Dr. H. Spencer-Jones, F.R.S. Astronomer Royal, Royal Observatory, Greenwich, London, S.E. 10. My dear Dr. Spencer-Jones:

Your letter of November 28 in answer to mine of the 17th has come. Inasmuch as I did not make my question plain, please permit me to venture again, and pardon the liberty I take in making a longer outline of my argument.

It is true, is it not, that the 10 days which Gregory XIII dropped in 1582 corresponded to the 10 days which had been added by Julian time between 300 and 1582? In this period of 1282 years the leap days for years which should not have been bissextile are just 10 in number. Or, it may be demonstrated that the excess of the Julian year over the true solar year when multiplied by 1282, that is, .0078013 times 1282 equals exactly 10.0012 days. Therefore may I not conclude that Gregory's act really resulted in another change than the two you mention, namely, that the dropping of 10 days in 1582 rectified the mean length of the calendar as far back as 300 A.D.?

But the centenary years 100 and 200 were treated by the Julian reckoning as bissextile, and these two excess leap days were needed that the vernal equinox might step into proper place, as of March 21 in 300. However, this made those first three centuries that much too long, to be exact, 2.34 days too long. Scaliger's tables do not appear to notice this gloss in man's time-clock when he placed Jan.1, 1 A.D. as Saturday, which could only be on the basis of the two excess days in the early part of the Christian. Therefore I stated in my first letter that it appeared as if all the rest of the era had been adjusted to mean solar time, that is, practically so.

It happens that I am interested in the true solar time of a certain date in the first century; and, on the reasoning as given above, it would seem as if Jan.1, I A.D. should be Monday if one wished to figure dates in true solar time, and not in Julian time.

I have sent to our Library of Congress for Clavius' discussion of the facts as known in his day concerning the act of Gregory XIII. Man did not then know the true length of the year. Though they are the privileged ones, may we not enlarge and refine their picture a little?

Please allow me to thank you sincerely for your painstaking effort to help me, and to hope that I am not trespassing upon your time or upon the office of the Astronomer Royal in asking for further consideration. It means much to me.

In honour of my forefather, Sir Isaac Newton, I send the season's greetings.

Yours very sincerely,

Grace Amadon (Amadon)

Dec. 15, 1938. St. Joseph, Mich. Box 45-K, R.R.2.

.25 .2421987 .0078013 1282 156026 624104 156026

78013

10.0012666 days

.0078013 300 2.34039 d

Digitized by the Center for Adventist Research

Communications should be addressed to the ASTRONOMER ROYAL

Telephone: Greenwich 1238

Royal Observatory, Greenwich, London, S.E.10.

28th December, 1938.

Miss G. Amadon. Box 45-K, R.R.2. St. Joseph, Michigan, U.S.A.

Dear Madam,

In reply to your further letter, the calendar was rectified by Julius Caesar, with the aid of the astronomer Sosigenes of Alexandria, in B.C. 46, the length of the mean year being taken as The calendar was then adjusted so that the months were restored to their normal position in the year, two intercalary months, amounting together to 67 days, being inserted between November and December. From that time each month has had its present duration.

The edict which required an intercalary day (leap day) to be inserted every fourth year was misunderstood by the pontifices, who reckoned the four years inclusively and so made on year in three a leap year. Consequently the year 8B.C. began three days too late, in relation to the proper Julian calendar. To correct this, Augustus ordered that there should be no leap year until A.D. 8. From A.D.8 the Julian calendar was strictly observed till the reform of Pope Gregory XIII in A.D. 1582.

When Gregory XIII reformed the calendar,

the adjustment was made such that the vernal equinox should occupy the position assigned to it in the Easter tables, viz. March 21. These tables date, I believe, from about the third century. The important point is that this adjustment placed the vernal equinox on a date that is purely arbitrary and not necessarily related to the date on which the equinox fell when the revision of the calendar by Julius Caesar was made: this earlier revision merely brought the months back to their normal position.

The calendar that has been used was therefore the incorrect Julian calendar B.C. 46 to B.C. 8; no leap years from B.C. 8 to A.D. 8 (each year 365 days); the correct Julian calendar A.D. 8 to A.D. 1582; the Gregorian calendar since.

This, I think, provides you with all the information you need.

Yours sincerely,

Astronomer Royal.

b. Gencer lones

IN REPLY ADDRESS NOT THE SIGNER
OF THIS LETTER, BUT
SUPERINTENDENT, NAVAL OBSERVATORY
WASHINGTON, D. C.

NAVY DEPARTMENT

REFER TO No.

U. S. NAVAL OBSERVATORY

EN23/H5(11)(3320)

WASHINGTON, D. C.

9 September 1937

Dear Madam:

Your letter of 19 August has been received.

The number of days in a tropical year is decreasing at present at the rate of 0.0000000614 each year; 365.24219879 days being the length at 1900.0, based on observations of the Sun's position since 1750 (when observations first became accurate). The last two or three figures will probably be changed by the next century or two of solar observations. Similar remarks apply to the Moon.

The full moon after Spring equinox (1919-30) was as follows:

year	month	day	hour	minute
1919	April	15	8	25 A.M.)
1920	April	3	10	55 A.M.)
1921	March	23	8	19 P.M.)
1922	April	11	8	44 P.M.)G.C.T.
1923	April	1	1+19-	10 P.M.)
1924	March	21	4	30 A.M.)
1925	April	9	3	33 A.M.)
1926	March	29	10	O A.M.)
1927	April	17	3	35 A.M.)
1928	April	5	3	38 A.M.)
1929	March	25	7	46 A.M.)
1930	April	13	5	48 A.M.)

Jerusalem time is 2^h 20^m 53.7 later than G.C.T. Eastern Standard Time is 5 hours earlier than G.C.T.

Very truly yours,

James Robertson, Director Nautical Almanac.

Miss Grace Amadon, Box 45-K, R.R.2, St. Joseph, Michigan. man. 21-4-30 29 29-12-44 Glenn H.Draper, U.S. Naval Observatory, Washington, D.C. Dear Mr. Draper:

I greatly appreciate your frank criticism of my theory concerning the date of the Crucifixion. I have carefully reviewed all your references. Because the chronologic formulae vary from the astronomical in their results by a day or two, I have from the very first attempted to find some other means of reckoning. I enclose a copy of the TABLE which I use to find the day of the week for any date. The Gregorian correction when applied to the Christian era, as from 1931 to 31 A.D., differs from the astronomical by about one-half day only, so that the days of the week for this period come true. Please note that by this table the Christian era began on Monday. This I believe to be the true day, and not Saturday, as given in the Encyclopedia Britannica.

I have a similar TABLE for the Julian Calendar, which for this same period of 1931 years extends over two weeks further back, beginning on a Sunday. This seems to be in harmony with the real length of the Julian year over the astronomical in 1931, or 15.158601 days. = 16.064 3108
These correspond to the 15 bissextile days added above those demanded

by the Gregorian correction.

By translating my date as of April 11-13-53.75 (Jerusalem) to the Julian Calendar of the first century, I can meet your astronomical figure April 25.84 G.C.T. within 23 minutes. However, I do not believe that this was the crucifixion date--it was a month too late. Dr. Hales in his chronology refers to this date as a recorded eclipse of the moon occurring a month after the crucifixion.

Will you please be so kind as to send me your astronomical record of the first full moons following the vernal equinox for the years 27-34 A.D.? When I have finished my TABLES I shall be grateful for further criticism, and will send you all the figures if you feel that you will have time to look them over. I wish also to ask you this: Do you consider 365.25 and 365.2425 as the true means for the Julian and Gregorian years respectively?

Thanking you much for your kind interest,

I am Yours Sincerely,

July 11, 1938, Box 45-K, R.R. 2, St.Joseph, Mich. april 10,-14-51 14-18 Mar. 26-20 29,530588 14.965294 561 25-2127 29-12-43 29-12-43 Glenn H. Draper, Naval Obcervatory, Washington, D.C. Dear Mr. Draper:

It has been nearly three months since I last wrote you. The Journals you so kindly sent have been very useful to me; I am expecting to be in Washington within a few weeks, and will bring them along.

Here is a question that bothers me a little:

If the time of Full Moon at Greenwich is, say, April 2-20 hr.-5.5, what would be the time of the same Full Moon at Jerusalem? that is, in the year 1931?

9.C.T. Gp:2720-5.5

I do not mean to ask what would be the time in Jerusalem when the moon is Full at Greenwich; I know that it would be 2 hrs.-20.89 later; but I am not exactly clear in my mind about this?

I have received word that the Encyclopedia Britannica admits their mistake in placing Julius Caesar's correction of the calendar in 46 B.C. For a long time I have considered 45 B.C. as the right date. Now they say that their future editions will so read. I will write you again shortly--I wish you to think over again an answer you sent me in regard to one of my previous questions; but in the mean time please respond to this question herein enclosed.

Yours very sincerely,

Nov.27, 1938. St. Joseph, Mich. Box 45-K, R.R.2.

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 $3, e, 7$
 3

Arthur M. Harding, University of Arkansas, Fayetleville Arkansas.

Dear Prof. Harding:

Your articles on "TIME" in the Journal of Calendar Reform I have read with great interest. I wish to ask you an important question that has crossed my path, and here it is:

Is the Julian day number 1721424, or Jan.1, 1 A.D., correctly designated as Saturday on the basis of true solar time?

My contention is that the ten days which Gregory XIII omitted from the calendar but corrected it from the year 300 and on to his own time. Therefore, what about the correction for the two Julian leap days of the centenary years 100 and 200? These bissextile years were needed in order to place the vernal equinox at March 21 in 325; and therefore we should not expect the council of Nicea to have made any change. Is the Julian day reckoning really responsible for this correction? And when the Julian day number 1721424 was named Saturday, did this table neglect to drop the two leap days corresponding to the years 100 and 200? If so, should not Jan.1, 1 A.D., be Monday in respect to true solar time?

It seems to me that Jan.1, 1 A.D. could be Saturday only on the basis of the years 100 and 200 being bissextile, and hence Julian in character, while all the rest of the Christian era has come under correction. I would greatly appreciate it if you would answer me on this point.

Yours very sincerely,

Nov.17, 1938, St. Joseph, Mich. Box 45-K, R.R. 2.

UNIVERSITY OF ARKANSAS FAYETTEVILLE

MATHEMATICS AND ASTRONOMY ARTHUR M. HARDING, Ph. D.

November 28, 1938.

Miss Grace Amadon Box 45-K, R.R.2 St. Joseph, Michigan.

Dear Miss Amadon:

Answering your letter of the seventeenth, I regret that I am not able to give you the information desired. The question you have raised is an interesting one and I shall devote some time to it.

If I get a definite answer any time soon, I shall write you.

Cordially yours,

A. M. Harding,

Professor of Mathematics

and Astronomy.

AMH: MG

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DATA to be filled out from NAUTICAL ALMANAC for EASTER FULL MOON* - Greenwich C. Time.

NOTICE:

In the volumes of the American Ephemeris and Nautical Almanac and the American Nautical Almanac, beginning with those for 1925, the hours of the day are counted from midnight to midnight instead of from noon to noon as was done in the volumes before 1925, and the time is designated Civil Time instead of Mean Time.

By this change each day begins twelve hours earlier than formerly; i.e., January 1.0, 1925, in the volume for 1925, is the same as December 31.5, 1924, in the volume for 1924.

Year	_	Date				ate				
					Month	Day	Hr.	Min.		
1919					Apr.	14	20	25.1	Greenwich Time	
1920			•	•	Apr.	2	22	54.7	Greenwich Time	
1921			•	•	Mar.	23	8	18.9	Greenwich Time	
1923	•			•	Apr.	1	1	9.8	Greenwich Time	Mean
1924				•	Apr.	19	2 .	10.7	Greenwich Time	
1927			•	•	Apr.	17	3	35.4	Greenwich Time	
1928				•	Apr.	5	3	38.3	Greenwich Time	
1929				•	Mar.	25	7.	46.3	Greenwich Time	Civil
1930					Apr.	13	5	48.5	Greenwich Time	

From: Nautical Almanac; Phases of the Moon

First full moon after March 21st of each year.

* First Full Moon after Vernal Equinox (Mar. 21)

Grace Amadon St. Joseph, Mich. Box 45-K R.R. 2

2.5. Naval Obs. Sept. 2, 1938 Lear Frace Amadon Farm sending herewith four numbers of the Journal which I believe you will find interesting and helpful. Please return them when you have read what you may be interested in. Glen N. Drapor

Glenn H. Draper, Naval Observatory, Washington, D.C. Dear Mr. Draper:

I will accept your kind offer of the loan of the Journals. Please send me a number of them by parcel post C.O.D. If you care to send a whole year's numbers that will be fine, and then I can judge just how they will fit my subject. I am progressing a little, I think. I can show from the Bible that the year 31 A.D. was the year of the Crucifixion. If so, then March 27 or 28 must have been the date, on the basis that the C.Era began on Monday.

I will give your Journals careful attention, and

thanks a lot for offering them to me.

Yours very sincerely,

Aug.30, 1938. St. Joseph, Mich. Box 45-K, R.R.2. Glenn H.Draper, Naval Observatory, Washington, D.C.

Dear Mr. Draper: Here is an argument submitted -- please advise: --

ANARGUMENT

By the following landmarks of time--days of the week--one can wend his way back to the year 1:

Gregorian Calend	ar -	Jan.1	, 1583	equals	Saturday
0		Dec.3	1,1582	11	Friday
tt		Oct.1		п	Friday
Julian Calendar		Oct.	46 11 11	11	Friday
n			1,1501	17	Monday
n		11	1401	11	Saturday
11		11	1301	11	Sunday
11		11	1201	11	Monday
11		11	1101	17	Tuesday
n		12	1001	11	Wednesday
n		11	901	11	Thursday
n		11	801	11	Friday
n		11	701	17	Saturday
"		29	601	**	Sunday
11		11	501	12	Monday
11		11	401	"	Tuesday
11		11	301	11	Wednesday
11		27	201	11	Thursday
		11	101	44	Friday
11		**	1	11	Saturday

In this TABLE account is made of the 10 days dropped by Gregory in 1582. It is evident that he reckoned from the Council of Nicea in 325, for the difference between Julian and Solar time in (1582 - 325), or 1257 years is

1257 times (365.25 -365.2421987), or .0078013, equals 9.8 days. At the time of this Council the vernal equinox had slipped back to Mar.l from the time of Julius Caesar in 46 B.C. This apparently would make 3 days to be counted as the Julian increase in 325, but it was not 3 full days as regards the years belonging to the Christian era, which the equation below shows:

Julian increase over solar time for 1582 years equals 1582 times .0078013 equals 12.34 days.

Days dropped in 1582 " 10

Additional correction needed for C.E. " 2.34 days.

The very fact that the vernal equinox had receded in 325 shows that this matter of 2 full days increase must have been taken care of in the edict of the Council that the v.e. should stay at Mar.21, to which point it had slipped back in about 400 years from Mar.25. These 4 days have to be charged up to the irregularities of the pontiffs, that is partly, or to the correction of Augustus Caesar, the length of the year not being known, for the real Julian irrease for the 325 years seems to have been a little over 2 days.

Consequently in order to determine the exact date of the Julian year (the calendar can't acknowledge a fraction of a day) these two days should be dropped from the Julian Calendar on Jan.1,1 A.D., the same as the 10 days were dropped on Oct.5,1582, for by reckoning backward from the 16th century

Julian time to the year 1 we find the Julian increase over Solar time that much more than the 10 days which Gregory dropped. This places Jan.1, 1 A.D. on Monday as the true astronomical beginning of the Christian era, it seems to me. If the Gregorian correction is spread over the Christian era backward from the 20th century, the Table shows Jan.1 to be Monday. Inasmuch as the Gregorian calendar for this whole period differs from Solar time by only 14 hours, the two would practically coincide. On the other hand if the Julian correction be applied to the Christian era, starting backward from the 20th century, as a measure of time, Jan.1 will come out on Sunday in the year 1 A.D. But a Julian period of, say 1931 years, is too long by 15.06 days. Counting these off from Sunday, Jan.1,1 A.D., we come back to Monday agair.

Monday is the day acknowledged by Bliss and Dr. Hales, and I believe that this day harmonizes best with the Jewish calendar. Is Saturday the day for Jan.1, 1 A.D. which you have recorded on your tables of the Julian calendar? The Encyclopedia Britannica gives Saturday as the day. When you answer this question, please give me the exact name of the Table from which you will be

quoting.

It is plain to me that Gregory considered the calendar corrected up to the year 325, because the v.e. was on Mar.21. But in order to arrive at this point the Julian calendar had to add a certain number of leap days, and in estimating the real length of the Julian increase over Solar time, all these leap days have to be reckoned—this is my contention. Please comment.

Please tell me the name of the Table from which you took the record of the eclipses in your last letter. Thanks very much. They were just what I need-

ed.

Yours very sincerely,

Box 45-K, R.R. 2, St. Joseph, Mich. Aug. 22, 1938.

* which was based on the moon.

Superintendent, Naval Observatory, Navy Department, Washington, D.C. My dear Sir:

I am in need of a few items from your astronomical records, and would greatly appreciate the favor if you can send me the report of the list given below.

Yours very sincerely,

NEW MOON -- GREENWICH CIVIL TIME -- FIRST CENTURY

A.D. 31 --

A.D. 32 ---

A.D. 33 ---

Glenn H. Draper, Naval Observatory, Washington, D.C. Dear Mr. Draper:

Thanks kindly for your letter of July 22, and for your proposition to criticize my subject. I am not quite ready yet to say that it is ready for the critical eye. Because history seems to pass over the birth and death of the Founder of the Christian religion, I am appealing to astronomy. A bacteriologist by profession, for me the sky is a new field of investigation. The records of the Naval Observatory contain much that the college and university do not reveal, and this is why I am bothering you.

My article needs to be complete and very plain in every detail before I can submit it to you at your price for criticism, for a calendar subject runs up into many hours. Clavius wrote eight hundred pages for Gregory XIII before he dropped the ten days. If I had plenty, Mr. Draper, no price would hinder my acceptance of efficient criticism. Well, we'll see. I can't state just yet what I may do. The way may open so that

I can come to Washington.

In the mean time will you please tell me this? --

If a table of the moon's revolutions were built up on the basis of her mean constant, that is, by repeatedly adding or subtracting 29.530588 days from a known phase of the moon, how would this compare with your Observatory records of the moon's motion, which, I understand, are computed months ahead? Please state whose tables are used as a basis for the Observatory records.

Any question that I may ask you is of importance to me as a matter of record and authority, and your answers I may wish to use references. For this service I will pay you \$1.00 for each letter. It may be that this moderate remuneration will be worth your while. Later on we may get together on the Subject as a whole.

Thanking you for your interest, and your painstaking answers,

I am yours sincerely,

grace Amadon

Aug.1, 1938, St. Joseph, Mich. Box 45-K, R.R. 2. IN REPLY ADDRESS NOT THE SIGNER
OF THIS LETTER, BUT
SUPERINTENDENT, NAVAL OBSERVATORY
WASHINGTON, D. C.

NAVY DEPARTMENT

REFER TO No.

U. S. NAVAL OBSERVATORY

WASHINGTON, D. C.

EN23/H5(11)(3320)

20 April 1938

Dear Madam:

Relative to your letter of 12 April 1938, I am pleased to inform you that Mr. Glen H. Draper, of this office, has offered to look over your article after office hours.

Very truly yours,

James Robertson, Director Nautical Almanac.

Miss Grace Amadon, Box 45-K, R.R.2, St. Joseph, Michigan.

agen

UNITED STATES NATIONAL MUSEUM BUREAU OF AMERICAN ETHNOLOGY ASTROPHYSICAL OBSERVATORY NATIONAL ZOOLOGICAL PARK

ALL CORRESPONDENCE SHOULD BE ADDRESSED TO THE SECRETARY



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DIVISION OF RADIATION AND
ORGANISMS

May 24, 1938.

Dear Madam:

The manuscript which you sent under date of April 30, 1938 has been read by a member of the Smithsonian scientific staff. He regards your discussion as a very interesting one, but a rather futile one in view of the uncertainty from an historical standpoint as to when the founder of the Christian religion was born and as to how long he lived.

Very truly yours,

Secretary.

Miss Grace Amadon, Box 45-K, R.R. 2, St. Joseph, Michigan.



UNITED STATES NATIONAL MUSEUM BUREAU OF AMERICAN ETHNOLOGY ASTROPHYSICAL OBSERVATORY NATIONAL ZOOLOGICAL PARK

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INTERNATIONAL EXCHANGES
DIVISION OF RADIATION AND
ORGANISMS

April 22, 1938.

Dear Madam:

If you send the manuscript to which you refer in your letter of April 12 to this Institution, it will be referred to a member of its scientific staff for criticism.

Very truly yours,

Samporey

Administrative Assistant to the Secretary.

Miss Grace Amadon, Box 45-K, R.R. 2, St. Joseph, Michigan. Superintendent Smithsonian Institute, Washington, D.C. Dear Sir:

I have worked out a little problem pertaining to the date of the Crucifixion, based on the law of Meton's cycle and the motion of the moon. I need to have it criticized. Have you anyone on the staff of the Smithsonian Institute that would be interested to look over my manuscript and drawings? The problem is not long.

Yours very sincerely,

April 12,1938, Box 45-K, R.R.2. St.Joseph, Mich. H.W.Dorsey, Administrative
Assistant to the Secretary
Smithsonian Institution,
Washington, D.C.
My dear Sir:

Enclosed is the manuscript concerning which
I wrote you on April 12. The problem on page three invites the criticism of your staff. I shall await with
keen interest the answer. Many thanks for giving me
this opportunity.

Yours very sincerely,

April 27, 1938. Box 45-K, R.R.2. St. Joseph, Michigan. James Robertson, Superintendent Naval Observatory, Washington, D.C. My dear Sir:

I wish to thank you for the list of full-moon dates which you sent me last September-EN23/H5(11)(3320)-they were exactly what I needed and fitted nicely into my work.

I have worked out a little problem based on the law of Meton's cycle, and pertaining to full-moon dates of the first century. I need to have it criticized. Have you anyone on your staff who would have time to look over my manuscript? It is short.

Yours very sincerely,

April 12, 1938. Box 45-K, R.R.2, St.Joseph, Mich.

James

James Robertson, Director of Nautical Almanac, U.S. Naval Observatory, Washington, D.C. My dear Mr. Robertson:

Permit me to sincerely thank you

for arranging with Mr. Draper to look over my problem.

I shall wait with keen interest for his criticism.

Very truly yours,

EN23/H5(11)(3320)

April 27, 1938. Box 45-K, R.R.2, St.Joseph, Michigan. UNITED STATES NATIONAL MUSEUM BUREAU OF AMERICAN ETHNOLOGY ASTROPHYSICAL OBSERVATORY NATIONAL ZOOLOGICAL PARK

ALL CORRESPONDENCE SHOULD BE ADDRESSED TO THE SECRETARY



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ORGANISMS

July 18, 1939.

Dear Madam:

The manuscript entitled "Date of the Crucifixion" which you submitted for criticism has been referred to a member of the staff of the Astrophysical Observatory. He replies as follows:

"The treatise on the 'Date of the Crucifixion' by Grace E. Amadon is well written, and a praiseworthy effort to correlate all factors, biblical, astronomical and historical. The astronomical factors appear to be carefully considered. The biblical and historical factors I am incompetent to judge."

Your manuscript is returned herewith.

Very truly yours,

Secretary.

Miss Grace Edith Amadon, Theological Seminary, Takoma Park, D. C.



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