhere interrupted by the Nile or sharp mountains*): 1578 km = (in 60^{ths}) $2^x 3/8 = 14^\circ 1/4$ = 8550 stades at 600 stades/degree, or nearly 10000 stades (Strabo 2.5.7, 17.3.1: fn 111 here) at later-standard 700 stades/degree? — accurate to ordmag 1′ or 1 nautical mile. Was the hypothetical survey supervised by contemporary scientist Timocharis, demonstrably expert (fn 99) in 1′-accuracy latitude-fix via ringed instruments?

I29 For over 100^{y}, at least from H.Berger, scholars have wondered if the early overlarge 300000 stades Earth circumference C, cited in Archimedes' *Sandreckoner*, was due to Dikaearchos (c.−300). In 1994, *DIO* showed[112] that if Dikaearchos measured sea-horizon dip from atop conveniently-seaside Mt.Pelion accurately ($1^\circ 1/10$) & computed C from it, then his over-estimate of Pelion's height as 10 stades would (in ignorance of quantifiable atmospheric refraction) have produced $C = 300000$ stades within ordmag 1%.

I30 *DIO* produced hitherto-unperceived & thitherto-uncited physical evidence that the Galactic Equator appeared on ancient Greek celestial globes: www.dioi.org/fff.htm#phod.

I31 Kallippos' −329/6/28 Summer Solstice was his famous calendar's epoch. Modern discovery of the event's hitherto unknown hour unexpectedly happened in connexion[113] with 1985 realization that Kallippos' $365^d 1/4$ yearlength ought to have been found by him from the gap between his solstice & Meton's. Meton's calendaric Solstice-hour was Athens' day-epoch, 18^h, for the day ***containing*** the solstice, not its exact time (Rawlins 2018U §J4), thus −431/6/27 3/4. So, adding 102 Kallippic years, or $37255^d 1/2$, to that date reveals Kallippos' epoch as −329/6/28 1/4, dawn, which is late by 3^h, thus accurate within traditional $1^d/4$ precision. Moreover, the New Moon at 4 AM was only 1^h after 3 AM solstice, a once-in-centuries ideal conjunctive epoch for his lunisolar calendar. Kallippos induced his yearlength from division of $37255^d 1/2$ by 102, finding (as it happened) exactly $365^d 1/4$ days. His solar motion was codified into his famous Kallippic 76-year cycle of four 6940^d Metonic 19^y cycles minus 1^d, that is, $365^d 1/4$ per year. Due to Meton's -17^h truncation error & his own Solstice's $+3^h$ error (interval's net error $+20^h$), he accidentally arrived at history's 1^{st} Julian calendar, nearly 3 centuries before Caesar's Sosigenes.

I32 Note: Superscripts occasionally used here & below: d = days, h = hours, m = timeminutes. Lunar: u = synodic months, v = anomalistic months, w = draconitic months. Solar: g = anomalistic years, y = tropical years, y = sidereal years, K = Kallippic years. (Degree-remainders merely signify 360^{ths}.) Tropical-years here can refer to real ones or the Metonically-defined "tropical" (or Easter) year $235^u/19$.

[112] *DIO 4.2* (1994) §M & fn 22. Dikaearchos' 10-stades-high Mt.Pelion, Pliny 2.65.162.

[113] Yearlength $365^d 1/4$: Rawlins 1985H. Kallippos solstice-hour-epoch: *ibid*, & Rawlins 2018U eq.2. [Wikipedia's Callippus entry falsely implies Meton-Kallippos's 1^d difference relates to precession.]

I33 Sourcing Ptolemy's final lunisolar ratio,[114] $105416^{u} = 8523^{y}$, occurred 2 decades ago (all 10[!] digits exactly elicited) by test-exploring Greek awareness of the 800^{y} sidereal eclipse-cycle nest (1/5 of 800^{y} cycle attested: Geminos 8.40-41): solution, awareness, & nest not suspected ere Rawlins 1996C eq.31. (Sidereal year accuracy: *ibid* fn 110.) Royal Muffia Cavilliers have produced no math error or alternate solution since. Predictable result (see Rawlins 1996C's title and boxed 2013 statement atop its p.2): permanent silence.

I34 More muteness greeted *DIO*'s 2002-2003 discovery that all 3 previously unsolved, anciently adopted mean motions of the Moon (1. System A; 2. draconitic; 3. Ptolemy's last lunar equation)[115] were exactly consistent with discovery by ancient scientists who merely divided an eclipse cycle ratio by whatever integer or half-integer was common to both the ratio's terms, **just the way Ptolemy at *Almajest* 4.2&6.9 explains determining months synodic, anomalistic, & draconitic**. Notably, no matter where, *over a 400^{y} span* (3rd century BC to 2nd century AD), the pairs' latter eclipses are located in time, all the prior ratio-solving eclipses turn out to be from *the very same century*, the ***thirteenth BC*** (§I36). One might suppose the center's largely old-guard pan-Babylonianists, would welcome the prospect that such remarkable Greek triple-accuracy could have a fundamental & irreplaceable debt to Babylon and would delight in the potential new vistas opened by these astonishingly exact matches. Instead, the entire history-of-ancient-astronomy shunninity, frustrated by inability (like §I33) to find math error or ***alternate eclipses to show non-uniqueness***, has been forced to just datalessly scoff (chief sneerleaders: A.Jones and D.Duke) at the very idea of such remote eclipse records as ridiculous *a priori*. But perhaps neither snickerer has heard about non-cult[116] scholarship by Johannes Koch who had already (10^{y} earlier) estimated Babylonian observations' nascence as about −1350? Surprise realization that Hipparchos' famous 600^{y} lunisolar tables effectively went back just that far only occurred[117] in 2015.

I35 So we should gauge the proposed eclipse-ratio method by comparing it to what may be verrrry loosely referred to as "the competition" (e.g., fn 119). Facts: No other method is attested. (Twice: *idem*.) No other method is so simple & immediately-direct-to-the-result. No other method could ensure such high accuracy, 1-part-in-10^{6}, 3 times out of 3, *eliminating false nearby period-ratios* (§I37). No other method than eclipse-period ***integral ratios*** so naturally accounts for why all said motions were expressed as ***integral ratios***. No other method explains the 4-digit size of each ratio's 2 components: **as in *Almajest* 4.2&6.9**. No other credible (fn 119) method, attested (or unattested) has math-reproduced ANY of the numbers sought, while *DIO*'s proposal has done so for ALL 24 digits precisely — that is, all six 4-digit components — on-the-nose in each case: see www.dioi.org/thr.htm#cqtp.

[114] *PlanHyp* 1.1.6 (Heiberg 1907 pp.78-79 or Neugebauer 1975 p.901 eq.3): $105416^{u} = 8523^{y}$. Solved: Rawlins 1996C eqs.20-31. Thanks to K.Moesgaard for a perceptive correction.

[115] §I36. The admirable exception to Hist.sci ignoring ancient monthlength accuracy: Pedersen 1974 pp.164&424. But he does not realize how such accuracy was achieved, nor does he go on to challenge the anti-empirical orthodoxy we saw at fn 8.

[116] Moesgaard 1992 p.474. Initial Muffia tactic vs R.Newton & *DIO* was non-citation. But *Isis* Editor Margaret Rossiter's publishing *DIO*-respecting Thurston 2002S defied the 30^{y} shun, inspiring (*what else from pathological unregenerates*?) **DOUBLEshun**: [a] Thurston's swift ever-exile from *JHA* (www.dioi.org/pm3.htm); [b] *DIO*-citations' end in AAS-HAD's *Newsletter* & [c] *Isis*' Cumulative Bibliography; [d] during Thurston 2002S's refereeing (2000), the usual indiscriminate (fn 66) unrefereed anti-bodies prepared for launch: Schaefer 2001 (Pb), Schaefer 2002, Jones 2002E (2nd to Pb), Duke 2005T, Duke 2008W (Pb), Jones 2010B (2nd to Pb), as pols outdid each other (to squush #1 blackballee ***no matter how***: §§B-G), all now on *JHA*'s *certified*-Premier (fn 42) board. Re *JHA*'s prior villain, we quote from ‡2 fn 28: "Rewards handed out to those who attacked the R.Newton satan include *JHA* boardship (R.Newton 1991 fn 2) & a MacArthur for miss-man [fn 96 here] Swerdlow. (It's hard to find good help anymore.) . . . . maid-men Evans&Schaefer were elevated at *JHA* not long after their massive bungled 1998&2001-2002 attacks on Rawlins. (The unsubtlety here may actually be deliberate.) Selecting boardmembers [thusly] will damage mean-IQ atop *JHA* for decades to come."

[117] For this recent shock, see www.dioi.org/thr.htm#rbkv. Re Hipparchos' 600^{y} tables, see Pliny 2.9.53.

I36 To emphasize the precision and the breadth of this achievement, we display the three anciently-adopted lunar speeds *DIO* has mathematically traced to hugely-separated eclipse-pairs, all starting around the 13th century BC (details www.dioi.org/thr.htm#cqtp):

−1291/11/23 vs −280/1/16 & −1273/12/05 vs −262/1/26 → $6247^{u} = 6695^{v}$ (SystemA),
−1244/11/13 vs −140/1/27 → $5458^{u} = 5923^{w}$ (Hipparch),
−1200/07/11 vs 125/4/05 & −1189/06/12 vs 136/3/06 → $3277^{u} = 3512^{v}$ (*PlanHyp*).

(Latter dates: earliest firm System A text is −262 [J.Britton 1999 n.6; Rawlins 2002B §E6]; −140 [Rawlins 2002H §C9] and +125 & +136 [Rawlins 2003P §C] eclipses are attested.)

I37 Again: mere integral division is *DIO*'s twice-ATTESTED eclipse-cycle "method" (too fancy a term?) of exactly reproducing all 24 digits. In the 1 1/2 decades since these supersimple *DIO* solutions' 2002-2003 debut: no historian-of-science has publicly engaged a single one's science. Nothing beyond a rigid clique's continued traditional insistence on its vaporous theory that UNATTESTED laborious Babylonian analysis of poor lunar horizon[118] data couldamusta produced such accuracy — if only enough[119] data were averaged! (This bizarre notion came inevitably out of the Neugebauer-Babylonianist cult, ever-clinging baselessly[120] to its sacred tenet that Babylon gave rise to high Greek astronomy.) Naturally, no numbers are provided[121] to show how such a fantastic reconstruction could: [a] repeatedly produce HYPER-accurate results, or [b] find the draconitic month at all,[122] or [c] distinguish

[118] See Huber 2000 for the variety of systematic errors infecting Babylonian crude horizon data (***use of which for month-gauging is totally unmentioned in any ancient source***) plus the brevity of the Babylonian data's time-base (2.2 centuries). Contrast to *DIO*'s uncomplicated ancient-standard eclipse-cycle-ratio method, clearly attested (§I34) for finding Greek monthlengths from eclipse-pairs separated by 3 1/2 or 6 centuries, or proposedly and fittingly (§I36) 10, 11, even 13 centuries.

[119] See www.dioi.org/thr.htm#cvpc, and Britton 1999, for his theory of System A-year origin, and www.dioi.org/thr.htm#rgbb, for his clique-pique at Rawlins 2002B's simple exact-fit to same: just halving an integral eclipse period-relation! P.Huber dreams that ancients merged non-integral short-period relations to create ordmag 1000^{y} integral ones (contrary to obvious common-sense, as well as ancient sidereal-vs-synodic records: ‡2 §N15), like Neugebauer 1975 reading into 3rd century AD *containment* testimony (*ibid* p.321) such an imaginary *construction* (*ibid* p.322). But that sort of origin [A] is, unlike *DIO*'s *Almajest* 4.2&6.9-based method, unattested (*ibid* p.555 finds no integral or 1000^{y} ratios); & [B] wastes long-time-base's accuracy-advantage (from dividing both endpoint-errors by a huge integer), ***known to every astronomer who ever gauged celestial periods*** (from Mars to pulsars) in the real science world. Ptolemy knew better: *Almajest* 4.6 uses long time-spans, so deduced celestial mean motions "will be valid over as long a period as possible." See Toomer 1984 n.18 at *Almajest* 3.1.

[120] Indicting specifics' sheer breadth: www.dioi.org/j129,pdf, Rawlins 1991W §§E-F, esp. §E3 & fn 73. Hmmm. Do pan-Babylonianists never-ever wonder just why: Babylon had no Aristarchos? No Archimedes? No Apollonios? Not even a Seleukid Euklid? No trigonometry. No transit data. No observed solstices. No vertical instruments. No knowledge of Babylon's latitude (‡2 §N13). No serious astronomy until after Greek conquest (§G5)? Was Seleukid Babylon's gift to science its fortunate preservation of Greek-astronomy glimpses (e.g., §F3 [1]) on durable clay, not fragile papyrus?

[121] *DIO*'s theory, which easily & EXACTLY (fn 119 above) solves System A's monthlength (Rawlins 2002B eq.2) — and is extrapolated at *ibid* p.19, to *DIO*'s General Theory of Ancient Cyclicities — is not cited at all in Britton 2007 p.124 (System A ratio misprinted), though the same *DIO* issue it appeared in is inimically cited at Britton *op cit* n.66. Similarly, defense of Ptolemy's star-catalog authorship by Pedersen 1974 (pp.249&258) omits citation of Delambre 1817's simple contrary proof, though citing elsewhere (*ibid* p.109 n.5), for another purpose, the very Delambre page on which said proof appears: Rawlins 1982C p.362. More deliberate non-citations at fn 10, & in above chapters (esp. §G11) on ***data-tampering***, worshipper-"historians" just following hero-Ptolemy's example, after all!

[122] Babylonianist lunar-six proposals for determining the anomalistic month can't work for the draconitic month — therefore a different farfetched explanation needs concocting. Someday. Meantime, *DIO*'s — & Ptolemy's! (fn 119) — uncited (e.g., fn 121) eclipse-cycle method www.dioi.org/thr.htm, solves both. Exactly. A parallel case: to explain Ptolemy's huge solar errors, defenders pushed the theory that they were caused by atmospheric refraction and/or mis-setting of the Alexandria ring (fn 70). Such might have (but didn't, as reluctantly proven by Neugebauerian John Britton 1992 p.44) roughly explained away his equinoctial errors, but could never have explained his solstice-error; whereas the

among almost-as-accurate proximate ratios (www.dioi.org/thr.htm#cpcc), or [d] explain why each solution emerges as a ratio, a glaring feature of ALL pre-Ptolemy adopted lunar motions, which by contrast to orthodoxy is accounted-for perfectly inevitably by the eclipse-period-ratio solution. Jones' blindered private rejection[123] (by subsequently-undercut[124] reasoning) of the *DIO* draconitic solution, flees all of the overkill-numerous, solid, unambiguous evidences consistent with said theory, particularly its PRECISE match to Hipparchos' draconitic $5458^{u} = 5923^{w}$ ratio (*Almajest* 4.2) by pairing an early apogee eclipse, −1244/11/13, with his Rhodos-observed −140/1/27 eclipse, *the very same perigee eclipse* which he uniquely had also previously (*Almajest* 6.9) paired with a less early apogee eclipse (−719/3/8) for exactly the same draconitic purpose, with inferior result — inevitably, due to shorter timebase. Comments: In all history, no astronomer but Hipparchos ever used an apogee-perigee eclipse-pair. Scoffings at the theory's outrageousness-vs-orthodox-preconception inadvertently compliment it by reflecting its potential advance's enormity.

I38 §I36 presents three perfectly fitting 2002-2003 *eclipse-solutions* to Greek adopted monthlengths. Why shunners' 15^{y}-impotence in finding DR-errors? Or alternate solutions? Answer (§I34): **there IS no other umbral lunar eclipse-pair** whose integral-months ratio precisely, proportionately, directly yields (by *Almajest* 4.2&6.9 method) any of §I36's three attested, never-before-solved Greek integer-ratio motions, with: both eclipses visible in Greek-Babylonian region, latter eclipse within 50^{y} of discovery-date (c.−262, −140, +136, resp), earlier eclipse not ere *Almajest* 4.6's −720/3/19 (*oldest eclipse-data historians-of-science accept that Greeks possessed*: Toomer 1984 p.166 n.59). To pioneers who undo the above negative assertion by finding, before 2020/1/1, real umbral lunar eclipse-pairs directly solving the ratios in question (under above specs, incl. hist.sci's own 721 BC bound), *DIO* will gratefully grant: \$10000 for $3277^{u}/3512^{v}$; \$20000 for $6247^{u}/6695^{v}$; \$30000 for $5458^{u}/5923^{w}$; *\$40000 extra for all 3 relations*. [To certify the bet, *DIO* will deposit \$50000 with the National Academy of Sciences, if it will hold same for winners until time's up.]

J How to Hide from Reckoning: Get Thee to a Shunnery

J1 The foregoing suggests shortcomings in the modern ancient astronomy subfield re: [a] Scrupulous & neutral refereeing. [b] Turfless generosity & citational integrity. [c] Open-minded curiosity and tolerance (Hoskin, Evans, Jones, and Toomer have fled contact with Rawlins for years, e.g., Thurston 1998D fn 2) without a professional-survival priority — nay, necessity — of treating archons with an attitude of nondissent, even supplication, to allay (non-imaginary) fear of being unpublished or outright blackballed, as if such etiquette-issues outrank (§H5) academic skills & integrity. (And o-yes accurate history.) [d] Scientific skills (or regular consultation with able scientists), & especially the purest scientists' attitude of humble subservience to evidence (acquired by careers of frequent empirical contradiction). [e] Celerity of incorporation of knowledge-advancements (vs fn 20 here: 84 years?!) that will determine whether historians-of-science can ever grasp the empiricism & brilliance of Hellenistic science. [f] Essential, genuine neutrality and curiosity (hardly compatible with a cult's insistence on aggressively protecting sacred viewpoints for decades on end), enhanced by willingness to hypothesize-explore — ever subject to evidence-congruity (e.g., fnn 16&83 vs fnn 20&25&40). [g] Philosophy-of-science&common-sense Occamite weighing of competing theories by such criteria as simplicity (§H above), probability's relation to confirmation (‡2 §N15), minimal hypotheses (§D & fn 122), fruitfulness (§§C3[b], E, & F), predictivity (§§F & G). Instead of by herd-grantmanship.

J2 What simple, Occamly-coherent theory explains the serpentine communal behavior detailed above? — targetted non-citation, desperately indiscriminate "alternate" solutions to demean solid achievement, dishonest smearing, data fudgery and even destruction? Answer: shunning[125] (aimed at anyone upsetting archons' tenets or pretensions) — the single spare hypothesis that ties together all of the foregoing superficially mysterious, deeply inexcusable offenses against ethical scholarship. No use denying it: jihad-shunning of Diller, Newton, Rawlins, and *DIO* is common knowledge throughout the JHAD circle. (Can't blame on Rawlins' acknowledged shortcomings, for sedate gentlemen Diller, Newton, & Thurston [www.dioi.org/pm3.htm] were shunned from 1934, 1968, & 2003, resp, most of them years before Rawlins barged into The Ptolemy Controversy in 1976. Even highly expert Britton felt he'd been somewhat exiled, as he imparted to Duke, for honestly owning that Ptolemy's solar errors were not innocent: fn 122.) But, given the above consistently weird incidents, one needs no inside dope to smell heresy-banishment, along with the temptation that attacking the most archon-resented heretics (*no matter how shoddily*: fn 66) will bring advancement to any careerist willing to stoop that low.[126] What scholar ever lost immediate status by adding to an establishment cult's sacred crank literature? Concluding:

[1] Outside the clique here examined, can historians-of-science recall any cases like the above-cataloged rear-guard mass-vandalism of data and thus of potential historical progress constructable thereon? (But, then, have there previously been unanswerability-panics of the magnitude that R.Newton & *DIO* represented?)

[2] For the ancient astronomy field, has Curtis Wilson's cleansing hope (fn 59) been snuffed?

[3] Greek astronomy will ever rank uniquely as man's 1^{st} foray in precise predictive science. Its lofty place in human history need not be desecrated by archons' mundane limitations.[127]

theory of fabrication explains both and to the *Almajest*'s 1^{h} precision. Therefore, in each case (lunar or solar): *which approach would Occam prefer*?

[123] Half-dozen evidences for Hipparchos as author of $5458^{u} = 5923^{w}$: Rawlins 2002H §C.

[124] Neugebauerians long taught that 6 cuneiform-tablets' lunar calculations for c.−200 proved chronologically Hipparchos (c.−130) took his draconitic equation from Babylon, until Rawlins 2002H §D1 pointed out: [a] the only 3 early tablets using his equation were the only 3 *not dated on the clay*, and [b] there's a 7^{th} tablet that is clay-dated, using his equation, but the date is *after* Hipparchos. As willfully as in fn 28, Jones ignores (private communications) not only this & fn 123's flock of coherent evidences, but also rejects an unexpected key eyeopening spinoff-benefit: recommending responsively increased caution when time-placing non-clay-dated astronomical cuneiform tablets: *ibid* §D1.

[125] Jihad-shunning (longstanding: above, fn 109, & Rawlins 1991W fnn 171&173) of Diller, Newton, & *DIO* is known to all in the JHAD-circle, resorted-to from careerists' fear that honest critics are simply bad-for-business. *Organizing* such disgusting cultist behavior (which works by influence [e.g., fn 116], not ESP) is a disgrace to academe. Like marriage, shunning is easy to commit, hard to end (‡2 fn 34): usually originating in archonal rage at intellectual rebellion, in fields so degenerate that Disrespecting archons and exposing pretensions are worse crimes than the counter-crimes of smearing, shunning, deceiving, stealing, doctoring, censoring, *en route* to effecting decades of knowledge-subtraction. The exiling entity commits to the banned's worthlessness without anticipation of concomitant risk: what if the shunnee then produces valuable knowledge? The shunner can never admit banishing valid scholarship. So either [a] he loses faces by unshunningly owning to a mistake or [b] omertà-fakes (e.g., fn 66) the exile's vindicated work as being just as worthless as Infallibly decreed at the outset & bars non-denigrating citation. How many image-protective archons ever chose option [a]?

[126] Whenever weighing cultists' attacks on *DIO*'s frustratingly reliable inductional and computational achievements, it may seem difficult to distinguish between [i] those meant to impress archons with toadily-awesome loyal-slavery to the shun, from [ii] just innocently misguided truth-seeking efforts, in a field with a limited number of puzzles, where endeavors inevitably overlap. Difficulty with [ii]: why would honest research keep resorting to doctoring or trashing data (§§C-G above)? Further on the theme of openness&honesty in the history-of-science world: [a] In 1992, complaint from sometime *Isis* boardperson R.Kargon caused temporary cancellation of Johns Hopkins Univ's Library subscription: *DIO 2.1* p.2. [b] At the cozy Muffia 1994/5/6-8 Dibner Inst symposium (M.I.T.), a display stack of *DIO* issues was stolen: *DIO 4.1* p.2. [c] At the 1997 international History of science conference at Liège, the *DIO* display samples' sole copy of Tycho's star-catalog (*DIO* vol.3: Rawlins 1993D) vanished.

[127] History-of-astronomy's present #1 archon Evans joined the unHoly Trinity ruling the *JHA* less by quality of research (though that's not negligible: fnn 9&34, and www.dioi.org/cot.htm#gjne) than by ingratiatory loyalty to *JHA* power-operator-editor & AAS-HAD co-founder O.Gingerich. Due to these less-than-entirely-academic factors, upon Evans' 2013 elevation to *JHA* Editorship (Rawlins 2009E fn 7 had predicted years in advance that Evans was heirhead-apparent), no audible historian-of-science thought it mattered that (among other ethical lapses: fn 10) he continues decades of ducking explanation of his laughable 1987-launched & 1998-suppressed lunar observation of 1981/7/16 (fn 11) and so lets

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stand indefinitely-uncorrected his own miscalculated-backfired evidence, not retracting the slander of Greek science it was adduced for, in ever-orthodox support of the 2 prime inter-related field-dominant clique-myths regarding Greek astronomy that we've been discussing hereabouts: [a] Ptolemy's honesty (fn 9); [b] Greek data-ineptitude's unattested-but-alleged consistency with allegedly-normal science (fn 8; also Evans 1998 p.209) that allegedly-retained only theory-fitting data: i.e., forcing all Greek astronomy to fit a *faker-astrologer*; then, pre-post-erously, with Ptolemaic evidential circularity, using that very model to prove his normalcy, a truth-inversion warp that's ruled the field for most of ***a century***.

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