DISSERTATIO ACADEMICA

QUANTITATES QUASDAM PRO LOCIS QUIBUSDAM ET SPECULIS ASTRONOMICIS CONSTANTES, AD COMPUTANDAS OCCULTATIONES STELLARUM ET ECLIPSES SOLIS IDONEAS,

SISTENS,

QUAM

CONSENSU AMPLISS. PHILOSOPHORUM ORDINIS IN UNIVERSITATE CÆSAREA LITTERARUM ABOËNSI

MODERANTE

Mag. JOH. FREDR. AHLSTEDT,

Mathem. Professore Publ. & Ord. Fac. Phil. p. t. Decano,

PRO LAUREA

AD PUBLICUM DEFERT EXAMEN

HENRICUS JOHANNES WALBECK,

Stip. Publ. Aboënsis.

In Aud. Phil. die 20 Septembris 1815.

h. a. m. c.

ABOÆ, Typis FRENCKELLIANIS.

Amplissime atque Celeberrime D^ne Professor, O-
nis philosophorum ad inclytam hancce Athenaeum de-
cane Maxime spectabilis fautor aestumatissime

Auctori hujusce dissertationis Clarissimo -
rem gerere cupienti partes, quas ei placuit mihi in-
gere, suscepi amicitiae ejus majorem habens ratio-
nem, quam vel studiorum meorum a materia jam
ventilanda longe diversorum distantiumque, vel ra-
tionum, quae me jugiter dissuadent tenentiae ad hanc me
accingi haud passa sunt. Concedas itaque ~~mihi~~ in ipsa
arena tum capturo mihi Tu Amplissime Vir ... huic
putationi praesides, ne denique aures taciles praebe-
que maxime aestimaverim omni qua de et verborum
rogo honore.

Ad Te, Clarissime D^ne Candidate non longo o-
pus hic est praeamine: tanta enim est animi tui serico-
ris in amicitia colenda quanta in artibus doctrinis que
et inprimis in sublimi illa astronomica sufficienta pro-
cendi mentis acies et perspicatia. Rem igitur ~~a~~ non
documentis probaturus sum dignus se viventi, quod te jam
expectat trabeo, facile ~~amicitia mea~~ vel studiorum
meorum diversitati, vel temporis angustiae tribuas si in
praemeditata, quas forte allaturus sum, circa Dissertationem
laudatam observationes, minus contra minusque solide invenire-

Inter diversa phænomenorum cælestium genera ad inveniendas meridianorum differentias primum occupant occultationes stellarum a Luna, haudque infimum eclipses etiam Solis ab hac vel planetis inferioribus locum, quorum calculo inservientes formulas plurimi præstantissimi Viri, LAGRANGE, LEXELL, DUSEJOUR, BOHNENBERGER, DELAMBRE, OLBERS & LITTROW a) publici juris fecerunt. Plurimæ harum facile ab aliis possunt derivari, neque tamen omnes practico respectu ejusdem sunt commoditatis. Inter has diversas methodos, ut quidem mihi videtur, brevissime forsan usurpatur vel ea quæ a BOHNENBERGER (Geogr. Ortsbest. pagg. 339 & 345) ope nonagesimi traditur, vel præstantissima illa ab OLBERS (Astron. Jahrb. 1811) proposita. Etsi vero OLBERS & LITTROW methodos etiam tradiderunt calculum parallacticum tam respectu Ascensionis rectæ & Declinationis, quam altitudinis & azimuth peragendi, elegantiorem tamen hæ formulæ analyticam formam, quam commodiorem practicum habent usum. Sunt enim Loca Lunæ respectu ecliptices in tabulis data, & motus ejus ad æqua-

a) Neque silentio prætereundæ sunt formulæ Clar. BESSEL, quibus datis veris Lunæ ad eclipticam relatis positionibus, apparentes Ascensiones Rectæ & Declinationes mox computantur. Hæc methodus calculandis e tabulis occultationibus fixarum maxime est idonea,

torem relatus magis inæqualis est quam ad eclipticam. Porro, si eclipses stellarum vel Solis ad horizontem computantur, major requiritur labor, cum loca, quæ in tabulis ad Eclipticen referuntur, primo ad æquatorem, mox ad horizontem reduci debeant. Quid? quod in computandis ad usus geographicos phænomenis his, hæc ultima methodus minime est idonea, & usus hujus tantum ad eos casus restringitur, ubi e tabulis tantum & elementis e theoria datis calculantur eclipses. In usum eorum, qui forsan unam alteramve harum formularum, BOHNENBERGERII sc. & OLBERSII non viderunt, eas hic afferam. Designent L, λ, D, Longitudinem, Latitudinem & Radium Lunæ (vel Solis *)) veram, L′, λ′, D′, easdem apparentes, β Latitudinem loci geocentricam, ε Ecliptices obliquitatem, α Tempus sidereum (cum Nut. in A. R.), p Parallaxem Longitudinis, π parallaxem horizontalem æquatoream, ϱ radium terræ ad æquatoris relatum, & erit secundum BOHNENBERGER:

$$\text{Sin } b = \text{Sin } \beta \text{ Cos } \varepsilon - \text{Cos } \beta \text{ Sin } \varepsilon \text{ Sin } \alpha$$

$$\text{Sin } N = (\text{Sin } \beta \text{ Sin } \varepsilon + \text{Cos } \beta \text{ Cos } \varepsilon \text{ Sin } \alpha) \text{ Sec } \beta.$$

$$\text{Tg } p = \frac{\varrho \text{ Sin } \pi \text{ Cos } b \text{ Sin } (L - N)}{\text{Cos } \lambda - \varrho \text{ Sin } \pi \text{ Cos } b \text{ Cos } (L - N)}$$

$$\text{Tg } \lambda' = \frac{(\text{Sin } \lambda - \varrho \text{ Sin } \pi \text{ Sin } b) \text{ Cos } p}{\text{Cos } \lambda - \varrho \text{ Sin } \pi \text{ Cos } b \text{ Cos } (L - N)}$$

$$\text{Sin } D' = \frac{\text{Cos } p. \text{ Cos } \lambda' \text{ Sin } D}{\text{Cos } \lambda - \varrho \text{ Sin } \pi \text{ Cos } b \text{ Cos } (L - N)}$$

For

*) Parallaxis Longitudinis Solis & Lat. app. ope priorum calculentur formularum, quæ tum insignem abbreviationem admittunt. Pro Sole & planetis est $D' = D$.

Formulæ Olbersianæ hæ b) sunt

$$\text{Tang } L' = \frac{\text{Sin L Cos}\lambda - \varrho \text{ Sin}\pi (\text{Sin}\alpha \text{ Cos}\beta \text{ Cos}\varepsilon + \text{Sin}\beta \text{ Sin}\varepsilon)}{\text{Cos L Cos}\lambda - \varrho \text{ Sin}\pi \text{ Cos}\alpha \text{ Cos}\beta}$$

$$\text{Tg}\lambda' = \frac{[\text{Sin}\lambda - \varrho \text{ Sin}\pi (\text{Sin}\beta \text{ Cos}\varepsilon - \text{Sin}\alpha \text{ Cos}\beta \text{ Sin}\varepsilon)] \text{ Cos L'}}{\text{Cos L Cos}\lambda - \varrho \text{ Sin}\pi \text{ Cos}\alpha \text{ Cos}\beta}$$

$$\text{Sin D}' = \frac{\text{Sin D. Cos L' Cos}\lambda'}{\text{Cos L Cos}\lambda - \varrho \text{ Sin}\pi \text{ Cos}\alpha \text{ Cos}\beta.}$$

Labor calculandi eclipses in his duabus methodis fere idem est, id vero commodum non negligendum, quod Bohnenbergianæ tantum cum quinque vel sex ad summum figuris decimalibus logarithmorum computentur, quod etiam valet de partibus posterioribus duarum primarum Olbersii & tota tertia formula, ubi præterea, prima, cum apparens tantum longitudo detur, summa cura e tabulis trigonometricis supputetur. Perspicuum est, in utraque methodo (si Nonagesimus per allatas formulas computatur) calculum breviorem reddi, si quantitates constantes Sin β Cos ε, Sin β Sin ε, Log Cos β Cos ε, Log Cos β Sin ε & ϱ seu etiam Log $(1 - \varrho)$ pro diversis locis e tabula depromi possint, quare igitur non inutile duxi, has pro quibusdam speculis astronomicis, & locis aliquot borealibus, quorum Longitudines ex observatis occultationibus computare forsan si fata tulerint, in animo est, heic sistere & in communem usum promulgare.

Necesse est, ut maxime probabilis in hoc calculo assumatur valor ellipticitatis telluris. Hic diversis modis, secum invicem

b) *Astr. Jahrb. 1811.* Quæ in *Astr. J. B. 1808* occurrunt, forsan non tam commodæ sunt, saltem eam abbreviationem calculi non admittunt.

vicem bene consentientibus prope $\frac{1}{300}$ constituitur. Verissimum est, graduum mensuras multum a se invicem abludere, verumque ita est, paucis m. secundis in Latitudinibus extremorum arcus mensurati punctorum mutatis, vel etiam variatis quam minime longitudinibus basium (quæ sæpe admodum breves fuerunt), omnes ad eandem posse ellipticitatem reduci. Combinatio vero omnium, (quæ vero plurimæ non ita sunt accuratæ, ut certitudinem 1″ in Latitudinibus, cum adhuc major præcisio ad hunc usum necessaria esset, habeant), Cl:o Lindenau dedit $\frac{1}{310}$ c); mensuraque gallica novissima duce Delambre & Mechain cum suecana a Svanberg peracta comparata, quæ ambæ sine dubio accuratissimæ sunt $\frac{1}{300,7}$ d); Duæ æquationes Lunares, quod notum est, una in Longitudine, altera in Latitudine, quarum coëfficientes a Burg empirice sunt determinatæ, $\frac{1}{300}$; & ex 29 selectis pendulorum observationibus ab Hallström e) ad calorem 0° & spatium aëre vacuum correctis formula pro longitudine penduli sexagesimalis per methodum minimorum quadratorum sequitur 439,230 + 2,343 $\sin\beta'^2$ lin. paris., quæ ellipticitatem requirit $\frac{1}{300}$. Præterea novissima gallica mensura ad finem perducta bene cum valore $\frac{1}{300}$ consentit, cum longitudo arcus meridiani inter Formenteram & Dunkerque ex observationibus tantum 0,41 metris diversa ab ea, quam dicta hæc ellipticitas poscit, inventa sit f).

In sequentibus igitur assumsi valorem $\frac{1}{300}$, quo posito, Latitudo apparens & vera sint β' & β, quo habeatur $\operatorname{Tg}\beta = (\frac{1}{300})^2$

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c) v. Zach *Mon. Correspondenz 1806, Aug.*

d) Svanberg *Mesure d'un arc du Meridien*, Préf. pag. XXVIII.

e) Dissert. de Fig. Tell. ope Pendul. determinanda P. III. pagg. 9. 10. P. V. pagg. 3. 4.

f) Bode *Astron. Jahrb.* 1813. pag. 252.

$(\frac{3\,0\,4}{\gamma\,0\,\gamma})^2$ Tang β', & logarithmus hujus coëfficientis (Logarithmis fractionum propriarum semper denario auctis) = 9,9971476, vel etiam

$$\beta' - \beta = 677'',4 \operatorname{Sin} 2\beta' - 1'',1 \operatorname{Sin} 4\beta',$$

ubi Log. Coëff. sunt 2,83085 & 0,046. Ad calculandum ϱ sequentes inserviunt formulæ, approximatoriæ quidem, sed eandem præbentes præcisionem, quam formulæ rigorosæ ope usitatarum tabularum trigonometricarum:

$$\varrho = 1 - 0{,}00325189 \operatorname{Sin} \beta'^2 - 0{,}00002658 \operatorname{Sin} \beta'^4$$

(Log. 7,512135; 5,4245).

$$\operatorname{Log} \varrho = 10 - 0{,}00141228 \operatorname{Sin} \beta'^2 - 0{,}00001384 \operatorname{Sin} \beta'^4$$

(L. 7,149920; 5,1408).

$$\operatorname{Log}(1-\varrho) = \operatorname{Log} \operatorname{Sin} \beta'^2 + 7{,}512135 + p \operatorname{Sin} \beta'^2 - q \operatorname{Sin} \beta'^4,$$

$$\operatorname{Log} p = 7{,}5502; \quad \operatorname{Log} q = 5{,}4463.$$

Hæc ultima formula, reliquarum commodissima, ea est, cum qua tabellam construxi. Est vero, si π = par. æqu., π' = loci, accurate $\operatorname{Sin} \pi' = \varrho \operatorname{Sin} \pi$, non vero exacte $\pi - \pi' = (1 - \varrho)\pi$, error vero, qui ordinis quinti est, in nullo casu ultra 0″,01 ascendit.

Exhibet igitur sequens tabella valores antea nominatos, adjunctis eorum variationibus pro diff. 10″ in ε & β, cujus quidem variatio insensibiliter differt a variatione $\tau\alpha$ β' si hæc 30″ seu 40″ minor g), præsertim si hæc omnia ad sex figuras decim. logarithmicas computentur, quod abunde sufficit, cum variatio

Log

g) Probat hoc formula approximatoria: $\Delta(\beta' - \beta) = 0'',00657 \operatorname{Cos} 2\beta'\, d\beta' - 0'',00005 \operatorname{Cos} 4\beta'\, d\beta'$, ubi $d\beta$ in secundis exprimitur.

Log. Sin π etiam pro π = 62′ & pro 0″,01 unitatem in sexta figura excedat. Et si parallaxis Lunæ tantum ad 0″,1 datur, quinque sufficiunt figuræ. Cum omnes novissimas astronomicas Latitudinum determinationes præsertim in v. Zach M. Corr. adhuc videre mihi non licuerit, plurimas e tabulis Gothanis (1804) Solis, & recentioribus quibusdam datis assumsi.

Pello		Pullingi		Tornea		Caianeb.	
66°48′0″		66°38′41″		65°50′45″,4		64°13′30″	
66 39 48,3		66 30 26,8		65 42 22, 5		64 4 38,5	
9,1979576	488	2006878	484	2143981	466	2407559	433
0,8422520	176	8412596	177	8360642	183	8249986	194
9,5603471	177	5630773	177	5767876	176	6031454	174
0,3656390	75	3652082	77	3629527	79	3581489	84
7,4419	408	7,4408	408	7,4355	405	7,4240	400

Hernösand.		Aboa		Sveaburg.		Petropolis	
62° 37′ 30″		60° 27′ 15″		60° 8′ 44″		59° 56′ 23″	
62 28 15,8		60 17 32,8		59 58 58,2		59 46 34,7	
9,2649449	404	2952259	369	2993135	364	3020117	362
0,8134338	206	7967275	221	7942606	223	7926012	224
9,6273344	171	6576154	168	6617030	167	6644012	167
0,3531285	89	3458764	95	3448050	97	3440847	97
7,4117	394	7,3938	386	7,3911	385	7,3893	384

Upsalia		Revalia		Holmia		Scara	
59°51′50″		59°26′29″		59°20′35″		58°23′42″	
59 42 0,8		59 16 34,8		59 10 39,8		58 13 36,4	
9,3030000	360	3084523	354	3097075	353	3215645	340
0,7919875	224	7885424	227	7877345	228	7798254	234
9,6653895	167	6708418	166	6720970	166	6839540	164
0,3438182	98	3423225	98	3419720	99	3385384	102
7,3886	384	7,3849	382	7,3840	382	7,3753	378

Dor-

Latitudines in tabulis a Nobilissimo Math. Schulten (anno 1802 editis) non quadrant cum

60° 50' 50'' lat. pro... profess...

60° 27' 7'' Gadolin

Stockh. 59° 20' 31''
Abo 60° 27' 15''

Dorpat 58° 23' 0"

Riga. 56° 56' 32"

Carlscrona 56° 10' 45" Marelius

Lund 55° 42' 0" Schenmark Correspond

Hamburg 53° 34' 32"

Berlin 52° 31' 45"

Dorpatum		Gothoburg.		Riga		Mitavia	
58°22'43"		57°42'42"		56°57'1"		56°39'6"	
58 12 37,3		57 32 29,3		56 46 40,9		56 28 43,1	
9,3217657	340	3298407	331	3388067	321	3422521	318
0,7796870	234	7739932	239	7673645	244	7647280	246
9,6841552	164	6922302	163	7011962	162	7046416	161
0,3384783	103	3360065	104	3331288	106	3319843	107
7,3751	378	7,3688	375	7,3613	372	7,3584	372

Carolicorona		Mosqua		Lond. Goth.		Havnia	
56°10'8"		55°45'45"		55°42'45"		55°41'4"	
55 59 40,7		55 36 13,9		55 32 13,7		55 30 32,4	
9,3477400	312	3520984	307	3528363	307	3531466	307
0,7604215	249	7569049	251	7563010	252	7560455	252
9,7101395	160	7144879	159	7152258	159	7155361	159
0,3301148	109	3285881	109	3283259	109	3282152	110
7,3535	367	7,3492	367	7,3487	367	7,3485	367

Wilna		Dantiscum		Hamburgum		Lilienthal.	
54°41'2"		54°20'48"		53°32'51"		53°8'24"	
54 30 22,3		54 10 5,7		53 22 2,9		52 57 33,2	
9,3640063	295	3675761	292	3758600	283	3799910	279
0,7468392	258	7436850	259	7361075	265	7321888	268
9,7263958	157	7299656	157	7382495	155	7423805	155
0,3242930	112	3228490	113	3195595	115	3178583	116
7,3379	362	7,3342	360	7,3253	357	7,3207	355

Brema		Celle		Berolinum		Ultrajectum.	
53°4'45"		52°37'12"		52°31'15"		52°5'39"	
52 53 53,9		52 26 17,9		52 20 20,3		51 54 41,8	
9,3806023	278	3851738	274	3861513	272	3903162	268
0,7316005	268	7271350	271	7261645	272	7219636	274
9,7429918	154	7475633	153	7485408	153	7527057	152
0,3176029	116	3156644	118	3152431	118	3134194	119
7,3200	355	7,3247	353	7,3135	352	7,3085	350

Got.

Gottinga		Londinum		Grenovicum		Lipsia	
51°31′54″		51°30′30″		51°28′39″		51°20′44″	
51 20 53,7		51 19 29,6		51 17 38,4		51 9 42,8	
9,3957098	263	3659313	263	3962234	263	3974703	262
0,7163652	278	7161317	278	7158225	278	7144975	279
9,7580993	151	7583208	151	7586129	151	7598598	150
0,3109890	121	3108876	121	3107534	121	3101781	121
7,3018	347	7,3015	347	7,3011	347	7,2995	346

Elberfeld		Vratislavia		Dresda		Seeberg	
51°15′40″		51° 7′ 6″		51° 3′ 9″		50°56′7″,9	
51°4′38″,3		50 56 3″,6		50°52 6,3		50 45 4,8	
9,3982553	261	3996039	259	4002187	259	4013073	258
0,7136478	279	7122066	280	7115422	281	7103577	281
9,7606448	150	7619934	150	7626082	150	7636968	150
0,3098094	121	3091844	122	3088951	122	3083810	122
7,2985	346	7,2967	345	7,2959	345	7,2945	344

Praga		Cracovia		Manhem.		Ratisbona	
50°5′18″		50°3′40″		49°29′18″		49°0′58″	
49 54 10,9		49 52 32,8		49 18 8,6		48 49 47,0	
9,4090600	250	4093053	250	4144102	245	4185415	241
0,7016875	286	7014063	287	6954553	290	6904976	293
9,7714495	148	7716948	148	7767997	146	7809310	145
0,3046171	124	3044950	124	3019116	126	2996593	127
7,2838	340	7,2835	340	7,2761	337	7,2699	335

Par. Obs. Del.		Par. Obs. Sch. M.		Par. Obs. R.		Vienna	
48°51′38″		48°51′6″		48°50′14″		48°12′36″	
48 40 26,5		48 39 54,5		48 39 2,4		48 1 22,7	
9,4198871	239	4199638	239	4200884	239	4254355	234
0,6888540	294	6887600	294	6886072	294	6819270	297
9,7823396	145	7823533	145	7824779	145	7878250	144
0,2990458	128	2990050	128	2989386	128	2960385	129
7,2679	334	7,2677	334	7,2676	334	7,2591	331

Mo-

Elberfeld finns ej på någon karta.

Bergau est locus plane incognitus nec in ullo libro seu dictionar.
geogr. inveniendus

Viviers 44° 29′ 4″

Madrit 40° 25′ 18″

Monachium		Cremifanum		Bergavia		St. Gallen	
48° 8′ 20″		48° 3′ 36″		48° 3′ 6″		47°25′40″	
47 57 6,9		47 52 22,8		47 51 52,2		47 14 24,9	
9,4260333	234	4266970	233	4267668	233	4319403	228
0,6811655	298	6803170	298	6802273	298	6734821	302
9,7884228	143	7890865	143	7891563	143	7943298	142
0,2957080	129	2953397	129	2953008	129	2923725	131
7,2581	330	7,2571	330	7,2569	329	7,2483	326

Mediolanum		Patavium		Vivarium		Massilia	
45°27′59″		45°23′40″		44°29′16″		43°17′49″	
45 16 4 ,7		45 12 22,6		44 17 58,8		43 6 33,0	
9,4474838	213	4480337	212	4548472	205	4634725	197
0,6517657	313	6509544	313	6406469	318	6268686	325
9,8098733	137	8104232	137	8172367	135	8258620	132
0,2829451	136	2825928	136	2781181	138	2721366	141
7,2199	315	7,2188	315	7,2050	311	7,1862	303

Mirapicum		Neapolis		Madritum		Panormum	
43° 5′ 19″		40°50′15″		40°24′58″		38° 6′ 45″	
42 54 3,3		40 39 5,1		40 13 49,6		37 55 47,6	
9,4649447	196	4801808	181	4829003	178	4970650	164
0,6244306	326	5975745	337	5924454	340	5638567	351
9,8273342	131	8425703	126	8452898	125	8594545	119
0,2710782	141	2594195	146	2571928	147	2447818	152
7,1828	303	7,1447	290	7,1372	287	7,0943	273

Explic. Exhibet pro quovis loco prima & secunda linea latitudinem apparentem & veram, tertia Log Cos β Sin ε (ε vero 23° 28′ assumta), adjecta variatione pro $\Delta\ \beta = 10''$, quæ negativa est, ubi constans variatio pro $\Delta\ \varepsilon = 10'' = +\ 485$; quarta, Sin β Cos ε, subjunctis variationibus in eadem linea

pro $\Delta\beta = 10''$ & in posteriori pro $\Delta\varepsilon$, quæ negativa; quinta Log Cos β Cos ε, cujus variatio pro $\Delta\beta$ eadem est ac in linea tertia, & ubi pro $\Delta\varepsilon = 10''$ constans variatio = — 91,4; sexta Sin β Sin ε, ubi variatio pro $\Delta\beta = 10''$ in eadem linea, & pro $\Delta\varepsilon$ in sequenti, quæ positivæ sunt, invenitur; ultima vero linea valorem Log $(1 - \varrho)$ tradit.

Ad inveniendas differentias sequentes adhiberi possunt formulæ, si hæ non ope tabularum trigonometricarum, quod minus exactum est, computentur.

$d\beta$ & $d\varepsilon$ in secundis exprimendæ.

$d(\text{Log Cos } \beta \text{ Sin } \varepsilon) = - 0{,}4343 \text{ Sin } 1'' \text{ tg } \beta \, d\beta + 0{,}4343 \text{ Sin } 1'' \text{ Cotg } \varepsilon \, d\varepsilon.$

$d(\text{Sin } \beta \text{ Cos } \varepsilon) = \text{Cos } \varepsilon \text{ Cos } \beta \text{ Sin } 1'' \, d\beta - \text{Sin } \beta \text{ Sin } \varepsilon \text{ Sin } 1'' \, d\varepsilon$

$d \text{ Log } (\text{Cos } \beta \text{ Cos } \varepsilon) = - 0{,}4343 \text{ Sin } 1'' \text{ tg } \beta \, d\beta - 0{,}4343 \text{ Sin } 1'' \text{ tg } \varepsilon \, d\varepsilon$

$d(\text{Sin } \beta \text{ Sin } \varepsilon) = \text{Cos } \beta \text{ Sin } \varepsilon \text{ Sin } 1'' \, d\beta + \text{Sin } \beta \text{ Cos } \varepsilon \text{ Sin } 1'' \, d\varepsilon$

Si $d\beta = d\varepsilon = 10''$ erit in casu nostro approximatorie, has quatuor differentias per d(1), d(2) &c. designando

$d(1) = - N \text{ tg } \beta + 0{,}00004850 \quad (\text{Log } N = 5{,}32335)$

$d(2) = A \text{ Cos } \beta - B \text{ Sin } \beta \quad (\text{Log } A = 5{,}64808; \text{ Log } B = 5{,}28568).$

$d(3) = - N \text{ tg } \beta - 0{,}00000914$

$= B \text{ Cos } \beta + A \text{ Sin } \beta.$

His jam argumentis satis superque persuasi finemque sermonis mei jam facturo reliquum est, ut, Te Celeberrime Domine Prof. Hor. Tauber aestimatissime maximas, quas tibi possum, gratias ob benevolentiam et humanitatem non hac occasione solum mihi exhibitam, sed etiam per omne id tempus quo mihi Te ~~aut Academiae Secretario, aut~~ partim Membro Senatus Academici partim jam ~~aut denique~~ Decano Amplissimi Ordinis philosophici semper facili et benigno uti tuique licuit. ~~Te~~ Illam ego favorem quamvis non nisi grata mente votisque tacitis remunerari possim, tamen ~~tota delector~~ spe, nullo dubito, ~~fore ut eandem~~ mihi etiam in posterum benevolentiam et favorem ~~Tu conservaturus~~ expetere, sperare.

Clarissime Domine Candidate, Amico dilectissime honoratissime!

Talem cum hac occasione te praebueris, qualem te aequi & probi judicii aestimatores antea cognoverunt, ~~eum~~ nempe, de quo non modo bene sperare, sed cui etiam confidere possent Cives tui in genere praecipue vero in hac litterarum sede, non possum non animitus Tibi gratulari, duo ~~haec~~ optans, quod utrumque te pro stilo haud diffido, ut laurea qua propediem ab ~~ipso~~ Uraniae sacerdote cingenda sunt tempora tua, ~~nunquam~~ virescere nunquam desinant, alterum ut me ~~in numero~~ inter amicorum tuorum ~~semper habeas~~ eum annumeres.

C. N. Aas