

Good Evidence and Bad Science: Evaluating the Grounds of the Rhythm Method in Nineteenth-Century Western Europe and America

From the mid-nineteenth century until the discovery of mid-menstrual ovulation in the early twentieth, the western scientific notion of a ‘safe period’ of sterility in the human female assumed falsely that ovulation took place around the time of menstruation. Consequently, the rhythm method of contraception by avoiding intercourse during fertility, which doctors promoted with great enthusiasm for many decades, was inherently invalid. This raises one of the great difficulties in history: that of evaluating the quality of past science, not from the perspective of what is known today, but from the proper perspective of what scientists had to go by in their own time. This principle acknowledges that it is too easy to dismiss an archaic idea as ‘bad science.’ However, it is also too easy to assume that a scientific myth is just a necessary product of a sheer lack of information or understanding.

Too little scholarly attention has been paid to the rhythm method of the nineteenth century, and much less has even implicitly explored within it the issue raised above. In this essay, I propose to do so. I will begin by carefully placing the nineteenth century rhythm method and its scientific basis firmly in the context of their broad historical development. Then I will evaluate the extent of physiological knowledge available to contemporary doctors, and argue that the physiological views they had really were, in fact, bad science. Paradoxically, I will then argue that the idea persisted partly because, while the *physiological* evidence was contrary to it, the *statistical* evidence, in regards to

the method's success, gave it some credence. A political agenda on the part of doctors will also be briefly outlined.

The 'Safe Period' before and after 1930

Today, methods of contraception based on knowledge of human female fertility and sterility, usually in regards to the menstrual cycle, are termed Fertility Awareness-Based Methods. Conception is understood as possible only in the days surrounding ovulation, which takes place at the middle of the menstrual cycle. These days are determined so that a couple can avoid unprotected intercourse during this time.¹ This practice goes back to the classic 'rhythm method' or 'calendar method' published by Leo J. Latz in 1932.² This method involved observing trends in the menstrual cycle over time and thus estimating one's individual time of ovulation.

This method of contraception, however, was not entirely new. The idea of relating fertility to menstruation had been popularised by doctors in the west from the mid-nineteenth century for several decades. The difference was that the time of fertility was not placed in the middle of the menstrual cycle. In fact, that was the very time in the cycle typically believed to be the 'safe period' of sterility in women. R. T. Trall, for example, advised that intercourse be held off until "ten or twelve days after the cessation of the menstrual flow."³ Similarly, H. Arther Allbutt suggested eight days after the monthly flow.⁴ The belief was that ovulation is marked by menses (i.e. bleeding); it is

¹ For an excellent introduction to current knowledge on this subject, see Pallone and Bergus, "Fertility Awareness-Based Methods."

² Latz, *The Rhythm*.

³ Trall, *Sexual Physiology*, 206.

⁴ Allbutt, *The Wife's Handbook*, 45.

now understood that ovulation typically occurs fourteen days before the onset of the bleeding.⁵

This earlier idea of the rhythm method was first suggested by the scientist responsible for its underlying theory: Felix Archimede Pouchet (see below). It was further propagated by Adam Raciborski, influencing, together with Pouchet and T.G.G. Bischoff, a stream of American publicity.⁶ In France it was popularised by Auguste Debay.⁷ Doctors embraced it with great enthusiasm, including such prominent voices as the pop-physician John H. Kellogg and the doctor and feminist Elizabeth Blackwell among others. Even the Roman Catholic Church gave its sanction.⁸

The rhythm method, however, was not without its critics. In 1854 Dunne and Derbois, two pseudonymous abortion practitioners, called it an “erroneous impression.” In 1872, gynaecologist Goodell saw in it a “widespread delusion.” While most did not dispute that there was an infertile period somewhere in the menstrual cycle, it became increasingly doubted over the decades that it was at menses.⁹ But despite these doubts the ‘safe period’ “would continue to be advised by doctors for over sixty years.”¹⁰ Before endeavouring to explain why, we must turn to its physiological basis.

The Medical Basis: a Century of Ovular Theory

These two great historical manifestations of the rhythm method each began with a scientific breakthrough. In the nineteenth century, it was the discovery that ovulation

⁵ How many days this is after the end of menses depends upon menses’ duration, which differs from person to person. The implications of this are revealed later in the text.

⁶ Brodie, *Contraception and Abortion*, 80-81.

⁷ McLaren, *Sexuality and Social Order*, 61.

⁸ McLaren, *Birth Control*, 126; Brodie, *Contraception and Abortion*, 81-82.

⁹ Brodie, *Contraception and Abortion*, 82-83.

¹⁰ McLaren, *Birth Control*, 127.

occurred independently of intercourse and was related rather to the menstrual cycle. In the 1920's it was the discovery of *when* ovulation occurred in the cycle. This latter discovery is attributed to two people. Japanese gynaecologist Kyusaku Ogino concluded from surgical observation of 118 cases that ovulation takes place 12 to 16 days before menstruation. The Austrian Hermann Knaus concluded 14-16 days from endocrinological testing.¹¹

The story of the earlier breakthrough in the nineteenth century is more complicated. The mammalian egg was discovered in 1827 by Karl Ernst von Baer. He believed that ovulation was brought on by copulation, which had been demonstrated in rabbits. In 1843, Theodor L. W. Bischoff demonstrated spontaneous ovulation, i.e. ovulation occurring independently of copulation, in dogs.¹² In 1847, Felix Archimede Pouchet, having extended this principle to humans, argued that ovulation accompanied Menstruation, and that women were sterile from the twelve day after menses to the end of the next.¹³ He also believed that menstruation in women corresponded with the periodic heat found particularly in mammals.¹⁴

While spontaneous ovulation during menstruation in humans is thus attributed to Pouchet, the idea actually goes back to John Power in 1831.¹⁵ By 1849 it was part of a broader 'ovular theory of menstruation'. In that year, shortly after Pouchet's radical findings, W. B. Kesteven published a strong critique of this theory, which he attributed

¹¹ Latz, *The Rhythm*, 36-38.

¹² Laqueur, "Orgasm, Generation," 25-26.

¹³ Brodie, *Contraception and Abortion*, 80.

¹⁴ Laqueur, "Orgasm, Generation," 27.

¹⁵ Girdwood, "Theory of Menstruation," 828; Bullough and Voght, "Women, Menstruation," 67. Girdwood cites authorities, including Dr. Robert Lee in 1834, who state this idea to be an hypothesis, not yet a theory.

not to Pouchet but to “Dr. Power, Dr. Robert Lee, and others.”¹⁶ Although Pouchet is never mentioned among the nine other significant figures referred to by Kesteven,¹⁷ it is in this article that his claims concerning the period of fertility come under serious attack.

The Contrary Evidence

In critiquing the ‘ovular theory of menstruation’, Kesteven arranges it into six distinct propositions and confutes them individually. Our concern is with proposition 3: “The maturation of single ova occurs periodically, i.e. at the period of menstruation.”¹⁸ It must be remembered that Kesteven is not just arguing against menstruation being the time of ovulation, but also against ovulation being connected with the cycle at all.¹⁹ Indeed, he offers facts to challenge this, and great care must be taken to separate his arguments accordingly. It reminds us of the difficulty in judging arguments in history against the knowledge of that time rather than our own. That being said, it can logically be expected that a specific claim is more easily refuted than a general one, and this is a case in point (see below for an example).

He begins by pointing out that the ‘rupture of the ovisacs’, which denotes the release of ova, has been observed before menstruation, while menstruation has also been observed in the absence of such rupture. Thus, what the theory claims to be two connected phenomena, have each been observed independently of each other. In the next paragraph, he notes that

¹⁶ Kesteven, “an Examination,” 930.

¹⁷ Ibid. 935.

¹⁸ Ibid. 931.

¹⁹ Ibid. 932-933.

if the period of menstruation were the especial period of the maturation and discharge of ova, the latter should have been detected more frequently in the tubes or uterus, and more constantly after the period of menstruation than at any other time; but this is not the fact, - indeed the reverse obtains.²⁰

The first of these claims suggests that there is no relationship between ovulation and menstruation, but is hardly as counter-intuitive as the second claim if one expects ovulation to occur specifically *during* menstruation. Indeed, ‘the reverse’ is exactly what would be expected today.

Kesteven cites evidence and agreement from other authorities. An unnamed “writer in the British and Foreign Medico-Chirurgical Review”²¹ presents a further anatomical problem:

The presence of a true corpus luteum, when *we know*, from the fact of impregnation, that an ovum has been cast off; and the absence of any such body after the ordinary menstrual periods.²²

What does accompany menstruation, the same writer notes, is the ‘false’ corpus luteum, “but the two are in no notable particular alike; indeed they are perfectly dissimilar.” This certainly does present a hole in the identification of menstruation with the time of ovulation. It is now known that the ‘true’ and ‘false’ corpora lutea are the same organ. When the ovum is fertilised the organ expands and persists for months (true). When no fertilisation occurs it deteriorates (false).²³ The writer expects to find a ‘true’ corpus luteum during menstruation if the theory is correct. In reality, it would not have been

²⁰ Ibid. 931.

²¹ Ibid. 933.

²² Anonymous, cited in Kesteven, “an Examination,” 933.

²³ *Dorland’s Illustrated Medical Dictionary*, 30th ed., s.v. “Corpus: c. lu’teum.”

found. If menstruation did mark ovulation they would have found something much closer in appearance to the ‘true’ corpus luteum, as it would not have deteriorated. This may still have led some to disagreement, but not as confidently.²⁴ It should be noted here that the writer, and Kesteven, are writing as much against the related idea that menstruation can be likened to oestrus (heat) in animals.

Another doctor who disputes the ‘ovular theory of menstruation’, also cited by Kesteven,²⁵ is Henry Oldham. He also argues from the lack of a corpus luteum at menstruation, and better, points out “cases, which I have carefully required into, where impregnation occurred at the respective times of ten days, twelve days, and twenty-one days after the monthly periods.”²⁶ It is true that Oldham saw conception as *more likely* to occur just after menses, but is convinced that it can happen at any time in the cycle. The ovular theory, he observes, “has been prematurely shaped into a law, and it will not, I am sure, bear a practical test.”²⁷

It is beyond the span of this essay to investigate seriously the evidence *for* the ‘ovular theory’. It is worth mention, however, that Kesteven, who claims to have adequately summarised the debate,²⁸ mentions only “the occasional discovery of recently ruptured vesicles in persons dying during menstruation.”²⁹ These he attributes to simple and un-extraordinary coincidence. Nevertheless, Kesteven’s discussion strongly demonstrates in its own right that the rhythm method really was founded on ‘bad science’.

²⁴ There was much confusion among doctors over the corpus luteum. For some contemporary commentary, see Girdwood, “Theory of Menstruation.”

²⁵ Kesteven, “an Examination,” 932.

²⁶ Oldham, “Clinical Lecture,” 48.

²⁷ Ibid. 48.

²⁸ Kesteven, “an Examination,” 935.

²⁹ Ibid. 931.

An Effective Method on False Premises?

It is clear that the physiological evidence was contrary to the placing of ovulation at the time of menstruation. What is more, this evidence did not take its time to make itself available, but was there as early as 1849, among the earliest years of the promotion of the rhythm method. This raises the question: why did the belief take so long to leave the literature? As unbelievable as it may seem, part of the answer lies in the actual efficacy of the rhythm method itself, irrespective of the falsehood it was based on. Recall that Trall and Allbutt, respectively, recommended waiting ‘ten or twelve’, and ‘eight’ days after the cessation of menses. They also made statements of the success of their advice. According to Trall, his method had “been relied on by thousands of married persons, with very few failures.”³⁰ Similarly, Allbutt warned that his proscribed “method fails in about five cases in every hundred,”³¹ In other words, a 95% success rate! There is no question as to the scepticism that these figures warrant. But in fact, as Janet Brodie cleverly points out, they are, to some extent, quite explicable.³²

Most recommendations were for women to count the days from the end of the menstrual flow. As it happens, it is the beginning, not the end, of menses that marks the cycle. So women with longer flows, six days for example, would have been more likely to begin intercourse after ovulation if going by this advice. This also goes for women with shorter cycles, as they ovulate sooner. Many women following the ‘twelve’ of Trall’s ‘ten or twelve days’, therefore, would have already ovulated on beginning intercourse. Allbutt’s ‘eight days after’ was less reliable, but was still likely to reduce the

³⁰ Trall, *Sexual Physiology*, 206.

³¹ Allbutt, *The Wife’s Handbook*, 46.

³² Brodie, *Contraception and Abortion*, 85. It is her argument I use in the text below.

number of fertile days in which intercourse took place. Strictly speaking, a woman is only fertile for up to twenty-four hours once the ovum has been released. It is the life-span of sperm (up to five days), that renders a woman 'fertile' for as long as six days.³³ Ovulation is understood to take place 14 days before the onset of menstruation.

So, for example, a woman with a regular 28-day cycle is likely to ovulate around day 15. If she has a four-day flow, and waits eight days, she will begin at day 13, copulating for only about half of the length of her fertility. If she waits twelve days, she begins at day 17, probably more than twenty-four hours after ovulation. So depending on the time waited *after* menses, the duration of menses, and the regularity and length of one's cycle (shorter is better), the conventional recommendations could be quite effective. What must have made the rhythm method of the nineteenth century work for many women, Brodie³⁴ suggests, is that the uncertainty evident in the differing views of doctors, not to mention difficulty in determining the end of bleeding, would have cautioned women to have intercourse later rather than sooner. Perhaps many of those more serious about contraception even added a few days of their own. Finally, the statistics of Trall and Allbutt probably do not exclude those wise enough to combine the 'safe period' with other forms of contraception.³⁵ The physiological evidence may have failed to justify the rhythm method, but its apparent success, another empirical perspective to go by, helps us understand why that was so unclear.

³³ Pallone and Bergus, "Fertility Awareness-Based Methods," 147.

³⁴ Brodie, *Contraception and Abortion*, 85.

³⁵ *Ibid.* 86.

A Political Incentive

Angus McLaren offers another reason that the rhythm method was so highly esteemed by nineteenth century doctors. Traditionally, doctors were against contraception generally:

As long as birth control was achieved by the use of the sheath, douche or sponge – all non-medical appliances associated in the public’s mind with the libertine, the prostitute, and the midwife – it lay outside the realm of respectable medicine.³⁶

The rhythm method, in contrast, was a product of science, and thus it allowed doctors to promote a contraceptive of their own. The medical profession could now involve itself in the most private area of people’s lives, pushing further the doctor’s role as counsellor or confessor; a role for which he competed with the priest.³⁷ The rhythm method, then, illustrates how when science itself falls short of explaining a scientific idea, so often politics can fill the gap.

Conclusion

It is a major weakness of this essay that no real attention has been paid to the arguments *in favour* of the ovular theory concerning ovulation timing, which may have borne more weight than Kesteven admits, or even come to light at a later time. Further research exploring this would be merited to build a stronger case for the justice of his and Oldham’s critical positions. That being said, an examination of their grounds of disagreement shows very strongly that the rhythm method was a product of ‘bad science’, because the doctors were not taking all of the current facts into account. However, while

³⁶ McLaren, *Birth Control*, 126

³⁷ McLaren, *Sexuality and Social Order*, 61-63.

this is true for the physiology, science did not contradict it on every level: the evidence of reliability, though now known to be incidental, did offer some empirical reason to believe it (without deeming it infallible). This, together with the political incentives of doctors, is what explains this confronting failure of science.

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