penitentials must have been destitute of common sense, as well as common decency, if anything save stern necessity drove them to fill their pages with that which forms the staple of their contents." Anyone who cares to verify the truth of this has the material provided for him in vol. iii. of Haddan and Stubbs' "Councils and Ecclesiastical Documents relating to Great Britain and Ireland." The later developments of the system in the matter of Indulgences are sketched in Lindsay's "History of the Reformation," vol. i., pp. 213-227.

The Date of the Crucifixion.

By Lieutenant-Colonel MACKINLAY.

IN the April number of The Churchman the Rev. D. R. Fotheringham, M.A., F.R.A.S., asserts (p. 266) in his striking and interesting article, "Fresh Light on the Date of the Crucifixion," that "astronomy not only narrows the uncertainty of the year, but also definitely decides once and for ever the still more engrossing question as to the exact day of the Crucifixion," which, he says, was on Friday, April 3, A.D. 33. He also states (p. 271) A.D. 29 is "a date that is no longer astronomically tenable" for that event.

He argues thus—the Crucifixion took place on a Friday and on the Passover day (14th of the lunar month Nisan), but in A.D. 29 that day fell on *Saturday*, March 19, because (according to his deductions) Nisan 1 was on March 5, when the new moon was first visible.

If Nisan 1 had fallen on the day previous (March 4), Nisan 14 would also, of course, have been a day earlier—viz., Friday, March 18, in which case the calendar would have agreed with the supposition that A.D. 29 was the year of the Crucifixion.

The question then turns on the point whether March 4 could have been Nisan 1 in A.D. 29.

In that year the beginning of the month might have been determined: (1) By actual observation of the new moon; (2) Possibly by some calculation, if the evening of March 4 were cloudy; (3) Possibly by some empirical rule.

(I.) Mr. Fotheringham states that the new moon could not have been seen just after sunset on March 4, A.D. 29, as it was then too young and not well placed for visibility in the sky. He bases this denial on a definite rule (p. 267) propounded by his brother, the eminent mathematician, J. K. Fotheringham,[1] Esq., M.A., D.Litt. This rule[2] is deduced from seventy-six observations of the times of earliest visibility of the new moon, and of latest visibility of the old moon, made during the years 1859 to 1880 at Athens and its neighbourhood, all of them by Julius Schmidt, except five, which were by Mommsen. The conclusion is rightly arrived at (and for this our thanks are due to Dr. Fotheringham) that visibility is not determined by the age of the moon alone, but also by its declination, which contributes to influence its position in the heavens with regard to the sun. According to Dr. Fotheringham's rule, the new moon was certainly not visible on March 4, A.D. 29.

Let us examine the basis on which this rule rests. The records of the observations were sent by Mommsen to Bruhns,

[1] See Monthly Notices of the Royal Astronomical Society, May, 1910, on "The Smallest Visible Phase of the Moon," p. 530. Also *The Journal of Theological Studies*, October, 1910, on "Astronomical Evidence for the Date of the Crucifixion," p. 120; the investigation of the rule is not given in THE CHURCHMAN.

[2] The rule asserts that the new moon will be visible if situated above an imaginary arc in the sky whose highest part is 12° above the setting sun, but the moon will be invisible if below that line. Dr. Fotheringham states (Monthly Notices of the Royal Astronomical Society, May, 1910, p. 530) that the "observations give a very clear dividing *line* between the conditions of positive and negative observations." Though his rule cannot be accepted as accurate, as will be shown later, it is an important step in the right direction, as it leads the way to the true statement, that if the new moon is situated above a certain arc-shaped *band* whose highest part is 12° above the setting sun, it will certainly be visible in ordinary cloudless weather; if below the *band* it will certainly be invisible under all circumstances; but if the new moon appears in the band itself, its visibility will depend upon the clearness of the atmosphere, the lower positions of the band naturally requiring the most perfect conditions of the air and the keenest vision on the part of the observer, in order to secure visibility.

but the latter failed to deduce from them an exact method for determining the first visible phase of the moon at sunset or the last visible phase at sunrise. Quite recently, however, Dr. Fotheringham claims to have done so. He found that seventy-four out of the total of the observations obeyed the rule which he constructed; but two cases (Nos. 2 and 43), when the thin crescent of the moon was plainly visible, were very decided exceptions; these exceptions were both observed by Schmidt, an astronomer and observer of the first rank. Dr. Fotheringham, however, disregarded these two observations, because one was that of the old moon, and the remaining one then became only one exception out of many observations. This surely was an unwise step to take, especially under the particular circumstances of the investigation, because on further inspection it was found that at least forty-six[1] of the observations were made when there could have been no doubt whatever that the moon would be visible, provided the sky were not cloudy. These forty-six observations were therefore useless for the testing of visibility. The number of suitable observations for the purpose in view was therefore reduced to thirty at the outside, and two undeniably trustworthy exceptions in thirty should certainly be regarded, there being no valid reason to reject an observation of the last visibility of the old moon.

It is also noticeable that during the last six years of the observations—viz., from January, 1874, to January, 1880—no attempt whatever was made to observe any new or old moon as badly placed for visibility as the two previously mentioned successful exceptions to the rule. Mommsen made one of his observations (No. 73) when out for a walk, and he himself suggests that his failure to observe might possibly have been due to obscuration produced by Mount Hymettus; he then continued watching until the stars disappeared, but this raises a doubt, says Dr. Fotheringham, whether, if the walk had been

[1] In all these instances the moon had an altitude of over 12° at sunrise or at sunset, and was always visible. Nos. 47 and 36 had altitudes as great as 28·7° and 32·8° above the rising sun, and No. 18 an altitude of 21·1° above the setting sun.

prolonged a little longer, he might not have been successful in seeing the moon. Another of his observations (No. 74), when he failed to see the moon, was made on a cloudy evening, though there were breaks at times through which the moon might have been seen. Evidently Mommsen's observations are not very reliable.

It would therefore appear that Dr. Fotheringham's rule is not based on suitable data: we are confirmed in our distrust by the fact that Mr. D. W. Horner,[1] a well-known and careful observer, and three others saw the new moon with the naked eye on February 10 last year (1910) in England when it was only sixteen hours old. According to Dr. Fotheringham's rule this new moon ought not to have been seen.

It is true that the new moon of March 4, A.D. 29, was only about thirteen and a half hours old, but it was placed about as favourably for visibility[2] as Mr. Horner's new moon of last year. It is difficult, therefore, to believe that the new moon of March 4, A.D. 29, could not possibly have been seen by unaided vision, specially when the following facts are considered.

(*a*) The atmosphere of Palestine is much clearer than that of England; as an instance of difference of visibility caused by difference of atmosphere, it may be mentioned that when the present writer was on the Transit of Venus Expedition in 1882, the planet was seen for several hours every day for weeks together with the naked eye on the voyage out, and also in Jamaica; but in England he has very seldom seen the same planet in the middle of the day or early afternoon, and only with considerable difficulty by unaided vision.

(*b*) In the latitude of Jerusalem (31° 47′ N.) darkness comes on after sunset more rapidly than in England, or even in Athens;

[1] See *The Observatory*, April, 1911, pp. 162-3, and *The English Mechanic*, May 5, 1911, p. 308. Letters by D. W. Horner.

[2] See *The Observatory*, May, 1911, p. 203, letter by C. T. Whitmell, who calculates the altitude of the new moon seen on February 10, 1910, at sunset, as about $4\frac{1}{2}°$; difference of azimuth of the moon from the setting sun 10°. The same elements for the new moon at sunset March 4, A.D. 29, would be about altitude 6°, azimuth $6\frac{1}{2}°$.

consequently the new moon can be seen more easily in Palestine than in the other two countries.

(*c*) Jerusalem is about 2,600 feet above the sea; celestial objects near the horizon can there be seen with greater clearness than from a lower level, because there is a less density of air to look through.

(*d*) The Jewish observers were specially trained to search for the new moon with the naked eye. Probably they were among the most skilful of such observers who have ever lived. They had constant practice for hundreds of years from a fixed position, and they must certainly have known, very approximately, *where* to search for the new moon in the heavens—a most important matter when endeavouring to "pick up" a faint celestial body.

(*e*) With distant objects, only a little raised above the horizon, the atmospheric conditions of visibility vary greatly at different times at the same place. Thus, the Welsh mountains may be seen from the Irish Coast, near Dublin, on some few days in the year, but they are not visible on *every* cloudless day. It would appear, therefore, to be unwise to conclude that because the new moon is not visible to the naked eye on some ordinary cloudless evening that it *never* can be seen when in the same or even in a worse position. As a matter of fact the new moon (No. 53) of December 20, 1873, which was looked for, but not seen, by Schmidt at Athens, was in almost the same position, relatively to the sun, as the new moon which was seen by Mr. Horner at Tunbridge Wells, on February 10, 1910, when doubtless the atmosphere was exceptionally clear. Hence Dr. Fotheringham[1] was hardly correct when he stated "the problem (of the visibility of the new moon) is almost purely astronomical and not atmospheric." All observers are well aware that, at low altitudes in particular, the condition of the atmosphere has an immense influence on the visibility of objects which are difficult to see.

Taking all these facts into consideration, it is impossible to

[1] Monthly Notices of the Royal Astronomical Society, May, 1910, p. 530.

be certain that the new moon was not seen by the naked eye, if the sky were clear, on March 4, A.D. 29.

(II.) Let us now suppose that the evening of March 4, A.D. 29, was cloudy, and that the new moon was hidden. As a mean lunation contains only a very little more than twenty-nine and a half days, the months must have consisted of twenty-nine and thirty days alternately (on an average), with an excess of a thirty-day month about every two and a half years. It is certain that no month contained more than thirty days, even if no observation of the new moon could be made. Might not a month occasionally have consisted of only twenty-nine days, even if the new moon were hidden? In some cases it was known beforehand when a new month would begin, for David once said to Jonathan, "Behold, to-morrow is the new moon" (1 Sam. xx. 5). We do not know whether these words were spoken on the twenty-ninth or thirtieth day of a month. That only twenty-nine days were *sometimes* given to a month, without an observation of the new moon, is most probable, for if it were not so, and if the new moon had been clouded on only a few successive occasions, each month would have contained thirty days; it would then be found that when the new moon at last appeared it would be on an evening just after the close of the twenty-eighth day of the month. This would have caused great confusion in the calendar, because in that case the month just finished could only have contained twenty-eight days. It is possible, therefore, that if the new moon on the evening following the twenty-ninth day of the previous month (Adar) A.D. 29, had been obscured by cloud, the next day, March 4, might have been proclaimed Nisan 1. The evidence about the use of any rules or calculations for the Jewish calendar in such cases in the first century is unsatisfactory.

(III.) Let us now consider any possible empirical rule. Dr. Fotheringham states[1] that at one time, according to an ancient authority, it was the custom to make Adar (the month before Nisan) always to consist of only twenty-nine days, in

[1] *Journal of Theological Studies*, October, 1910, pp. 125, 126.

order to enable Jews in distant countries to know some time beforehand on which day to observe the Passover, thus insuring that all might keep it simultaneously. Dr. Fotheringham does not think that this rule was carried out in the time of Christ, but he admits that it might have been. It is therefore not impossible that in A.D. 29 the month Adar may have been allotted only twenty-nine days on this account, in which case Nisan 1 would have been on March 4, and consequently the Passover and the Crucifixion on Friday, Nisan 14 (March 18). The Rev. D. R. Fotheringham does not allude to any such possibility in his recent article in THE CHURCHMAN.

To sum up the astronomical part of the subject, Dr. Fotheringham's valuable investigation shows, what had long been known, that it cannot certainly be said from astronomical or calendar considerations that A.D. 29 fulfilled the conditions necessary to mark it as the year of the Crucifixion. On the other hand, neither he nor his brother has proved that date to be impossible.

Although it cannot be allowed that Mr. Fotheringham has succeeded in his argument that A.D. 29 was not the date of the Crucifixion, nevertheless he has done valuable service in drawing marked attention to the subject of the smallest visible phase of the moon, because it has an important bearing on Biblical chronology. It is hoped that this subject will be further investigated in astronomical circles.

The historic difficulty in the April CHURCHMAN as to the interpretation of the fifteenth year of Tiberius in Luke iii. 1, if A.D. 29 is taken to be the year of the Crucifixion, has been repeatedly raised. But scholars such as Alford, Sanday, Turner, and Ramsay accept the interpretation that Luke iii. 1 accords with the date A.D. 29 for the Crucifixion.

In the lax and changeable methods of counting regnal years in those days, the exact date cannot be fixed with certainty from this verse in Luke; the beginning of the reign of Tiberius *may* be the commencement of some position of rule which he took up at a certain time, or it *may* be the subsequent date of the beginning of his undivided sway.

Mr. Fotheringham, in his Article in THE CHURCHMAN, has only brought forward two evidences of date, both from Scripture, but there is another Bible passage which points (on the supposition of a three and a half years' ministry) to the year A.D. 29 for the Crucifixion,—"Forty and six years was this temple in building" (John ii. 20). There are also other New Testament verses which indicate a very definite year—that of the first of the enrolments (Luke ii. 1-2). These Roman enrolments took place every fourteen years. The date most consistent with this Gospel quotation is 8 B.C., which also indicates, of course, the year of the Nativity. If this be so, and if the Crucifixion were A.D. 29, the Lord's age at the beginning of His (three and a half years') ministry would have been just thirty-two years, which, according to Alford,[1] is correctly covered by the expression "about thirty years of age" (Luke iii. 23, R.V.). But if the year of the Lord's death were A.D. 33, His age at the beginning of His ministry would have been thirty-six years, which is not consistent with the expression "about thirty years of age."

There is a mass of secular historic evidence in favour of 8 B.C. and A.D. 29 for the dates of the Nativity and of the Crucifixion respectively. The former date agrees with the express statement of Tertullian that Christ was born during the rule of Sentius Saturninus, and the latter date is in accord with the universal testimony of the early Latin fathers that the Lord suffered under the rule of the Gemini. There are also other reasons for A.D. 29 as the year of the Crucifixion which were given in THE CHURCHMAN (March, 1910).

We thus see that many evidences point to A.D. 29 as the date of the Crucifixion, and that the two considerations brought forward by Mr. Fotheringham do not contradict that supposition.

But supposing that his date A.D. 33 is accepted for the Crucifixion, he does not tell us how he would dispose of the remaining strong evidences which support A.D. 29 and negative A.D. 33 as the year of that grand event.

This subject is of great importance, because if we prove (as

[1] The Greek Testament, note on Luke iii. 23.

we believe we have) that *all* the evidence supports A.D. 29, we demonstrate that the Crucifixion was an historic fact, and not the myth which it is asserted to be by some popular writers of the day.

Cordial thanks are given to Mr. E. Walter Maunder, F.R.A.S., of the Royal Observatory, Greenwich, for much help given in the preparation of this article.

The Religious Philosophy of William James.

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II.

WE Christians have some good reasons, we saw in the former article, for welcoming this new American way of looking at religion. Scientific men have too often set religion altogether on one side by simply "pooh-poohing" it, but now someone has come forward from the heart of the scientific world and demanded fair play. It is true, he says, that the churches seem often to contain only bigots, who have never thought their faith out for themselves, and that systems of theology have rested on unproven and unprovable ideas rather than on facts, and yet religious institutions and theologies are, after all, only secondary products of religion. Let them by all means be put on one side, but only in order that we may look fairly and sympathetically at the primary product and real home of religion—the hearts of individual men. Professor James was addressing himself, we saw, to the scientific people who think that religion can all be explained away on materialistic principles, and showed them that it is not simply a theory, but an actual power. And if this is the case, he went on, it cannot be unreasonable to adopt the believing attitude of mind, if only because the saints have been more effective than the merely