Fabricas

RF 8

TABOAS

TABOAS

DE

$$\tau = \frac{g}{h}\operatorname{sen}(H+\gamma\tau).$$

ADVERTENCIA

No calculo dos Eclipses do Sol e das occultações dos planetas e das estrellas pela Lua, annunciados nas Ephemerides astronomicas de Coimbra, servem ainda as formulas seguintes, que são, com pouca differença, as que o sr. *J. M. da Rocha* ajunctara ás Ephemerides para 1804.

I. Chamando: T e $T+\tau$ o tempo medio da conjuncção verdadeira e o da apparente em ascensão recta da Lua e do astro occultado; Θ o tempo da passagem d'este pelo meridiano; A a differença dos movimentos horarios dos dois corpos em ascensão recta, e δ em declinação, no instante da conjuncção verdadeira; Δ a differença das suas declinações, e d' a declinação da Lua no mesmo instante; H e H'' os angulos horarios do astro n'esse instante e no da conjuncção apparente; π a parallaxe horizontal da Lua, e p a differença entre essa parallaxe e a do astro; c a distancia dos centros; P a latitude geocentrica do logar: são

$$
(A)\left\{\begin{array}{c}
H=\gamma\,(T-\Theta),\\[2ex]
g=p\cos P,\ h=A\cos d',\ \beta=p\,\mathrm{sen}\,P\cos d',\ q=g\,\mathrm{sen}\,d',\\[2ex]
\tau=\dfrac{g}{h}\,\mathrm{sen}\,(\mathrm{H}+\gamma\tau)=\dfrac{g}{h}\,\mathrm{sen}\,\mathrm{H}'',\\[2ex]
h'=h-\gamma' g\cos\mathrm{H}'',\ \delta'=\delta-\gamma' q\,\mathrm{sen}\,\mathrm{H}'',\ \Delta'=\Delta+\delta\tau-\beta+q\cos\mathrm{H}'',\\[2ex]
\dfrac{\delta'}{h'}=\mathrm{tang}\,\alpha,\ \dfrac{\Delta'\cos\alpha}{c}=\cos\varphi,\ t=\dfrac{c\,\mathrm{sen}\,(-\alpha\mp\varphi)}{h'},\\[2ex]
\text{Tempos da phase } c=\mathrm{T}+\tau+t.
\end{array}\right.
$$

Nos eclipses do Sol são: $\gamma=15°$; $\log.\gamma'=9.4179687$.

Nas occult. d'estrellas são: $\log.\gamma=1{,}1772786$; $\log.\gamma'=9.4191560$.

II. No principio e no fim dos eclipses de Sol repete-se o calculo das formulas (A) em que entra c; e, quando a duração chega a hora e meia, o d'aquellas

AVERTISSEMENT

Dans le calcul des Éclipses du Soleil et des occultations des planètes et des étoiles par la Lune, qu'on annonce dans les Éphémérides astronomiques de Coimbre, on se sert encore à present des formules suivantes, qui sont à peu près celles que Mr. *J. Monteiro da Rocha* a ajouté à les Éphémérides pour 1804.

I. Soient: T le temps moyen de la conjonction vraie en ascension droite de la Lune et de l'astre occulté, e $T+\tau$ celui de la conjonction apparente; Θ le temps de la passage de l'astre par le méridien; A et δ les différences des mouvements horaires des deux corps en ascension droite et en déclinaison, à l'instant de la conjonction vraie; Δ la différence des déclinaisons, et d' la déclinaison de la Lune, au même instant; H et H'' les angles horaires de l'astre à cet instant et à celui de la conjonction apparente; π la parallaxe horizontale de la Lune, et p la différence de cette parallaxe à celle de l'astre; c la distance des centres; P la latitude géocentrique du lieu. Nous aurons:

$$H = \gamma(T - \Theta),$$

(A)

$$g = p\cos P,\ h = A\cos d',\ \beta = p\sin P\cos d',\ q = g\sin d',$$

$$\tau = \frac{g}{h}\sin(H + \gamma\tau),$$

$$h' = h - \gamma' g\cos H'',\ \delta' - \delta - \gamma' q\sin H'',\ \Delta' = \Delta + \delta\tau - \beta + q\cos H'',$$

$$\frac{\delta'}{h'} = \operatorname{tang}\alpha,\ \frac{\Delta'\cos\alpha}{c} = \cos\varphi,\ t = \frac{c\sin(-\alpha \mp \varphi)}{h'},$$

Temps de la phase $c = T + \tau + t$.

Pour les éclipses du Soleil, on a: $\gamma = 15°$; $\log\gamma' = 9.4179687$.

Pour les occult. des étoiles: $\log\gamma = 1{,}1772786$; $\log\gamma' = 9.4191560$.

II. Pour le commencement et pour la fin des éclipses du Soleil on répète le calcul des formules (A) dans lesquelles se trouve c; et, lorsque la duration

em que entram h' e δ': usando dos valores mais approximados d'essas quantidades, que dão as formulas seguintes:

$$n = g \operatorname{sen}(H'' + \gamma t),\ m = 3 - q \cos(H'' + \gamma t),$$

$$\operatorname{tang} \mu = \frac{n}{m},\ \operatorname{sen} z = \frac{n}{p \operatorname{sen} \mu} = \frac{m}{q \cos \mu},$$

$$c = \text{semid. } ☾ (1 + \operatorname{sen} \pi \cos z) + \text{semid. } ☉,$$

$$h' = h - \gamma' g \cos(H'' + \frac{1}{2} \gamma t),\ \delta' = \delta - \gamma' q \operatorname{sen}(H'' + \frac{1}{2} \gamma t).$$

III. Como é trabalhoso o calculo de τ, o sr. *A. J. Pinto d'Almeida*, um dos primeiros collaboradores das Ephemerides, formou, para as occultações d'estrellas, uma taboa do valor de τ até a terceira casa decimal, com os argumentos H em tempo e $\log \frac{g}{h}$; taboa até agora inedita.

Mais tarde o sr. *R. G. Osorio* formou, para as mesmas occultações, outra taboa dos valores de τ até a quinta casa decimal, com os argumentos H em arco e $\frac{g}{h}$; taboa que foi juncta ás Ephemerides para 1844.

A primeira d'estas taboas tem a vantagem de ser mais facil o seu uso. E, sendo necessario, com o valor, que ella dá approximado até a terceira casa decimal, póde ordinariamente levar-se a approximação até a quarta casa, calculando uma vez a formula.

A segunda tem a vantagem de dar logo os valores assim approximados.

São estas duas taboas as que se imprimem agora, por escacearem os exemplares da segunda.

Observatorio Astronomico, 20 de Março de 1877.

O Director,

R. R. de Sousa Pinto.

atteindra une heure et demie, on répètera le calcul de celles où se trouvent h' et δ': en employant les valeurs plus exactes de c, h', δ', données par les formules que voici:

$$n = g \sin (H'' + \gamma t), \quad m = \beta - q \cos (H'' + \gamma t),$$

$$\text{tang } \mu = \frac{n}{m}, \quad \text{sen } z = \frac{n}{p \text{ sen } \mu} = \frac{m}{q \cos \mu},$$

$$c = \text{semid. } \mathbb{C} \, (1 + \text{sen } \pi \cos z) + \text{semid. } \odot,$$

$$h' = h - \gamma' g \cos (H'' + \frac{1}{2} \gamma \tau), \quad \delta' = \delta - \gamma' q \text{ sen } (H'' + \frac{1}{2} \gamma t).$$

III. Le calcul de τ étant laborieux, Mr. *A. J. Pinto d'Almeida*, l'un des prémiers collaborateurs des *Ephémérides*, a construit, pour les occultations des étoiles, une table des valeurs de τ, jusqu'à la troisième décimale, avec les arguments H en temps et $\log \frac{g}{h}$; mais cette table est restée inédite jusqu'à présent.

Plus tard Mr. *R. Guerra Osorio* a construit, pour les mêmes occultations, une autre table des valeurs de τ, jusqu'à la cinquième décimale, avec les arguments H en degrés et $\frac{g}{h}$. Cette table a été jointe à les *Éphémérides* pour 1844.

L'usage de la première de ces tables est plus facile; et, si, en employant les valeurs données par elle, on calculera la formule, on obtiendra le plus souvent, quand il faudra, des valeurs approchées jusqu'à la quatrième décimale.

La seconde a l'avantage de donner tout de suite les valeurs avec cette approximation.

USO DAS TABOAS

Sejam a e a' duas funcções consecutivas horizontaes das taboas; b e b' as duas seguintes nas mesmas columnas; m o intervallo horizontal tabular dos argumentos, e n o vertical. Se forem h e k as differenças dos argumentos dados para os correspondentes a a, teremos:

$$z = a + (a' - a) \cdot \frac{h}{m},\ z' = b + (b' - b) \cdot \frac{h}{m},\ x = z + (z' - z) \cdot \frac{k}{n} \ldots (1);$$

ou, substituindo na terceira as expressões de z e z' dadas pelas duas primeiras,

$$x = a + (a' - a) \cdot \frac{h}{m} + \left[b - a + (a + b' - (b + a')) \cdot \frac{h}{m} \right] \cdot \frac{k}{n} \ldots (2)$$

A formula (2) é a das *differenças cruzadas*, $a + b' - (b + a')$ (*Taboas Astronomicas* de Monteiro da Rocha, pag. VI, e *Calculo das Ephemerides Astronomicas*, n.° 47.)

Querendo, por exemplo, usar da primeira taboa a fim de obter o τ correspondente aos argumentos $\log \frac{g}{h} = 0{,}257$ e $H = 2^h{,}25$, acharemos n'ella, para os argumentos, que comprehendem estes, 0,25 e 0,26, com $2^h{,}2$; 0,25 e 0,26, com $2^h{,}3$: $a = 1{,}457$ e $a' = 1{,}503$; $b = 1{,}492$ e $b' = 1{,}539$. E como são $m =$ uma centesima e $n =$ uma decima, as formulas (1) darão

$$z = 1{,}457 + 0{,}046 \times 0{,}7 = 1{,}4892,\ z' = 1{,}492 + 0{,}047 \times 0{,}7 = 1{,}5249,$$

$$x = 1{,}4892 + 0{,}036 \times 0{,}5 = 1{,}507.$$

Com a forma (2) o calculo será:

$$x = 1{,}457 + 0{,}0322 + (0{,}035 + 0{,}001 \times 0{,}7) \times 0{,}5 = 1{,}507.$$

Se pela formula $\tau = \frac{g}{h} \operatorname{sen} \gamma\ (H + \tau)$ quizermos agora achar o valor de τ mais approximado, teremos:

H	2,25	$\log (H+\tau)$	0,5748412	$\log \frac{g}{h}$	0,2570000
τ	1,507	$\log \gamma$	1,1772786		
$H+\tau$	3,757		1,7521198	$\log \operatorname{sen} \gamma (H+\tau)$	9,9211526
					0,1781526
		$\gamma(H+\tau)$	56,5093		
			$=56°30'33''$	$x =$	1,5071.

PRIMEIRA TABOA

T—θ	Log. $\frac{g}{h}$								
H^h	9.98	9.99	0,00	0,01	0,02	0,03	0,04	0,05	0,06
0 ,1	0^h,033	0^h,034	0^h,036	0^h,037	0^h,038	0^h,039	0^h,040	0 ,042	0^h,043
0 ,2	0 ,067	0 ,069	0 ,071	0 ,073	0 ,076	0 ,078	0 ,081	0 ,084	0 ,086
0 ,3	0 ,100	0 ,103	0 ,107	0 ,110	0 ,114	0 ,117	0 ,121	0 ,125	0 ,129
0 ,4	0 ,133	0 ,137	0 ,142	0 ,146	0 ,151	0 ,156	0 ,161	0 ,166	0 ,172
0 ,5	0 ,166	0 ,171	0 ,177	0 ,182	0 ,188	0 ,194	0 ,201	0 ,207	0 ,214
0 ,6	0 ,199	0 ,205	0 ,212	0 ,218	0 ,225	0 ,232	0 ,240	0 ,248	0 ,256
0 ,7	0 ,232	0 ,239	0 ,246	0 ,254	0 ,262	0 ,270	0 ,279	0 ,288	0 ,297
0 ,8	0 ,264	0 ,271	0 ,280	0 ,288	0 ,298	0 ,307	0 ,317	0 ,327	0 ,338
0 ,9	0 ,295	0 ,304	0 ,313	0 ,323	0 ,333	0 ,344	0 ,355	0 ,366	0 ,378
1 ,0	0 ,326	0 ,336	0 ,346	0 ,357	0 ,368	0 ,380	0 ,392	0 ,404	0 ,417
1 ,1	0 ,357	0 ,367	0 ,378	0 ,390	0 ,402	0 ,415	0 ,428	0 ,442	0 ,456
1 ,2	0 ,387	0 ,398	0 ,410	0 ,423	0 ,436	0 ,450	0 ,464	0 ,479	0 ,494
1 ,3	0 ,416	0 ,428	0 ,441	0 ,455	0 ,469	0 ,484	0 ,499	0 ,515	0 ,531
1 ,4	0 ,445	0 ,458	0 ,472	0 ,486	0 ,501	0 ,517	0 ,533	0 ,550	0 ,567
1 ,5	0 ,473	0 ,487	0 ,502	0 ,517	0 ,532	0 ,549	0 ,566	0 ,584	0 ,602
1 ,6	0 ,500	0 ,515	0 ,531	0 ,547	0 ,563	0 ,581	0 ,598	0 ,617	0 ,636
1 ,7	0 ,527	0 ,543	0 ,559	0 ,576	0 ,593	0 ,611	0 ,630	0 ,649	0 ,669
1 ,8	0 ,553	0 ,570	0 ,586	0 ,604	0 ,622	0 ,641	0 ,660	0 ,680	0 ,701
1 ,9	0 ,578	0 ,595	0 ,613	0 ,631	0 ,650	0 ,669	0 ,689	0 ,710	0 ,732
2 ,0	0 ,603	0 ,621	0 ,639	0 ,657	0 ,677	0 ,697	0 ,717	0 ,739	0 ,761
2 ,1	0 ,627	0 ,645	0 ,663	0 ,683	0 ,703	0 ,724	0 ,745	0 ,767	0 ,790
2 ,2	0 ,650	0 ,668	0 ,687	0 ,707	0 ,728	0 ,749	0 ,771	0 ,794	0 ,817
2 ,3	0 ,672	0 ,691	0 ,711	0 ,731	0 ,752	0 ,774	0 ,796	0 ,820	0 ,844
2 ,4	0 ,693	0 ,713	0 ,733	0 ,754	0 ,775	0 ,797	0 ,820	0 ,844	0 ,869
2 ,5	0 ,713	0 ,733	0 ,754	0 ,775	0 ,797	0 ,820	0 ,843	0 ,868	0 ,893
2 ,6	0 ,733	0 ,753	0 ,774	0 ,796	0 ,819	0 ,842	0 ,865	0 ,890	0 ,915
2 ,7	0 ,752	0 ,773	0 ,794	0 ,816	0 ,839	0 ,862	0 ,886	0 ,912	0 ,937
2 ,8	0 ,770	0 ,791	0 ,813	0 ,835	0 ,858	0 ,882	0 ,906	0 ,932	0 ,958
2 ,9	0 ,787	0 ,808	0 ,830	0 ,853	0 ,876	0 ,900	0 ,925	0 ,951	0 ,977
3 ,0	0 ,803	0 ,825	0 ,847	0 ,870	0 ,893	0 ,918	0 ,943	0 ,969	0 ,995
3 ,1	0 ,818	0 ,840	0 ,863	0 ,886	0 ,910	0 ,934	0 ,959	0 ,986	1 ,012
3 ,2	0 ,832	0 ,855	0 ,878	0 ,901	0 ,925	0 ,950	0 ,975	1 ,001	1 ,028
3 ,3	0 ,846	0 ,868	0 ,891	0 ,915	0 ,939	0 ,964	0 ,990	1 ,016	1 ,043
3 ,4	0 ,859	0 ,881	0 ,905	0 ,928	0 ,953	0 ,978	1 ,004	1 ,030	1 ,057
3 ,5	0 ,871	0 ,893	0 ,917	0 ,941	0 ,965	0 ,990	1 ,016	1 ,043	1 ,070
3 ,6	0 ,882	0 ,904	0 ,928	0 ,952	0 ,976	1 ,002	1 ,028	1 ,054	1 ,082
3 ,7	0 ,892	0 ,915	0 ,938	0 ,962	0 ,987	1 ,012	1 ,039	1 ,065	1 ,092
3 ,8	0 ,901	0 ,924	0 ,948	0 ,972	0 ,997	1 ,022	1 ,048	1 ,075	1 ,102
3 ,9	0 ,910	0 ,933	0 ,957	0 ,981	1 ,005	1 ,031	1 ,057	1 ,084	1 ,111
4 ,0	0 ,918	0 ,941	0 ,964	0 ,989	1 ,013	1 ,039	1 ,065	1 ,091	1 ,119
4 ,1	0 ,925	0 ,948	0 ,971	0 ,996	1 ,020	1 ,046	1 ,072	1 ,098	1 ,126

T—θ / H^h	Log. $\frac{g}{h}$								
	0,07	0,08	0,09	0,10	0,11	0,12	0,13	0,14	0,15
0^h,1	0^h,045	0^h,046	0^h,048	0^h,049	0^h,052	0^h,053	0^h,055	0^h,057	0^h,059
0 ,2	0 ,089	0 ,092	0 ,096	0 ,099	0 ,102	0 ,106	0 ,110	0 ,114	0 ,118
0 ,3	0 ,133	0 ,138	0 ,143	0 ,148	0 ,153	0 ,158	0 ,164	0 ,170	0 ,176
0 ,4	0 ,177	0 ,184	0 ,190	0 ,196	0 ,203	0 ,211	0 ,218	0 ,226	0 ,234
0 ,5	0 ,221	0 ,229	0 ,236	0 ,244	0 ,253	0 ,262	0 ,271	0 ,281	0 ,292
0 ,6	0 ,264	0 ,273	0 ,282	0 ,292	0 ,302	0 ,313	0 ,324	0 ,336	0 ,348
0 ,7	0 ,307	0 ,317	0 ,328	0 ,339	0 ,351	0 ,363	0 ,376	0 ,390	0 ,404
0 ,8	0 ,349	0 ,361	0 ,373	0 ,385	0 ,399	0 ,413	0 ,427	0 ,443	0 ,459
0 ,9	0 ,391	0 ,404	0 ,417	0 ,431	0 ,446	0 ,461	0 ,477	0 ,494	0 ,512
1 ,0	0 ,431	0 ,445	0 ,460	0 ,476	0 ,492	0 ,509	0 ,526	0 ,545	0 ,564
1 ,1	0 ,471	0 ,486	0 ,502	0 ,519	0 ,537	0 ,555	0 ,574	0 ,594	0 ,615
1 ,2	0 ,510	0 ,527	0 ,544	0 ,562	0 ,581	0 ,600	0 ,621	0 ,642	0 ,664
1 ,3	0 ,548	0 ,566	0 ,584	0 ,603	0 ,623	0 ,644	0 ,666	0 ,688	0 ,712
1 ,4	0 ,585	0 ,604	0 ,623	0 ,644	0 ,665	0 ,687	0 ,710	0 ,733	0 ,758
1 ,5	0 ,621	0 ,641	0 ,661	0 ,683	0 ,705	0 ,728	0 ,752	0 ,777	0 ,803
1 ,6	0 ,656	0 ,676	0 ,698	0 ,720	0 ,743	0 ,768	0 ,793	0 ,819	0 ,846
1 ,7	0 ,690	0 ,711	0 ,734	0 ,757	0 ,781	0 ,806	0 ,832	0 ,859	0 ,887
1 ,8	0 ,722	0 ,745	0 ,768	0 ,792	0 ,817	0 ,843	0 ,870	0 ,898	0 ,927
1 ,9	0 ,754	0 ,777	0 ,801	0 ,826	0 ,852	0 ,879	0 ,906	0 ,935	0 ,965
2 ,0	0 ,784	0 ,808	0 ,833	0 ,858	0 ,885	0 ,913	0 ,941	0 ,971	1 ,001
2 ,1	0 ,813	0 ,838	0 ,863	0 ,890	0 ,917	0 ,945	0 ,974	1 ,005	1 ,036
2 ,2	0 ,841	0 ,867	0 ,893	0 ,920	0 ,947	0 ,976	1 ,006	1 ,037	1 ,069
2 ,3	0 ,868	0 ,894	0 ,921	0 ,948	0 ,976	1 ,006	1 ,036	1 ,068	1 ,100
2 ,4	0 ,894	0 ,920	0 ,947	0 ,975	1 ,004	1 ,034	1 ,065	1 ,097	1 ,129
2 ,5	0 ,918	0 ,945	0 ,972	1 ,001	1 ,030	1 ,060	1 ,092	1 ,124	1 ,157
2 ,6	0 ,942	0 ,969	0 ,996	1 ,025	1 ,055	1 ,085	1 ,117	1 ,150	1 ,183
2 ,7	0 ,964	0 ,991	1 ,019	1 ,048	1 ,078	1 ,109	1 ,141	1 ,174	1 ,208
2 ,8	0 ,985	1 ,012	1 ,041	1 ,070	1 ,100	1 ,132	1 ,164	1 ,197	1 ,231
2 ,9	1 ,004	1 ,032	1 ,061	1 ,091	1 ,121	1 ,153	1 ,185	1 ,218	1 ,252
3 ,0	1 ,023	1 ,051	1 ,080	1 ,110	1 ,140	1 ,172	1 ,205	1 ,238	1 ,272
3 ,1	1 ,040	1 ,068	1 ,097	1 ,127	1 ,158	1 ,190	1 ,223	1 ,256	1 ,291
3 ,2	1 ,056	1 ,085	1 ,114	1 ,144	1 ,175	1 ,207	1 ,240	1 ,273	1 ,308
3 ,3	1 ,071	1 ,100	1 ,129	1 ,160	1 ,191	1 ,222	1 ,255	1 ,289	1 ,324
3 ,4	1 ,085	1 ,114	1 ,143	1 ,174	1 ,205	1 ,237	1 ,269	1 ,303	1 ,338
3 ,5	1 ,098	1 ,127	1 ,156	1 ,187	1 ,218	1 ,250	1 ,282	1 ,316	1 ,350
3 ,6	1 ,110	1 ,139	1 ,168	1 ,198	1 ,229	1 ,261	1 ,294	1 ,328	1 ,362
3 ,7	1 ,121	1 ,149	1 ,179	1 ,209	1 ,240	1 ,272	1 ,305	1 ,338	1 ,372
3 ,8	1 ,130	1 ,159	1 ,189	1 ,219	1 ,250	1 ,281	1 ,314	1 ,347	1 ,382
3 ,9	1 ,139	1 ,168	1 ,197	1 ,227	1 ,258	1 ,290	1 ,322	1 ,355	1 ,389
4 ,0	1 ,147	1 ,175	1 ,205	1 ,235	1 ,265	1 ,297	1 ,329	1 ,362	1 ,396
4 ,1	1 ,153	1 ,182	1 ,211	1 ,241	1 ,272	1 ,303	1 ,335	1 ,368	1 ,401

T—θ	Log. $\frac{g}{h}$								
H^h	0,16	0,17	0,18	0,19	0,20	0,21	0,22	0,23	0,24
0 ,1	0^h,061	0^h,063	0^h,066	0^h,069	0^h,071	0^h,074	0^h,077	0 ,080	0^h,084
0 ,2	0 ,122	0 ,127	0 ,132	0 ,137	0 ,142	0 ,148	0 ,154	0 ,161	0 ,167
0 ,3	0 ,183	0 ,190	0 ,197	0 ,205	0 ,213	0 ,221	0 ,230	0 ,240	0 ,250
0 ,4	0 ,243	0 ,252	0 ,262	0 ,272	0 ,283	0 ,294	0 ,306	0 ,319	0 ,332
0 ,5	0 ,302	0 ,314	0 ,326	0 ,338	0 ,351	0 ,365	0 ,380	0 ,396	0 ,413
0 ,6	0 ,361	0 ,374	0 ,388	0 ,403	0 ,419	0 ,436	0 ,453	0 ,472	0 ,491
0 ,7	0 ,419	0 ,434	0 ,450	0 ,467	0 ,486	0 ,505	0 ,425	0 ,546	0 ,568
0 ,8	0 ,475	0 ,493	0 ,511	0 ,530	0 ,551	0 ,572	0 ,595	0 ,618	0 ,643
0 ,9	0 ,530	0 ,550	0 ,570	0 ,591	0 ,614	0 ,637	0 ,662	0 ,688	0 ,716
1 ,0	0 ,584	0 ,605	0 ,627	0 ,650	0 ,675	0 ,700	0 ,727	0 ,756	0 ,785
1 ,1	0 ,636	0 ,659	0 ,683	0 ,708	0 ,734	0 ,761	0 ,790	0 ,821	0 ,852
1 ,2	0 ,687	0 ,712	0 ,738	0 ,764	0 ,792	0 ,821	0 ,851	0 ,884	0 ,917
1 ,3	0 ,737	0 ,763	0 ,790	0 ,818	0 ,847	0 ,878	0 ,910	0 ,944	0 ,979
1 ,4	0 ,784	0 ,812	0 ,840	0 ,869	0 ,900	0 ,933	0 ,966	1 ,001	1 ,038
1 ,5	0 ,830	0 ,859	0 ,888	0 ,919	0 ,951	0 ,985	1 ,020	1 ,056	1 ,094
1 ,6	0 ,874	0 ,904	0 ,934	0 ,966	1 ,000	1 ,035	1 ,071	1 ,108	1 ,147
1 ,7	0 ,917	0 ,947	0 ,979	1 ,012	1 ,047	1 ,083	1 ,120	1 ,158	1 ,198
1 ,8	0 ,958	0 ,989	1 ,022	1 ,056	1 ,091	1 ,128	1 ,166	1 ,206	1 ,247
1 ,9	0 ,996	1 ,028	1 ,062	1 ,097	1 ,133	1 ,171	1 ,210	1 ,250	1 ,292
2 ,0	1 ,033	1 ,066	1 ,100	1 ,136	1 ,173	1 ,212	1 ,251	1 ,292	1 ,334
2 ,1	1 ,068	1 ,102	1 ,137	1 ,173	1 ,211	1 ,250	1 ,290	1 ,331	1 ,374
2 ,2	1 ,102	1 ,136	1 ,171	1 ,208	1 ,246	1 ,286	1 ,326	1 ,368	1 ,412
2 ,3	1 ,134	1 ,168	1 ,204	1 ,241	1 ,280	1 ,320	1 ,360	1 ,403	1 ,447
2 ,4	1 ,164	1 ,199	1 ,235	1 ,273	1 ,311	1 ,352	1 ,393	1 ,435	1 ,479
2 ,5	1 ,192	1 ,227	1 ,264	1 ,302	1 ,341	1 ,381	1 ,423	1 ,465	1 ,510
2 ,6	1 ,218	1 ,254	1 ,291	1 ,329	1 ,368	1 ,409	1 ,450	1 ,493	1 ,538
2 ,7	1 ,243	1 ,279	1 ,316	1 ,354	1 ,394	1 ,435	1 ,476	1 ,519	1 ,564
2 ,8	1 ,266	1 ,302	1 ,340	1 ,378	1 ,418	1 ,459	1 ,500	1 ,543	1 ,588
2 ,9	1 ,288	1 ,324	1 ,362	1 ,400	1 ,440	1 ,481	1 ,522	1 ,565	1 ,609
3 ,0	1 ,308	1 ,344	1 ,382	1 ,420	1 ,460	1 ,501	1 ,542	1 ,585	1 ,629
3 ,1	1 ,326	1 ,363	1 ,400	1 ,439	1 ,478	1 ,519	1 ,560	1 ,603	1 ,647
3 ,2	1 ,343	1 ,380	1 ,417	1 ,456	1 ,495	1 ,536	1 ,577	1 ,620	1 ,663
3 ,3	1 ,359	1 ,395	1 ,433	1 ,471	1 ,510	1 ,551	1 ,592	1 ,634	1 ,678
3 ,4	1 ,373	1 ,409	1 ,447	1 ,485	1 ,524	1 ,564	1 ,605	1 ,647	1 ,691
3 ,5	1 ,386	1 ,422	1 ,459	1 ,497	1 ,536	1 ,576	1 ,617	1 ,659	1 ,701
3 ,6	1 ,397	1 ,433	1 ,470	1 ,508	1 ,547	1 ,586	1 ,627	1 ,668	1 ,711
3 ,7	1 ,408	1 ,443	1 ,480	1 ,518	1 ,556	1 ,595	1 ,636	1 ,677	1 ,719
3 ,8	1 ,416	1 ,452	1 ,489	1 ,526	1 ,564	1 ,603	1 ,643	1 ,684	1 ,725
3 ,9	1 ,424	1 ,459	1 ,496	1 ,533	1 ,571	1 ,609	1 ,649	1 ,689	1 ,730
4 ,0	1 ,431	1 ,466	1 ,502	1 ,538	1 ,576	1 ,614	1 ,654	1 ,693	1 ,734
4^h,1	1 ,436	1 ,471	1 ,507	1 ,543	1 ,580	1 ,618	1 ,657	1 ,696	1 ,736

T—θ	Log. $\frac{g}{h}$								
H^h	0,25	0,26	0,27	0,28	0,29	0,30	0,31	0,32	0,33
0^h,1	0^h,087	0^h,091	0^h,096	0^h,100	0^h,105	0^h,110	0^h,115	0^h,121	0^h,128
0 ,2	0 ,175	0 ,182	0 ,190	0 ,199	0 ,209	0 ,220	0 ,231	0 ,243	0 ,256
0 ,3	0 ,261	0 ,272	0 ,285	0 ,298	0 ,312	0 ,327	0 ,344	0 ,362	0 ,381
0 ,4	0 ,346	0 ,361	0 ,377	0 ,395	0 ,413	0 ,433	0 ,455	0 ,478	0 ,502
0 ,5	0 ,430	0 ,448	0 ,468	0 ,489	0 ,512	0 ,536	0 ,562	0 ,590	0 ,619
0 ,6	0 ,512	0 ,533	0 ,547	0 ,581	0 ,608	0 ,637	0 ,666	0 ,698	0 ,733
0 ,7	0 ,592	0 ,617	0 ,644	0 ,671	0 ,702	0 ,734	0 ,768	0 ,803	0 ,843
0 ,8	0 ,670	0 ,698	0 ,727	0 ,758	0 ,792	0 ,827	0 ,865	0 ,904	0 ,947
0 ,9	0 ,744	0 ,775	0 ,807	0 ,841	0 ,877	0 ,916	0 ,957	1 ,000	1 ,045
1 ,0	0 ,816	0 ,850	0 ,884	0 ,920	0 ,960	1 ,001	1 ,044	1 ,090	1 ,138
1 ,1	0 ,885	0 ,921	0 ,958	0 ,996	1 ,038	1 ,081	1 ,127	1 ,175	1 ,225
1 ,2	0 ,952	0 ,990	1 ,029	1 ,069	1 ,113	1 ,158	1 ,206	1 ,255	1 ,308
1 ,3	1 ,016	1 ,055	1 ,096	1 ,139	1 ,183	1 ,231	1 ,280	1 ,331	1 ,386
1 ,4	1 ,077	1 ,117	1 ,160	1 ,204	1 ,250	1 ,298	1 ,349	1 ,402	1 ,458
1 ,5	1 ,134	1 ,176	1 ,220	1 ,265	1 ,313	1 ,362	1 ,414	1 ,468	1 ,525
1 ,6	1 ,188	1 ,231	1 ,276	1 ,323	1 ,372	1 ,422	1 ,475	1 ,530	1 ,587
1 ,7	1 ,240	1 ,284	1 ,330	1 ,377	1 ,427	1 ,478	1 ,532	1 ,587	1 ,645
1 ,8	1 ,289	1 ,334	1 ,380	1 ,428	1 ,479	1 ,531	1 ,585	1 ,641	1 ,699
1 ,9	1 ,335	1 ,381	1 ,427	1 ,476	1 ,527	1 ,580	1 ,634	1 ,691	1 ,749
2 ,0	1 ,379	1 ,424	1 ,472	1 ,521	1 ,572	1 .625	1 ,679	1 ,736	1 ,794
2 ,1	1 ,419	1 ,465	1 ,513	1 ,562	1 ,614	1 ,667	1 ,721	1 ,778	1 ,836
2 ,2	1 ,457	1 ,503	1 ,551	1 ,601	1 ,653	1 ,706	1 ,760	1 ,817	1 ,875
2 ,3	1 ,492	1 ,539	1 ,587	1 ,637	1 ,689	1 ,741	1 ,796	1 ,853	1 ,911
2 ,4	1 ,525	1 ,572	1 ,620	1 ,670	1 ,722	1 ,774	1 ,829	1 ,885	1 ,943
2 ,5	1 ,555	1 ,602	1 ,651	1 ,701	1 ,752	1 ,805	1 ,859	1 ,914	1 ,972
2 ,6	1 ,583	1 ,630	1 ,679	1 ,729	1 ,779	1 ,832	1 ,886	1 ,941	1 ,998
2 ,7	1 ,609	1 ,656	1 ,704	1 ,754	1 ,805	1 ,857	1 ,910	1 ,965	2 ,022
2 ,8	1 ,633	1 ,680	1 ,728	1 ,777	1 ,828	1 ,880	1 ,933	1 ,987	2 ,043
2 ,9	1 ,655	1 ,701	1 ,749	1 ,798	1 ,848	1 ,900	1 ,952	2 ,006	2 ,061
3 ,0	1 ,674	1 ,721	1 ,768	1 ,817	1 ,867	1 ,918	1 ,970	2 ,023	2 ,078
3 ,1	1 ,692	1 ,738	1 ,785	1 ,833	1 ,883	1 ,933	1 ,985	2 ,038	2 ,092
3 ,2	1 ,708	1 ,754	1 ,800	1 ,848	1 ,897	1 ,947	1 ,999	2 ,051	2 ,104
3 ,3	1 ,722	1 ,767	1 ,814	1 ,861	1 ,910	1 ,959	2 ,010	2 ,062	2 ,114
3 ,4	1 ,735	1 ,779	1 ,825	1 ,872	1 ,920	1 ,970	2 ,020	2 ,071	2 ,122
3 ,5	1 ,745	1 ,790	1 ,835	1 ,882	1 ,929	1 ,978	2 ,027	2 ,078	2 ,129
3 ,6	1 ,754	1 ,798	1 ,843	1 ,889	1 ,936	1 ,984	2 ,033	2 ,083	2 ,133
3 ,7	1 ,762	1 ,805	1 ,850	1 ,896	1 ,942	1 ,989	2 ,038	2 ,087	2 ,136
3 ,8	1 ,768	1 ,811	1 ,855	1 ,900	1 ,946	1 ,993	2 ,041	2 ,089	2 ,138
3 ,9	1 ,772	1 ,815	1 ,859	1 ,903	1 ,949	1 ,995	2 ,042	2 ,090	2 ,138
4 ,0	1 ,775	1 ,818	1 ,861	1 ,905	1 ,950	1 ,996	2 ,042	2 ,089	2 ,136
4 ,1	1 ,777	1 ,819	1 ,862	1 ,906	1 ,950	1 ,995	2 ,040	2 ,086	2 ,133

T—0	Log. $\frac{g}{h}$								
H[h]	9.98	9.99	0,00	0,01	0,02	0,03	0,04	0,05	0,06
4 ,1	0[h],925	0[h],948	0[h],971	0[h],996	1[h],020	1[h],046	1[h],072	1[h],098	1[h],126
4 ,2	0 ,931	0 ,954	0 ,978	1 ,002	1 ,027	1 ,052	1 ,078	1 ,104	1 ,131
4 ,3	0 ,937	0 ,960	0 ,983	1 ,007	1 ,032	1 ,057	1 ,083	1 ,109	1 ,136
4 ,4	0 ,941	0 ,964	0 ,988	1 ,012	1 ,036	1 ,062	1 ,087	1 ,114	1 ,140
4 ,5	0 ,945	0 ,968	0 ,992	1 ,016	1 ,040	1 ,065	1 ,091	1 ,117	1 ,144
4 ,6	0 ,949	0 ,972	0 ,995	1 ,019	1 ,043	1 ,068	1 ,093	1 ,119	1 ,146
4 ,7	0 ,951	0 ,974	0 ,997	1 ,021	1 ,045	1 ,070	1 ,095	1 ,121	1 ,148
4 ,8	0 ,953	0 ,976	0 ,999	1 ,022	1 ,046	1 ,071	1 ,096	1 ,122	1 ,148
4 ,9	0 ,954	0 ,977	1 ,000	1 ,023	1 ,047	1 ,071	1 ,096	1 ,122	1 ,148
5 ,0	0 ,955	0 ,977	1 ,000	1 ,023	1 ,047	1 ,071	1 ,096	1 ,121	1 ,147
5 ,1	0 ,955	0 ,977	0 ,999	1 ,023	1 ,046	1 ,070	1 ,095	1 ,120	1 ,145
5 ,2	0 ,954	0 ,976	0 ,998	1 ,021	1 ,045	1 ,068	1 ,093	1 ,118	1 ,143
5 ,3	0 ,953	0 ,974	0 ,997	1 ,019	1 ,042	1 ,066	1 ,090	1 ,115	1 ,140
5 ,4	0 ,951	0 ,972	0 ,994	1 ,017	1 ,040	1 ,063	1 ,087	1 ,111	1 ,136
5 ,5	0 ,948	0 ,969	0 ,991	1 ,013	1 ,036	1 ,059	1 ,083	1 ,107	1 ,132
5 ,6	0 ,945	0 ,966	0 ,987	1 ,010	1 ,032	1 ,055	1 ,078	1 ,102	1 ,126
5 ,7	0 ,941	0 ,962	0 ,983	1 ,005	1 ,027	1 ,050	1 ,073	1 ,097	1 ,121
5 ,8	0 ,936	0 ,957	0 ,978	1 ,000	1 ,022	1 ,045	1 ,067	1 ,091	1 ,114
5 ,9	0 ,931	0 ,952	0 ,973	0 ,994	1 ,016	1 ,038	1 ,061	1 ,084	1 ,107
6 ,0	0 ,926	0 ,946	0 ,967	0 ,988	1 ,009	1 ,031	1 ,054	1 ,076	1 ,099
6 ,1	0 ,920	0 ,940	0 ,960	0 ,981	1 ,002	1 ,024	1 ,046	1 ,068	1 ,091
6 ,2	0 ,913	0 ,933	0 ,953	0 ,974	0 ,995	1 ,016	1 ,038	1 ,060	1 ,082
6 ,3	0 ,906	0 ,926	0 ,946	0 ,966	0 ,987	1 ,008	1 ,029	1 ,051	1 ,073
6 ,4	0 ,899	0 ,918	0 ,938	0 ,958	0 ,978	0 ,999	1 ,020	1 ,041	1 ,063
6 ,5	0 ,891	0 ,910	0 ,929	0 ,949	0 ,969	0 ,989	1 ,010	1 ,031	1 ,052
6 ,6	0 ,882	0 ,901	0 ,920	0 ,939	0 ,959	0 ,979	0 ,999	1 ,020	1 ,041
6 ,7	0 ,873	0 ,892	0 ,910	0 ,929	0 ,949	0 ,969	0 ,989	1 ,009	1 ,030
6 ,8	0 ,864	0 ,882	0 ,900	0 ,919	0 ,938	0 ,958	0 ,977	0 ,997	1 ,018
6 ,9	0 ,854	0 ,872	0 ,890	0 ,908	0 ,927	0 ,946	0 ,965	0 ,985	1 ,005
7 ,0	0 ,843	0 ,861	0 ,879	0 ,897	0 ,915	0 ,934	0 ,953	0 ,973	0 ,992
7 ,1	0 ,833	0 ,850	0 ,867	0 ,885	0 ,903	0 ,922	0 ,941	0 ,960	0 ,979
7 ,2	0 ,822	0 ,838	0 ,856	0 ,873	0 ,891	0 ,909	0 ,927	0 ,946	0 ,965
7 ,3	0 ,810	0 ,827	0 ,843	0 ,861	0 ,878	0 ,896	0 ,914	0 ,932	0 ,951
7 ,4	0 ,798	0 ,814	0 ,831	0 ,848	0 ,865	0 ,882	0 ,900	0 ,918	0 ,936
7 ,5	0 ,786	0 ,802	0 ,818	0 ,835	0 ,851	0 ,868	0 ,886	0 ,903	0 ,921

T—θ	Log. $\frac{g}{h}$								
H^h	0.07	0.08	0,09	0,10	0,11	0,12	0,13	0,14	0,15
4^h,1	1^h,153	1^h,182	1^h,211	1^h,241	1^h,272	1^h,303	1^h,335	1^h,368	1^h,401
4 ,2	1 ,159	1 ,188	1 ,217	1 ,246	1 ,277	1 ,308	1 ,340	1 ,372	1 ,406
4 ,3	1 ,164	1 ,192	1 ,221	1 ,251	1 ,281	1 ,312	1 ,344	1 ,376	1 ,409
4 ,4	1 ,168	1 ,196	1 ,225	1 ,254	1 ,285	1 ,315	1 ,347	1 ,379	1 ,411
4 ,5	1 ,171	1 ,199	1 ,227	1 ,277	1 ,287	1 ,317	1 ,348	1 ,380	1 ,412
4 ,6	1 ,173	1 ,201	1 ,229	1 ,258	1 ,288	1 ,318	1 ,349	1 ,380	1 ,413
4 ,7	1 ,175	1 ,202	1 ,230	1 ,259	1 ,288	1 ,318	1 ,349	1 ,380	1 ,412
4 ,8	1 ,175	1 ,202	1 ,230	1 ,259	1 ,288	1 ,318	1 ,348	1 ,379	1 ,410
4 ,9	1 ,175	1 ,202	1 ,229	1 ,258	1 ,286	1 ,316	1 ,346	1 ,376	1 ,408
5 ,0	1 ,173	1 ,200	1 ,228	1 ,256	1 ,284	1 ,313	1 ,343	1 ,373	1 ,404
5 ,1	1 ,172	1 ,198	1 ,225	1 ,253	1 ,281	1 ,310	1 ,339	1 ,369	1 ,400
5 ,2	1 ,169	1 ,195	1 ,222	1 ,250	1 ,277	1 ,306	1 ,335	1 ,365	1 ,395
5 ,3	1 ,166	1 ,192	1 ,218	1 ,245	1 ,272	1 ,300	1 ,330	1 ,359	1 ,389
5 ,4	1 ,161	1 ,187	1 ,214	1 ,240	1 ,267	1 ,295	1 ,324	1 ,353	1 ,382
5 ,5	1 ,157	1 ,182	1 ,208	1 ,235	1 ,262	1 ,289	1 ,317	1 ,345	1 ,374
5 ,6	1 ,151	1 ,176	1 ,202	1 ,228	1 ,255	1 ,282	1 ,309	1 ,337	1 ,366
5 ,7	1 ,145	1 ,170	1 ,195	1 ,221	1 ,247	1 ,274	1 ,301	1 ,329	1 ,357
5 ,8	1 ,138	1 ,163	1 ,188	1 ,213	1 ,239	1 ,266	1 ,292	1 ,320	1 ,347
5 ,9	1 ,131	1 ,155	1 ,180	1 ,205	1 ,231	1 ,257	1 ,283	1 ,310	1 ,337
6 ,0	1 ,123	1 ,147	1 ,171	1 ,196	1 ,221	1 ,247	1 ,273	1 ,299	1 ,326
6 ,1	1 ,114	1 ,138	1 ,162	1 ,186	1 ,211	1 ,236	1 ,262	1 ,288	1 ,314
6 ,2	1 ,105	1 ,128	1 ,152	1 ,176	1 ,200	1 ,225	1 ,250	1 ,276	1 ,302
6 ,3	1 ,095	1 ,118	1 ,141	1 ,165	1 ,189	1 ,214	1 ,238	1 ,264	1 ,289
6 ,4	1 ,085	1 ,107	1 ,130	1 ,154	1 ,177	1 ,201	1 ,226	1 ,251	1 ,276
6 ,5	1 ,074	1 ,096	1 ,119	1 ,142	1 ,165	1 ,189	1 ,213	1 ,237	1 ,262
6 ,6	1 ,063	1 ,084	1 ,107	1 ,129	1 ,152	1 ,175	1 ,199	1 ,223	1 ,247
6 ,7	1 ,051	1 ,072	1 ,094	1 ,116	1 ,139	1 ,161	1 ,185	1 ,208	1 ,232
6 ,8	1 ,038	1 ,060	1 ,081	1 ,103	1 ,125	1 ,147	1 ,170	1 ,193	1 ,216
6 ,9	1 ,026	1 ,046	1 ,067	1 ,089	1 ,110	1 ,132	1 ,155	1 ,177	1 ,200
7 ,0	1 ,012	1 ,033	1 ,053	1 ,074	1 ,095	1 ,117	1 ,139	1 ,161	1 ,184
7 ,1	0 ,998	1 ,019	1 ,039	1 ,059	1 ,080	1 ,101	1 ,123	1 ,144	1 ,167
7 ,2	0 ,984	1 ,004	1 ,024	1 ,044	1 ,064	1 ,085	1 ,106	1 ,127	1 ,149
7 ,3	0 ,970	0 ,989	1 ,008	1 ,028	1 ,048	1 ,068	1 ,089	1 ,110	1 ,131
7 ,4	0 ,955	0 ,973	0 ,992	1 ,012	1 ,031	1 ,051	1 ,071	1 ,092	1 ,113
7 ,5	0 ,939	0 ,958	0 ,976	0 ,995	1 ,014	1 ,034	1 ,054	1 ,074	1 ,094

T—θ	Log. $\frac{g}{h}$								
H^h	0.16	0.17	0,18	0,19	0,20	0, 21	0,22	0,23	0,24
4 ,1	1^h,436	1^h,471	1^h,506	1^h,543	1^h,580	1^h,618	1^h,657	1^h,696	1^h,736
4 ,2	1 ,440	1 ,474	1 ,510	1 ,546	1 ,583	1 ,621	1 ,659	1 ,698	1 ,738
4 ,3	1 ,443	1 ,477	1 ,512	1 ,548	1 ,585	1 ,622	1 ,660	1 ,698	1 ,738
4 ,4	1 ,445	1 ,479	1 ,514	1 ,549	1 ,585	1 ,622	1 ,660	1 ,698	1 ,737
4 ,5	1 ,445	1 ,479	1 ,514	1 ,549	1 ,585	1 ,621	1 ,658	1 ,696	1 ,734
4 ,6	1 ,445	1 ,479	1 ,513	1 ,548	1 ,583	1 ,619	1 ,656	1 ,693	1 ,731
4 ,7	1 ,444	1 ,477	1 ,511	1 ,545	1 ,580	1 ,616	1 ,652	1 ,689	1 ,726
4 ,8	1 ,442	1 ,475	1 ,508	1 ,542	1 ,577	1 ,612	1 ,647	1 ,684	1 ,721
4 ,9	1 ,439	1 ,472	1 ,505	1 ,538	1 ,572	1 ,607	1 ,642	1 ,678	1 ,714
5 ,0	1 ,436	1 ,467	1 ,500	1 ,533	1 ,566	1 ,601	1 ,635	1 ,671	1 ,707
5 ,1	1 ,431	1 ,462	1 ,494	1 ,527	1 ,560	1 ,594	1 ,628	1 ,663	1 ,698
5 ,2	1 ,425	1 ,456	1 ,488	1 ,520	1 ,553	1 ,586	1 ,619	1 ,654	1 ,689
5 ,3	1 ,419	1 ,450	1 ,481	1 ,512	1 ,544	1 ,577	1 ,610	1 ,644	1 ,679
5 ,4	1 ,412	1 ,442	1 ,473	1 ,504	1 ,535	1 ,567	1 ,600	1 ,634	1 ,668
5 ,5	1 ,404	1 ,433	1 ,464	1 ,495	1 .526	1 ,557	1 ,590	1 ,623	1 ,656
5 ,6	1 ,395	1 ,424	1 ,454	1 ,485	1 ,515	1 ,546	1 ,578	1 ,611	1 ,644
5 ,7	1 ,385	1 ,414	1 ,444	1 ,474	1 ,504	1 ,535	1 ,566	1 ,598	1 ,630
5 ,8	1 ,375	1 ,404	1 ,433	1 ,462	1 ,492	1 ,523	1 ,554	1 ,585	1 ,616
5 ,9	1 ,364	1 ,393	1 ,421	1 ,450	1 ,480	1 ,509	1 ,540	1 ,571	1 ,602
6 ,0	1 ,353	1 ,381	1 ,409	1 ,437	1 ,466	1 ,496	1 ,526	1 ,556	1 ,586
6 ,1	1 ,341	1 ,368	1 ,396	1 ,424	1 ,452	1 ,481	1 ,511	1 ,540	1 ,570
6 ,2	1 ,328	1 ,355	1 ,382	1 ,410	1 ,438	1 ,466	1 ,495	1 ,524	1 ,554
6 ,3	1 ,315	1 ,341	1 ,368	1 ,395	1 ,423	1 ,451	1 ,479	1 ,507	1 ,536
6 ,4	1 ,301	1 ,327	1 ,353	1 ,380	1 ,407	1 ,434	1 ,462	1 ,490	1 ,518
6 ,5	1 ,287	1 ,312	1 ,338	1 ,364	1 ,391	1 ,417	1 ,445	1 ,472	1 ,500
6 ,6	1 ,272	1 ,297	1 ,322	1 ,348	1 ,374	1 ,400	1 ,427	1 ,454	1 ,481
6 ,7	1 ,256	1 ,281	1 ,306	1 ,331	1 ,356	1 ,382	1 ,408	1 ,435	1 ,461
6 ,8	1 ,240	1 ,264	1 ,289	1 ,313	1 ,338	1 ,364	1 ,389	1 ,415	1 ,441
6 ,9	1 ,224	1 ,247	1 ,271	1 ,295	1 ,320	1 ,345	1 ,370	1 ,395	1 ,421
7 ,0	1 ,207	1 ,230	1 ,253	1 ,277	1 ,301	1 ,325	1 ,350	1 ,375	1 ,400
7 ,1	1 ,189	1 ,212	1 ,235	1 ,258	1 ,281	1 ,305	1 ,329	1 ,354	1 ,378
7 ,2	1 ,171	1 ,193	1 ,216	1 ,238	1 ,261	1 ,285	1 ,308	1 ,332	1 ,356
7 ,3	1 ,153	1 ,174	1 ,196	1 ,219	1 ,241	1 ,264	1 ,287	1 ,310	1 ,334
7 ,4	1 ,134	1 ,155	1 ,176	1 ,198	1 ,220	1 ,243	1 ,265	1 ,288	1 ,311
7 ,5	1 ,115	1 ,135	1 ,156	1 ,178	1 ,199	1 ,221	1 ,243	1 ,265	1 ,288

T—θ	Log. $\frac{g}{h}$								
H^h	0.25	0.26	0,27	0,28	0,29	0,30	0,31	0,32	0,33
4^h,1	1^h,777	1^h,819	1^h,862	1^h,906	1^h,950	1^h,995	2^h,040	2^h,086	2^h,133
4 ,2	1 ,778	1 ,820	1 ,862	1 ,905	1 ,948	1 ,992	2 ,037	2 ,083	2 ,129
4 ,3	1 ,778	1 ,819	1 ,860	1 ,903	1 ,946	1 ,989	2 ,033	2 ,078	2 ,124
4 ,4	1 ,776	1 ,817	1 ,858	1 ,899	1 ,942	1 ,984	2 ,028	2 ,072	2 ,117
4 ,5	1 ,773	1 ,813	1 ,854	1 ,895	1 ,936	1 ,979	2 ,021	2 ,065	2 ,109
4 ,6	1 ,769	1 ,809	1 ,848	1 ,889	1 ,930	1 ,972	2 ,014	2 ,057	2 ,100
4 ,7	1 ,764	1 ,803	1 ,842	1 ,882	1 ,922	1 ,964	2 ,005	2 ,048	2 ,090
4 ,8	1 ,758	1 ,796	1 ,835	1 ,874	1 ,914	1 ,955	1 ,996	2 ,037	2 ,079
4 ,9	1 ,751	1 ,789	1 ,827	1 ,866	1 ,905	1 ,945	1 ,985	2 ,026	2 ,067
5 ,0	1 ,743	1 ,780	1 ,818	1 ,856	1 ,895	1 ,934	1 ,973	2 ,014	2 ,054
5 ,1	1 ,734	1 ,771	1 ,808	1 ,845	1 ,883	1 ,922	1 ,961	2 ,000	2 ,040
5 ,2	1 ,724	1 ,760	1 ,797	1 ,834	1 ,871	1 ,909	1 ,947	1 ,986	2 ,025
5 ,3	1 ,714	1 ,749	1 ,785	1 ,821	1 ,858	1 ,895	1 ,933	1 ,971	2 ,010
5 ,4	1 ,702	1 ,737	1 ,772	1 ,808	1 ,844	1 ,881	1 ,918	1 ,956	1 ,993
5 ,5	1 ,690	1 ,724	1 ,759	1 ,794	1 ,829	1 ,866	1 ,902	1 ,939	1 ,976
5 ,6	1 ,677	1 ,710	1 ,745	1 ,779	1 ,814	1 ,849	1 ,885	1 ,921	1 ,958
5 ,7	1 ,663	1 ,696	1 ,730	1 ,764	1 ,798	1 ,833	1 ,868	1 ,903	1 ,939
5 ,8	1 ,648	1 ,681	1 ,714	1 ,747	1 ,781	1 ,815	1 ,850	1 ,885	1 ,920
5 ,9	1 ,633	1 ,665	1 ,698	1 ,730	1 ,763	1 ,797	1 ,831	1 ,865	1 ,900
6 ,0	1 ,617	1 ,649	1 ,680	1 ,713	1 ,745	1 ,778	1 ,811	1 ,845	1 ,879
6 ,1	1 ,601	1 ,632	1 ,663	1 ,694	1 ,726	1 ,758	1 ,791	1 ,824	1 ,857
6 ,2	1 ,583	1 ,614	1 ,644	1 ,675	1 ,707	1 ,738	1 ,770	1 ,803	1 .835
6 ,3	1 ,566	1 ,595	1 ,626	1 ,656	1 ,687	1 ,718	1 ,749	1 ,781	1 ,813
6 ,4	1 ,547	1 ,576	1 ,606	1 ,636	1 ,666	1 ,696	1 ,727	1 ,758	1 ,790
6 ,5	1 ,528	1 ,557	1 ,586	1 ,615	1 ,645	1 ,674	1 ,705	1 ,735	1 ,766
6 ,6	1 ,509	1 ,537	1 ,565	1 ,594	1 ,623	1 ,652	1 ,682	1 ,711	1 ,742
6 ,7	1 ,489	1 ,516	1 ,544	1 ,572	1 ,600	1 ,629	1 ,658	1 ,687	1 ,717
6 ,8	1 ,468	1 ,495	1 ,522	1 ,550	1 ,577	1 ,606	1 ,634	1 ,663	1 ,691
6 ,9	1 ,447	1 ,473	1 ,500	1 ,527	1 ,554	1 ,582	1 ,609	1 ,637	1 ,666
7 ,0	1 ,425	1 ,451	1 ,477	1 ,504	1 ,530	1 ,557	1 ,584	1 ,612	1 ,639
7 ,1	1 ,403	1 ,429	1 ,454	1 ,480	1 ,506	1 ,532	1 ,559	1 ,586	1 ,613
7 ,2	1 ,381	1 ,406	1 ,430	1 ,456	1 ,481	1 ,507	1 ,533	1 ,559	1 ,585
7 ,3	1 ,358	1 ,382	1 ,406	1 ,431	1 ,456	1 ,481	1 ,506	1 ,532	1 ,558
7 ,4	1 ,335	1 ,358	1 ,382	1 ,406	1 ,430	1 ,455	1 ,480	1 ,505	1 ,530
7 ,5	1 ,311	1 ,334	1 ,357	1 ,381	1 ,404	1 ,428	1 ,452	1 ,477	1 ,501

SEGUNDA TABOA

	$\frac{g}{h}$					
H°	1,0	1,1	1,2	1,3	1,4	1,5
0°,5	0h,01183	0h,01349	0h,01528	0h,01721	0h,01931	0h,02159
1 ,0	0 ,02366	0 ,02699	0 ,03057	0 ,03444	0 ,03862	0 ,04318
1 ,5	0 ,03549	0 ,04047	0 ,04584	0 ,05165	0 ,05792	0 ,06474
2 ,0	0 ,04731	0 ,05395	0 ,06111	0 ,06884	0 ,07720	0 ,08628
2 ,5	0 ,05913	0 ,06742	0 ,07636	0 ,08601	0 ,09646	0 ,10780
3 ,0	0 ,07093	0 ,08087	0 ,09160	0 ,10316	0 ,11568	0 ,12928
3 ,5	0 ,08271	0 ,09430	0 ,10681	0 ,12027	0 ,13487	0 ,15070
4 ,0	0 ,09447	0 ,10772	0 ,12200	0 ,13737	0 ,15403	0 ,17209
4 ,5	0 ,10622	0 ,12111	0 ,13716	0 ,15443	0 ,17314	0 ,19342
5 ,0	0 ,11795	0 ,13449	0 ,15228	0 ,17145	0 ,19219	0 ,21469
5 ,5	0 ,12965	0 ,14783	0 ,16737	0 ,18843	0 ,21119	0 ,23589
6 ,0	0 ,14134	1 ,16113	0 ,18243	0 ,20535	0 ,23013	0 ,25701
6 ,5	0 ,15299	0 ,17440	0 ,19743	0 ,22222	0 ,24901	0 ,27804
7 ,0	0 ,16462	0 ,18764	0 ,21240	0 ,23903	0 ,26781	0 ,29898
7 ,5	0 ,17623	0 ,20084	0 ,22731	0 ,25577	0 ,28652	0 ,31981
8 ,0	0 ,18780	0 ,21401	0 ,24216	0 ,27246	0 ,30516	0 ,34054
8 ,5	0 ,19934	0 ,22714	0 ,25696	0 ,28908	0 ,32371	0 ,36116
9 ,0	0 ,21084	1 ,24021	0 ,27171	0 ,30563	0 ,34217	0 ,38166
9 ,5	0 ,22230	0 ,25323	0 ,28639	0 ,32209	0 ,36052	0 ,40205
10 ,0	0 ,23372	0 ,26619	0 ,30101	0 ,33847	0 ,37878	0 ,42230
10 ,5	0 ,24508	0 ,27910	0 ,31555	0 ,35477	0 ,39691	0 ,44241
11 ,0	0 ,25640	0 ,29195	0 ,33004	0 ,37097	0 ,41495	0 ,46239
11 ,5	0 ,26767	0 ,30474	0 ,34445	0 ,38708	0 ,43287	0 ,48223
12 ,0	1 ,27891	0 ,31747	0 ,35878	0 ,40309	0 ,45067	0 ,50192
12 ,5	0 ,29009	0 ,33013	0 ,37302	0 ,41900	0 ,46834	0 ,52145
13 ,0	0 ,30122	0 ,34274	0 ,38719	0 ,43481	0 ,48590	0 ,54083
13 ,5	0 ,31299	0 ,35528	0 ,40126	0 ,45051	0 ,50332	0 ,55004
14 ,0	0 ,32330	0 ,36775	0 ,41525	0 ,46610	0 ,52060	0 ,57910
14 ,5	0 ,33426	0 ,38014	0 ,42915	0 ,48159	0 ,53775	0 ,59800
15 ,0	0 ,34516	1 ,39246	0 ,44296	0 ,49696	0 ,55477	0 ,61672
15 ,5	0 ,35600	0 ,40470	0 ,45667	0 ,51221	0 ,57162	0 ,63525
16 ,0	0 ,36678	0 ,41687	0 ,47028	0 ,52734	0 ,58834	0 ,65360
17 ,0	0 ,38813	0 ,44095	0 ,49721	0 ,55723	0 ,62130	0 ,68972
18 ,0	0 ,40921	0 ,46471	0 ,52374	0 ,58662	0 ,65364	0 ,72508
19 ,0	0 ,43000	0 ,48810	0 ,54983	0 ,61546	0 ,68531	0 ,75964
20 ,0	0 ,45050	0 ,51112	0 ,57544	0 ,64375	0 ,71632	0 ,79340

	$\frac{g}{h}$					
H°	1,5	1,6	1,7	1,8	1,9	2,0
0°,5	0h,02159	0h,02407	0h,02678	0h,02976	0h,03307	0h.03674
1 ,0	0 ,04318	0 ,04813	0 ,05358	0 ,05953	0 ,06610	0 ,07341
1 ,5	0 ,06474	0 ,07217	0 ,08033	0 ,08925	0 ,09912	0 ,11007
2 ,0	0 ,08628	0 ,09619	0 ,10703	0 ,11894	0 ,13209	0 ,14669
2 ,5	0 ,10780	0 ,12018	0 ,13372	0 ,14860	0 ,16504	0 ,18328
3 ,0	0 ,12928	0 ,14411	0 ,16033	0 ,17816	0 ,19785	0 ,21971
3 ,5	0 ,15070	0 ,16799	0 ,18687	0 ,20762	0 ,23052	0 ,25594
4 ,0	0 ,17209	0 ,19179	0 ,21332	0 ,23696	0 ,26303	0 ,29197
4 ,5	0 ,19342	0 ,21552	0 ,23969	0 ,26617	0 ,29538	0 ,32778
5 ,0	0 ,21469	0 ,23918	0 ,26593	0 ,29524	0 ,32758	0 ,36334
5 ,5	0 ,23589	0 ,26274	0 ,29210	0 ,32420	0 ,35957	0 ,39863
6 ,0	0 ,25701	0 ,28621	0 ,31812	0 ,35299	0 ,39134	0 ,43368
6 ,5	0 ,27804	0 ,30957	0 ,34400	0 ,38161	0 ,42288	0 ,46845
7 ,0	0 ,29898	0 ,33281	0 ,36973	0 ,41004	0 ,45423	0 ,50294
7 ,5	0 ,31981	0 ,35593	0 ,39528	0 ,43827	0 ,48533	0 ,53711
8 ,0	0 ,34054	0 ,37891	0 ,42069	0 ,46629	0 ,51616	0 ,57096
8 ,5	0 ,36116	0 ,40177	0 ,44589	0 ,49409	0 ,54672	0 ,60448
9 ,0	0 ,38166	0 ,42448	0 ,47098	0 ,52165	0 ,57699	0 ,63762
9 ,5	0 ,40205	0 ,44704	0 ,49583	0 ,54897	0 ,60697	0 ,67040
10 ,0	0 ,42230	0 ,46942	0 ,52048	0 ,57605	0 ,63664	0 ,70279
10 ,5	0 ,44241	0 ,49163	0 ,54492	0 ,60290	0 ,66599	0 ,73477
11 ,0	0 ,46239	0 ,51367	0 ,56915	0 ,62948	0 ,69501	0 ,76636
11 ,5	0 ,48223	0 ,53553	0 ,59317	0 ,65576	0 ,72367	0 ,79751
12 ,0	0 ,50192	0 ,55722	0 ,61696	0 ,68174	0 ,75198	0 ,82820
12 ,5	0 ,52145	0 ,57871	0 ,64050	0 ,70743	0 ,77988	0 ,85842
13 ,0	0 ,54083	0 ,60000	0 ,66381	0 ,73281	0 ,80741	0 ,88813
13 ,5	0 ,56004	0 ,62109	0 ,68689	0 ,75786	0 ,83452	0 ,91734
14 ,0	0 ,57910	0 ,64199	0 ,70968	0 ,78259	0 ,86122	0 ,94600
14 ,5	0 ,59800	0 ,66268	0 ,73224	0 ,80706	0 ,88759	0 ,97437
15 ,0	0 ,61672	0 ,68315	0 ,75455	0 ,83122	0 ,91360	1 ,00228
15 ,5	0 ,63525	0 ,70340	0 ,77658	0 ,85506	0 ,93923	1 ,02974
16 ,0	0 ,65360	0 ,72343	0 ,79833	0 ,87858	0 ,96450	1 ,05674
17 ,0	0 ,68972	0 ,76278	0 ,84099	0 ,92462	1 ,01396	1 ,10935
18 ,0	0 ,72508	0 ,80125	0 ,88255	0 ,96925	1 ,06160	1 ,15992
19 ,0	0 ,75964	0 ,83875	0 ,92296	1 ,01253	1 ,10767	1 ,20862
20 ,0	0 ,79340	0 ,87528	0 ,96222	1 ,05446	1 ,15217	1 ,25549

T—θ	Log. $\frac{g}{h}$					
H^h	1,0	1,1	1,2	1,3	1,4	1,5
20°	0^h,45050	0 ,51112	0^h,57544	0^h,64375	0^h,71632	0^h,79340
21	0 ,47072	0 ,53378	0 ,60063	0 ,67131	0 ,74668	0 ,82636
22	0 ,49060	0 ,55604	0 ,62532	0 ,69867	0 ,77632	0 ,85848
23	0 ,51015	0 ,57790	0 ,64950	0 ,72523	0 ,80525	0 ,88975
24	0 ,52938	0 ,59934	0 ,67322	0 ,75120	0 ,83347	0 ,92019
25	0 ,54825	0 ,62036	0 ,69642	0 ,77655	0 ,86096	0 ,94977
26	0 ,56676	0 ,64097	0 ,71909	0 ,80129	0 ,88772	0 ,97849
27	0 ,58494	0 ,66116	0 ,74126	0 ,82542	0 ,91377	1 ,00637
28	0 ,60274	0 ,68089	0 ,76289	0 ,84891	0 ,93907	1 ,03337
29	0 ,62017	0 ,70015	0 ,78399	0 ,87176	0 ,96361	1 ,05949
30	0 ,63722	0 ,71898	0 ,80454	0 ,89398	0 ,98739	1 ,08473
31	0 ,65388	0 ,73734	0 ,82454	0 ,91556	1 ,01043	1 ,10913
32	0 ,67016	0 ,75522	0 ,84399	0 ,93649	1 ,03274	1 ,13270
33	0 ,68606	0 ,77267	0 ,86290	0 ,95679	1 ,05429	1 ,15541
34	0 ,70156	0 ,78964	0 ,88126	0 ,97645	1 ,07512	1 ,17729
35	0 ,71666	0 ,80612	0 ,89906	0 ,99547	1 ,09524	1 ,19834
36	0 ,73137	0 ,82214	0 ,91631	1 ,01384	1 ,11461	1 ,21855
37	0 ,74567	0 ,83769	0 ,93301	1 ,03158	1 ,13327	1 ,23796
38	0 ,75955	0 ,85276	0 ,94916	1 ,04869	1 ,15121	1 ,25658
39	0 ,77303	0 ,86736	0 ,96476	1 ,06518	1 ,16845	1 ,27440
40	0 ,78611	0 ,88148	0 ,97981	1 ,08104	1 ,18499	1 ,29143
41	0 ,79878	0 ,89512	0 ,99431	1 ,09627	1 ,20082	1 ,30772
42	0 ,81105	0 ,90830	1 ,00829	1 ,11091	1 ,21598	1 ,32322
43	0 ,82291	0 ,92100	1 ,02172	1 ,12493	1 ,23045	1 ,33798
44	0 ,83436	0 ,93323	1 ,03461	1 ,13834	1 ,24423	1 ,35202
45	0 ,84540	0 ,94499	1 ,04695	1 ,15114	1 ,25735	1 ,36528
46	0 ,85604	0 ,95629	1 ,05878	1 ,16337	1 ,26984	1 ,37787
47	0 ,86629	0 ,96714	1 ,07012	1 ,17504	1 ,28170	1 ,38981
48	0 ,87611	0 ,97751	1 ,08090	1 ,18610	1 ,29291	1 ,40102
49	0 ,88554	0 ,98743	1 ,09118	1 ,19661	1 ,30351	1 ,41158
50	0 ,89458	0 ,99689	1 ,10097	1 ,20659	1 ,31352	1 ,42149
51	0 ,90320	1 ,00589	1 ,11022	1 ,21596	1 ,32289	1 ,43070
52	0 ,91144	1 ,01446	1 ,11899	1 ,22481	1 ,33167	1 ,43930
53	0 ,91930	1 ,02261	1 ,12730	1 ,23315	1 ,33990	1 ,44731
54	0 ,92677	1 ,03030	1 ,13509	1 ,24092	1 ,34754	1 ,45466
55	0 ,93386	1 ,03757	1 ,14242	1 ,24819	1 ,35463	1 ,46143

	$\frac{g}{h}$					
H°	1,5	1,6	1,7	1,8	1,9	2,0
20°	0h,79340	0h,87525	0h,96222	1h,05446	1h,15217	1h,25549
21	0 ,82636	0 ,91086	1 ,00035	1 ,09508	1 ,19512	1 ,30053
22	0 ,85848	0 ,94544	1 ,03730	1 ,13430	1 ,23645	1 ,34374
23	0 ,88975	0 ,97901	1 ,07307	1 ,17215	1 ,27619	1 ,38515
24	0 ,92019	1 ,01158	1 ,10765	1 ,20860	1 ,31433	1 ,42479
25	0 ,94977	1 ,04315	1 ,14109	1 ,24374	1 ,35097	1 ,46272
26	0 ,97849	1 ,07371	1 ,17341	1 ,27758	1 ,38616	1 ,49898
27	1 ,00637	1 ,10327	1 ,20456	1 ,31010	1 ,41984	1 ,53358
28	1 ,03337	1 ,13184	1 ,23455	1 ,34133	1 ,45208	1 ,56659
29	1 ,05949	1 ,15943	1 ,26343	1 ,37130	1 ,48291	1 ,59804
30	1 ,08473	1 ,18601	1 ,29114	1 ,39999	1 ,51234	1 ,62794
31	1 ,10913	1 .21163	1 ,31778	1 ,42746	1 ,54042	1 ,65638
32	1 ,13270	1 ,23628	1 ,34337	1 ,45375	1 ,56719	1 ,68340
33	1 ,15541	1 ,25997	1 ,36786	1 ,47882	1 ,59265	1 ,70900
34	1 ,17729	1 ,28273	1 ,39130	1 ,50275	1 .61686	1 ,73325
35	1 ,19834	1 ,30456	1 ,41373	1 ,52557	1 ,63986	1 ,75621
36	1 ,21855	1 ,32545	1 ,43512	1 ,54727	1 ,66165	1 ,77789
37	1 ,23796	1 ,34546	1 ,45552	1 ,56790	1 ,68228	1 ,79833
38	1 ,25658	1 ,36458	1 ,47498	1 ,58749	1 ,70180	1 ,81757
39	1 ,27440	1 ,38280	1 ,49346	1 ,60602	1 ,72017	1 ,83561
40	1 ,29143	1 ,40017	1 ,51099	1 ,62354	1 ,73748	1 ,85252
41	1 ,30772	1 ,41673	1 ,52765	1 ,64013	1 ,75380	1 ,86841
42	1 ,32322	1 ,43245	1 ,54338	1 ,65574	1 ,76909	1 ,88323
43	1 ,33798	1 ,44734	1 ,55823	1 ,67038	1 ,78337	1 ,89699
44	1 ,35202	1 ,46147	1 ,57228	1 ,68415	1 ,79675	1 ,90978
45	1 ,36528	1 ,47478	1 ,58545	1 ,69699	1 ,80914	1 ,92157
46	1 ,37787	1 ,48733	1 ,59779	1 ,70897	1 ,82062	1 ,93242
47	1 ,38981	1 ,49916	1 ,60937	1 ,72015	1 ,83127	1 ,94239
48	1 ,40102	1 ,51023	1 ,62015	1 ,73050	1 ,84105	1 ,95145
49	1 ,41158	1 ,52056	1 ,63014	1 ,74003	1 ,84998	1 ,95965
50	1 ,42149	1 ,53022	1 ,63942	1 ,74882	1 ,85812	1 ,96706
51	1 ,43070	1 ,53916	1 ,64793	1 ,75681	1 ,86544	1 ,97365
52	1 ,43930	1 ,54743	1 ,65574	1 ,76405	1 ,87199	1 ,97940
53	1 ,44731	1 ,55507	1 ,66290	1 ,77061	1 ,87784	1 ,98441
54	1 ,45466	1 ,56205	1 ,66636	1 ,77644	1 ,88296	1 ,98871
55	1 ,46143	1 ,56837	1 ,67514	1 ,78157	1 ,88735	1 ,99227

	$\frac{g}{h}$					
H°	1,0	1,1	1,2	1,3	1,4	1,5
55°	0h,93386	1h,03757	1h,14242	1h,24819	1h,35463	1h,46143
56	0 ,94056	1 ,04442	1 ,14930	1 ,25497	1 ,36117	1 ,46763
57	0 ,94688	1 ,05082	1 ,15567	1 ,26120	1 ,36715	1 ,47320
58	0 ,95283	1 ,05681	1 ,16160	1 ,26695	1 ,37259	1 ,47823
59	0 ,95842	1 ,06241	1 ,16709	1 ,27222	1 ,37752	1 ,48273
60	0 ,96361	1 ,06757	1 ,17212	1 ,27699	1 ,38193	1 ,48665
61	0 ,96844	1 ,07234	1 ,17672	1 ,28130	1 ,38583	1 ,49006
62	0 ,97291	1 ,07673	1 ,18089	1 ,28515	1 ,38925	1 ,49298
63	0 ,97701	1 ,08070	1 ,18459	1 ,28850	1 ,39216	1 ,49532
64	0 ,98077	1 ,08429	1 ,18789	1 ,29142	1 ,39459	1 ,49719
65	0 ,98420	1 ,08750	1 ,19081	1 ,29392	1 ,39658	1 ,49860
66	0 ,98726	1 ,09033	1 ,19329	1 ,29595	1 ,39808	1 ,49949
67	0 ,98999	1 ,09279	1 ,19538	1 ,29757	1 ,39915	1 ,49993
68	0 ,99239	1 ,09488	1 ,19708	1 ,29879	1 ,39981	1 ,49993
69	0 ,99444	1 ,09658	1 ,19835	1 ,29956	1 ,39999	1 ,49943
70	0 ,99617	1 ,09794	1 ,19926	1 ,29994	1 ,39976	1 ,49851
71	0 ,99757	1 ,09896	1 ,19983	1 ,29993	1 ,39911	1 ,49715
72	0 ,99864	1 ,09963	1 ,19999	1 ,29951	1 ,39804	1 ,49537
73	0 ,99940	1 ,09997	1 ,19980	1 ,29871	1 ,39658	1 ,49319
74	0 ,99986	1 ,09995	1 ,19924	1 ,29755	1 ,39472	1 ,49059
75	0 ,99998	1 ,09960	1 ,19831	1 ,29599	1 ,39245	1 ,48757
76	0 ,99981	1 ,09893	1 ,19705	1 ,29408	1 ,38982	1 ,48418
77	0 ,99936	1 ,09793	1 ,19546	1 ,29180	1 ,38683	1 ,48042
78	0 ,99859	1 ,09661	1 ,19352	1 ,28917	1 ,38346	1 ,47626
79	0 ,99754	1 ,09499	1 ,19126	1 ,28621	1 ,37975	1 ,47175
80	0 ,99622	1 ,09306	1 ,18867	1 ,28292	1 ,37569	1 ,46688
81	0 ,99460	1 ,09080	1 ,18575	1 ,27927	1 ,37126	1 ,46164
82	0 ,99271	1 ,08826	1 ,18253	1 ,27531	1 ,36651	1 ,45607
83	0 ,99053	1 ,08545	1 ,17900	1 ,27103	1 ,36143	1 ,45015
84	0 ,98807	1 ,08233	1 ,17515	1 ,26643	1 ,35603	1 ,44390
85	0 ,98535	1 ,07894	1 ,17102	1 ,26153	1 ,35032	1 ,43734
86	0 ,98236	1 ,07526	1 ,16661	1 ,25631	1 ,34428	1 ,43045
87	0 ,97912	1 ,07130	1 ,16189	1 ,25079	1 ,33792	1 ,42324
88	0 ,97563	1 ,06708	1 ,15690	1 ,24499	1 ,33128	1 ,41574
89	0 ,97188	1 ,06258	1 ,15162	1 ,23890	1 ,32436	1 ,40794
90	0 ,96789	1 ,05784	1 ,14608	1 ,23252	1 ,31713	1 ,39983

	$\frac{g}{h}$					
H°	1,5	1,6	1,7	1,8	1,9	2,0
55°	1^h,46143	1^h,56837	1^h,67514	1^h,78157	1^h,88735	1^h,99227
56	1 ,46763	1 ,57410	1 ,68032	1 ,78606	1 ,89107	1 ,99515
57	1 ,47320	1 ,57919	1 ,68482	1 ,78986	1 ,89409	1 ,99731
58	1 ,47823	1 ,58369	1 ,68871	1 ,79303	1 ,89647	1 ,99882
59	1 ,48273	1 ,58764	1 ,69202	1 ,79561	1 ,89824	1 ,99972
60	1 ,48665	1 ,59101	1 ,69473	1 ,79757	1 ,89939	2 ,00000
61	1 ,49006	1 ,59382	1 ,69686	1 ,79894	1 ,89992	1 ,99964
62	1 ,49298	1 ,59612	1 ,69844	1 ,79976	1 ,89990	1 ,99870
63	1 ,49532	1 ,59785	1 ,69946	1 ,79999	1 ,89927	1 ,99716
64	1 ,49719	1 ,59906	1 ,69994	1 ,79967	1 ,89809	1 ,99507
65	1 ,49860	1 ,59979	1 ,69991	1 ,79884	1 ,89639	1 ,99246
66	1 ,49949	1 ,60000	1 ,69936	1 ,79747	1 ,89416	1 ,98931
67	1 ,49993	1 ,59972	1 ,69831	1 ,79559	1 ,89141	1 ,98564
68	1 ,49993	1 ,59898	1 ,69679	1 ,79323	1 ,88816	1 ,98148
69	1 ,49943	1 ,59775	1 ,69477	1 ,79035	1 ,88441	1 ,97681
70	1 ,49851	1 ,59607	1 ,69229	1 ,78701	1 ,88018	1 ,97166
71	1 ,49715	1 ,59397	1 ,68936	1 ,78323	1 ,87549	1 ,96605
72	1 ,49537	1 ,59143	1 ,68600	1 ,77900	1 ,87036	1 ,95999
73	1 ,49319	1 ,58845	1 ,68219	1 ,77432	1 ,86478	1 ,95348
74	1 ,49059	1 ,58504	1 ,67795	1 ,76921	1 ,85877	1 ,94654
75	1 ,48757	1 ,58120	1 ,67328	1 ,76365	1 ,85234	1 ,93918
76	1 ,48418	1 ,57699	1 ,66821	1 ,75771	1 ,84549	1 ,93140
77	1 ,48042	1 ,57241	1 ,66277	1 ,75139	1 ,83825	1 ,92323
78	1 ,47626	1 ,56745	1 ,65694	1 ,74468	1 ,83061	1 ,91465
79	1 ,47175	1 ,56210	1 ,65072	1 ,73757	1 ,82258	1 ,90571
80	1 ,46688	1 ,55638	1 ,64413	1 ,73008	1 ,81418	1 ,89639
81	1 ,46164	1 ,55029	1 ,63715	1 ,72220	1 ,80539	1 ,88672
82	1 ,45607	1 ,54385	1 ,62984	1 ,71399	1 ,79627	1 ,87667
83	1 ,45015	1 ,53708	1 ,62220	1 ,70545	1 ,78680	1 ,86627
84	1 ,44390	1 ,52997	1 ,61422	1 ,69657	1 ,77701	1 ,85553
85	1 ,43734	1 ,52253	1 ,60589	1 ,68734	1 ,76687	1 ,84448
86	1 ,43045	1 ,51478	1 ,59723	1 ,67778	1 ,75640	1 ,83312
87	1 ,42324	1 ,50669	1 ,58824	1 ,66789	1 ,74560	1 ,82142
88	1 ,41574	1 ,49831	1 ,57896	1 ,65771	1 ,73451	1 ,80941
89	1 ,40794	1 ,48962	1 ,56938	1 ,64723	1 ,72313	1 ,79712
90	1 ,39983	1 ,48065	1 ,55950	1 ,63646	1 ,71146	1 ,78452

	$\frac{g}{h}$					
H°	1,0	1,1	1,2	1,3	1,4	1,5
90°	0h,96789	1h,05784	1h,14608	1h,23252	1h,31713	1h,39983
91	0 ,96366	1 ,05285	1 ,14028	1 ,22588	1 ,30963	1 ,39145
92	0 ,95918	1 ,04760	1 ,13421	1 ,21898	1 ,30185	1 ,38280
93	0 ,95447	1 ,04208	1 ,12787	1 ,21178	1 ,29379	1 ,37384
94	0 ,94953	1 ,03633	1 ,12129	1 ,20434	1 ,28548	1 ,36463
95	0 ,94436	1 ,03035	1 ,11446	1 ,19666	1 ,27690	1 ,35517
96	0 ,93895	1 ,02412	1 ,10739	1 ,18872	1 ,26806	1 ,34544
97	0 ,93333	1 ,01767	1 ,10009	1 ,18054	1 ,25898	1 ,33547
98	0 ,92751	1 ,01100	1 ,09254	1 ,17210	1 ,24966	1 ,32524
99	0 ,92145	1 ,00409	1 ,08477	1 ,16342	1 ,24008	1 ,31475
100	0 ,91519	0 ,99701	1 ,07678	1 ,15452	1 ,23028	1 ,30404
101	0 ,90873	0 ,98964	1 ,06855	1 ,14539	1 ,22026	1 ,29309
102	0 ,90206	0 ,98208	1 ,06011	1 ,13604	1 ,20999	1 ,28191
103	0 ,89520	0 ,97432	1 ,05146	1 ,12648	1 ,19951	1 ,27052
104	0 ,88814	0 ,96637	1 ,04258	1 ,11669	1 ,18881	1 ,25892
105	0 ,88088	0 ,95821	1 ,03349	1 ,10670	1 ,17788	1 ,24708
106	0 ,87344	0 ,94986	1 ,02421	1 ,09651	1 ,16676	1 ,23504
107	0 ,86581	0 ,94131	1 ,01472	1 ,08610	1 ,15544	1 ,22280
108	0 ,85800	0 ,93257	1 ,00505	1 ,07549	1 ,14392	1 ,21035
109	0 ,85002	0 ,92365	0 ,99520	1 ,06470	1 ,13221	1 ,19771
110	0 ,84186	0 ,91455	0 ,98516	1 ,05373	1 ,12029	1 ,18488
111	0 ,83352	0 ,90525	0 ,97493	1 ,04255	1 ,10818	1 ,17184
112	0 ,82502	0 ,89579	0 ,96453	1 ,03120	1 ,09590	1 ,15863
113	0 ,81635	0 ,88618	0 ,95394	1 ,01966	1 ,08343	1 ,14525
114	0 ,80752	0 ,87638	0 ,94319	1 ,00795	1 ,07078	1 ,13169
115	0 ,79853	0 ,86643	0 ,93228	0 ,99608	1 ,05797	1 ,11796
116	0 ,78938	0 ,85632	0 ,92119	0 ,98404	1 ,04500	1 ,10404

	$\frac{g}{h}$					
H°	1,5	1,6	1,7	1,8	1,9	2,0
90°	1h,39983	1h,48065	1h,55950	1h,63646	1h,71146	1,78452
91	1,39145	1,47138	1,54934	1,62538	1,69948	1,77161
92	1,38280	1,46182	1,53888	1,61400	1,68720	1,75848
93	1,37384	1,45199	1,52814	1,60234	1,67464	1,74502
94	1,36463	1,44188	1,51714	1,59043	1,66181	1,73131
95	1,35517	1,43152	1,50586	1,57825	1,64875	1,71735
96	1,34544	1,42088	1,49432	1,56582	1,63542	1,70314
97	1,33547	1,40998	1,48253	1,55315	1,62183	1,68867
98	1,32524	1,39885	1,47049	1,54020	1,60801	1,67395
99	1,31475	1,38745	1,45819	1,52700	1,59392	1,65898
100	1,30404	1,37583	1,44567	1,51358	1,57961	1,64379
101	1,29309	1,36398	1,43291	1,49994	1,56506	1,62836
102	1,28191	1,35189	1,41986	1,48606	1,55029	1,61273
103	1,27052	1,33959	1,40669	1,47195	1,53531	1,59687
104	1,25892	1,32707	1,39329	1,45763	1,52012	1,58080
105	1,24708	1,31432	1,37965	1,44307	1,50471	1,56453
106	1,23504	1,30137	1,36581	1,42832	1,48908	1,54803
107	1,22280	1,28822	1,35175	1,41338	1,47326	1,53136
108	1,21035	1,27487	1,33749	1,39822	1,45722	1,51448
109	1,19771	1,26131	1,32304	1,38288	1,44100	1,49740
110	1,18488	1,24757	1,30838	1,36736	1,42460	1,48014
111	1,17184	1,23362	1,29353	1,35163	1,40801	1,46269
112	1,15863	1,21950	1,27851	1,33573	1,39124	1,44506
113	1,14525	1,20519	1,26330	1,31966	1,37429	1,42728
114	1,13169	1,19070	1,24792	1,30340	1,35717	1,40930
115	1,11796	1,17605	1,23238	1,28698	1,33988	1,39117
116	1,10404	1,16124	1,21667	1,27039	1,32244	1,37290

ADVERTENCIA

Calculei esta taboa para achar os valores de τ da equação $\tau = \frac{g}{h} \operatorname{sen}(H+\gamma\tau)$ para os *annuncios* das occultações das estrellas com maior approximação e menos trabalho, do que pela falsa posição com duas hypotheses: suppõe se Log. $\gamma = 1,1772786$. Eph. de 1807. Na occultação da estrella τ de Leo a 2 de Janeiro de 1844 temos $\frac{g}{h} = 1,3764$, $H = 13°,4738$: por duas partes proporcionaes se vê, que a $\frac{g}{h} = 1,3$ e $\frac{g}{h} = 1,4$ correspondem $\tau' = 0^h,44967$ e $\tau'' = 0^h,50240$, para $H = 13°,4738$; tomando depois a parte proporcional entre τ' e τ'', correspondente a 0,0764, e junctando-a a τ acha-se $\tau = 0^h,48987$: resolvendo a formula obtem-se $\tau = 0^h,48968$, differença $t = 0'',7$. Na occultação da estrella 55 de Leo a 9 de Janeiro de 1844 temos $\frac{g}{h} = 1,4134$, $H = 32°,7354$, com o que se acha $\tau' = 1^h,04858$, e $\tau'' = 1^h,14940$, e finalmente $\tau = 1^h,06208$: resolvendo a formula temos $\tau = 1^h,06198$: differença $t = 0'',4$. Nos productos para as partes proporcionaes, antes da divisão, despresam-se as decimaes da 6.ª casa. *Rufino Guerra Osorio.*

ERRATA

Pagina	*Linha*	*Erro*	*Emenda*
20	2	$\text{Log}\,\frac{g}{h}$	$\frac{g}{h}$
»	3	H^h	H°

ADDITAMENTO

As equações dos numeros I e II da *Advertencia* darão mais exactamente os tempos t, se nas expressões de β e q se empregar em vez de d' a declinação d do astro, e se usar de

$$c = \text{semid. } ☾ + \text{semid. astro } (1 - \text{sen } \pi \cos z);$$

o que é conforme com os n.^{os} 141 e 145 da Explicação das citadas Ephemerides para 1804.

E, além d'isso, será mais exacto usar, na segunda approximação, de

$$\Delta' + \frac{1}{2} \text{sen } 1'' \text{ sen } d \cos d' \, A^2 (\tau + t_1)^2$$

em vez de Δ'.

Les équations des numéros I et II de l'*Avertissement* donneront plus exactement les temps t, si dans les expressions de β et de q l'on employera la déclinaison d de l'astre au lieu de celle d' de la lune, et si l'on usera de

$$c = \text{semid. } ☾ + \text{semid. astre } (1 - \text{sen } \pi \cos z);$$

ce qui est d'accord avec les numéros 141 et 145 de l'explication des Éphémérides pour 1804.

Il sera d'ailleurs plus exacte d'employer, dans la seconde approximation,

$$\Delta' + \frac{1}{2} \text{ sen } 1'' \text{ sen } d \cos d' \, A^2 (\tau + t_1)^2$$

au lieu de Δ'.

ERRATA

Pages	*Lignes*	*Au lieu de*	*Lire*
3	18	$\delta' - \delta$	$\delta' = \delta$
5	7	$\frac{1}{2}\gamma^2$	$\frac{1}{2}\gamma^l$