The Rhythm Cycles in Marriage

The Rhythm Cycles in Marriage

PERIODICAL ABSTENTION IN WEDLOCK

A complete theoretical and practical introduction to the Knaus-Ogino method for the use of married people and their advisers

by
A. KREMPEL, M. D.

Foreword

THIS work on periodical abstention undertakes to state scientifically the theory commonly called the Knaus-Ogino theory and to suggest its practical applications which are based on the successful researches of the famous Dutch gynecologist, Dr. J. Smulders.

Dr. Raoul de Guchteneere, editor-in-chief of a European medical review, wrote as follows concerning the treatise: "I have much appreciated the clarity and the scientific exactitude with which you have treated the difficult subject of periodical abstention. You have thoroughly succeeded in making your book interesting, both to the ordinary reader and to the doctor."

To these complimentary words by a medical doctor should be added the comments of a specialist on moral psychology, Dr. P. Schulte: "Although at first I approached your work with some mistrust, I read it with the greatest interest. Your treatment is really convincing from the moral and from the medical point of view. I shall certainly recommend it to those who can benefit from it. The book is distinctly unlike many other similar ones that aim at popularizing the Knaus-Ogino-Smulders theory. There is gravity, there is dignity in this work of yours, which makes it a model of its kind. You do not rob conjugal life of its natural spontaneity. And yet you know that to insist on total continence wherever conception would be dangerous would not help all married people in their everyday life."

Since the appearance of the fifth German edition in 1947, this book has been translated into French, Dutch, Italian, and Portuguese; and now, for the first time, it appears in English. The revisions made in the later German editions by Dr. Smulders are included in this English translation.

The writing of this treatise was induced by the desire to help many married people with their psychological and moral difficulties. It was never the author's aim to decrease the number of children, but on the contrary, to help make married life healthier.

Contents

Part I: General Introduction

Part II: Theory

Part III: Practice

Part I: General Introduction

Scope of the Present Work

> *A discovery which helps to make married life healthier is of greater value to humanity than all other discoveries.*

In 1930 a sensational medical story was publicized by the press. It **Subject** was stated that the Austrian medical practitioner, Dr. H. Knaus, and a Japanese professor, K. Ogino, had discovered at the same time, but independently of each other, a way in which to determine accurately the fertile and sterile days in a woman's menstrual cycle; thus it became possible to solve one of the gravest of all problems of married life in a manner satisfactory in every way. The theory of Knaus and of Ogino had this in common: a woman can conceive only around the fifteenth day preceding her normal menstrual period; she cannot do so earlier or later.

Such an assertion could not but provoke the liveliest opposition. **Opposition** Among medical men there was doubt about the biological premises of the theory, but above all, it was thought that practical application could not be made. On the other hand, churchmen and students of political economy were more afraid of the efficacy of this new theory than of its impracticability. It was impossible to condemn on moral grounds what was but a state of continence during those days that were reputed to be fertile. Hurried propaganda pamphlets and tables

of conception with fixed rules resulted in understandable disappoint-
ments, and opposition to the theory increased. It is understandable
that neither a stereotyped pamphlet nor a printed table could be ab-

Pamphlets
Unsatisfactory
solutely reliable because the formation and discharge of the ovum,
the basis of all computation, is a biological phenomenon and not a
mechanical one; consequently it cannot be determined exactly either
by a rule of thumb or by the mechanism of tables.

In view of the uncertainty in the matter, this work undertakes to
state scientifically the Knaus-Ogino theory and to suggest its practical

Purpose of
Publication
applications, which are based on nine years of undeniably successful
research work by the Dutch gynecologist, Dr. J. Smulders. After much
thought we have decided to adopt his way of determining the period
of fertility.

It is admitted that the proper way to instruct people on a subject

Relationship
with the
Doctor
of this nature would be in the consulting room of a doctor and not in
a book liable to fall into anyone's hands. Unfortunately, however,
many doctors have refused, up to now, to be bothered with the Knaus-
Ogino theory or have given it very scanty attention. Therefore, it is
often impossible to recommend a competent practitioner to those who
need instructions, and yet a great number of married people urgently
need help. The means recommended up to now—contraceptives or
the ligature of the Fallopian tubes—satisfy neither medicine nor con-
science.

A book may dare to instruct people on periodical abstention for
this further reason: the cyclic return of sterile days is not like an ill-
ness which falls within the province of the doctor. If in popular lec-
tures and treatises it is praiseworthy to adapt for the man in the street
knowledge derived from the most varied scientific fields, why should
blame be attached to a method regarding a problem of the highest
practical importance? The doctor runs no risk when he passes on to
laymen a portion of his knowledge; when he explains the Knaus-

Ogino theory, for instance, to the best of his ability. Medical science, like all specialized knowledge, is only partially comprehensible to the layman. Therefore, those who have some understanding of it will make it their business to consult the specialist in case of need, and will thus be better able to carry out the necessary procedures. Although a married couple might apply the teaching of this book for years without consulting a doctor, experience has proved that in abnormal and difficult cases only an experienced doctor is competent to show the best way.

This work is addressed to a wide public, but it will also be valuable to the specialist. The difficulties associated with directing a book toward two categories of readers are fully appreciated. Here is how we have tried to meet the needs of both groups: material of interest only to the specialist has been relegated to the footnotes; all of the second part of the book, dealing with the history of the discovery and its biological premises, is also intended for the specialist; but the general introduction, found in the first part of the book, as well as the practical application in Part III, is intended for the general reader and can be grasped by him.

To Whom the Work is Addressed

In spite of the popular character of this work, a scientific statement of the problem is presented in Part II. This has been done because of the misunderstanding and the opposition to which the Knaus-Ogino theory gives rise.

It is hoped that the distinctive and valuable characteristic of this treatise will be that it forms a complete textbook. May the reader, for his part, study it with care to avoid disappointing results and, therefore, conclude that the method itself is unsatisfactory.

Can We Place Reliance
on Periodical Abstention?

*Experience may upset a theory, but theory
can never contradict experience.*

Obviously the first question that the reader asks himself is this: "Can
I trust the Knaus-Ogino theory? Is there danger of being deceived?"
Reliability of Here is the answer. If properly understood and applied according to
the Method the computation of Smulders and used only in the cases we are going
to consider, this theory does not deceive. It works with greater cer-
tainty than the use of contraceptives, or of the interruption of the act
of copulation, even leaving aside the moral factor.

We can state this with a full sense of our responsibility. However,
the reader must give utmost consideration to each word of the text, in
order to evaluate the theory properly. We may have made the asser-
tion: the theory is infallible. What may be less sure is the accuracy
with which it has been applied. Thus some scepticism would have been
introduced. Hence we must re-emphasize the fact that the theory, if
properly understood and applied, will not deceive.

Since 1930, the date of its appearance in Europe, the Knaus-Ogino
theory has been submitted to numerous tests in many parts of the
world. The results of these tests have induced many of the most fa-

mous doctors[1] to accept the theory in its essential lines at least and to testify publicly in its favor.

Among the researches made in Europe, those conducted by Dr. Smulders in Holland are undoubtedly the most eminent. We have already alluded to Dr. Smulders' work in the foreword and the reader will find it mentioned many times in the course of this book. **European Researches**

After Dr. Smulders' death, his collaborator, Dr. Holt, made the following summary: "For a great many couples, all with children, and therefore fertile, I knew both the date of the woman's periods and of numerous occasions of intercourse. Now out of 5,327 copulations genuinely accomplished during the 11 days preceding menstruation, all were without conception. In these cases the menstrual cycles varied from 23 to 40 days." Holt also tabulated the cases of 2,271 postmenstrual copulations, accomplished therefore after the beginning of menstruation and in the same completely natural manner. "I have been able to verify," writes Holt, "that the postmenstrual period of sterility lasts the same number of days as the cycle itself," and this corresponds exactly with the views of Knaus, Ogino, and Smulders.[2]

Less important statistics have been disregarded; reference is made primarily to the researches made at the University Clinic of Zürich, which clearly show the favorable results of periodical abstention as against the use of contraceptives.[3] Our own Tables II, III, and V afford additional confirmation.

The researches that call for the greatest consideration are those

[1] Albrecht, Schröder, Heuer, Riebold, Rumpf, Schäfer, Karner, Hermstein and Wittenbeck, Koller, Frey, Tobler, Labhardt, Weinzierl, Gruschka, Guthmann and Vetter, de Guchteneere, Smulders, Holt, Remmelts, Engelhard, Young, Pederson, Hartmann, Miller, Latz, Reiner, Lennbach, Novak, Delmas, Boas and Voet, Vignes and Boros, Wharton, Lawrence, Henrikson, Azevedo, Marcias de Torres, Zavala Saenz, Wolfenbüttel, and Brémond and Toldy.

[2] Holt, *Nederl. Tijdschr. v. Geneeskunde*, Nov. 8, 1941; No. 45, p. 4257, off-print pp. 1-2.

[3] *Schweiz. med. Wochenschr.*, 1934, p. 827, ff.

made in America. As early as 1933, in Chicago, Miller, Schulz, and Anderson submitted statistics relating to 134 individual cases. Out of a total of 2,200 copulations made during the period of sterility and in the fully natural way, none resulted in conception. However, two cases of copulation that had occurred in the period of fertility caused pregnancy in spite of the use of contraceptives. The women thus tested belonged to eight different nationalities and presented twelve different forms of menstrual cycles.[4]

In 1935, and again in 1938, Miller confirmed and completed the data previously published. Summing up his five years of observations on 480 women, he concluded: "That there are definite periods of physiological fertility and sterility in the menstrual cycle of normal women appears to be a definitely established biological law."[5]

Another American scientist, Professor Leo Latz of Chicago, expressed himself on this same subject in October, 1935.[6] His researches were made on 114 women kept under observation for several years. In the course of 1,128 cycles, 4,702 copulations had been made during the period of sterility which, as Latz carefully pointed out, was determined according to the computation suggested by Smulders, and as described herein. Of the 4,702 copulations, no case of conception resulted—striking evidence of the reliability of the system when interpreted properly.

In March, 1937, Latz, in collaboration with Dr. Reiner, returned to the subject in the *Illinois Medical Journal*. The two doctors stated that they had been studying the practical application of the Knaus-Ogino theory since the autumn of 1932, and out of 15,900 copulations only 59 resulted in a pregnancy. However, they verified that 57 of the

[4] "Conception Period in Normal Adult Women," *Surg. Gynec. Obst.,* June 1933, pp. 1020-1025.
[5] "The Fertile Period in Practice—A Five Year Clinical Study," *Surg. Gynec. Obst.,* 1938, Vol. 66, pp. 723-731.
[6] *The Journal of the American Medical Association,* 1935, pp. 1241-1246.

59 apparent failures could not be attributed to a mistake in the computation. Because of this, we feel it safe to assert that in the case of an average healthy woman with a regular menstrual cycle,[7] the findings as now put forward may be considered as sure. This conclusion is as modest in its expression as it is reassuring in its affirmation.

It should be noted that Miller had gathered his data by word of mouth, and Latz by correspondence. Latz[8] reported failure in only 2 per cent of his clients, whereas the gynecologist, De Guchteneere, registered nearly 5 per cent of failures over a period of nine years.[9] But De Guchteneere used the computation of Knaus, which is more limited than that of Smulders, the one we have adopted here.

Contrary to what the above conclusion of Latz might suggest, it is possible to determine the days which are definitely sterile, even in cases of very irregular menstruation, although such days will be fewer in number. The work of Smulders provides us with several examples; Tables IV and V confirm this fact.

The Brazilian professor, Carvalho Azevedo, of the Gynecological Clinic of Rio de Janeiro has reached the same conclusion.[10] Azevedo refers to fifty cases which he followed for three and one-half years. During this period, he encountered only two failures, both due to the fact, he writes, "that the computation was used immediately and, therefore, without the previous necessary observation over a period of three to eight months." Azevedo succeeded in fixing successfully the period of sterility in the case of menstrual cycles having a varia-

---

[7] Note that a regular menstrual cycle does not mean that menstruation occurs constantly on the same day—that would be fantastic—it is enough if the variations are not too great.

[8] Latz, *The Rhythm of Sterility and Fertility in Women,* Chicago, 1939.

[9] *Saint Luc Médical,* 1939, No. 3, p. 206.

[10] "Le probleme de la fecondation consciente," *Ann. Brazil. Gynec.,* 1936, pp. 255-283; 386-405; 474-511. Summarized in *Zentralbl. Gynäk.,* 1937, pp. 949-950.

tion of twelve or even of sixteen days, while even Ogino fixes as a
final limit a ten day variation.

Proof of   Provided the menstrual cycles have no pathological manifestations,
Reliability the computation can be made safely, even if it should be necessary to
avoid conception at all costs. This was substantiated at great length
by the many statistics tabulated by Dr. Smulders. It is obvious that
in cases where pathology exists, people should consult an experienced
doctor in order to receive professional advice.

The statistics and successes mentioned above constitute impressive
evidence. Even though Knaus's or Ogino's theory may not be the last
word on the subject, their tests made in Europe and in America prove
conclusively that their theory is valid, at least when applied as Smul-
ders applies it. Meanwhile, the field is open for further investigation.
Even Professor Knaus has already modified some of his previous
statements.[11] But the many scientists who discuss the Knaus-Ogino
theory cannot be excused if they condemn the theory without com-
plete investigation of its practical possibilities.

---

[11] e.g., the concession made by Knaus to Dr. Holt, the collaborator of Smulders,
on the variations in the menstrual cycle, v. *Zentralbl. Gynäk.*, 1935, pp. 2642,
ff.

CHAPTER THREE

Periodical Abstention Considered from the Moral and Social Point of View

The crux of the matter is not more or fewer births, but whether husband and wife express their mutual self-donation according to the laws of nature or against them.

Periodical Abstention and Morals

The new method of birth control[1] has an extremely valuable advantage. It is acceptable both from the point of view of health and of morals. Because of this, it differs fundamentally from methods that have been recommended up to now.

Some may ask: "In what sense does this new method differ from all others on moral grounds? In all cases the aim is to avoid having a child; the method, as such, does not count." And yet, here, the

---

[1] We use the expression "birth control" though with some hesitation. If the term is shorn of its pejorative and antinatural connotation, it can well have a completely acceptable meaning. Birth control then means nothing more than that man, a reasonable being, should conform to the norms of reason with regard to propagation as in all other spheres of life; in other words he should beget as many children as are consistent with the true welfare of the parents and the children already born, no more and no less.

method is of decisive importance. In all fields it is not only the goal at which one aims that should be legitimate, but the means by which that goal is reached must be equally legitimate. The wish to avoid conception is not in itself evil. The indifferent health of the woman, insufficient income of the husband, housing difficulties, hereditary defects which may be transmitted, and many other reasons may make such an intention perfectly legitimate. Consequently everything depends upon methods employed for its realization. When attained by abstention, either total or periodical, reasonable birth control is not blameworthy. On the other hand, if the parties vitiate the conjugal act, as is the case when using contraceptives or interrupting the act, birth control becomes contrary to natural law because of the manner in which it is accomplished. In this way these two methods are essentially different: the first method simply omits the conjugal act; the second makes use of it but vitiates it.

Justification for Using the Method   The reader may wonder how we can justify use of conjugal intercourse during the period of sterility when we recommend abstention during the days of fertility. Here is our answer. If procreation were the only reason for conjugal intercourse, as is the case with animals, the objection would be unanswerable. Animals have a period of heat outside which they have no desire to copulate. With them there is no marriage but only a sexual union. The survival of the species is the only end of their union, and that end is an unconscious one. With man it is a different matter. Although conjugal intercourse aims at procreation—a thing no one will deny—it nevertheless aims at another end which is much more intimately connected with marriage. Conjugal intercourse unites bodily the flesh of a man and a woman who have purposely contracted a marriage in order to be able to achieve the fullest physical and psychical union and to give one another the advantage of their respective sexes. This union of every faculty of man aims at a reciprocal integration of every one of his

faculties. Bodily intercourse is the ultimate degree of union: it unites man and wife in the most sensorial way.

Because of the preponderance of this sensorial character, carnal intercourse is moreover proof of marriage; it is a genuine expression of the reciprocal donation of the parties to one another. More deeply than by words, more exclusively than by kisses, a man and woman attain by their carnal union the feeling of complete unity. They are united as one.

Anyone who thinks of conjugal intercourse in this manner will have no difficulty in seeing why such an act must be natural, not because otherwise procreation would be impossible, as it is not possible in the years following the change of life, but because the intercourse would be unnatural and deceitful. Nature demands that the carnal act be natural in order to insure complete union. Couples making use of contraceptives only counterfeit this reciprocal possession of one another. Those who practice interruption of the intercourse refuse to give themselves fully in the act of promising to do so. Intercourse is not natural if it is thus vitiated; it denies the conjugal obligation in its essential expression.[2]

The function of the carnal act as we have just described it is strikingly revealed in the physiological effect that by intercourse the husband and wife are absorbed into one another, especially because of the action of the sperm of the male. We shall return to this point later.

Natural completion of the carnal act has another very important result: it produces a state of relaxation. In this way it takes away a physical and psychic oppression that may be very painful: both par-

---

[2] In the light of these principles, it is easy to understand why intercourse outside marriage, even just before the wedding, is illegitimate. As long as two people of opposite sex are not married, expression of their intimacy is false. The same point of view explains why solitary carnal satisfaction is against nature: it lacks the partner without whom the carnal act has no goal and no true significance.

ties benefit by this relief of tension. And it is exactly this benefit that people desire most of the time in intercourse, whereas its physiological and metaphysical meaning escapes them.

All these reasons explain how normally accomplished conjugal intercourse remains legitimate and reasonable even if the parties wish it to be, and know it to be, sterile. The same reasons condemn the unfinished act, even when it happens between parties who have already given birth to children. The number of children born is one thing. The conformity of the act to the natural law is another. In reality, no matter how many precautions have accompanied a conjugal act, a pregnancy very often results, while the normal act frequently remains sterile. The reader should not, therefore, identify the fecund act with the normal one.[3]

Legitimacy of Intercourse   Those who accept these arguments will not find it difficult to understand another fundamental moral law: normal intercourse between married people is always legitimate, but the extensiveness of its use is never obligatory. When people are married, sexual union is legitimate and permissible as often as they think fit; they need only act according to nature and avoid excess. That is why intercourse is justifiable during each period of sterility in the menstrual cycle. It is equally legitimate with a sterile woman, whether this condition is involuntary or has been brought about by surgery. Intercourse is equally legitimate during pregnancy and between aged married people. In all these cases the sexual act fulfills its fundamental function of bodily union and its accompanying manifestations as a genuine expression of marriage.

[3] What has just been said is in full conformity with the teaching of Pius XI. In his famous Encyclical on marriage, *Casti Connubii*, of December 31, 1930, he says: "Nor must antinatural acts be imputed to husband and wife who use their right according to right and natural reason, if, from natural causes, due either to the time (sterile period) or to certain physical defects, a new life cannot result from it."

On the other hand, the extent of the use of sexual intercourse is never in itself obligatory. Marriage gives the parties the right to it, but does not impose it as a duty. Just as the couple was free to wed or not, they may, once married, make use of marital rights as often or seldom as they wish. However, it is evident that they must be of one mind in this. No commandment of God obliges a married couple to have carnal intercourse. Since the birth of a child depends on this intercourse, it remains subject to the laws that regulate it. The carnal relation is not obligatory; therefore, it is not obligatory to generate children.

The undeniable natural instinct to live on in a child does not alter the law. Like every other instinct, it is subservient to reason. However strong it may be, it does not compel us, either physically or morally. A reasonable person may choose to satisfy this instinct, or he may not, according to his motives. Assuming, then, that they are in agreement, married parties are free to abstain at any time. They may have the best reasons for abstaining during the period of fertility, and no one can blame them if they make use of their admitted right during the period of sterility. Abstention during days of fertility becomes blameworthy only when and if it is made against the will of one of the parties, or if the choice depends on an unreasonable motive. Because, should husband or wife reasonably desire to have children, and should the circumstances justify such a desire, the other party cannot legitimately refuse intercourse during the days of fertility. We do not disregard the fundamental rights of marriage and are not pleading the cause of many modern women who shrink from bearing children or of couples whose motives are strictly selfish.

Conditions of Legitimate Abstention

An unreasonable motive poisons everything, even the best things. To desire avoidance of conception out of sheer selfishness would make continence blameworthy, were it total or periodical. We do not approve of such a form of birth control, even if brought about by prac-

ticing continence. However, married people of this type would hardly be able to resign themselves to the required minimum of ten days per month of full abstention.

Conclusion   Therefore, as in the past, there will be only one legitimate way to a blameless form of birth control: that of abstinence. But from now on, instead of continence being continual, it would be limited to a certain number of days each month. The principle is safeguarded, but the facts are better known.

Periodical Abstention and Birth Control

Importance of   All of the foregoing does not imply that children are not of primary
the Child   importance in a family. This holds good, although there is another element at the basis of marriage: the union between two persons of different sex. For reasons of education and health, or for social and religious reasons, one should never tire of stressing the prominent part which the child plays in the family.

Naturally, any married couple that has not stifled the voice of nature is strongly inclined to the begetting of children, especially the woman, who feels more intensely the pangs and joys of childbirth.

Not without reason does this treatise end with a chapter about large families. The reader should not think it a stratagem: it is genuinely designed to be an antidote to the idea that we can avoid having children, or at least have fewer than before. That is not desirable. But between one birth and the next, and when—according to circumstances—the total number of children is reached, one may choose the only morally unimpeachable means of birth control: abstention, if not continual, at least periodical.[4]

---

[4] Let it be remembered, however, that abstention of long duration, even total continence, is possible and sometimes inevitable as in the case of serious illness. Moreover, too frequent intimacy blunts man's spiritual power and exhausts his body physically.

Following are some of the advantages of periodical abstention:

1. It allows the birth of children to be spaced by legitimate means so that the mother may keep her energy for the difficult task of their upbringing. (From the medical aspect, from the birth of one child to the conception of the next, a delay of one or two years is desirable.)

Advantages of Periodical Abstention

2. Periodical abstention helps to avoid a large, and very likely unhealthy, family. Neither reason nor faith requires the greatest possible number of births; healthy, well-balanced children free from physical and mental defects are the goal.[5]

3. Periodical abstention directs the parents toward the child because a couple whose conduct is absolutely irreproachable is by this very fact disposed to receive the child, while deception would turn them against it.

Should we desire to increase the number of births, we would not succeed in doing so by keeping the Knaus-Ogino discovery quiet. Only a few years ago this theory was completely unknown, and yet the number of births was continually falling. In 1934, for instance, 50 per cent of couples in Vienna had no children. Statistics from cities all over the world would be quite similar. Obviously the decline in the number of births was not due to periodical abstention, which was then little known.

What is needed is a radical change in present-day thinking and conditions of life. As long as this change is not forthcoming, all complaints about the falling birth rate are useless. Suppressing knowledge of the Knaus-Ogino theory will not serve to increase the number of births.

One may approve, therefore, the opinion of the famous Brussels scientist and doctor, R. de Guchteneere, a devout Christian, who writes:

---

[5] In putting forward this view we do not mean to deny the crippled child the right to life. A cripple may, in the moral order, greatly outstrip some Hercules or some genius.

"Not by trying to keep people in ignorance of a scientific discovery, nor by discrediting it to the public shall we increase the birth rate. We must give back to men confidence, generosity, the joy of life, pride in a flourishing family; in short, the Christian attitude to life, and the help necessary in the difficulties of family life. When all these conditions are satisfied, the birth rate will again increase, with or without Ogino."[6]

To form an idea of present-day conditions, let us consider, for instance, the housing difficulties prevailing in sections of almost any large city in the world. Many apartment buildings consist of one-to-three-room apartments; this space may be adequate for a married couple, but certainly is insufficient to house a large family. Yet, in many cases, a family of five or more can be found living in one or two rooms, with the most essential necessities lacking.

Whether this condition is regarded as one cause affecting the lowering of the birth rate, one thing is certain: such dwellings are not large enough for a big family. If we desire to lodge children with some decency, and at night to separate boys from girls and both from their parents, a home or apartment with three rooms is not adequate for more than three children, and one of four rooms for more than four children. The question then arises as to what to do when, after five to seven years of married life, such a number of children is reached?

One may think that any large modern city is an abnormal agglomeration, but even so, families must find accommodations in it. And some would deprive these married couples of the new way which alone allows them to lead a life without sin in the present difficult conditions which are no fault of their own.

Theory Will Not Reduce Birth Rate The promulgation of the Knaus-Ogino theory will not reduce the birth rate. Moreover, the inclination to have children is like a spring which cannot be held down indefinitely; the instinct of perpetuating

[6] *Saint Luc Médical*, 1939, No. 3, p. 207.

life in the child is too deeply rooted in human nature.

We are profoundly convinced that if periodical abstention were allowed to take the place of the practices in use up to now, we would soon witness a notable increase in the birth rate. The return to the law of nature in married life would of necessity produce a return to the law of nature in the begetting of children.

Answers to Other Objections of a Moral Order

Unmarried couples will also be able to take advantage of the period of sterility. This is true, but cannot everything be abused, even the best things? Who would think of stopping the teaching of children to read on the pretext that they will be able to read bad books? All knowledge is a two-edged sword. It is the duty of educators to direct knowledge to good and not to leave men in ignorance of it. But, were not these abuses there before? And even supposing that many couples will abuse the knowledge of the existence of a monthly period of sterility, their sin would be less blameworthy on both moral and medical grounds, than was the use of means in existence up to now. Moreover, people are less prompted to incontinence during the period of sterility. With the woman, on whom the act finally depends, the sexual urge is strongest at the beginning of the period of fertility. And we may add that unmarried people most often do not have the conditions necessary for a precise calculation—preliminary observation, knowledge of more or less regularity of periods—though they stand in desperate need of avoiding consequences. Under the circumstances they would ordinarily feel it too risky to accomplish the normal act even during the period of presumed sterility. The damage to health and morals caused by conjugal onanism is certainly greater than the inconveniences caused by the above mentioned abuse. This reason justifies a popular publication on this subject regardless of some regrettable risks.

Misuse by Unmarried Couples

Periodical Abstention is a Moral Way   In spite of everything, the use of the Knaus-Ogino theory seems to be a very convenient way to limit the number of births. What matters is not to know if this or that is an easy way, but if it is a moral one. Naturally, periodical abstention does not exact such heroism as continual abstention, but it nevertheless demands continual sacrifice. It presupposes a continual and laborious observation and a careful computation, and imposes an uninterrupted abstention for at least ten days each month; not an easy thing for people who really love one another. Without doubt, the use of contraceptives may be easier. However, if a married couple is resigned to abstention from intercourse for the entire period of at least ten days each month, they must have very great reason for avoiding a pregnancy. And because of this acceptance of sacrifice inherent in continence, they will also be less tempted to do

Periodical Abstention Does Not Make Married Life Mechanical   away with an unexpected pregnancy than would people who go through married life without any restraint.[7]

Another objection may be that periodical abstention seems to make a mechanical thing of married life and violates the wishes of the Creator. Willingly it is admitted that the computation in question is not an ideal. It would be more in character with the nature of married life that people should give love free play. But is it not better to make an innocent computation than to ruin one's nerves and load one's conscience? After all, it is not Knaus-Ogino, but the Creator, who causes days of fertility to alternate continually with days of sterility. And it is a noteworthy fact that the former are more numerous than the lat-

---

[7] It is outside the scope of this work to deal with abortion. The doctor, even if he is not so categorical as the theologian, realizes very well that it is a crime against mother and child. It is an error to advance the right of self-defense as a reason. A child cannot be compared with an unjust aggressor; it is the parents themselves who have brought it into existence. If nature does not decide otherwise, a child may be allowed to die, but no one ever has the right to kill it. It must be added that the short sentence pronounced by Professor Zangger, a Zürich doctor and legist, is most meaningful: "There is much less danger in a birth than in an abortion that has been induced."

ter. To take advantage of this natural alternation to bring about pregnancy, if desired, or to avoid it if circumstances demand it, does not make married life mechanical.

It appears, however, that the fault is to be imputed to our over-developed civilization if we are today reduced to computation in order to distance birth from birth. Many decades ago there was a natural birth control in the fact that the mother remained completely sterile for the period, a very long one, when she was breast feeding her child. Today this is only practiced by primitive races; only among them does the mother breast feed the child for two or three years.[8]

Natural Birth Control

In this primitive state of affairs, a mother who breast fed her children for two years could give birth to no more than seven children at the most in twenty years, even without any restraint on the intercourse of husband and wife. Seven children in the primitive or at least rustic conditions of living do not prove an excessive burden. Today in twenty years of married life, a woman might have fifteen to twenty children.

On the other hand, a couple bringing five children into the world would have to submit themselves to sixteen years of continency unless they used other means. This simple computation should open the eyes of even the most stubborn. And one can imagine what tension sixteen years of continence mean for people who, by the right of their state,

---

[8] Contemporary examples are given, e.g., in the essay of Karamoy on the natives of the Celebes Islands (Düsseldorf, 1935). The Bible gives us two striking examples in antiquity. The Second Book of the Maccabees tells how the mother of the 7 Maccabee brothers bent over her youngest son and exhorted him to die a heroic death for the faith of his father. "My Son," she said, "have pity on me who bore thee for nine months under my heart and suckled thee for three years." (II Macc. 7:27.) (The martyrdom of the Maccabees took place in 170 b.c.) Of the young Samuel the Bible states: "As soon as his Mother had weaned him, she took him up to the Temple of the Lord in Siloh." (I Samuel 1:23-24.) For little Samuel to have been able to make the pilgrimage to the temple himself and render some service to Eli, he must have been at least five years old, even if the precocity of Orientals is taken into account.

must love one another, and who live in the most absolute intimacy, sleeping together night after night.[9] This explains why a great number of married people felt relieved of a heavy burden when they learned about the Knaus-Ogino theory.

Testimony in Favor of the Method Some extracts from letters from the work of Smulders, *Periodieke Onthouding,* testify to this. One father writes: "This discovery has saved our family." Another: "Little by little my wife is regaining her strength, thanks to the calming influence of the computation of the days." The same husband confided in another letter to Dr. Smulders: "My wife suffers much less with her nerves and is recovering rapidly." Another man who for eight months had made use of the period of sterility, whereas he had previously kept strictly to continual abstention, writes as follows: "It is impossible to compare things now with things as they were. How can one compare two entirely different situations? To put it briefly: you cannot imagine what a help Ogino has been to me. My nerves are returning to normal. . . . My wife, too, is much better. Imagine what it means to her to have a nearly normal conjugal life, without the haunting fear of pregnancy."

A letter to Dr. Smulders, dated February, 1932, says: "I now come to the second point: the influence of periodical abstention on our married life. I could write a whole treatise on it. I will only say that a radical change has taken place in our conjugal and family life. The eldest of our children is now twelve. Things have come right in good time, because the children's education can only begin now that father and mother are in agreement."

The same correspondent, answering Dr. Smulders, who had asked him if he found periodical abstention difficult, wrote: "At the begin-

---

[9] A third difference between primitive and civilized man may be mentioned, viz., the difficulty of childbirth. Among primitive peoples it may happen that a woman goes off to the fields in the morning and comes home at midday with a baby in her arms. How far they are from all the apparatus needed in modern hospitals for one single confinement!

ning it did not seem easy, but now I do not find it at all difficult any longer. It is true that at times it requires some effort, but the sacrifice is quickly made. If necessary, I am a bit reserved; my wife understands my attitude perfectly and is even grateful for it."

The author of this chapter has before him a letter of a good husband, who for more than seven years has profited by the teaching of this book. Not without a little exaggeration, but all the same drawing on his experience, he writes: "The conjugal life that is offered this way to married people is a gift of God and one of heavenly beauty."

With such testimonies from average people, there is no further need to produce additional reasons to justify the computation of the days of sterility and a publication on this subject. In the knowledge of the period of sterility, we now possess a real gift of God, while in a previous era we did not need it because of more natural economic and biological conditions.

Havoc Wrought by Contraceptives — Benefits of Periodical Abstention

> *What is wrong in theory cannot be right in practice.*

Vitiating the Act Professor Knaus made this statement on the subject of contraceptives: "They are against nature because they frustrate the conjugal act, and because from the moral, the aesthetic and hygienic point of view, they more or less injure both partners."[1] If, up to now, there was general silence about these consequences, it is because no one knew of any other method, except perhaps the interruption of the sexual act. But this vitiates the very nature of the act and in the long run destroys the sensitiveness of the nerves. The man suffers by it, but much more so the woman whose organism is excited without finding the relief which it needs. The consequences are many, and may result in an aversion to all things sexual. Besides the ravages to the nervous system, the cutting short of the sexual act produces a chronic hardening of the muscle of the uterus, a condition known to every gynecologist. If women would weigh the damage done to them by interruption, they would fear it more than another pregnancy. Thus a woman who for more than twelve years had avoided pregnancy by this means, ad-

[1] *Die Periodische Fruchtbarkeitusw.*, Vienna, 1935, p. 100.

mitted to us quite frankly that it would have been better for her had she had five children, than have to suffer the wrong that these twelve years of onanism had done her.

Nearly as much can be said about contraceptive methods, either chemical or mechanical. Chemicals, in particular, quite frequently give rise to infection. In many cases it is difficult to prove the connection between their use and the resulting illness; but considering the intimate connection between the moral and the psychic on the one hand and physical behavior on the other, it is easy to understand that no breach of the moral law is without penalty. A French medical practitioner, Dr. Sedillot, writes: "Any woman who constantly makes use of contraceptives becomes, physiologically speaking, abnormal."

Let us add a few words on the most radical preventive method: that of the ligature of the Fallopian tubes. Even this does not give the absolute assurance which it is meant to give. Pregnancies inside or outside the womb may still occur. Many women, it is true, suffer no troublesome consequences, but attention should be given to the following evidence taken from an article in a Swiss medical review.[2]

One woman confesses: "Yes, I have regretted it (sterilization) for a long time, because I do not feel any longer able to offer my husband what he wants of me. Most of the time I give myself to him . . . but with distaste." The same woman complains, too, that since the operation she has suffered from headaches, nervousness, intestinal pains, and cardiac disturbances. Another woman writes: "Unfortunately our intercourse is no longer what it once was. I no longer feel any desire, but rather a real reluctance to give myself to my husband. Naturally, I force my self as much as I can, but it is no longer the same thing. Thus my husband is dissatisfied and bad-tempered." Yet another says: "I regret the operation, because I have no longer anything to give my husband, and I am often accused of coldness, which pains me very

[2] *Schweizerischen Med. Wochenschrift*, 1939, p. 189 ff.

much." There is one more who confesses that as far as she is concerned all is dead in her conjugal relations, and she complains of nervous depression, adding that she would not advise anybody to undergo such an operation.

What a difference between these bitter confessions and those quoted previously about the beneficial results given by periodical abstention. With the remark of Dr. J. Tobler, a female physician, we shall conclude that "a sterilized woman is a mutilated one." This judgment condemns this operation on moral grounds, too, because the mutilation we are talking about is not produced with a view to getting rid of an organic illness but aims solely at preventing conception.

Professor Frederich Haag of Dusseldorf has already summed up the position of a doctor in respect to birth-control practices. "Whatever they are, these practices act on women with disastrous effects, be they nervous disorders or organic injuries produced either by chemicals or by an instrument. Even simple lotions made with pure water disturb the mechanism of the vagina."[3] Moreover, detailed researches made by Stemmer tell us that the seminal fluid does not only aim at procuring fertilization, but it acts vigorously on the whole feminine organism which, if deprived of these good offices, will react disastrously.[4]

We are thus brought to consider the advantages of a normally ac-

---

[3] The vagina purifies itself automatically, without human aid. If a woman wishes, however, to make a lotion for the vagina it should never be made with soapy water, but with a solution of lactic acid. (2.5 in 1000)

[4] *Münch. Med. Wochenschr.,* 1939, pp. 180-184. Stemmer states: "1. An insufficiently developed womb is remedied more or less quickly by intimacy. When a woman, after 2 or 3 years of marriage, complains of sterility and we find a uterus like that of a child, we can nearly always assume that at the outset of married life conception was avoided. 2. Many nervous disorders resulting in growths and in the upsetting of the balance of the hormones only disappear when the woman gives up contraceptive practices." In this same article will be found a bibliography of works on the same subject and reaching the same conclusions.

complished sexual act. With Dr. Stemmer, previously mentioned, Drs. de Guchteneere and Sedillot, and especially Dr. Barbe, in his masterly treatise "The Pathological Consequences of Birth-Control Practices" ascribe different women's ailments to the lack of hormones caused by the use of contraceptives. We may, for instance, mention a tendency to melancholy and anxiety. These ills were reduced or disappeared entirely as soon as hormone preparations were taken by the woman or when normal intercourse was resumed. The male seed is absorbed in the womb—not inside the vagina—to act on the organism as a remedy. Scattered by the blood vessels, it excites the internal secretional glands and promotes metabolism. This beneficial activity is today increasingly recognized, thanks to the work of Professor Thomson in England, and Drs. De Vogt, Meyer, Grabley, Peterson, and Siegmund in Germany.[5]

There is nothing to cause surprise in the outcome of these researches. It is enough to consider that in most cases only a microscopic portion—less than a billionth part—of the seminal fluid is actually used for reproduction. Although the abundance of seminal fluid is partly explained by the fact of selection, it would be difficult to think that it aims at this alone. It would then be difficult to explain either the enormous number of spermatozoa, or the fact that in man the sexual instinct is never dormant whereas in animals the sexual instinct is active only during the period of sexual heat.

Thus the normal sexual act unites the two partners body and soul. It has been noticed, especially in countries where conjugal life is still more or less in accordance with nature, how much husband and wife come to look like one another in their old age; they might be taken for brother and sister. It may be they have become related by blood through the continued influence of their normal sexual intercourse.

Advantages of Normal Conjugal Intercourse

[5] Siegmund notes that a seed which has not been used for fertilization is absorbed by the womb somewhat as food is absorbed by the intestine.

In 1936, out of 3,219 divorces legalized in Switzerland, 1,607 of these broken marriages were without children. This childlessness has certainly played its part; but we blame equally the vitiated sexual act, which deprived the parties of a more intimate fusion of their bodies. The two instruments, which should have played harmoniously together, were not attuned. Thus, once the early enthusiasm had passed away, discord revealed itself and went on growing.

Conclusions   By way of conclusion, let us cite the excellent remark of Dr. W. Stemmer: "Finally, I would like to dispel the misunderstanding that all women need sexual intercourse. I do not think they do. There are enough girls who have not lost their virginity and who are in perfect health. Only the *demi-vierge* is sickly, the one who seeks sensual pleasure without wishing or being able to satisfy it in a natural way. Anyone who wishes to remain continent must not expose himself to sexual excitement that he will not satisfy. If husband and wife, for any reason, must remain continent, they should sleep in separate rooms; they will thus avoid many nervous disorders."

We see that the indefeasible requirements of morality are again in perfect agreement with the more recent findings of medical science. Both medicine and morals, as shown in the previous chapter, proclaim this principle in respect of conjugal intercourse: either in full or not at all. They confirm the axiom: "What is wrong in theory cannot be right in practice."

Part II: Theory

CHAPTER FIVE

A Historical and
Bibliographical Survey

In antiquity, during the Middle Ages, and down to the twentieth century, most people and even some doctors believed that a woman might conceive on any day of the month. Professor Knaus and Dr. Holt, with arguments based on the *Talmud* and the *Mishna*, claim that some of the people of antiquity, the Jews, for instance, knew of the existence of a period of fertility. They bring as evidence of this the Mosaic law of purification and the fact that intercourse was forbidden at certain times. Nevertheless, these laws can be explained, in part at least, by the mentality of many primitive peoples. They believed that there was something humiliating about menstruation, pregnancy, and breast feeding, and that these made the woman dangerous to those around her; therefore, she was avoided.

    The lack of knowledge of the period of sterility is easily understood when one thinks of how variable the cycles of menstruation are. Let us assume that a married couple wanted to discover by personal observation the days of fertility. They would have to limit themselves to one copulation a month, each time a day later than the previous one. If we take a cycle of exactly 28 days, a pregnancy might possibly

Ignorance of the Period of Sterility

occur after ten months. At this point there would be a stoppage in the observation of at least nine months. During the breast-feeding period, again there would be no possibility of computation. It would be much easier to discover the days of sterility preceding menstruation. With arguments based on the *Veda* and other ancient writings, Dr. Holt opines that this period was quite commonly known in olden days.[1] More recently, Dr. de Guchteneere reported the interesting case of a woman who, without consulting her doctor, spaced out the births of her children by limiting intercourse to the presumed last days of the cycle; this is in perfect accord with the Knaus-Ogino theory. The woman confided that she had received this secret from her mother who had accidentally made the discovery. This woman had five pregnancies simply by choosing to have intercourse on a day preceding the last eleven days prior to menstruation.

First Scientific Experiments The earliest really scientific experiments in this field, go as far back as 1843. They were made by the French naturalist, F. A. Pouchet, in Rouen, and at the same period, although independently, by L. W. Bichoff, at Gieszen. Their work, soon followed by that of Raciborski and DeCourty, was nearly forgotten when, in 1877, the German gynecologist, Dr. Capellmann of Aix-la-Chapelle, brought it to light again. He sought to oppose, successfully, contraceptive methods of birth control by suggesting one in accordance with nature. Unfortunately the rule proposed by Capellmann was based upon the erroneous hypothesis of his predecessors, namely, that the egg was formed during the menstrual period. Because of this, he advised people to abstain during the first fourteen and the last three or four days of the cycle. If we compare this computation with the Ogino theory—formation of the egg from the sixteenth to the twelfth day before menstruation—it is evident that the suggestion of Capellmann would fail in every case where menstruation began after the 26th day. On the contrary, if the

[1] Holt, *Nederl. Tijdsch. v. Verlosk,* 1937, p. 138-145.

cycle were shorter, the computation worked, but by chance. This explains the partial success of Capellmann. Smulders mentions in his work a couple who successfully followed Capellmann's theory for twelve years; but the menstrual cycle of the woman had always been less than 26 days.

However, it was not until the beginning of this century that the scientists were directed on the right track by Dr. Wohlers, Fribourg-in-Brisgau. He had noticed, after questioning a certain number of women recently married that those whose marriage had coincided with the last week of the menstrual cycle had a recurrence of menstruation the following month.[2] During World War I, other investigations were made by Siegel, Nürnberger, Pryll, and Jäger on the pregnancies of wives of soldiers on leave. But since these authors had relied only on verbal communications and did not take into much account the varied length of the cycles, their researches only caused confusion.

Further Discoveries

Still, as early as 1913, the famous scientist, R. Schröder, then at Kiel, and later at Leipzig, had discovered, by way of histological researches, the days of fertility, even if only in the case of a menstrual cycle of 28 days. Starting from the activity of the corpus luteum, Schröder fixed ovulation as taking place between the 14th day and the 16th day after menstruation.[3] Since then we have learned that ovulation, which produces the period of fertility, does not occur during the menstrual period, as had been believed by Pouchet, Bischoff, and Capellmann. Many specialized investigations, especially on the

2 Communicated in *Deut. Med. Wochenschr.*, 1915, p. 1251.
3 "On the Time Relationship Between Ovulation and Menstruation," *Arch. Gynäk.*, 1913, 101:1. Even in the case of an average return of menstruation every three weeks, Schröder maintained until lately, that ovulation took place at nearly the same time, "perhaps a day sooner." *Münch. med. Wochenschr.*, 1938, pp. 2033-34. In the same review, 1939, pp. 184-6, Knaus contradicts Schröder by asserting that the ovum cannot reach its full implantation in the eight remaining days.

length of the life of the ovum and of spermatozoa, have since been made.

Knaus and Ogino　But it was to be the privilege of Kyusaku Ogino and Hermann Knaus to clarify the situation and thus make their names famous. Ogino was then the doctor in charge of the Gynecological Hospital of Niigata in Japan, and Knaus assistant doctor at the Gynecological Clinic of Graz.

As early as 1923 and 1924, Ogino had published some results in Japanese reviews, and gave a general idea of them in *The Japan Medical World,* in 1928. But it was not until 1930 that his theory attracted the attention of European doctors, when he published a similar article in the *Zentralblatt für Gynäkologie.*[4]

Knaus, who knew nothing about Ogino's work, reported his own observations for the first time at the 21st Congress of the German Society of Gynecology, and thereafter expounded his ideas in many articles in different medical reviews.[5] Knaus published his views in a treatise entitled *Die Periodische Fruchtbarkeit und Unfruchtbarkeit des Weibes,* 2nd ed. 1935, which is of prime importance in this field. Later Knaus completed this work by other articles mentioned in this volume.

Smulders　But no one in Europe made better use of this new theory than Dr. J. Smulders, the doctor in charge of the Huize-Assissie Clinic at Udenhout in Holland, a man of deep Christian convictions and the father of nine children. His interest in the theory dates from 1930, when he began intensive studies of its practical applications. It is one thing to discover a natural law and another to succeed in making practical use of it. Smulders did this. What urged him on was not scientific curi-

---

[4] Ogino, *Zentralbl. Gynäk.,* 1930, No. 8; 1932, No. 12. In 1934, Ogino published *The Conception Period of Women,* at Harrisburg, (U.S.).

[5] *Münch. med. Wochenschr.,* 1929, 28; 1931, 9; *Zentralbl. Gynäk.,* 1929, 35; 1932, 12; *Med. Welt,* 1930, 10; *Arch. Gynäk.,* 1931, 2; *Klin. Wochenschr.,* 1932, 46.

osity, but compassion for the misery of innumerable married people. Though recognizing the merits of Knaus, he based his computation on the data of Ogino. In agreement with the latter, he assumed the end of ovulation to be not only the 15th day, but the period· from the 16th to the 12th day before menstruation. The surprising results obtained by Smulders were published by him in the work: *Periodieke Onthounding in het Huwelijk.*[6] From the sixth edition Dr. Holt became his collaborator. In 1940, the latter published the eighth edition, entirely rearranged but considerably shortened. Because more than 100 pages of the seventh edition were devoted to the details of numerous cases, we studied the original text, and that has been the main source for this work.

Going through more than two dozen gynecological and medical reviews in various languages, published since 1930, we have been forced to form the opinion that material regarding the period of sterility was almost swamped in the great bulk of articles on other subjects. Several articles, especially those which attack the Knaus-Ogino theory, show in general a very limited knowledge of the sources. Among the more recent works on the subject, many prove favorable to the Knaus-Ogino theory.[7]

Lack of Interest

---

[6] *Nijmegen-Utrecht,* seventh edition, 1934, 230 pages. A French translation, considerably abridged, was published by Letouzey and Ane, Paris, 1933.

[7] Prof. de Guchteneere, "Les variations cycliques de la fécondité féminine," *Revue Francaise de Gynecologie et d'obstetr.,* 1933, pp. 138-57. "A propos de la continence périodique," *Saint Luc Médical,* Brussels, 1939, No. 3, pp. 194-207. Dr. Holt, *Marriage and Periodic Abstinence,* Longmans, London-New York, 1937. *Nederl. Tijdschr. v. Geneesk.,* 1941, No. 45, pp. 4257-64. Prof. Albrecht, *Münch. med. Wochenschr.,* 1933, pp. 1682 ff. Dr. Rumpf, *Zentralbl. Gynäk.,* 1937, pp. 1589-92. Dr. Georg Riebold, *Zentralbl. Gynäk.,* 1937, pp. 981-85. Dr. Weinzierl, *Med. Welt,* 1937, No. 29. Prof. Knaus, *Zentralbl. Gynäk.,* 1935, p. 2642 ff.; *Münch. med. Wochenschr.,* 1938, pp. 1851-56, and 1939, p. 196 ff. Prof. Labhardt, *Schweiz. med. Wochenschr.,* 1942, No. 20, pp. 537-40. In the *Schweiz. med. Wochenschr.,* and in *Praxis* appear many articles for and against the Knaus-Ogino theory which can be usefully consulted.

Biological Bases

Fundamental Ideas

The Internal Genital Organs The internal genital organs of a woman are: (a) the two ovaries, which are situated in the pelvis, one on either side of the uterus. It is in the ovaries that the ova or egg cells mature. They mature and are discharged from the ovaries in cycles, alternating first in one ovary and then the other. Usually only one ovum reaches maturity during each cycle. (When twins occur it is because two ova have matured at the same time, or because one of them has reached, earlier than its time, the stage of the second division of maturity.)

(b) The two Fallopian tubes, each about 3½ to 4 inches in length are attached to the uterus. At the outer end, they become fringelike and funnel-shaped. It is here that the ovum which has been expelled from the ovary is caught and carried toward the uterus. The ovum, measuring only about one-sixteenth inch, fertilized or not, travels along these tubes toward the womb in about ten days.

(c) The uterus or womb is firm and muscular with many indentures in its walls. Only a fertilized ovum will succeed in fixing itself

in the uterus and grow for nine months. The unfertilized ova are expelled from it fourteen days after having left the ovary, during the menstrual flow.

Vitality of the Ovum and of the Spermatozoa

During the life of a woman, nearly 400 ova reach maturity and nearly 30,000 fail to attain maturity. In this, nature shows extraordinary prodigality, which is not, however, useless. In the first instance it favors selection, because only the most vigorous ova come to full development.

Ova and Spermatozoa

As for man, a single emission of male sperm cells has from three to four hundred million spermatozoa, but ordinarily only one succeeds in penetrating the ovum and fertilizing it. This great abundance permits selection. The spermatozoön, or sperm cell, encounters a series of obstacles in its progress toward the ovum. First it must resist the acidity of the mucous membrane that kills most of its companions. Then it must travel quickly toward the outer opening of the Fallopian tube where fertilization takes place since if it does not do so, the sperm cell loses its fertilizing power. It takes about one to four hours to make this journey. Finally the sperm cell must have in reserve the strength necessary to penetrate the thick surrounding of epithelial follicular cells which protect the newly detached ovum. Only then can fertilization take place.

When the menstrual flow takes place, the ovum which has reached maturity during the preceding month, but has not been fertilized, is expelled.[1] At the same time, in one of the two ovaries, a new ovum begins to develop slowly for the first few days or even a week or two,

Ovulation

[1] Prof. Polano once remarked in his lectures in Munich that "menstruation was nature's shedding of tears of blood over the non-fertilized ovum as it went away."

and then more rapidly for two or three days. The little vesicle (follicle) that surrounds the ovum is then filling with liquid. This secretion increases until the vesicle bursts. The mature ovum is set free and with the follicular fluid is carried out of the ovary and enters the nearest tube.

In the next hour or two, the ovum sheds its shell of epithelial follicular cells. If at this moment there are some living spermatozoa nearby, one will most certainly succeed in penetrating the ovum; thus the ovum is fertilized. If not, the possibility of conception may be ruled out for a month. After the ovum has rid itself of the epithelial cells, it immediately surrounds itself—fertilized or not—with an impenetrable layer of albumin, which is meant to provide the fertilized ovum with its first food. After a few hours this albumin surrounds the ovum so well that no sperm cell could get through. And even if it did, nothing would be found but a decomposing ovum.

It was believed in the past that the ovum, after shedding the follicular shell, remained capable of being fertilized for nearly two weeks. Recent researches have reduced this period to about two hours. In 1932, Professor Frankel wrote: "Scientists agree that unless the freed ovum gets an immediate chance of fertilization, it dies." Dr. Albrecht, another authority, similarly reduced the possibility of fertilization to "a few hours only."[2] Even an adversary of the Knaus-Ogino theory, Dr. Hüssy, admits: "As for the fertilization of the ovum, all researches agree in limiting it to a period of a few hours."[3]

Spermatozoa   The spermatozoa themselves have a very short life. In the epididymis, they were kept at a temperature of a few degrees below blood heat. Once they reach the Fallopian tubes, the higher temperature they

---

[2] *Münch. med. Wochenschr.*, 1933, p. 1683.

[3] *Praxis*, Berne, 1936, p. 608. It is precisely because this celebrated Swiss doctor held the Knaus-Ogino theory to be useless in practice that we are glad to have his testimony; he cannot be suspected of prejudice.

encounter brings out all their vital force. As Knaus points out, heat transforms their reserve of potential energy into kinetic energy. But this very temperature also causes them to die. Kept at body temperature, the spermatozoa lose their fertilizing power after only 13 to 14 hours, whereas at a temperature 10 or 15 degrees higher, they would keep their power up to 72 hours, if the tests of Hammond, Walton, and Asdell can be accepted. After 30 hours at the most, the germinative power of the spermatozoa is lost and after 48 hours they become immobile; two factors which do not coincide "as numerous tests have proved." In the past, two or three weeks were considered to be the duration of the fertilizing power of the spermatozoa. Today it is considered as "lasting hours rather than days."[4]

To be on the safe side, we, together with Knaus, Höhne, and Behne, accept a maximum of 30 to 48 hours, because, "according to researches conducted at the Gynecological Clinic of Zürich University, the spermatozoa cannot be observed in the female genital organs for more than 24 hours."[5]

The period during which the spermatozoa keep their germinative power has been studied for more than 20 years in numerous tests with many different kinds of animals. The same conditions have been verified in all mammals, birds, and warm-blooded animals, "so they are certainly valid for men, too."[6]

We have, therefore, to take into account two natural laws now almost generally admitted: **Conclusions**

1. The spermatozoa once in the body of a woman keep their fertilizing power for only 30 hours;

2. The ovum is capable of being fertilized only for about 2 hours after ovulation. After that it dies.

[4] Knaus, *Münch. med. Wochenschr.*, 1934, p. 1825.
[5] Koller, *Schweiz. med. Wochenschr.*, 1934, p. 829.
[6] Hüssy, *Praxis*, Berne, p. 607.

When Does Ovulation Take Place?

All these discoveries would have little practical value if it were not possible to determine the moment when ovulation takes place and the woman becomes able to conceive. Much research has been directed to this end. Knaus, in a recent work, mentions 13 different methods which have been used since 1883 for attempting to determine the exact moment of ovulation.[7] The results were divergent because, until recent years, researchers took the date of the last menstruation as the basis for their computations. That their conclusions vary is not surprising when we remember that the time needed for the ovum to mature and be expelled from the ovary varies from woman to woman, and that it varies even in individual women.

Research   It was Frankel who connected ovulation with the forthcoming menstruation. Knaus based his researches on the activity of the corpus luteum which begins immediately after ovulation, and Ogino was the first to fix the date of ovulation in accordance with the menstruation

---

[7] Neither the method of Takata nor that of Samuels is included in these 13 methods. Knaus calls the former "much too problematic" and he is apparently right. Samuels believed that by means of a cycloscope he could distinguish two ovulations in each menstrual cycle. Dr. T. Koller of Zürich noted that numerous experiments of great precision have demonstrated the futility of this method because of frequent errors in recording. (*Zentralbl. Gynäk.*, 1938, p. 2644)

Takata of Kobe, Japan, with his collaborator Dohmoto, sustains that the curve of the figure of flocculation of the serum gives a picture of the ovarian cycle. In this way Takata claims to have discovered in 102 cases ovulation taking place between the 6th and the 19th day, mostly between the 10th and the 15th, and on an average, on the 13th day. Nevertheless, after examining the cycles in question, he concludes that "the follicular phase is normally repeated with a constant periodicity, while the phase of the *corpus luteum* is clearly connected with menstruation." Of 102 menstrual cycles examined by Takata, "only 27 per cent agree with Ogino's findings, while 73 per cent contradict them." On the other hand, "out of 32 women with a normal menstrual cycle of 26 to 30 days, 68 per cent conform to Ogino's law." (*Arch. Gynäk.*, 1938, pp. 204-22)

A close examination of the principal chart of Takata reveals the following

to come. He also was the first to take into account continual variations in the menstrual cycle. He began to compute in days rather than weeks. Thus he was able to show agreement in 542 out of 557 cases which, divided into nine statistical tables,[8] had been based on the preceding menstruation and because of this were greatly divergent from one another.

In these statistical tables, and later in his own tests, Ogino succeeded in fixing the period of ovulation between the 16th and the 12th day before the next menstruation. Of 118 women selected for observation, 81 had fairly regular menstrual cycles. With these 81 women he found a corpus luteum in its early phase of development between only the 16th and the 12th day before menstruation. Therefore, he concluded, a follicle must have burst a few hours before and one ovum must have been freed. These 81 women had very different individual menstrual cycles, but all had perfectly healthy genital organs.

facts: (1) Of the 38 women examined, many are less than 20 years of age. It is, therefore, very likely that all of them have not yet attained regular ovulation. (2) The menstrual cycles often show divergencies of a pathological order, cycles of even 17 days; such observations are not ones on which to build a law. (3) Finally, it is not stated whether the ovum was fertilizable in all the ovulations whose data Takata claims to have established.

These comments are valid even if the method of Takata should be right. He has stated that he verified 5 cases. He prescribed 15 days of abstention before, and 10 days after the date agreed on. Three of the pregnancies came to a successful conclusion, two lasted 271 days and one 277.

Let us note further this comment of Takata: "The thesis that sustains that the period of fecundity of a woman is in any case strictly limited, appears to be in conformity with the facts." (*Arch. Gynäk.*, 1938, p. 218)

Dr. T. Koller and his assistants spent a long time examining the serum method of Takata in the Gynecological Clinic of Zürich University. "The results were completely negative. . . . Our researches with serum have unfortunately failed to establish any relationship with the cyclical variations of periods. For that reason we cannot utilize the reaction recommended by Takata and Dohmoto, to determine the rupture of the follicle, at any rate in its present form and with the means and resources at the disposal of a clinical laboratory." (*Zentralbl. Gynäk.*, 1938, pp. 2648-50)

[8] Statistics of Schröder, Ruge II, Reusch, Halban and Kehren, Seitz and Wintz, and Fränkel.

Despite contrary opinion, the tests of Ogino do not prove that ovulation takes place regularly between the 16th and the 12th day, or that that is the only period in which ovulation may occur. One also may conclude that if some disturbance precedes it—an abdominal operation with seediness, fever, etc.—ovulation takes place normally during that period.[9] We say normally because there is data to prove that ovulation can take place in exceptional cases either nearer to or farther from the forthcoming menstruation. The problem is reduced simply to finding out if such abnormal ovulation is capable of fertilization. In theory, one would be inclined to deny it for several reasons. Nevertheless some cases submitted by Smulders suggest the opposite.

In any case, we are definitely of the opinion—along with Ogino, Albrecht, Smulders—and against Knaus, that ovulation that takes place at its normal time may become fertile. On this point Professor Albrecht states: "In five cases out of sixteen examined by me, conception took place outside the limits of the time fixed by Knaus."[10]

A case mentioned by Smulders shows ovulation subject to normal oscillation, as Ogino had found, as well as two times of abnormal ovulation. (It should be noted that the discomfort that some women experience about the middle of their menstrual cycle is a sign of ovulation.) Smulders found both types of ovulation in an extremely nervous woman. Within a two-year period, this woman felt intermenstrual discomfort ten times: eight times it happened between the 13th and 16th day previous to her period. The nervousness of this woman explains sufficiently these constant oscillations which correspond to those noted by Ogino. Nevertheless, once the intermenstru-

---

[9] It is impossible to determine exactly in a concrete case what can be accounted for by premature or delayed ovulation and what is due to a disturbance of the activity of the corpus luteum.

[10] Albrecht, *Münch. med. Wochenschr.*, 1933, p. 1684.

al discomfort occurred 23 days before her period and another time 3 days before, thus exceeding the limits fixed by Ogino.

Similarly, recent researches by the Japanese Dr. Hisao Ito invite us to make a distinction between normal and exceptional oscillation of ovulation.[11] Dr. Ito questioned female doctors and nurses about possible symptoms of ovulation. He found them varying from the 19th to the 10th day prior to the menstrual period, and on an average from the 16th to the 12th, as found by Ogino. Whether the activity of the corpus luteum goes astray, or ovulation, for pathological reasons, advances or is delayed, it seems clear that on occasion ovulation may take place either before or after the limits assigned by Ogino.

We have just dealt with the normal oscillations according to Ogino and with the existence of exceptional oscillations. It is important that we should clearly distinguish the regular day of ovulation from each of these variations. In a way different from that followed by his Japanese colleague, Knaus succeeded in establishing that between the regular day of ovulation and the beginning of the forthcoming period there is a bridge of 14 days—no more and no less. This is important, and it is easy to see that the 14th day fixed by Knaus as the day of the regular activity of the corpus luteum is exactly in the middle of the five days' period of variation established by Ogino, or, in other words, between the 16th and the 12th days which are also based upon the activity of the corpus luteum.

Briefly, this is how Knaus reached the formulation of his theory. In 1924, in London, under the direction of Professor Clark, and in 1925, in Cambridge, under the direction of Dixon, Marshall, and Hammond, Knaus conducted intensive studies on the muscles of the uterus. He followed this up in 1927 and in 1928 in the Stöckel Radiotherapy Department of the Gynecological Clinic of Berlin University, where he built an instrument that could register and reproduce graph-

Knaus Experiment

[11] *Japan. J. Obst.*, 1937, No. 1 and No. 22.

ically the contractions of the uterus. The test succeeded for the first time on November 30, 1928.[12]

With tests made on rabbits, Knaus established that the uterus could not contract after that moment when the hormonal secretion of the corpus luteum acts on it.[13] With his apparatus he was able to verify that the uterus of a woman reacts strongly and regularly to injections of pituitrin and contracts up to the 14th day previous to menstruation. Then it hardly contracts at all or does so faintly. This could not be explained otherwise than by the fact that the hormones of the corpus luteum had a sedative effect on the mucous membrane of the uterus.

Knaus fixed the day of ovulation as the 15th day previous to menstruation because it was necessary to take into account the few hours needed for formation of the corpus luteum and those necessary for the hormones to reach the mucous membrane. The statement of Knaus is in no way invalidated, but only modified a little by the more recent one of Holt: "In short cycles—from 23 to 26 days—ovulation takes place around the 14th day; in cycles of 27 and more, around the 15th."[14]

Proof from Smulders   A case mentioned by Smulders confirms, through observation of intermenstrual pains, what Knaus had discovered by injections of pituitrin. A woman "with perfectly healthy genitals" felt intermenstrual pain nearly every month during the two years in which she submitted to examination by Smulders. Generally this pain was felt

---

[12] *Die periodische Fruchtbarkeit,* 1935, p. 62.

[13] The yellow body—corpus luteum—plays a decisive part in all this. It was discovered by Hitschmann, Adler and Schröder. As its name implies, the yellow body is composed of a substance yellowish in color. As soon as the ovum has been expelled, this substance begins to form inside the now empty follicle. It begins at once to spread its secretion through the blood vessels; this secretion reaches in particular the mucous membrane of the uterus which swells with blood till it is nearly full. In this way it becomes ready to receive the fertilized ovum.

[14] *Nederl. Tijdschr. v. Geneeskunde,* No. 45, Nov. 8, 1941, p. 4263.

from the 14th to the 15th day previous to menstruation; eleven times on the 15th day, five times on the 14th. The menstrual cycle of this woman was from 26 to 29 days.[15]

The distinction made by us between the regular ovulation estab- **Fundamental** lished by Knaus, the normal oscillations observed by Ogino, and the **Distinctions** exceptional oscillations, which are nearly always sterile, appears to us to be of prime importance. It permits us to bring into line the slightly divergent data of Knaus and Ogino and it explains why Knaus was forced to consolidate his computation with "security days."[16]

The agreement between the conclusions of Knaus and those of Ogino is definitely confirmed by a new process used by Vanning, Hill, and Browe for determining ovulation.[17] Five times these authors were able to determine the activity of the corpus luteum in the case of a woman with a 25-29 day cycle. Four times it lasted 14 days and once 15 days. They verified this activity from 11 to 16 days over a succession of 22 cycles of from 22 to 29 days; in 15 of these cycles it lasted from 13 to 15 days. It is evident that the activity of the corpus luteum normally lasts 14 days, but with frequent variations. Thus a third natural law occurs which we introduce in a very prudent manner. Ovulation takes place regularly about the 15th day previous to the beginning of the regular period of menstruation.

[15] It is of interest to note the days on which ovulation took place starting from the previous menstruation. Once on the 11th, once on the 12th, 5 times on the 13th, 7 times on the 14th, once on the 21st day.

[16] It is true that Knaus, at least until 1939, considered the 15th day as the one fixed for ovulation. In 1939, he wrote in the *Zentralbl. Gynäk.*, p. 196, "that he has proved that ovulation in physiological conditions always takes place on the 15th day before menstruation, whatever may be the length of the cycle." Yet this assertion is slightly different from that formulated a year previously which lacked the restrictive "in physiological conditions." (*Münch. med. Wochenschr.*, 1938, p. 1855)

[17] "Studies on corpus luteum function," *Endocrinology*, 1937, pp. 711-721. The authors admit that Pregnandiol-Natrium-Glucuronidat is a secretion of the luteinizing hormone. Traces of this product are found in the urine during the corpus luteum phase.

Double Function of the Corpus Luteum

Even before the corpus luteum has begun to produce its effect on the mucous membrane of the uterus, the recently freed ovum is drawn toward the tube. Fertilized or not, it travels slowly toward the uterus for about 10 days. This slow movement is intentional. The fertilized ovum must have the necessary time to develop before it fixes itself in the uterine mucous membrane. During its journey it feeds on the albumin by which it has been surrounded. Once fixed in the uterus, the ovum, too, begins to secrete hormones which force the corpus luteum to continue its activity throughout the period of pregnancy. As was pointed out by Dr. Robert Meyer, the uterus needs an ample provision of blood during this entire period.

An unfertilized, and consequently undeveloped, ovum will not be able to secure itself in the uterus. It cannot produce hormones to act on the corpus luteum. The latter, after about fourteen days, gradually stops its activity. The flow of blood now begins. The unfertilized ovum is expelled, accompanied by the portion of the mucous membrane, saturated with blood, that was to receive it if fertilized. This is achieved by a progressive contraction of the muscles of the uterus. The corpus luteum, which up to now prevented the contraction, is inactive.

Nevertheless, the corpus luteum exercises another function during the 14 days of its spontaneous activity. The hormones that it pours into the blood act on the ovaries to prevent the maturation of another ovum. "This was actually proved by the experiments conducted by R. Meyer, Schröder, and Ruge."[18]

Ovulation   Whatever else happens, there is no other ovulation between normal ovulation and the following menstruation. But is this an absolute rule? Will there be no exception resulting, for instance, from a powerful

18 Hüssy, *Praxis,* 1936, p. 609.

passion or an accident or a sudden fright? In such animals as the cat and the rabbit copulation discharges the ovum. But in these animals there is no spontaneous ovulation. Other animals such as the sow or monkey have, like woman, spontaneous ovulation; that is, one independent of copulation. But they do not have induced ovulation. Nevertheless no animal is known to have both spontaneous and induced ovulation. From this, the best writers like Asdell, Knaus, and Albrecht conclude that these two forms of ovulation are not to be found in woman either. This conclusion is very well founded since, according to observation, each purely biological phenomenon found in human beings, has its parallel in some other animal. Moreover, if induced ovulation were possible in woman, the duration of the menstrual cycle should vary in young women at the beginning of married life. This does not normally happen, and when it does, it is for other reasons.[19]

What has been said above allows of the formulation of a fourth **Conclusion** law: regularly the corpus luteum acts spontaneously for 14 days. From the moment when its activity stops, menstruation begins. As long as it is active it prevents any other ovum from maturing.

[19] In the *Zentralbl. Gynäk.*, 1939, p. 198, Knaus says that "beside spontaneous and long-term ovulation there is no violent ovulation in man either induced or artificial: I think I have established this once and for all in my monograph *Die periodische Fruchtbarkeit un Unfruchtbarkeit des Weibes,* pp. 72-75, and in 'Zur Bestimmung der Ovulations- und Konzeptions-Termins' in *Zentralbl. Gynäk.*, 1935, No. 45." Yet in a letter from Dr. de Guchteneere, he states: "I am no longer as sure as I once was that induced ovulation is always impossible in humankind. I have observed one case in particular that admits of no other explanation." Unfortunately the famous Bruxelles doctor, in the article in which he mentions this case, only gives very vague particulars. (*Saint Luc Médical,* 1939, No. 3, p. 203) For what does he mean by "a woman whose periods are regularly regulated," and when does such a woman begin the "pre-menstrual period"? If Hüssy, too, has recently come to the opposite view, he can be answered by the contrary affirmation of Schröder: "If the egg has not almost reached maturity (beforehand) I think that violent ovulation is impossible." (*Zentralbl. Gynäk.*, 1943, p. 679) Smulders, with the most experiments to his credit, has never been forced to admit that ovulation could be spontaneous. He had another explanation of an unexpected conception.

CHAPTER SEVEN

Conclusions from the Previous Chapter

Passing from Theory to Practice

We have just discovered that the mysterious agent that fixes the lapse of time from ovulation to the beginning of menstruation is the corpus luteum. It will continue its activity up to 20 days and more, or reduce it to a few days. The corpus luteum prolongs its activity beyond the 14th day or stops it short according to whether the ovary tissue in which the corpus luteum is lodged is over-rich in blood, or insufficiently irrigated with blood.

The problem, therefore, that confronts the best of minds is this, Which of these two elements is the more constant and consequently able to serve as the foundation of our computation of the days of fertility? Is it the time it takes the ovum to mature, or is it the activity of the corpus luteum? Takata and Schröder take the first view; Knaus, Ogino, and Holt the second.[1]

[1] "The difference in the length of the cycles depends in the first place on that of the follicular phase." (Holt, *Nederl. Tijdschr. v. Geneesk.*, 1941, No. 45, p. 4263) Smulders gave no expert opinion on this subject, except that he generally followed Ogino.

Basing our judgment on numerous observations of our own and on those of Smulders, we suggest the following solution. We have to distinguish between the physiological and pathological course of the cycle of menstruation. Physiologically the period of about 14 days during which the corpus luteum is active gives the most constant datum. Therefore, it is more logical to take it as the basis of the computation. Since there is a margin of two to five days in the time taken by the ovum to reach maturity, it is unwise to use it as a basis for computation. However, because of pathological influences—not excluding the many passing disturbances which affect women—the activity of the corpus luteum is more variable than the time taken by the ovum to mature, and is less resistant to disturbance. On this point Schröder is of the same opinion.[2]

Before supporting our view by examples, let us look at another problem which is intimately connected with the preceding one and which we shall solve here by the same example. When a disturbing occurrence prolongs or shortens the maturation of the ovum or the activity of the corpus luteum beyond the normal limits fixed by Ogino, can the woman conceive outside the length of time computed? This is obviously a very vital question, and the answer, generally speaking, is no. Our prudence is born of the notes made by Smulders and of our own more recent ones of cases where a perceptible disturbance appears to have induced ovulation, either premature or delayed. In any case we have to see if it is the activity of the corpus luteum that has gone astray or the maturing of the ovum or a combination of both. **Disturbances Affecting Ovulation**

First let us suppose that it is only the activity of the corpus luteum which has been disturbed, since the disturbance has taken place after ovulation. In such a case fertilization is excluded, because the activity of the corpus luteum—even if prolonged—prevents the maturation of another ovum for the time being, while, when the activity is short, the

[2] *Zentralbl. Gynäk.*, 1933, No. 1.

menstrual flow starts early. Thus if a fertilized ovum entered the
uterus after about ten days it would be washed out by menstrual flow.
"It is, therefore, not difficult to understand that we have not seen any
woman become pregnant under similar circumstances." (Smulders)

But it should be noted that the disturbance may take place at the
beginning or in the middle of the menstrual cycle; ovulation may
then be either delayed or advanced. In such a case, conception outside
the limit of time obtained by computation is not to be excluded, but
it is exceptional. Moreover, we base our view on the parallel which
there seems to be between ovulation and childbirth. A fetus of eight
months and even of seven months may survive if all goes well. But so
far we have not heard that a child has survived who has been born
either before the sixth or after the eleventh month of gestation. The
same is true of the ovum when it is expelled much too early or much
too late.

Conclusive Experiments

Disturbance of the activity of the corpus luteum is often without
consequence. The work of Smulders is rich in examples on this point.

In Case No. 21, the menstrual cycles of a woman were from 29 to
34 days. The period of infertility was due to begin on the 24th day,
but following a week of intensive traveling the period was delayed up
to the 45th day. Copulation took place on the 24th day, but had no
effect.

In Case No. 23, the menstrual cycles of the woman were from 24 to
28 days. Due to an inflammation, for two consecutive months men-
struation was delayed, once up to the 36th day and the second time
up to the 42nd day. Copulation took place in both cases after the 18th
day but with no consequence.

In Case No. 25, the menstrual cycles of the woman were from 27

to 31 days. Because of an accidental disturbance, the period began on the 49th day. Copulation took place from the 21st day onward, but no pregnancy resulted.

In Case No. 29, the menstrual cycles of the woman ranged from 26 to 30 days. Twice, with an interval of six months, menstruation did not begin until the 34th day. In each case copulation took place from the 20th day but with no consequence. As early as 1930, Knaus had mentioned several cases in support of this fact.[3]

While in these cases it was a question of a prolongation of the activity of the corpus luteum, Smulders presents other cases—31, 32, 33, 34—where this activity was too much reduced. Theoretically the absence of consequences is more understandable.

It should be noted most explicitly that in all of the cases cited, the parties to the copulation were fertile. Moreover, the disturbing cause always seemed to appear after ovulation had taken place. Therefore, delay of the period was attributed to the disturbed corpus luteum. When one remembers the ease with which conception takes place if copulation occurs during a fertile period, it becomes apparent that in all the above cases pregnancy could not have been avoided merely by accident.

It is much more difficult to give decisive proof that disturbed ovulation is not ordinarily followed by pregnancy. Who can say if a disturbance at the beginning or in the middle of the menstrual cycle has affected nothing but ovulation, or if it has also affected the activity of the corpus luteum? On pages 46 and 54 of the original of our second edition, Smulders inserted in the margin two very valuable remarks on this matter: (a) "The vitality of the corpus luteum depends also on the more or less vigorous follicular evolution" and (2) "All follicles that reach maturity have not of necessity the same vigor; the spontaneous duration of the corpus luteum may depend on this."

Disturbed Ovulation Without Effect

[3] *Die med. Welt*, 1930, No. 10.

A study of the statistics of Latz and Reiner makes it difficult to believe that the people concerned took into consideration the disturbances that supervened in the first half of the cycle, and consequently anticipated or delayed the period of abstention. And yet according to the statistics, there were no consequences.

Similarly our tables confirm the fact that disturbed cycles are very frequent, but they are not usually accompanied by pregnancy. Thus, if we accept literally the Knaus-Ogino computation—ovulation taking place on the 15th day, or between the 16th and the 12th, previous to menstruation—it is difficult to see why, in Table IV, no conception resulted in those cycles that began on July 4, 1931, and February 19, April 21, and June 27, 1932. The same may be said of many months recorded in Table V, unless one admits, as we do, that the exceptional deviations of ovulation or of the activity of the corpus luteum, although very frequent, do not generally alter the period of fertility.

On the other hand, in two cases when the days established by our computation were exceeded by one or two days only, the woman became pregnant.[4]

Disturbed Ovulation with Effects However, as we have just said, there can be exceptions. Two recent cases of such exceptions follow. In the first case, the woman in question was 28 years of age. Ovulation was much delayed and fertile. After the birth of twins, the husband and wife had successfully practiced abstention, according to the directions in this book, for several years. Then, on the 13th day of the current cycle, the woman suffered a severe fright; the following day, under a local anesthetic, a wisdom tooth was extracted; then on the 17th day there was a beginning of tonsillitis. In short, there had occurred a series of quite definite disturbances. Intercourse took place on the 25th day, and a pregnancy of 276 days' duration resulted.

Until this time, the form of variation had covered 27 to 33 days;

[4] Table III, cycle of November 14, 1936; Table V, cycle of July 31, 1939.

however, because of the disturbances mentioned, ovulation took place only on the 25th day, although the normal computation marked the 23rd day as the earliest free one. The upset had indeed been so great that it was still felt after the birth, for subsequently, the cyclic variation was 32 to 37 days.

In the second case, that of a woman recently married, ovulation was extraordinarily anticipated and fertile. Before and after the marriage, the form of variation was 25 to 29 days, interrupted by a few days, but never any anticipation. Periodical abstention, according to the computations outlined in this book, was successful for over a year. But then, at the start of the cycle beginning on January 13, 1949, a long and tiring journey, coupled with a fright, must have induced premature ovulation. As a precaution, intercourse was discontinued one day before the limit, on the fifth instead of the sixth day. Nevertheless, a pregnancy resulted and culminated in the birth of a healthy boy.

These two examples make it imperative for us to insist on the rule propounded by Smulders: when any disturbance precedes or accompanies ovulation, prolong abstention to the right and the left of the limit from one to three days.

We have thus reached one of the most basic distinctions of our work. The form of variation which is at the base of our computation is one thing; disturbed cycles, which are not generally to be taken into account, are another. Smulders was the first, to our knowledge, to make this distinction clear. This alone would be enough to give his name a place of honor with those of Knaus and Ogino.

Going through the gynecological reviews, we have been surprised to find that this distinction has remained comparatively unknown. And yet it cannot be ignored. Let us take all the cases of menstruation, delayed or advanced, mentioned in our five tables. Had it been necessary to take note of all these deviations before starting their computation, people would have had to wait not only a year, as Knaus and

Distinction Between the Form of Variation and Disturbances

Ogino insist, but indefinitely, in order to know the extreme deviations. And if, tired of waiting any longer, they had based their computation on these deviations, what would have remained of the period of sterility? It would have been reduced to little or nothing.

What we have said here is well illustrated by an article mainly favorable to the Knaus-Ogino theory and published in 1939 by Dr. Schultze, the doctor in charge of the Gynecological Clinic of Wuppertal-Elberfeld. Over a period of fourteen years, a woman shows the following cycles: one each of 21, 22, 23, 31, and 33 days; twice 30 and 32 days; 9 times 24 days; 14 times 25 days; 29 times 26 days; 34 times 27 days; 26 times 28 days; and 20 times 29 days. It should be obvious that cycles of 21 to 23 days and those of 30 to 33 days, which in 14 years did not appear more than once or twice, are exceptional cycles, especially since in the table there are included four confinements, which always produce some upset. The normal cycles of the woman varied therefore from 24 to 29 days. It is even doubtful if the cycle of 24 days, which occurred only 9 times and that of 25 days which happened 14 times—an average of once a year only—should be considered as normal. It would be necessary to have at hand the full table, in order to see if these advanced menstruations were the result of some disturbance or if they could be considered for some time as part of what we have called variation, because of its fluctuations.

However, the author makes no distinction between a normal cycle and a disturbed cycle. He seems not even to take it into consideration. And thus he makes the false conclusion that the Knaus-Ogino theory, although right in theory, is useless in practice, because one never knows with certainty if in the future there will not occur longer or shorter cycles. But this question was settled long ago. The computation of the days of sterility and of fertility has to be based only on the form of variation, and it is only when a patent disturbance occurs that people are advised to prolong abstention for a few days.

Part III: Practice

Conditions Necessary
for the Computation

It is necessary to know the form and length of variation of the cycle. The previous chapters have revealed four fundamental data which are given here together.

1. The spermatozoa, once having entered the genital organs of the woman, do not retain their fertilizing power for more than 30 hours.
2. The ovum is capable of being fertilized only for two hours after having left the ovary; after this time it wastes away and dies.
3. Ovulation, which causes the two hours of fertility, takes place normally on the 15th day before the next menstruation.
4. The corpus luteum, which is formed after ovulation, is normally active for 14 days. During this time it prevents other ova from maturing. If fertilization has not taken place, the corpus luteum ceases activity at the end of 14 days, and the menstrual flow begins.

There are, therefore, two basic facts that regulate the computation of the days of fertility: the activity of the corpus luteum which, unless

disturbed, normally lasts 14 days. This is true in all women. And the period of maturation of the ovum, a limited period which differs from woman to woman. It is clear that this is the decisive element.

Difficulties in Computation   It would be simple to compute the days of sterility and of fertility if, at least in a specific woman, the menstrual cycles were always of the same length. In that case all that one would have to do would be to subtract from the length of the cycle the 14 days, and two more days to take into account the 30 hours during which the spermatozoa keep their fertilizing power. Thus would be found the three days only of necessary abstention from copulation if one wanted to avoid pregnancy for the month.

But matters are much more complex than this. First of all, many women, even those in perfect health, do not have their menstrual period every four weeks, but either every five or three and one-half weeks. Even more complex is the continual change of the beginning of menstruation. This beginning oscillates in the life of a woman like the needle of the compass of a moving ship.

Differences in Menstrual Cycles   The return of menstruation is neither regular nor most often exactly on the 28th day. Recent researches have refuted this view which was once accepted by lay people and doctors alike.[1]

---

[1] It is difficult to understand how even in 1938, A. Wiessmann (Giessen), in an article on the length of pregnancy (*Klin. Wochenschr.*, 1938, No. 46) could state, after having compared 5,000 birth charts in the Gynecological Clinic of Giessen, that 91 per cent of all women have their "periods" regularly every 28 days. Knaus had no difficulty in refuting this. (*Zentralbl. Gynäk.*, 1939, pp. 194-199)

When, however, one finds such a statement, one is tempted to doubt the faith one can place in statistics. Dr. R. de Guchteneere writes with some reason: "Statistics are an intrinsically deceptive art, especially when they are concerned with vital phenomena." (*Saint Luc Médical*, Brussels, 1939, No. 3, p. 199)

Ogino found, as early as 1932, that out of 1,000 cycles of different women, 10 per cent went below 25 days, 9 per cent only reached 28 days, 13 per cent rose to 30 days, 13 per cent to 31 days, and 31 per cent went beyond 31 days. (*Zentralbl. Gynäk.*, 1932, p. 727) (It is interesting to note that Japanese

It is true that all these statistics prove only in a general way that the duration of cycles varies a great deal. What is exceedingly important is to know between what limits the occurrence of menstruation oscillates for each particular woman. One example will show this.

The menstruation of a young woman, in good health, and leading a perfectly normal life, took place during one year at the following intervals: 30, 26, 27, 29, 26, 26, 31, 30, 27, and 26 days. As these figures suggest, and all observations confirm, the variations in the case of one specific woman normally keep within quite narrow limits. These limits of the normal beginning of the menstrual flow we call *the form of variation.* In the case mentioned, the form of the variation is from 26 to 30 days. **Definitions**

The number of days over which the beginning of menstruation extends is called *the index, or the span of the variation.* The index in this case is five days (26, 27, 28, 29, 30). But we find one isolated cycle of 31 days. This prolongation could well be attributed to some quite deep emotion felt by the woman. Similar disturbed cycles, exceptional ones, do not belong to the form of variation and should not

women frequently have long menstrual cycles.) Smulders' observations confirm these data. The number 28 has none the less its value as an average. Latz and Reiner, comparing 3,607 cycles, got an average of 28.1 days. English authors found that 78 per cent of the menstrual cycles of women under observation varied from 25 to 31 days. The figure 28 is, therefore, in the middle. (D. Gunn, Jenkin, and A. L. Gunn, *J. Obstetr.,* 1937, No. 51.) They succeeded in getting 950 women to write down the dates of their periods for one year. However, out of 950 lists, only 209 could be regarded as completely trustworthy. (A low percentage which must give food for thought to those who, on the word of a woman, feel justified in attacking the Knaus-Ogino theory.) Of these 209 women, not one records a cycle of less than 22 days, and yet cycles of 21 days are still normal. Only 2 per cent of the cycles were below 24 days; 95 per cent fell between 24 and 36 days and of these 78 per cent ranged between 25 and 31 days; 3 per cent of the cycles exceeded 36 days.

Similarly, in 1936, Carvalho Azevedo, of the Gynecological Clinic in Rio de Janeiro, found that out of 518 menstrual cycles of 50 women observed by him over a period of four years, 90 per cent extended from 24 to 34 days.

be taken into account in the computation; and less and less so in proportion to the extent of their deviation from the normal.

Fundamental Basis of Computation

What, therefore, is important is to discover for each given woman the form and span of the variation of her cycles. The failures that are attributed to the Knaus-Ogino theory very often arise because people apply the theory before having accurately established both the form and the span of the variations.[2]

But the important question which arises immediately is: "How can a menstrual cycle that belongs to the form of variation be distinguished from a disturbed cycle?" The answer is quite simple. The more frequent the cycle and the more it approaches the length of 28 days, the more it can be taken as a normal cycle. (These cycles obtain especially at times when nothing has happened to disturb the woman.) And, on the contrary, the more the advance or retardation may be attributed to some disturbing element, or the more a cycle varies from its ordinary length, the more it can be presumed that we have met with a disturbed cycle. However, should there be any doubt about it, the cycle should be accepted as belonging to the form of variation.

What the extreme limits of normal forms of variation are, as well as normal indexes has been established by the statistics of Smulders and Latz. These statistics really show that a normal form does not fall below 21 days nor rise above 35 days. Cycles longer or shorter than these are not normal.

Index

As for the index, it covers from three to seven days with 90 per cent of women, and usually from three to five days, according to

---

2 One can always read that some woman has conceived in the *praemenstruum*, another in the *postmenstruum*. This is a very inaccurate mode of expression. With a woman whose cycle is from 22 to 25 days—the case is a fanciful one—intimacy may produce results from the fourth day on and, therefore, at the beginning of the ordinary *postmenstruum*. If, on the other hand, a woman's cycle rises to 31 to 36 days, conception is still possible on the 25th day and, therefore, at the end of the usual *praemenstruum!*

Smulders. Indexes of only two days occur very seldom. As for a woman whose menstruation always begins on the same day, "she is still to be found."[3]

Indexes that exceed seven days are exceptional. From this it is but a step to indexes of pathological range. These alone prevent a reliable computation of the period of sterility. Fortunately they are very rare, and even when they occur can often be reduced to normal dimensions by medical treatment.[4]

Generally, the form of variation of the cycles of a woman keeps a constant line from the first year when, as a girl, she reached full development, up to the change of life.

Professor Knaus, keeping a record for nearly 20 years, was able to verify that the form of variation of one woman had been constantly between 26 and 30 days. Save during the years of development and of six pregnancies and periods of breast feeding, her periods during the remaining 13 years never exceeded the form of variation, except for six times by one day, and once by two days. Menstruation began at the age of 13. For four years the cycles oscillated one way or the other in a very capricious way, reaching with anticipations or retardations up to 20 days or more. This is normal during the two to five years of the developmental period. An analogous state reappears at the change of life, when the form of variation is less constant. During either of these periods a reliable computation is impossible. Menstrual periods

---

[3] This allows us to judge of the value of eight "exceptions" to the Knaus-Ogino theory published by Dr. Slamova in *Zentralbl. Gynäk.*, 1936, p. 1407. Among these eight cases there are three with an index of one day and two with an index of two days. No more need be said of the value to be attached to this table.

[4] Smulders, in his work, quotes only one case, the first of the kind he has met in which the absence of cyclic form resisted all treatment. The menstrual cycles of the woman in question were successively 24, 37, 34, 11, 38, 31, 12, and 64 days. Treatment carried out for the last three months brought no improvement; the Knaus-Ogino theory could not, obviously, be applied.

become normal only at the end of the developmental period and remain so until the change of life.[5]

A glance at the statistics of Latz and Smulders or at our five tables confirms what is suggested by the case mentioned by Knaus. But, contrary to what might be deduced from this case, we see that deviations are very frequent and at times considerable. Moreover, a more careful examination of those statistics and of our five tables reveals two important facts:

Break in Form of Variation

1. That a violent disturbance, like the exhaustion following childbirth or an illness, may cause a break in the form of variation. See Table V, 1936-1937. A special chapter is devoted to these breaks.

Oscillatory Movement

2. Besides these breaks of a more or less pathological character, we note that the form of variation seems to be subject to a slight oscillatory movement. With the passing of years and without any obvious cause, it moves a little to the right or left, but ordinarily by only one day.

The following is a concrete example. For nine months, the periods of one woman began between the 27th and the 28th day. Then for three consecutive months on the 26th day. The variation from 27 to 29 days had changed to one of 26 to 28 days. The same deduction may be made from Table II. During the year 1936, the menstruation had kept to a variation form of 23 to 26 days, while, in 1938, it re-

[5] Yet, during the period of development and at the change of life, periods are not always true ones. Recent investigations, like those of Edgar Allen in 1937 and Knaus (*Med. Klin.*, 1935, pp. 371-375 and 410-412) show that in these two periods a flux may occur although it was not preceded by any ovulation nor by any activity of the corpus luteum. Conversely, when there is any disease of the mucous membrane of the womb, there may be ovulation without the menstrual hemorrhage being necessarily produced. But these are abnormal unhealthy cases which do not upset the laws on which the application of the Knaus-Ogino theory is based. At most, the fact that such cases do occur may put us on our guard, and help us to avoid speaking of a failure where there is no failure.

turned to that of 22 to 25 days, as it had previously been in 1934. In Table V, one meets with a continuous movement between 28 and 31, and 27 and 30 days, excluding the break which occurred in 1936-1937.[6]

Whatever the theoretical explanation of this oscillatory movement may be, it can be dealt with in one of two ways. (1) The computation is adapted each time to the new form of variation. This presupposes an accurate note being made of the dates of the periods, and this should always be done. This method gives a longer period of sterility and is easily applied by doctors and educated people. (2) The form of variation, as it appears from the notes of an entire year, is increased by one day on the right and one day on the left in the table that one has prepared. This method is especially recommended when the computation is made without the help of a doctor, or when maximum safety is desired.

As has been stated above, the span of variation is ordinarily only

[6] As can be seen, we feel that an absolute distinction must be made between the pathological deviation or break and the undulatory movement which has a physiological character. The two have been confused up to the present under the one name of "displacement of the period." Disturbances themselves come under this heading in current literature.

The breakdown is attributable to an easily recognized cause, not so the wave motion. The latter generally preserves the amplitude of variation, although it displaces it slightly. In the break, on the other hand, the form and the index of variation are frequently disrupted. Table V, year 1936-1937, shows a classical example of such a break.

Undulatory movement is not sufficiently explained by disturbances alone, nor by the fact that, with the present way of counting, hours are not taken into consideration. (Take the case of two menstruations: the first beginning a little before, the second a little after midnight; different dates will be assigned to them, whereas two others, beginning on the same day, are put down for the same date, even if there are 22 hours between them—obviously in different months.)

Smulders mentions undulatory movements several times in his book. He calls it "golving," the term we use, and year by year he adapts his computation to it, so avoiding any failures.

three to seven days and it would be wise in practice to use an index of five days instead of three, of six days instead of four, or of seven days instead of five. The increase of the index should be made especially on the near side of the 28th day, thus counting 24 to 27 days instead of 24 to 26 only, and 28 to 32 instead of 29 to 32, even in spite of the fact that the notes seem to demand only 24 to 26, and 29 to 32, because a movement toward the average 28 is always possible.

We would like to assert here an additional instruction which results from the observation about the irregularities. As these irregularities, although notable, are not very often recognized, we recommend that two days be added to the time of variation before the date marked and two days after. This will practically guarantee 100 per cent protection against an undesirable pregnancy. With this instruction we do not overthrow a rule, but take life into consideration. This does not mean that the time of abstinence is too long, for the manifestation of ovulation in the second half will shorten this time considerably.

In order that the form of variation may be known at the time of marriage, every young woman should be instructed on the preparation and keeping of accurate records regarding her menstrual cycles, and of the causes which make them earlier or delay them beyond the normal.

How to Compute the Days of Fertility and of Sterility

Computation of the Fertile Days

Since the works of Knaus and Ogino have been known, many married people have been able to conquer supposed sterility. Professor Albrecht speaks of many successes in this line. Out of 60 women whose conjugal relations had been too few and left to chance during the days of sterility, 26 became pregnant in the first months after they had been told the most propitious days for conception.[1] The same success was met with by Dr. Rumpf. He succeeded in 45 out of 90 cases in helping women who were assumed to be sterile for seven or nine years, to become pregnant.[2]

We would like to take this opportunity to rectify an invalid view which is widely held. There certainly are women, or better, couples, that are sterile—we say couples, because sterility may be caused by

Conquering Supposed Sterility

---

[1] Albrecht, *Münch. med. Wschr.*, 1933, p. 1682 ff.
[2] Rumpf, *Zentralbl. Gynäk.*, 1937, p. 1598 ff.

the man,[3] but there are couples with whom conception is especially easy. Anyone who has read this work attentively will understand why.

General Instructions The days most favorable for conception range ordinarily between the 12th and the 15th day after the beginning of the period.[4] We shall later on give the formula for accurately determining these days in each particular case. According to Holt, controlled relations during the period of fertility offer the best chance for conception. Married people who desire children will do well, also, to abstain before and after the period of fertility.

Noting of Periods

Keeping Records In order to be able to know at least some of the days of absolute sterility each month, the woman must know, even if only approximately, the duration of her cycles. It will not be possible to make use of every day of sterility until accurate records for a period of one year have been kept. Knaus, Ogino, and Smulders all agree in this. Latz believes that eight months' time is enough and at times even less may suffice. We maintain that a year will give more accurate calculations.

It is, therefore, indispensable to take faithful note of the occurrence of the periods. And it will be necessary to do so all one's life, never

[3] The most recent publications increasingly attribute sterility to the husband. Some even speak of 50 per cent of the cases. "Let us no longer speak of sterile women, but of sterile marriages," insists Dr. L. Devraigne. This doctor, who for ten years has been in charge of a center for the treatment of sterility in Paris, declares that in one-third of his cases, he has found the cause in the man. (*Paris med.*, 1938, p. 369) Similarly, Thiessen, *Med. Klinik.*, 1939, p. 210.

[4] In a report made at the meeting of the Gesellschaft für Geburtshilfe und Gynäkologie held in Vienna on Sept. 13, 1938, Dr. L. Kraul had unfortunately to state that "astonishing ignorance about the days most favorable to conception still prevails." Like ourselves, Kraul recommends intercourse from the 12th to the 16th day of the cycle, if it is to be effective.

trusting to one's memory. It is impossible to stress this point too much; but it should be remembered that memory and oral information nearly always prove inaccurate.

One woman assured a doctor that her menstruation, which up to then had occurred regularly every four weeks, now came every 24 or 25 days. There was nothing to authorize a disbelief in her declaration. Fortunately, for a long period the woman had recorded on paper the date of her periods, without ever computing the length of the cycle. She was extremely nonplussed when, counting the length, it was established that her cycle had kept constantly to the form 27 to 29 days. Knaus and Smulders mention similar cases. In the same way, the husband to whom we owe the valuable data in Table V of this book writes: "This table has astonished me, because from it it appears that the cycle of my wife is not as regular as I had assumed." If surprises like this come to people who have kept accurate records of the periods for a long time, what may happen to those who rely on their memory only? Anyone who wishes to avoid failure should remember this point.

Every first day of the period must, therefore, be put down by the husband or wife, month after month, in a notebook, a calendar, or much better, on a table like the ones in this book. This record should never be destroyed.

It is sufficient to put down the first day of menstruation; how long menstruation lasts is of no importance. It usually lasts from three to five days and at times only two or even one day. In a few cases it goes on for eight days. Longer periods are not healthy and a physician should be consulted in the matter.

Details About the Menstrual Flow

When we speak of menstruation, we must note that there are also other discharges of blood from the vagina but which ordinarily last

Real and False a much shorter time: one or two days only. Also, the blood is of a
Menstruation different color, viz., light red. These discharges may well be an un-
healthy sign, in which case they need medical treatment. However,
these discharges should never be confused with menstruation proper
as the whole computation would then be totally wrong.

This type of loss of blood occurs frequently in the early months
after childbirth, after operations, because of a change of climate, or
for other reasons. It may occur at the very time when the fertilized
ovum fixes itself in the matrix, about ten days after conception; there-
fore, more or less at a time when menstruation was expected. It also
occurs at the time of the false menstruation, or fortnightly menstrua-
tion. As the name implies, this loss takes place in some women at the
time of ovulation, and with the other phenomena of ovulation, consti-
tutes a very valuable index for the fixing of the period of fertility.

From the foregoing, we can deduce the following conclusion, If a
loss of blood occurs within 10 or 20 days after menstruation, we have
presumably to deal with an ovulation loss, or a hemorrhage and not
menstruation proper.[5]

Neverthless similar cases may prove to be real menstruation. This
may happen especially when the menstrual cycle has been interrupted
by a disturbing event, such as grave shock, excessive exertion, sick-
ness, etc. To confuse a hemorrhage of a different nature with men-
struation would be as mistaken as to confuse regular menstruation
with a hemorrhage. Smulders in his work mentions one case of such
a mistake (Case No. 30). The menstrual cycle of a woman, after a

---

[5] It is this loss of blood that leads astray several authors who think they can
prove that intercourse during the premenstrual period can be fruitful. Bolaffio
is one such author. Without knowing it, he betrays his error himself in speak-
ing of the case where intercourse took place only toward the end of the month
"until traces of the menstrual flow appeared." (*Zentralbl. Gynäk.*, 1933, p.
2610) These traces were not from menstruation, but from an ovulation dis-
charge and it is not surprising that intercourse then taking place was fertile.

confinement, had been: 46, 30, 32, 31, 31, 29, 32, 33, and 32 days. She had sexual intercourse with her husband during the first eight days and the last eleven days of a cycle presumed to be of 33 days. The menstruation which had ended the previous cycle of 32 days had begun on April 10th. On April 24th, 14 days later, the woman got very tired and suffered a loss of blood which was accompanied by all the symptoms of ordinary menstruation. The couple knew nothing about broken cycles and starting, therefore, from the menstruation of April 10th, they repeated their intercourse on April 30th—too early even according to the computation—and continued it on May 2, 5, 8, and 10. The woman became pregnant. These people had fallen right in the period of fertility because they had confused the loss of blood on April 24, with the menstruation proper.

Hence this important point should be noted. However much anticipated or retarded proper menstruation may be, the computation of the new cycle must start from the actual beginning of the menstruation and not from the date when it was normally expected. Proper menstruation, therefore, always begins a menstrual cycle, whether it comes early or late.

Other Irregularities

It may happen that menstruation is interrupted, only to return later. **Interrupted** In such a case one should put down on the calendar the day when the **Menstruation** loss of blood was larger. If the interruption has lasted only a short while, it would be enough to add from one to three days—before and after—to the period of abstention. If the interruption were more prolonged, it would be wiser to extend the abstention to the entire cycle, and also to prolong abstention a little during the following month. As we know menstruation can reappear once or even several times during pregnancy, and in that case it will often be possible to determine ex-

actly the day of conception and of confinement. This is also possible, if, before and after the day of conception, there was fairly long abstention.[6] (See examples in Tables II and V.) Similarly it is then possible to fix in advance the probable date of birth.

The Knaus-Ogino theory can also be of great use in actions for affiliation of illegitimate children, although it is necessary to proceed with much prudence in the matter.

How to Compute the Length of Cycles

It is a very important as well as complex matter to be able to measure exactly the length of the different cycles. The day on which menstruation begins is taken as the first day of a cycle. The last day of the cycle is the day before the next menstruation begins. In our graph these two days are shown in black.[7] Hours are not counted. Whether menstruation begins at 1:00 A.M. or at 11:00 P.M., nothing but the date is put down. Similarly the abstention periods begin and end at midnight.[8]

Let us show what we mean with the help of Table I. The woman whose case we will take had her first menstruation on January 1, 1936;

[6] With regard to the duration of pregnancy, research in the last few years has made definite progress and gone beyond the findings of Nägele. Professor Albrecht now thinks that the average duration of pregnancy is 272 days. Knaus gives 273 days. Thanks to careful research made by Anselmino and Speitkamp on no less than 15,039 births, they reach an average of 283 days, but counted from the last menstruation. "Forty-four per cent of all women are confined around 283±5 days." (*Münch. med. Wschr.,* 1938, pp. 588-589)

  If we consider the 14th day as the average limit of conception, and taking into account the normal activity of the corpus luteum which lasts 14 days, too, we get 283−14=269 days. On the other hand, Friedl, Rindler, and Geller (*Arch. Gynäk.,* 1939, pp. 26-43) fix pregnancy at 266 days.

  By comparing these four figures—273, 273, 269, and 266—we get the figure 270 as a pretty sure average. All of the cases in which—while this work was in preparation—we have been able to establish the duration of pregnancy ourselves, confirm this conclusion.

the next period occurred on January 28. This cycle was of 27 days: from January 1 to 27, inclusive. The third period began on February 25. On the previous day there had ended a cycle of 28 days, of which 4 were in January and 24 in February. A fourth period beginning on March 25, thus ended on March 24th a cycle of 29 days, 24 days of which were in March and 5 in February, because 1936 was a leap year. This accuracy is not pointless! We know from experience that the varying length of the months in the calendar—31, 30, 28 (29)— is a frequent cause of miscalculation.

In 1934-1935, the form of variation was from 28 to 30 (31) days. In 1936-1937 from 27 to 29 days. The exceedingly short cycle of December, as well as the three extremely long cycles represent disturbances. Therefore, these four cycles do not belong to the form of variation. They can thus be omitted for purposes of computation.

How the Computation is Made

Let us assume that a woman has kept an exact record of a whole year of the data of her periods; that she has about 12 different cycles of menstruation and that from these she has been able to find her own

---

[7] Ogino, Knaus, Tobler, etc., represent menstrual cycles with different types of graphs. Ogino marks in black the whole duration of menstruation and that twice over, once at the end of the preceding month and once at the beginning of the next month. Knaus does the same, but is content to mark the first day. These systems have one disadvantage. As the eye rests on the graph it is tempted to count one day too many for each cycle. In point of fact, Tobler adds it in order to make the computation easier. But in this way each month is given one day too many. To avoid all these pitfalls, we have, after long thought, resolved to adopt our own method of presentation. The little black squares serve only as a framework to throw into relief the length of each cycle. They have no direct connection with menstrual periods. The eye has no difficulty in moving from each square on the right to the upper row of figures and there it finds straight away the duration of the given cycle.

[8] By making a note of the hours it is sometimes possible to delay a little the beginning of abstention or to hasten its end.

form of variation. The following would be the way to find, in her case, the days of fertility and the days of sterility, and this paragraph is of utmost importance to this book.

Formula for Calculations Subtract from the shortest of the cycles included in the form of variation the number 19. Thus is obtained the last day still assuredly sterile before the beginning of the period of fertility. Now subtract from the longest cycle of the form of variation the number 10. In this way the first day assuredly sterile of the second half of each cycle is obtained.[9]

The formula therefore is: minus 19, minus 10. (1910, the year of

[9] This calculation follows that of Smulders, but is stated in a slightly different form. In 1934, Smulders attributed to spermatozoa a possible survival of 2-3 days, whereas it is 30 hours at the outside. On the other hand, supported by Takata and indirectly by Knaus, we admit that the most advanced day for fertile ovulation is the 17th day and not, as Smulders, Holt, and Ogino make it, the 16th day before the coming period. We thus get exactly the number of days of continence established by Smulders, the number approved by Ogino, recently adopted by de Guchteneere and applied with the greatest success by doctors in North and South America like Lataz, Reiner, and Carvalho Azevedo; and similarly in Switzerland, with one slight variation, at the Gynecological Clinic of Zürich University. As regards the formula of the computation, this is how Smulders reckons. $7+(12)+11=30$, obtained thusly: $(30-26)+8=12$.

Holt for the same form of cycle calculates thus: first day of abstention: $26-18=8$. Last day of abstention: $30-11=19$. As for our formula, it does not aim at giving the fertile days, as does that of Holt, but what people want to know most of the time: the first and last sterile day. In case of confusion, our formula is more favorable.

Knaus's formula is quite different. Knaus—and Miller concurs with him— fixes the sterile period at 13 days before menstruation and not at 14 only, as Ogino, Smulders, de Guchteneere, Holt, Azevedo, Latz, and ourselves do. To Knaus, indeed, the 15th day before the menstrual discharge is always the day of ovulation. However, he adds one day for safety. In the postmenstrual period, Knaus adds a day, too, to the sterile period. Expressed our way, his formula becomes: -18, -12. This way of counting, it is true, may suffice a certain time, even for a long time, but, as a general rule, we believe it to be absolutely inadequate. On the other hand, the computation of Knaus may require as many and even more days of abstention than ours, since Knaus does not distinguish clearly the form of variation for disturbed cycles.

ORIGINAL TABLE I

■ = Beginning of menstrual cycles   ■ = Last day of the cycle; day preceding next period

Date of beginning of Menstruation	Length of Cycle																																				Date Cycle Ends
	sterile										fertile										sterile																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	
11 January 1934	■																														■						10 February
11 February	■																											■									10 March
11 March	■																												■								8 April
9 April	■																												■								7 May
8 May	■																												■								5 June
Records interrupted																																					
17 March 1935	■																													■							15 April
16 April	■																													■							15 May
16 May	■																											■									12 June
13 June	■																														■						13 July
14 July	■																											■									10 August
11 August	■																												■								8 September
9 September	■																											■									6 October
7 October	■																													■							5 November
6 November	■																																	■			10 December
11 December	■																			■																	31 December
1 January 1936	■																									■											27 January
28 January	■																										■										24 February
25 February	■																											■									24 March
25 March	■																										■										21 April
22 April	■																										■										19 May
20 May	■																											■									17 June
18 June	■																									■											14 July
15 July	■																																■				17 August
18 August	■																									■											13 September
14 September	■																									■											10 October
11 October	■																														■						11 November
12 November	■																										■										9 December
10 December	■																										■										6 January
7 January 1937	■																										■										3 February
4 February	■																											■									4 March
5 March	■																										■										1 April
2 April	■																									■											29 April
30 April	■																									■											26 May
27 May	■																											■									24 June

the appearance of Halley's comet, may aid in remembering the formula −19, −10.) It should moreover be noted that the larger number is subtracted from the smaller number and the smaller number is subtracted from the larger. Briefly, the calculation is made as follows:

> **Number of days of
> shortest cycle minus 19** = **Last day assuredly sterile.**

> **Number of days of
> longest cycle minus 10** = **First day assuredly sterile
> (in second half of cycle).**

Before illustrating our formula with examples, we shall explain more fully how it was derived.

When we subtract the number 14 from the shortest and longest of the cycles included in the form of variation, we get the earliest and the latest day of normal ovulation according to Knaus, that is, the 15th day preceding the next menstruation. But this day—always fertile—may oscillate according to Ogino from the 16th to the 12th day. One must, therefore, anticipate the earliest day by one day and delay by three days the latest possible day of ovulation.

Moreover, Takata—whose method is concerned directly with ovulation and not through the intermediary of the corpus luteum—says that he has found, in cases that agree with those of Ogino, that ovulation is always a little in advance of that found by Ogino himself.[10] Despite the reservation that we make, we do not think that this interesting finding can be set aside. That is why we anticipate by still another day the first day of ovulation according to Ogino.

The acceptance of a 17th day rests moreover on the following consideration. In the same way as Knaus—reckoning on a period of 14 days for the activity of the corpus luteum—concluded that the 15th was the day of normal ovulation, we too feel that because of the activity of the corpus luteum which is prolonged at times to 16 days

[10] *Arch. für Gynäk.*, 1938, p. 218.

(according to Ogino) we must fix the 17th day for the earliest day of ovulation. Lastly, the period of up to 30 hours during which the spermatozoa keep their fertilizing power has to be taken into account. To be on the generous side, this amounts to two more days.

The minimum number of days, therefore, during which copulation is liable to result in conception would reach the figure eight, in the purely imaginary case of a form of variation with cycles all of the same length: 2 (days duration of fertilizing power of the spermatozoa) $+2+1+3$ (days of ovulation) $=8$. With an index of three days this would mean: $2+8=10$. With an index of four days: $3+8=11$, etc. The smaller the index, the fewer will be the necessary days of abstention from intercourse, and vice versa.

Application of the Formula −19,−10

Application to Average Forms of Variation

Let us take first the case of a form of variation of from 26 to 30 days. The computation in this case is made as follows: 26 minus 19=7. This will mean that for this woman the seventh day after the beginning of menstruation is always the last day still certainly sterile before the period of fertility begins. Now: 30 minus 10=20. This will mean that the period of sterility will start again on the 20th day. The period of fertility in this case will extend from the 8th to the 19th day inclusively.

<div align="right">

General Rules for Computations

</div>

	Period	
Sterile	Conception Possible	Sterile from
7 days	12 days	20th day

|–|–|–|–|–|–|–||–|–|–|–|–|–|–|–|–|–|–||–|–|–|–|–|–|–|–|–|

It is evident that the less one approaches the limits of the period of fertility, the more one may avoid pregnancy; and conversely, the more one goes toward the center of this period the more likely is pregnancy to occur. This is valid in all cases. Nevertheless, a woman who leads

a very quiet life may perhaps be able—even for a long time—to have sexual intercourse on the first day of the period of fertility as well as on the last two days of the same period without any fear of becoming pregnant. However, we do not guarantee this.

Another example of a computation for a normal form of variation considers the periods of a woman, which for a period of a year have oscillated between 24 and 29 days. Computation: 24 minus 19=5; 29 minus 10=19. Therefore, conception is possible from the 6th to the 18th inclusive. Similar cases are given in our Tables I, III, IV, and V.

It should, however, be noted that the days of menstruation coincide with the first few sterile days obtained by computation. Often people do not like to make use of these days; consequently, in practice, the period of sterility at the beginning of the cycle will become shorter. The longer menstruation lasts, the shorter will be the remaining days of sterility. It is important to note that the days of sterility, in our computation, begin with menstruation and not after it.

Application to a Very Small Form of Variation

After keeping an accurate record for a period of a year, the form of cycles of a woman was shown to be 23 to 25 days. Computation: 23 minus 19=4; 25 minus 10=15. Consequently the first four days (usually the length of time of her menstruation) were sterile, in addition to all those after the 15th day.

In similar cases, however, we would recommend that the length of maximum cycle be extended a little. In fact, should a disturbance delay considerably the maturation of the ovum, it would mean that the cycle might be extended to the average length of 28 days, without making the ovum sterile. Thus in cases of a very small form of variation, we suggest—as Smulders did—that the computation be made:

ORIGINAL TABLE II

■ = First day of menstrual cycle   ■ = Last day of menstrual cycle
    + = First and Last Day of Intercourse

	sterile			fertile												sterile													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
	Pregnancy; confinement June 2nd																												
	42 days after 1st period																					+							
14 July 1934	■			cycle of 39 days																					+				
22 August	■			cycle of 38 days																									
29 September	■																			+					■				26 October
27 October	■																			+	■								17 November
18 November	■																			+			■						12 December
13 December	■																	+	■										2 January
3 January 1935	■																	+					■						27 January
28 January	■																+						■						21 February
22 February	■																	+					■						18 March
19 March	■																+					■							10 April
11 April	■															+						■							4 May
5 May	■																			+			■						29 May
30 May	■																	+				■							22 June
23 June	■		+																	+	■								15 July
16 July	■																+								■				12 August
13 August	■																				■								2 September
3 September	■																+							■					29 September
30 September	■																+					■							23 October
24 October	■															+						■							17 November
18 November	■																+								■				13 December
14 December	■																+				■								2 January
3 January 1936	■															+							■						29 January
30 January	■																+						■						23 February
24 February	■													+								■							17 March
18 March	■													+									■						11 April
12 April	■													+									■						6 May
7 May	■												+								■								30 May
31 May	■												+								■								22 June
23 June	■												+										■						18 July
19 July	■															+					■								10 August
11 August	■																					■							3 September
4 September	■																							■					29 September
30 September	■												+								■								23 October
24 October	■												+									■							15 November
16 November	■												+											■					11 December
12 December	■												+								■								4 January
5 January 1937	■		+										+								■								25 January
26 January	■														+								■						20 February
21 February	■			+													+						■						16 March
17 March	■			+							+										■								6 April
7 April	■											+									■								29 April
30 April	■											+	pregnancy 268 days confinement Feb. 2, 1938																
18 April 1938	■		+														+												5 June
6 June	■			+																+	■								26 June
27 June	■			+																+		■							18 July
19 July	■		+																	+			■						11 August
12 August	■													+									■						4 September
5 September	■													+								■							27 September
28 September	■												+								■								19 October
20 October	■		+														+						■						13 November
14 November	■																+							■					8 December
9 December	■													+							■								30 December
31 December	■													+									■						23 January
24 January 1939	■															+						■							16 February
17 February	■														+						■								16 March
11 March	■													+									■						4 April
5 April	■																						■						29 April

27 minus 10, for instance, instead of 25 minus 10, despite the fact
that the record indicates a short cycle. Therefore, the period of ste-
rility will start again on the 17th day, rather than on the 15th day, as
indicated below.

<div style="text-align:center">

Period
Sterile   Conception Possible Sterile from
4 days   12 days   17th day

I–I–I–I–II–I–I–I–I–I–I–I–I–I–I–II–I–I–I–I–I

</div>

Table II proves that our computation is valid in the case of very **Example**
short cycle forms. It should be noted that sexual intercourse was al- **According to**
ways effected without contraceptive devices. At the bottom of the table **Table II**
a pregnancy is indicated. The pregnancy was desired and intercourse
during the days of fertility proved effective. During the early days of
sterility there were few occasions of intercourse because of the con-
comitant menstruation.

The limits given by computation were often not strictly observed.
We explain why this infringement was not followed by pregnancy
thus: when the cycles are very short, the period of fertility seems to
be very limited. On the one hand, the ovum needs time to mature, even
if it is not always 13 to 14 days as Schröder indicates. On the other
hand, the corpus luteum needs at least ten days for its own activity
because otherwise the ovum will not succeed in fixing itself in the
matrix.

Therefore, it is easy to understand why the copulation on the 11th
day in March, 1937, had no consequences, while it was followed by
conception when it was repeated two months later. The menstrual cycle
of March-April, 1937, was of 21 days. If we deduct from 21 the aver-
age figure of 14 (the length of time needed for the ovum to mature),
we get the 7th day as the day of ovulation. Intercourse took place on
the 11th day; long before that, the ovum had died. That the copula-

tion of the fifth day of the same cycle March-April, 1937, and later at the beginning of the cycle of June, 1938, should have had no conse- quences, strengthens our conviction that the fertilizing power of the spermatozoa is of very short duration and that the ovum requires a certain period of time to reach maturity.

Application to a Wide Form of Variation

Contrary to what we have said of the short form of variation, that is, the need to move forward the end of the fertile period toward the 28th day, in this case we need to move back the beginning of the period toward the same average of 28 days.

For example, a young woman in good health had kept an account of her periods for nine months. The record showed cycles as follows: 38, 30, 33, 33, 30, 32, 33, 27, and 33 days. The form of variation is from 30 to 33 days; nevertheless, we shall take it as being from 29 to 33. Therefore, the computation is: 29 minus 19=10; 33 minus 10=23. In this particular case it is evident, because of abstention before and after, that conception could not take place except between the 18th and the 20th days. The first 10 days of the cycle, which include the menstrual period, were sterile, as well as all those after the 23rd day, as indicated below.

	Period	
Sterile	**Conception Possible**	**Sterile from**
10 days	**12 days**	**23rd day**

I-I-I-I-I-I-I-I-I-II-I-I-I-I-I-I-I-I-I-I-I-I-II.-I-I-I-I-I-I-I

Application to an Irregular Form of Variation

The menstrual cycle of a 30-year-old woman who, although subject to attacks of asthma, had perfectly healthy genital organs were as

follows: (June, 1935, to January, 1936) 32, 28, 42, 31, 31, 33, and 40 days; (January, 1938, to March, 1939) 40, 31, April and May omitted, 30, 37, 36, 29, 35, 30, 39, and 37 days respectively.

This is clearly an irregular form of variation. The fact will appear even more evident if we make a graph of it. In similar cases, we can no longer make any distinction between a form of variation and disturbances. And so the only thing to do is to make the computation with a very large form of variation; namely, from 28 to 40 days, which gives an index of 13 days. Consequently the computation is: 28 minus 19=9; 40 minus 10=30.

	Period	
Sterile	**Conception Possible**	**Sterile from**
9 days	**20 days**	**30th day**

I–I–I–I–I–I–I–I–I–II–I–I–I–I–I–I–I–I–I–I–I–I–I–I–I–I–I–II–I–I–I–I–I–I

It is easy to see that the days of abstention are from the 10th day to the 29th day inclusive; from the first day of the cycle to the 9th day, and all those after the 30th day are sterile.

Application to an Inordinately Long Form of Variation

It is difficult to meet with forms of cycles inordinately long and having small indexes, e.g., cycles of 32 to 35 days. On the contrary, it is possible to find some with a greater index, as from 32 to 38 days. (See Table V) In that case, as often happens, the previous cycles were shorter and one must always expect that they will resume the shorter form.[1] So in making the computation, the shorter form of variation

---

[1] The work of Smulders gives only three cases of very high forms of variation (cases 39, 40, 41) ; all three are quite extraordinarily high. After treatment, the cycles were reduced to 30-40 days. Smulders used the ordinary computation and never allowed intercourse after the first 12 days. He subtracted the last 11 sterile days from the longest cycle recorded. Experience justified his computation.

must be taken into consideration. Until otherwise proved, it must be supposed that this previous form of variation is still a potentiality. However, if the form of variation has always been as long, but there appears one average cycle of 29 days, such a cycle must be included in the form of variation, unless it is definitely ascertained that this was a disturbed cycle and not a form of variation.

Accepting the fact that ovulation nearly always takes place between the 12th and the 15th day, we do not recommend that more than 11 days at the beginning of the cycle should be considered as certainly sterile. It is only after confinement that the maturation of the ovum definitely takes a longer time.

Assuming that the form of variation of a woman is 32 to 38 days, but with one cycle of 29 days, the computation should be made as follows: 29 minus 19=10; 38 minus 10=28. The period liable to conception extends, then, from the 11th to the 27th day inclusive.

	Period	
Sterile	**Conception Possible**	**Sterile from**
10 days	**17 days**	**28th day**

I-I-I-I-I-I-I-I-I-II-I-I-I-I-I-I-I-I-I-I-I-I-I-I-II-I-I-I-I

In such a case it should not be too risky to resume intercourse from the 25th day, because even the time for the maturation of an ovum is limited.

Application to a Case Where the Form of Variation is not Sufficiently Known

The authors were consulted by a healthy young woman who knew only five dates of her menstruation: May 16, June 19, July 18, August 6, and September 16. These dates gave cycles of 34, 29, 29, and 31 days. The cycle of 34 days was explained by the fact that she had been subjected to a strenuous mountain-climbing expedition. The cycle of

29 days, since it had occurred twice, was certainly normal to the form of variation; the same is true of the cycle of 31 days.

In view of these figures, and the fact that her index was never more than five days, it was possible to build up around the 29th day a provisional index of eight days of which four days were after and four days before the 29th. We suggested the application of a wide form of variation, viz., of 26 to 33 days. We thus obtained 26 minus 19=7; 33 minus 10=23. The 7th day was the last day of sterility before the period liable to conception; the 23rd day was the beginning of the second period of sterility. The form of variation will be indicated more and more clearly by forthcoming menstrual cycles, and this knowledge will then allow a gradual reduction of the period of abstention to 12 days, if the index of 5 days as mentioned by the woman, proved to be absolutely correct.

What to do in a Case Where no Record of the Menstrual Periods Has Ever Been Kept

The woman should have a general idea of the length of her cycles; nevertheless, it will be necessary to expect considerable divergence from the real facts. Let us suppose that her menstrual periods occur regularly every four weeks. This will mean a tentative variation of from 24 to 34 days, and the computation will be 24 minus 19=5; 34 minus 10=24. From this we deduce that the first five days of the cycle are sterile and that, similarly, those after the 24th day will be sterile. Let us say again that menstruation will be concomitant with the first five days of sterility.

With further attention to the succeeding cycles, the woman will gradually improve her knowledge of her real form of variation. However, for some time she will have to add to the longest cycle and reduce the shortest one in her computation in order to avoid conception. The

only cycles which may be neglected in the computation are those which are disproportionately long or short and which obviously are due to a distinct disturbance.

Should one be consulted for advice on this subject, we suggest that it be recommended that only the first six days of the cycle be considered as sterile; thus the margin of security will be sufficient to avoid any consequences.

Warning about Errors in Computation

The following is an example of a failure resulting from a mistake in computation. (See Table III) The married couple in question already had several children and, therefore, decided to limit their sexual intercourse to the period of sterility. For five months the cycles had been from 27 to 30 days. From this the couple decided on a form of 27 to 30 days. They stopped intercourse on the eighth day which is in agreement with our formula 27 minus 19=8. However, they resumed intercourse two days too early, as they used the computation 30 minus 12=18, instead of 30 minus 10=20. This went on successfully for four months, but in the fifth month the wife became pregnant. We would also like to remark that at the middle of the sixth cycle the wife had been excessively fatigued. This may have caused a normal delay in ovulation, which in its turn caused the pregnancy. The pregnancy lasted 277 days, seven days longer than the average; this might mean that conception was even later. Had it taken place after the 19th day, this would prove an example of exceptional delay in ovulation.

Taught by this failure, the married couple subsequently kept strictly to our formula in their calculation of the period of fertility. Since then, for as long as we were able to follow their case, there were no pregnancies.

We shall end this chapter by a more general consideration. When

ORIGINAL TABLE III

■ = First day of menstrual cycle ■ = Last day of menstrual cycle

+ = Last, then first occasion of intercourse

Length of Cycle — columns 1–8 = sterile, columns 9–19 = fertile, columns 20–32 = sterile

Date of beginning of Menstruation	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	Date Cycle Ends
27 June 1936	■							+																			■						23 July
24 July	■							+																			■						19 August
20 August	■						+																							■			18 September
19 September	■							+										+										■					16 October
17 October	■							+											+									■					13 November
14 November	■							+											+	Pregnancy lasting 277 days; confinement, September 4.													
13 November 1937	■																							+					■				11 December
12 December	■																							+							■		11 January
9 January 1938	■																			+											■		8 February
8 February	■						+													+								■					7 March
8 March	■						+												+								■						3 April
4 April	■						+												+									■					1 May
2 May	■																		+								■						28 May
29 May	■						+												+									■					25 June
26 June	■						+											+									■						22 July
23 July	■							+											+									■					19 August
20 August	■																				+								■				17 September
18 September	■																		+										■				16 October
17 October	■																			+							■						12 November
13 November	■																		+							■							8 December
9 December	■																		+											■			7 January
8 January 1939	■						+												+									■					4 February
5 February	■							+												+								■					4 March
5 March	■							+											+							■							30 March
31 March	■							+											+														

■ = First day of menstrual cycle ■ = Last day of menstrual cycle

+ = Last, then first occasion of intercourse

Date of beginning of Menstruation	Length of Cycle			Date Cycle Ends
	sterile	fertile	sterile	
	1 2 3 4 5 6 7 8 9 10	11 12 13 14 15 16 17 18 19 20 21 22	23 24 25 26 27 28 29 30 31 32 33 34 35 36 37	
29 May 1930	■			26 June
27 June	■			25 July
26 July	■		27■	21 August
22 August	■		26■	19 September
20 September	■	19+	27■	17 October
18 October	■	18+	26■	13 November
14 November	■	19+ 20+	28■	15 December
16 December	■	18+ 19+ 20+	29■	13 January
14 January 1931	■ 7+	18+ 19+	28■	10 February
11 February	■ 6+	18+ 19+	27■	10 March
11 March	■ 7+	18+ 19+ 20+	25■	4 April
5 April	■	19+ 20+	24■	3 May
4 May	■ 7+ 8+	19+ 20+	30■	3 June
4 June	■ 7+ 8+	19+	31■	3 July
4 July	■	18+	29■	4 August
5 August	■ 7+	23+	29■	4 September
5 September	■ 7+	21+ 22+	29■	28 September
29 September	■ 8+	19+ 20+	27■	27 October
28 October	■ 8+	19+ 20+	26■	23 November
24 November	■ 7+	19+ 20+	29■	22 December
23 December	■ 9+	19+ 20+	28■ 29■	20 January
21 January 1932	■	18+	29■	18 February
19 February	■	18+ 19+	32■	22 March
23 March	■	18+	28■	20 April
21 April	■ 7+ 8+		27■ 33■ 36■	26 May
27 May	■ 7+ 8+		27■ 36■	26 June
27 June	■ 7+			1 July
2 July	■ 7+	20+	29■	27 August
28 August	■ 7+ 8+		27■ 31■	24 September
25 September	■	18+	31■	24 October
23 October	■	18+ 19+	29■	24 November
25 November	■		26+ 29■	24 December
25 December	■ 7+		23+ 27■	22 January
23 January 1933	■	18+ 19+	28■	19 February
20 February	■ 7+		25+	17 March
18 March	■ 7+	18+ 19+		13 April
14 April	■	Pregnancy		

people are fixing the day of their marriage, they would do well to take into consideration the menstrual cycle and arrange the marriage about one week before the beginning of the next menstruation. This is suggested not merely so that the couple may convince themselves personally—when menstruation begins again—that the Knaus-Ogino theory exists, but because it is not wise for conception to take place immediately after the excitement of the wedding or under emotional stress which usually accompanies the wedding trip. If conception does not occur immediately after the wedding, the husband and wife have an opportunity to prepare themselves physically and spiritually for their creative function. This is a very valuable advantage of the new discovery.

General Considerations

What to do in Case of Disturbances and of Illness

Disturbances

Since the first edition of our book, we have come to realize that some of the readers will doubt the practical value of our formula because of this and subsequent chapters. Therefore, we wish to make this statement: so long as a woman is in good health, has a stable form of variation, and has nothing out of the ordinary to disturb her psychic life she has nothing to learn from this chapter; but, on the contrary, from the moment she has lost her physical or moral equilibrium, she should study this chapter attentively.

Major Disturbances Any seriously disturbing events may hasten or delay menstruation. The deeper the furrowing produced by such an event, the greater will be the reaction caused on the menstrual cycle in which it occurs. Confinements, miscarriages, and serious illnesses are among major disturbances. Other disturbances displace menstruation in accordance with how much they affect the individual.

Among minor psychical disturbances we find great sorrow or exceptional joy; great anxiety, for instance, the fear of pregnancy; an

uncontrollable temper resulting in a violent outburst; remorse of conscience; physical or intellectual fatigue; irritability; fits of melancholy or of hypochondria; and excessive participation in unaccustomed sports.

Minor Disturbances

For example, a woman had a cyclic variation of 25 to 28 days. On the 17th day of the current cycle the woman had thought her baby had fallen out of his crib. The following day, the 18th after the last menstruation, the new period began. It had thus ended a cycle of 18 days—a broken cycle—but one without repercussions.

Another young woman who was married recently had her periods every 28 to 30 days. Just after the beginning of her menstrual cycle, the woman journeyed to the mountains. Just 23 days after the beginning of the cycle, menstruation began. It had been anticipated by six days, and ended a cycle of only 22 days.

Another woman, after two cycles of 30 to 34 days, experienced two interrupted cycles of 18 to 20 days. According to her, both of these broken periods were due to unaccustomed exercise. In spite of sexual intercourse during the first eight days, she did not become pregnant, a fact easy to understand because the cycle had been interrupted.

Latz mentions the case of a 27-year-old Nebraska woman whose cycles varied between 28 and 33 days for a period of over nine months. While she was ill with pneumonia there appeared a cycle of only 23 days, followed by normal cycles again of 34, 32, and 31 days. Latz also mentions the case of a 42-year-old Michigan woman whose cycles were as follows: eight varied between 26 and 29 days. Then came one of 24 days, attributed by Latz to intense cold. This was followed by four normal cycles. After the death of one of her brothers there appeared again a cycle of 25 days followed by normal cycles. Other similar examples can be found in Tables I to V.

The obvious question that arises is: "What happens when a disturbance affects the cycle in which it occurs?" We must make a dis-

tinction. If the disturbance happens before ovulation, it may either hasten or delay it. But if it happens after ovulation, obviously it can no longer affect it, but it might affect the following cycle.

How should we act in these circumstances? There are two ways. Either extend the computed length of the period of continence by abstaining two or three days at the beginning and two or three days at the end, or the procedure of Smulders can be used.

According to Smulders, the disturbance may come (a) at the beginning of the cycle, (b) about the time when ovulation takes place, and (c) after ovulation.

(a) The earlier the disturbance occurs, the more it hastens or delays the maturation of the ovum. Therefore, it becomes necessary to start abstention two or three days earlier than the time computed and to continue it for two or three days longer.

(b) If the disturbance arrives during the period of fertility, it would be enough to continue abstention for two or three more days.

(c) And, if the disturbance takes place after the period of fertility is over, the only thing liable to be affected by it is the corpus luteum. Since ovulation has already been completed, there is no fear of conception. Therefore, no special caution is necessary in this case, unless the disturbance occurs just on the eve of the next period of menstruation, at which time it may affect the ovulation of the next cycle. In that case it will be prudent to anticipate by three days and to continue for three days longer the abstention period of the next cycle.

Absence of Menstruation

Internal disturbances are the most difficult to reckon with. In very rare cases menstruation may suddenly cease. For example, Latz mentions the case of a 37-year-old New Jersey woman. The table published by Latz gives menstrual cycles varying from 24 to 30 days. Her

brother's sudden death gave her such a violent shock that one cycle went on for 51 days, double the length of an ordinary cycle. This suggests the disappearance of one complete cycle. However, the following cycles returned to her normal length of 26 to 27 days.[1]

An analogous phenomenon occurred with a woman discussed previously. After a confinement she took note of cycles of 29, 37, 35, and 37 days. The couple had no intercourse until the seventh day. They, therefore, took account of the break that had been made and resumed intercourse after the 31st day. However, a considerable disturbance immediately preceded this resumption of intercourse. When, subsequently, there was still no period on the 39th day, the woman expressed her fears to the writer. Later the woman told us that the period had begun on the 63rd day, and that about 15 days before that, she had felt customary intermenstrual discomfort, accompanied by a large discharge of leucorrhea. It is very likely that this, too, is a case of a transient loss of a period.

Intense fear or simply the approach of the change of life may also provoke the disappearance of periods. Such cases must be left to the doctor. The disturbance may have affected the mucous membrane of the womb, the corpus luteum, and, more seldom, the ovaries.[2] A woman who has cause to fear that the delay of her period is due to a disturbance of this type should suspend sexual intercourse until her next period.

---

[1] *Journal of the American Medical Association,* 1935, pp. 1241-1246.

[2] Knaus reports the case of a woman who in the space of a year and a half had had 12 periods with a normal form of variation of 23 to 26 days. Five of these periods, however, took double the time to begin, viz., 48, 48, 50, 51, and 52 days. Knaus thinks that one of the ovaries was only functioning intermittently. Smulders, on the other hand, wonders if this is not simply a case of unusually long cycles.

Illnesses

Any serious illness may disturb the form of variation. Abstention is then a self-evident necessity. During mild illnesses it would be enough to extend the period of abstention by a few days at the beginning and at the end of the computed period of fertility. As the woman regains her strength, the form of variation gradually returns to the normal, and we gradually allow a return to the normal period of abstention. The reader probably wonders whether an unexpected pregnancy can take place during a sudden illness that has hastened or delayed ovulation. Smulders doubts it very much.

A Break in the Form of Variation

A sudden change in the form of variation is to be dreaded more than **Causes** the disturbance which causes it.[1] For example, let us consult Table I. At the beginning, the form of variation is from 28 to 30 days. Then the husband suddenly became unemployed; this was a dreadful blow to the wife. As a consequence the cycle of her menstruation expanded to 35 days and the next one contracted to 21 days. The shock was so violent that the form of variation changed from 28 to 30 day cycles to cycles of 27 to 29 days.[2] Since this change immediately followed a

[1] We are here moving in a field which unfortunately has not yet been sufficiently explored. No one could say with certainty—except for the suckling period when the maturation of the ovum is normally delayed—if a break is due to a change in the time the ovum has taken to mature, or to the activity of the corpus luteum alone, or perhaps to both at once, and if the last, in what proportion. Similarly it is not known if these breaks in the form of variation can last for the rest of the woman's life.

[2] Smulders, too, mentions breaks, but only after confinement and on verbal testimony. He quotes the case of a woman whose periods previously occurred about every 30 days and who, after her 12th confinement had all of them about every 28 days, for four consecutive years. The same writer tells of another woman whose form of variation, also after the 12th confinement, changed from 28 days to 31 days. Smulders further admits that breaks can be caused by a change in the woman's mode of life or by a change of climate.

disturbance, we should consider it as a break and not as an oscillatory movement, even if the change was only one day. In general, the variation form seems to be especially threatened when the period becomes abnormal twice consecutively, as it was in the case just mentioned.

In another actual example, the length of cycles after a confinement were: 29, 16, 29, 29, 35, 29, 28, 29, and 29 days. The cycles were, therefore, perfectly normal, except for disturbances causing the 16-day and 35-day cycles. The couple had engaged in periodical abstention according to our formula. Following a pregnancy which had been desired, a miscarriage occurred a month later. Immediately after this the form of variation broke. The cycles that followed were of 32 to 39 days. Another very interesting case of a sudden change in the form of variation is mentioned in Table V, year, 1936 to 1937.

Breaks Not Very Likely Permanent Until the contrary can be proved, we do not believe that a sudden change in the form of variation can become permanent. Still less can we accept a lasting change in the period of maturation of the ovum. We think that if a sudden change in the form of variation has actually taken place as a consequence of a severe disturbance, or is threatening to do so, one must take into account both the old as well as the new form.

Thus, in the first case mentioned in Table I, it would be necessary to count, starting from 1936, the variation form of 27 to 30 days and not only that of 27 to 29 days. In the second case mentioned above, the computation should be as follows: 28 minus 19=9; 35 minus 10=25; or even 37 minus 10=27. The 39-day cycle that was caused by the miscarriage need not be taken into account. As an example of how wisely a couple acted during the sudden change of the form of variation, one should consult Table V.

Two Standard Cases

Two cases which have been studied for a very long time will admirably illustrate the whole teaching of this book. They definitely prove not only that the first and the last days of a cycle are sterile, but also that the period most liable to conception is about the middle of the cycle.

In the first case, (see Table IV) Smulders had just published the **See Table IV** cycles from May, 1930, to July, 1931.[1] However, Professor Fetscher then objected that perhaps the couple had meanwhile become sterile, and that for this reason their sexual intercourse no longer produced any result.[2] Totally unaware of the controversy of which they were the center, the husband and wife decided to have a fourth child. One occasion of intercourse alone, on the 12th day of the cycle, fulfilled their desire, thus disproving Fetscher's theory.

It should be noted that all the occasions of intercourse put down in the table were according to nature. Before 1930, the same couple had strictly practiced total abstention for seven to eight months after

[1] *Nederl. Tijdsch. Geneesk.,* August 22, 1931.
[2] *Deutschen Med. Wochenschr.,* 1933, No. 21.

each confinement; then they had returned to their intercourse only from the 14th day to the 18th day after the beginning of menstruation. On the advice of their doctor they had chosen those days believing that they were the safest, but each time the wife became pregnant, which is in perfect harmony with the Knaus-Ogino theory.

In Table IV we see that the form of variation is from 27 to 29 days. The computation is, therefore, 27 minus 19=8; 29 minus 10=19. Smulders had taken as the variation form 27 to 30 days, and had consequently recommended abstention up to the 19th day, inclusive. The couple went beyond the prescribed limits, as is proved by the table, and quite rightly, as far as it was during the premenstrual period.

A simple glance at the table is enough to show a surprising number of irregularities, even some very notable ones. What strikes us first of all is the sudden change of variation form during the four months from May to September, 1931. Or was it a case of four consecutive disturbances? As is evident the couple had, in some degree, taken into account this divergence.

The husband told us, in several letters, the cause of some of the outstanding irregularities. The married couple were anxious to see the end of very important family business. On December 16, 1930, the business was completed satisfactorily; menstruation began that evening. Another time, the couple's two year old boy had eluded his parents' watchfulness, climbed on a plank and had fallen off. The mother experienced great anxiety. That evening her menstrual period began, three days earlier than it should have. In another instance the couple had gone beyond the limits fixed by Dr. Smulders. Because of this, there was anxiety lest a pregnancy occur. As a consequence, menstruation was delayed. Then for a period of six weeks, three of the children were ill with whooping cough. The mother, nursing them unceasingly day and night, became quite fatigued. This delayed the cycle by about one week and slightly shortened the following one also.

We would like to give an interesting passage of a letter the husband addressed to Dr. Smulders: "I often notice with regret how little periodical abstention is known even now, and how much misunderstanding there still is about it. Informed Christian people of my acquaintance, who do not know that I practice it, come and tell me how the recommendations of so and so have bitterly deceived them. If you ask them about most elementary data for the computation they can only answer with 'perhaps' and 'about,' etc."

In the second case, the reader should consult Table V. In 1931, this 22 year old woman was married. A year later, after the birth of their first child, the couple heard about the Knaus-Ogino theory. In view of the indifferent health of the young wife, the couple decided to take advantage of it. According to information given by the husband, their intercourse was always normal, ordinarily every two or three days during the period of sterility, and two consecutive pregnancies prove that the wife had not been sterile.

Except for a break of a year, the variation form was maintained with an index of four days at the most. The conception of August 10, 1933, is not surprising, nor is that of July 31, 1935, although the first would be difficult to explain if we were to adhere strictly to the law of Knaus about the 15th day. Starting the computation from August 10th, we find that the first pregnancy lasted 269 days; the child was born on May 6, 1934. The second pregnancy lasted 270 days, starting from July 31st; the child was born on April 26th. Therefore, both pregnancies were perfectly normal.

The slight oscillatory movement of the variation form that goes from 28 to 31 days and from 27 to 30 days should be noted.

A remarkable fact in this table is the break of the variation form between the summer of 1936 and that of 1937. Afterward the previous form reappears. It is good to know how prudently the couple managed to adapt their intercourse during this unexpected change. The hus-

band tells us in a letter that his wife had taken a fairly long time to recover after the last confinement. He noted that the variation form after the change grew more and more normal in proportion to the strength regained by his wife.

This case, the break of form included, would appear as a model exception to the Knaus-Ogino theory if the periods had not been so scrupulously recorded and if the married couple had not acted in accordance with the changed circumstances. Examples like these are much more informative than a long discussion.

It was this book which attracted the attention of the husband to the phenomenon of ovulation and which induced him to make notes on that of his wife. At the beginning of October, 1946, he wrote as follows: "My wife now feels intermenstrual discomfort more intensely than before and over a period of three days." He added that in the table he had always marked the last day as the one when the pain was most acute. Since ovulation was over by then, the man and his wife could safely exceed the limit. Intercourse like that of October 13, 1945, speaks definitely in favor of the short-lived vitality of the ovum. The opinion that in human beings ovulation cannot be induced but is spontaneous is confirmed every time the limits set up by the theory are exceeded.

Let us quote some observations from the letters of the husband. "My wife, moreover, confirms the law that women have better health for having had children. God, in His Infinite Wisdom, does not fear that the world will be depopulated because of periodical abstention. Not for nothing has He given the woman her love for children. People who do not want to have children, and yet wish to live in accordance with the natural law, would beget children in spite of themselves. Because to young married people it would always be painful to abstain for the whole length of the period of fertility; it is too long for them. On the other hand, lack of experience also causes failure. In this way,

ORIGINAL TABLE V

1932-1935

■ = First day of menstrual cycle ■ = Last day of menstrual cycle

+ = Last, then first occasion of intercourse

Length of Cycle — columns 1–8 *sterile*, 9–20 *fertile*, 21–40 *sterile*

Date of beginning of Menstruation	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	Date Cycle Ends
9 April 1932	■									+																			+					■							12 May
13 May	■								+														+							■											11 June
12 June	■								+	+														+					■												10 July
11 July	■																			+	+															■					15 August
16 August	■					+	+														+									■											14 September
15 September	■					+	+															+		+						■											14 October
15 October	■							+																+			■														10 November
11 November	■							+															+					■													8 December
9 December	■								+																+					■											7 January
8 January 1933	■										+														+	+			■												4 February
5 February	■							+	+																+					■											6 March
7 March	■							+												+									■												4 April
5 April	■							+	+														+						■												3 May
4 May	■						+																	+						■											2 June
3 June	■				+				+														+						■												1 July
2 July	■				+				+	+											+								■												30 July
31 July	■									+											+																			■	Pregnancy, 269 days; confinement, May 6, 1934
23 June 1934	■					+															■							+											■		31 July
1 August	■						+													■							+	■													28 August
29 August	■					+															■																				18 September
19 September	■					+	+																		+			■													16 October
17 October	■					+	+																					+			■										16 November
17 November	■				+	+															+								■												15 December
16 December	■						+																							■											14 January
15 January 1935	■					+																+							■												13 February

ORIGINAL TABLE V (Continued)

1935-1938

■ = First day of menstrual cycle   ■ = Last day of menstrual cycle

+ = Last, then first occasion of intercourse

Date of beginning of Menstruation	Length of Cycle — sterile (1–9) / fertile (10–19) / sterile (20–40)	Date Cycle Ends
14 February 1935	1:■ 7:+ 23:+ 29:■	15 March
16 March	1:■ 6:+ 21:+ 28:■	13 April
14 April	1:■ 5:+ 6:+ 22:+ 32:■	16 May
17 May	1:■ 7:+ 23:+ 30:■	16 June
17 June	1:■ 6:+ 26:+ 29:■	16 July
17 July	1:■ 6:+ 7:+ 24:+ — Pregnancy, 270 days; confinement, April 26, 1936	April 26, 1936
26 June 1936	1:■ 27:■ 28:+	23 July
24 July	1:■ 6:+ 26:+ 36:■	29 August
30 August	1:■ 6:+ 28:+ 31:+ 33:■	2 October
3 October	1:■ 5:+ 28:+ 33:■	5 November
6 November	1:■ 6:+ 27:+ 33:■	9 December
10 December	1:■ 7:+ 30:+ 30:■	9 January
10 January 1937	1:■ 6:+ 26:+ 33:■	12 February
13 February	1:■ 6:+ 29:+ 33:■	18 March
19 March	1:■ 34:+ 35:■	23 April
24 April	1:■ 7:+ 32:+ 31:■	25 May
26 May	1:■ 7:+ 24:+ 29:■	24 June
25 June	1:■ 6:+ 23:+ 34:■	29 July
30 July	1:■ 7:+ 27:+ 32:■	31 August
1 September	1:■ 26:+ 29:■	30 September
1 October	1:■ 5:+ 6:+ 24:+ 25:+ 27:■	28 October
29 October	1:■ 5:+ 6:+ 22:+ 23:+ 29:■	27 November
28 November	1:■ 27:■	25 December
26 December	1:■ 7:+ 22:+ 29:■	24 January
25 January 1938	1:■ 33:+ 32:■	26 February

ORIGINAL TABLE V (Continued) 1938-1940

■ = First day of menstrual cycle
■ = Last day of menstrual cycle
+ = Last, then first occasion of intercourse

Date of beginning of Menstruation	1	2	3	4	5	6	7	8	9 (sterile)	10–26 (fertile)	27	28	29	30	31	32	33	34	35	36	37	38	39	40 (sterile)	Date Cycle Ends
27 February 1938	■									+22		■													27 March
28 March	■							+8		+23						■									28 April
29 April	■						+7			+24										■					3 June
4 June	■						+7			+27		■													4 July
5 July	■						+7			+21				■											2 August
3 August	■					+6				+23				■											1 September
2 September	■						+7			+23			■												30 September
1 October	■						+7	+8		+23					■										30 October
31 October	■								+9	+25				■											30 November
1 December	■						+7			+25			■												29 December
30 December	■						+7	+8		+23			■												28 January
30 January 1939	■						+7	+8		+23				■											28 February
1 March	■							+8		+22					■										31 March
1 April	■							+8		+23			■												1 May
2 May	■							+8		+23		■													30 May
31 May	■						+7			+23		■													30 June
1 July	■						+7			+26		■													28 July
29 July	■							+8		+23				■											28 August
29 August	■							+8		+23					■										29 September
30 September	■					+6				+23					■										30 October
31 October	■						+7			+27				■											29 November
30 November	■							+8		+24			■												28 December
29 December	■						+7			+24			■												25 January 1940
26 January 1940	■						+7			+23					■										26 February
27 February	■							+8		+23		■													26 March

ORIGINAL TABLE V (Continued) 1940-1942

■ = First day of menstrual cycle ■ = Last day of menstrual cycle
+ = Last, then first occasion of intercourse

Date of beginning of Menstruation	Length of Cycle																																								Date Cycle Ends
	sterile									fertile									sterile																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
27 March 1940	■							+																+						■											25 April
26 April	■							+															+					■													24 May
25 May	■						+																+				■														20 June
21 June	■						+														+								■												19 July
20 July	■							+													+						■														15 August
16 August	■							+															+						■												14 September
15 September	■							+														+						■													12 October
13 October	■							+																+				■													10 November
11 November	■							+														+								■											9 December
10 December	■							+														+						■													6 January 1941
7 January 1941	■						+															+						■													3 February
4 February	■						+															+										■									8 March
9 March	■							+																+				■													7 April
8 April	■							+													+						■														4 May
5 May	■							+													+							■													1 June
2 June	■							+																+						■											1 July
2 July	■							+																+				■													29 July
30 July	■							+																	+						■										28 August
29 August	■						+																	+						■											27 September
28 September	■							+																+				■													24 October
25 October	■							+														+						■													20 November
21 November	■							+														+							■												18 December
19 December	■							+														+								■											17 January 1942
18 January 1942	■						+																	+						■											15 February
16 February	■						+																+					■													15 March
16 March	■							+																	+					■											13 April

ORIGINAL TABLE V (Continued) 1942-1944

■ = First day of menstrual cycle ■ = Last day of menstrual cycle

+ = Last, then first occasion of intercourse

O = Sign of ovulation

Date of beginning of Menstruation	Length of Cycle			Date Cycle Ends
	sterile	fertile	sterile	
	1 2 3 4 5 6 7 8 9	10 11 12 13 14 15 16 17 18	19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40	
14 April 1942	■ ... +		+ ... ■(29)	14 May
15 May	■ ... +(6)		+(23) ... ■(30)	12 June
13 June	■ ... +(8)		+(23) ... ■(27)	10 July
11 July	■ ... +(8)		+(22) ... ■(27)	7 August
8 August	■ ... +(6)		■(28)	5 September
6 September	■ ... +(8)		+(22) ... ■(28)	3 October
4 October	■ ... +(7)		+(24) ... ■(29)	1 November
2 November	■ ... +(7)		+(20) ... ■(29)	1 December
2 December	■	O(15)	+(20) ... ■(27)	29 December
30 December	■ ... +(8)	O(16)	+(22) +(23) ... ■(28)	26 January 1943
27 January 1943	■ ... +(8)		+(22) ... ■(29)	26 February
27 February	■	O(14)	+(21) ... ■(27)	27 March
28 March	■	O(14)	+(23) ... ■(27)	26 April
27 April	■	O(14)	+(21) ... ■(28)	24 May
25 May	■	O(14)	+(22) ... ■(29)	23 June
24 June	■ ... +(7)	O(14)	... ■(29)	21 July
22 July	■	O(13) O(15)	+(20) +(21) ... ■(29)	19 August
20 August	■	O(14)	+(20) +(21) ... ■(27)	15 September
16 September	■	O(14)	+(21) ... ■(29)	15 October
16 October	■		+(24) ... ■(30)	12 November
13 November	■		+(24) ... ■(30)	12 December
13 December	■	O(14)	+(21) ... ■(27)	10 January 1944
11 January 1944	■ ... +(7)		+(21) ... ■(29)	6 February
7 February	■		+(20) ... ■(31)	9 March
10 March	■		+(21) ... ■(27)	6 April
7 April	■ ... +(5) +(6)		+(23) ... ■(29)	3 May
4 May	■ ... +(7)	O(14)	+(19) ... ■(29)	2 June

ORIGINAL TABLE V (Continued) 1944-1946

■ = First day of menstrual cycle
■ = Last day of menstrual cycle
+ = Last, then first occasion of intercourse
O = Sign of ovulation

Date of beginning of Menstruation	Length of Cycle																																								Date Cycle Ends
	sterile									fertile																sterile															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
3 June 1944	■														O			+											■												2 July 1944
3 July	■					+	+													+					■																27 July
28 July	■						+	+						O							+						■														24 August
25 August	■							+						O				+										■													22 September
23 September	■					+	+							O					+									■													20 October
21 October	■							+						O				+											■												19 November
20 November	■													O				+							■																15 December
16 December	■							+																■																	12 January 1945
13 January 1945	■					+						O									+					■															7 February
8 February	■						+							O				+									■														7 March
8 March	■						+	+						O					+							■															3 April
4 April	■														O					+										■											4 May
5 May	■					+														+											■										5 June
6 June	■					+								O								+					■														2 July
3 July	■					+								O								+					■														29 July
30 July	■																O		+										■												27 August
28 August	■						+	+						O									+						■												26 September
27 September	■																O						+					■													24 October
25 October	■																		+										■												22 November
23 November	■							+							O								+				■														19 December
20 December	■																											■													17 January 1946
18 January 1946	■																		+			+			■																14 February
13 February	■					+	+			O										+	+								■												14 March
15 March	■																				+				■																9 April
10 April	■					+						O								+								■													8 May
9 May	■					+	+															+				■															1 June
5 June	■												O													■															1 July
2 July	■							+												+						■															28 July
29 July	■																		+								■														25 August
26 August	■														O												■	■													22 September

ORIGINAL TABLE V (*Continued*)   1946-1949

■ = First day of menstrual cycle   ■ = Last day of menstrual cycle

+ = Last, then first occasion of intercourse

o = Sign of ovulation

Date of beginning of Menstruation	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	Date Cycle Ends
23 September 1946	■																										■	■											20 October 1946
21 October	■																						+			■	■												16 November
17 November	■												o															■											14 December
15 December	■											o						+									■												12 January 1947
13 January 1947	■																					+						■											9 February
10 February	■													o						+									■										11 March
12 March	■																													■									8 April
9 April	■																											■											6 May
7 May	■																									■													1 June
2 June	■														o							+				■													28 June
29 June	■												o													■													26 July
27 July	■												o								+					■													21 August
22 August	■																											■											19 September
20 September	■																	+										■											16 October
17 October	■												o											+							■								17 November
18 November	■																											■											14 December
15 December	■														o													■											11 January 1948
12 January 1948	■																+										■												9 February
10 February	■																					+									■								12 March
13 March	■																			+								■											10 April
11 April	■																											■											8 May
9 May	■														o							+				■													5 June
6 June	■												o													■													2 July
3 July	■																						+				■												31 July
1 August	■																											■											28 August
29 August	■												o															■											25 September
26 September	■																												■										21 October
22 October	■																									■	■												20 November
21 November	■																								■	■													17 December
18 December	■																						+			■													12 January 1949
13 January 1949	■					+																+				■													7 February

the number of children willed by the Creator is already there, when at about thirty the passion of the married couple has calmed down and the desire for sexual intercourse has diminished. So far as we are concerned, we had two surprises. I would not like to have missed them."

From a letter dated March 18, 1949, covering the last section of the table, we quote the following: "This time I have frequently not put down the last intercourse before the fertile period; all the same we never went beyond the eighth day. Intercourse always took place on absolutely natural lines, without any precaution."

How to Manage After a Confinement or a Miscarriage

Smulders' remarks on what we have said in Chapters Eleven and Twelve of this book are valid for this chapter too: "It is the exception that needs to be fully considered rather than the rule itself." The superficial reader sees in this a reason to doubt the rule. But the wise reader feels that woman's body is not a machine governed by simple formulae, but an organism with complex and peculiar laws of its own.

Breast Feeding   It should be noted that confinements and miscarriages ordinarily delay the menstrual period considerably. Smulders cites the case of a woman who had a child on September 30, 1931. The following period occurred on May 19, 1932, more than seven months later. During the whole of this time the woman had nursed the child. This would partially explain why the period was late. Besides the disturbance of confinement, breast feeding also helps to delay the period. Professor Englehart of Graz, drawing upon his own researches, reported to the 25th Congress of the German Society of Gynecology in Berlin in October, 1937, that "the same hormone that excites the glands of the

breast to produce the milk, reduces the activity of the ovaries and thus brings the amenorrhea of lactation and the sterility (temporary) of the woman."[1]

It is evident that no computation based on menstruation can be made until menstruation begins again. Obviously the couple will abstain from intercourse for the first four weeks after childbirth, as well as for the four weeks that precede it, to avoid the danger of infection.

When the period recurs after childbirth, it means that about 15 days earlier a new ovum reached maturation and that a pregnancy would be possible. A conception during lactation is not to be excluded *a priori*, although it is more difficult to achieve. However, many authors feel this possibility should be excluded while the milk supply is abundant. Once the menstrual period has returned, the early cycles are ordinarily prolonged and may last 40 to 50 days. **Menstruation After Childbirth**

Smulders also cites the case of a very healthy woman, who before and after her seventh pregnancy had a variation form of 26 to 30 days. But the early cycles after the seventh pregnancy were much longer— 41, 45, and 50 days. All of this time the woman was breast-feeding the child. Nevertheless, it is possible for early cycles after childbirth to resume the normal variation form from the beginning. This happens especially if the cycle was very short, say from 21 to 25 days or when the milk ceases prematurely.

In case Number 44, Smulders states that childbirth occurred on June 12, 1931, and menstruation began again on July 28, 1931. The early cycles were 25, 23, 25, 24, and 27 days. The variation form of this woman had previously been of 23 to 27 days; the cycles had, therefore, returned to the previous variation form. But generally speaking for as long as the woman is breast feeding a child she is liable to a prolonged cycle, though previous ones were normal.

[1] *Zentralbl. Gynäk.*, 1938, p. 120.

In another instance, Smulders states that after a confinement a married couple returned to their previous habit of abstention from intercourse from the 10th to the 24th day following the beginning of menstruation. Meanwhile, the wife was breast-feeding her child. During the first three months, nothing happened because the cycles had been of 34, 29, and 31 days. But in the fourth month, although the mother was still breast-feeding the child, she became pregnant. This fourth cycle must have lasted more than 35 days; the delay is fully explained by the lactation and the consequent delay of ovulation. Thus one easily understands this pregnancy, which must have been due to copulation that took place after the 24th day.

Effects of Weaning
Another fact is that the menstrual cycle occurring while the child is being weaned is a prolonged one, and the faster the weaning takes places, the more this is so. On the contrary, if the weaning takes place slowly, the cycle is a little prolonged. Beginning with the month that follows weaning, the cycles return to their normal form.

Varying Cycles After Childbirth
Smulders cites a case in which childbirth occurred on August 29, 1930. The first period began on September 25th. Afterward, the cycles were of 24, 38 days (during which cycle the breast feeding was stopped), 33, and 32 days. Thus the length of the cycles had returned to normal. After a second confinement of the same woman, there were cycles of 40, 30 days, etc.; this time there was no breast feeding. It is often found that cycles are of different lengths after each birth. A woman must not, therefore, argue like this: "After the last confinement, this or that happened, the same should happen now."

Summary

We have found that after childbirth the variation form loses stability, and that even a break in that form is possible. Ovulation is often

delayed until the third cycle after weaning. During all this time computation of the days of sterility should be as follows: when the first real period occurs after childbirth one may consider as sterile the first four to eight days of each cycle.[2] This rule is not given as an infallible but as a highly probable one.

Practical Instructions

The days of sterility should be taken as four if the previous form was very short, or if the woman is very weak. The better the health of the woman, and the more regularly lactation proceeds, the more safety there is in going beyond the four days. It is obvious that these four to eight days begin with the beginning of real menstruation and not at its end.

We have spoken of real periods because other types of hemorrhage very similar to menstruation may occur after childbirth. When Knaus mentions the case of a woman who, after childbirth, had menstrual cycles of 15 to 12 days, this must have been a case either of hemorrhage or of an interrupted period.[3]

It is evident that many things may happen to disturb the cycle after childbirth, and it will not always be possible to distinguish these from the irregularities that all cycles present after childbirth. However, the following rule for computation appears. Starting with the cycle after weaning, when a new variation form or the habitual one is gradually established, married people must manage prudently. They should subtract the number ten from the longest cycle, for example, 38 minus 10, 35 minus 10, etc., and not have intercourse except in the days allowed by the computation. Nevertheless, as stated previously, the first four to eight days may be used after the very first reappearance of men-

Computation When Returning to Form of Variation

---

[2] Our direction is based on the hypothesis that the first cycles after confinement are at least of 23 to 27 days. Smulders also gives as sterile all days after the 25th or the 40th. This is assuming that the current cycle will not be more than 45 or 50 days, which is nearly always the case. However, in the cycle when breast feeding stops suddenly, a much longer cycle must be expected.

[3] Knaus, *Die Periodische Fruchtbarkeit*, etc., p. 83, Table II.

struation. It can be seen that ordinary computation is faulty after childbirth. Fortunately, several phenomena that ordinarily accompany ovulation come to our help, and we shall deal with them in Chapter Sixteen.

Example for Computation After Childbirth
We would like to illustrate again how Smulders dealt with one case. A woman had given birth to a child on March 20, 1932, and her period returned 91 days later, on June 19th. The following period came on August 8th. Therefore, the first cycle had lasted 50 days. On July 20th the mother's milk had dried up, and that explains the extraordinary length of the cycle. The third period occurred on September 8th, thus ending the second cycle of 31 days. At this time Dr. Smulders was consulted. He computed as sterile the first eight days of each cycle and all the days after the 25th. He envisaged a minimum cycle of 27 days, and a maximum of 35. In reality, the fourth period began on October 7th and thus ended a cycle of 29 days. Smulders concluded that it was safe to use the first eight days as well as those after the 23rd. This time he had assumed a cycle of 33 days as a maximum.

After Miscarriages
After a miscarriage computation is made in the same way. Here, too, in most cases, the first menstruation is delayed. The directions given previously are, therefore, also applicable in this case. But, as there is no question of lactation here, the variation form should become normal early, except when the previous variation form had been broken.

Change of Life

At the change of life the variation form disappears gradually, and with it the basis of our computation. The cycles become inordinately long, alternating suddenly with very short ones. Fertilization becomes unlikely but cannot be excluded.

Change of life generally begins between 45 and 50 years of age; in some cases it appears as early as 35, and in others it is delayed until after 50 years of age. Here conditions of health, hygiene, climate, and race play an important part. Women who are nervous or in poor health should expect nature to be capricious at this time and should consult a doctor early. Otherwise it might happen that after having for years followed the rule of distinguishing sterile days from fertile days, the woman is surprised by a conception when she is on the threshold of the change of life. We must add that this is very unlikely. The risk of incontinence may be greater for the couple than the risk of an unlikely pregnancy.

We suggest, without pressing it, however, to make use of only the first five days of each cycle, and of those that follow the 35th, during the change of life.

Here again the phenomena of ovulation may take place both before and during the change of life. When well observed, and if necessary verified by a doctor, they will be of help in fixing the sterile days after ovulation.[1]

Once the change of life is accomplished, the woman is entirely deprived of the burden and the joy of maternity. The ovaries stop all activity, and the woman becomes absolutely sterile.

---

[1] Holt quotes the case of a woman who, after having felt every ovulation for more than 20 years, noticed nothing more in the course of eight cycles preceding the menopause. "This makes it highly probable that there are menstrual cycles without ovulation during the *praeclimacterium*." (Holt, *Nederl. Tijdschr. v. Geneesk.*, 1939, No. 45, p. 4260) In this case conception is naturally ruled out. But even if ovulation does not occur, the ovum is not of necessity ripe and fertilizable, during the *praeclimacterium*.

Phenomena
Accompanying Ovulation

There are many different symptoms of ovulation which until recent years have not been taken into account by writers on the subject. Women hardly ever differentiate these symptoms from those of other ills. On this subject Smulders says: "The greater number of people only see what they already know." Similarly, in a recent work, the American doctors, Wharton, R. Lawrence and Erle Enrikson, note in dealing with the intermenstrual disturbance, which is one of these phenomena, that "because such a disturbance is slight, a woman does not refer to it unless she is expressly asked about it."[1]

But today, many doctors are diligently studying these phenomena. As early as 1931, Dr. de Guchteneere wrote that he did not think they "were rare events."[2] Smulders with his wide experience estimates that "at least one-half of the female population could discover the moment when their ovulation occurs should they observe it for a length of time." According to the Japanese doctor, Hisao Ito, 40 per cent of

Recent Observations

[1] "Studies in Ovulation," *J.A.M.A.*, 1936, pp. 1425-1433.
[2] *Rev. Méd. deLouvain*, 1931, Number 5.

the nurses and 70 per cent of the women students and women doctors whom he had questioned, were able, by careful self-observation, to discover the moment of the "breaking away of the ovum."[3] Dr. Holt goes so far as to state that perusal of this question has convinced him that every woman could determine the moment of her own ovulation by observation of one or another of these phenomena.[4]

The phenomena of ovulation will confirm the computation of the days of sterility, and should be taken into account when, after childbirth or at the change of life, other computation is hardly possible. The same is true, too, of some pathological forms of cycles. But these phenomena of ovulation have a disadvantage since they are only useful for the days that follow the rupture of the follicle. Besides, since these phenomena are often based on nothing more than a "feeling," they are often misleading.

False Menstruation One of these phenomena, false menstruation, has already been mentioned. We pointed out that the false is distinguished from the true menstruation by the short duration and light red color of the flow. It is true that after childbirth other types of bleeding frequently appear. Except in the case of postpartum hemorrhage or hemorrhage produced by other causes, it would always be safe to assume that a viscid flow, especially one occurring 14 days before the next period, is false menstruation.

Intermenstrual Discomfort A second phenomenon accompanying ovulation is that of intermenstrual discomfort such as abdominal pain and heaviness in the loins. Such discomfort may also be experienced about 14 days before the menstrual period. It may occur either on the right side or on the left, depending upon which ovary is at work. A woman does not necessarily feel these manifestations each month. Some other phenomenon of ovulation may take their place. The duration of intermenstrual discomfort

[3] Quoted by Koller, *Zentralbl. Gynäk.*, 1938, p. 2644.
[4] "Een Ovulatiesyndrom," *Nederl. Tijdschr. Geneesk.*, 1937, p. 1902 ff.

ORIGINAL TABLE VI

Fluctuations in temperature for three periods.

may be from only a few hours to several days, and is sometimes interrupted.

A third and very important phenomenon, discovered quite recently **Rise in** and not subject to error, is the slight rise in temperature following **Temperature** ovulation.[5] If a woman takes her temperature (rectally) every morning before rising she will find that in the middle of the cycle it is a little below 98.5° F., and rises slightly higher afterward. Not until a few days before the next period does the temperature fall again. It can be assumed that this change is related to the activity of the corpus luteum. Further, it is observed that, in a cycle prolonged by disturbances, the temperature drops again at about the usual time, about 15 days after ovulation. On the other hand, if the temperature is maintained above 98.5° F. for more than 15 days, it can be concluded that conception has taken place, as the temperature during the first months of pregnancy stays above 98.5° F.

True, this taking of the temperature in the morning is bothersome but at least it enables one to fix absolutely the date of ovulation and consequently the end of the period of fertility. This method also affords the least costly and the earliest means of ascertaining that pregnancy has begun and to set the approximate date of birth as well as that of conception. Finally, this method will enable married people hitherto sterile to ascertain the most likely day for fertilization.

In Table VI a temperature chart which covers three months is presented. In the last years (February 11, 1946, to May 30, 1949) the woman's cycles oscillated between 26 and 38 days; the form of variation was from 28 to 35 days. For the last three months, as indicated by the chart, the cycles were 38, 28, and 28 days. In those months, the

---

[5] Mentioned for the first time by the American Rubinstein (*Proc. Soc. Exp. Biol. and Med.*, vol. 35, p. 168). Then Palmer spoke of this before the Societe Francaise de Gynécologie, in February 1938; most of the curves drawn by Palmer coïncide in an amazing way with the period of ovulation fixed by Ogino (16th to 12th day before a period).

morning temperature reached 98.5° F. on the 15th, 12th, and 13th day before the next menstruation. The considerable prolongation in the first month was due to a delay in maturation of the ovum which was attributed to a disturbance. The activity of the corpus luteum was only slightly prolonged. Our formula of 35 minus 10=25 would, however, have warded off an undesirable conception. The three curves on the graph, Table VI, illustrate the constancy of the law, as well as the freedom it allows. The horizontal stroke in the chart shows the duration of the periods.

Other Phenomena of Ovulation   Other phenomena, although less sure and therefore less valuable than the others, are confirmed by experience. Such manifestations as pimples that appear on the face or back, unusual oiliness of the hair, and a lowering of the body temperature will be noticed.

Some manifestations are of a purely nervous character, such as headaches, heaviness in the legs or in the genital organs, general oppression, insomnia, nervousness, stronger desire for sexual satisfaction and caresses, and a feeling of tension in the breast. All these symptoms last from one to several days.

Instructions   It is, therefore, suggested that when a woman knows from experience that these phenomena reveal ovulation, she may assume her period of sterility to begin three days after they have disappeared. (These are the instructions of Holt and of de Guchteneere.) These authors recommend waiting not only one but three days, because the intermenstrual disturbance and other phenomena preceding ovulation may have been induced by distention of the ovary. Yet one woman, who is very sensitive to intermenstrual disturbances, confirmed that she takes up intercourse again immediately afterward.

Should the phenomena that accompany ovulation be interrupted, one should abstain a little longer. It should never be forgotten that these phenomena may alternate with one another. One month one symptom may appear, and another the following month. At times

several of these phenomena appear together. If one is doubtful about the nature of the phenomenon, then it would be wiser to follow the date of the ordinary computation. The agreement of these phenomena with both the next menstruation and with our computation is shown clearly in Table V, 1943 to 1949.

Some Considerations
on Sexual Intercourse

There are numerous problems that a book on periodical sexual abstention must discuss, because these factors are inherent to a happy sexual union and it would be wrong not to consider them. One of them, the conduct of husband and wife in their sexual intercourse, a particularly delicate problem, will be discussed here briefly. This is being included in order to meet the requests of many readers; we would not like to disappoint them under the cover of tact or by arguing that it is outside the scope of the subject.

At first sight, any recommendations about this might appear superfluous. Some might say: "Is not love a sure guide in this matter?" Unfortunately this does not seem to be the case. It is heart-rending to witness the disasters caused by the clumsy conduct of many people in this sphere. There is nothing else so likely to promulgate and preserve an ideally happy marriage as normal sexual intercourse achieved through the proper conduct of the couple. On the other hand, there is nothing that can so easily destroy love and undermine health as a lack of proper conduct.

It is very difficult for a man or woman to grasp and fully understand the physical and psychic nature of the opposite sex. Basically man and woman are very different and their sexual reactions are naturally different, too. It is absolutely wrong to perceive that the opposite sex has the same basic desires, or experiences identical sensations.

While the intensity of sexual excitement and satisfaction is probably nearly equal in both participants, the excitement develops differently in man and woman. In the case of the male, the curve rises rapidly and falls just as rapidly, as soon as the sexual act is completed. However, in the case of a woman, the development of excitation is very slow; excitement does not reach its apex except after much affection and tenderness, and it decreases slowly after the completion of intercourse. The husband must exercise extreme gentleness and delicate techniques as the border line between the sublime and ugly is so slight that the mind can transgress it totally unaware.

These simple facts must dictate the conduct of husband and wife in their sexual intercourse. Because these facts are not sufficiently taken into account, numerous conflicts arise in the life of married people and sexual repulsion and enmity manifests itself. The woman suffers from an inferiority complex; traces of hysteria become evident; and the fear of intercourse with a husband who does not understand her wants and desires may easily lead even to adultery.

If the husband and wife wish to avoid these fatal consequences they must act as follows: if, for any reason, either partner wishes to avoid sexual intercourse, the other partner should respect and be guided by these wishes. The woman must show great coolness toward her husband, for what would simply be endearment for her may awaken in the man the strongest sexual desire. It is neither morally easy nor physically good for the man, once thus excited, to have to repress himself, and the majority of young women are not sufficiently conscious of this fact. Thus they are extremely surprised when a man, whose

desire they have awakened without any consideration, "takes liberties." The one who lights a fire must also let it burn.

On the other hand, when there is nothing to prevent intercourse between the husband and wife, and when the wife herself desires it, she should not lock herself in an unapproachable fortress. She should meet her husband half way and he will then know what is expected of him. He should then proceed delicately. For the wife, much more so than for the husband, sexual intercourse is the authentic expression of conjugal love. What perhaps is for a man but an incident is for a woman an event that brings the whole of her being into action. With patient tenderness the husband will much more easily win the heart and the body of his wife than by an untimely rush. Let us mention in passing that a man can gain much by being affectionate and tender toward his wife, even at times when sexual intercourse is not the motivation. This would have a soothing influence on everyday life. Lovers know this, but married people often forget it. If both parties are considerate, display attention to each other's needs and desires, and display initiative and inventiveness in awakening and satisfying one another's desires, then happiness and an ideal marriage are attained and preserved.

The husband should, therefore, begin with caresses which little by little awaken the desire in his wife. The intercourse is at its best and its most ideal point when husband and wife reach total satisfaction at the same time. It is admitted that this is not always easy, particularly if the man has been over-excited. In such circumstances it would be good to repeat the intercourse as soon as possible. The second time the husband's excitement will mount less rapidly and may thus come to harmonize with that of the wife.

Sexual intercourse does not merely consist of the sexual union of the husband and wife. It should be realized that it comprises the prelude, the sexual union, and the postlude. The majority of men take less account of the feminine reaction that follows intercourse than

they do of the reaction which precedes it. As soon as the husband's own desire is gratified, which is almost immediately after ejaculation, he may turn over and fall asleep. There is no doubt that fatigue is the normal effect of complete satisfaction in all animals. But by acting thus, the husband may not even know that he is leaving his wife to herself and perhaps unsatisfied. In spite of the physical relaxation which he is already experiencing, he should be assiduous and try to cultivate his wife's pleasure. The time required is very different according to the temperament of the woman. As we have said previously, the postlude is a part of the sexual act and is essential to sexual union because it fully confirms the expression of love attained in the intercourse. The postlude offers a time of peaceful relaxation, a diminution of excitement, and the return to normal balance and control.

Only intercourse accomplished in the above-mentioned way fulfills its important function in marriage. Repeated happy sexual union enhances the attractive factors of marriage and by prompt and constant enhancement of these factors, repugnance remains dormant because it has no opportunity to develop. Thus many crises can be avoided.

Here we would like to remind women that they exhibit very injudicious behavior if they refuse themselves to their husbands without having a valid reason. Obviously an old woman feels little, if any, carnal pleasure. However, in giving herself with good will, even though she receives no pleasure, she will still benefit by the hormonal advantage of intercourse and will do a great service to her husband. All this presupposes, it is true, that the husband is disposed to accomplish the act in the normal way. For, if it were otherwise, the wife would not be obliged to follow suit.

In conclusion we would like to say a word further on frequency. Here, as in everything else, there is a happy medium. In young couples the urge is stronger and intercourse will be more frequent than with couples who have been married for many years. Always avoid excess,

as in excess not only the danger of satiety arises but it is harmful, especially to the man. Neither of the parties to the act should be physically taxed by over-exertions or exactions of a sexual nature. There should be a mutual agreement regarding frequency, taking into consideration each partner's physical and psychic character and respecting each other's personality and privacy.

Marriage implies an interchange of much higher values than carnal intercourse alone. It is a sacred institution in which the partners, united by love, agree to control their amatory emotions and direct them always toward each other. A marriage without carnal intercourse can be envisaged and could last, while a marriage in which there is only carnal intercourse would not make sense. Nature prescribes the sure way.

Chief Causes of Failure

> *A discovery is not to be neglected simply because it can be applied incorrectly.*

The principal causes which may lead to failure by an incorrect application of the teaching of Knaus and Ogino may be summed up as follows:

1. *Inaccurate computations of the period of sterility.* People often compute the period of abstention incorrectly, either because they use the wrong formula, or because they are unable to apply the formula correctly to their own form of variation. If it is not entirely clear to the reader how to compute the periods of fertility and sterility, the chapters devoted to this should be reread very carefully.

2. *The assumption that all women have the same period of fertility whereas every case is different.* A few years ago the following instructions appeared on a chart in the waiting room of a Gynecological Clinic in Switzerland: "People who desire to avoid conception should abstain from intercourse from the ninth to the eighteenth day of the cycle." It is not at all surprising that many of the people who followed these general instructions were disappointed.

3. *The dates of the menstrual periods are not written down regularly.* And yet this is absolutely necessary in order to make accurate

computations. One day more or one day less is a decisive element if the calculations are to be of any value at all. Memory alone is not sufficient to recall accurately the days on which menstruation occurs, particularly over a long period of time.

4. *Failure of the married couple to conform strictly to the computations.* After the couple has made use of periodical abstention for a long period, there comes a time when they think that they can, with impunity, exceed the dates fixed by the computation. They may even do so successfully for a long time, and that makes them even more sure that the limits can be exceeded; that is, until the "exception" comes.

5. *Continuing intercourse during the period of fertility.* The couple may continue intercourse during the period of fertility by making use of contraceptives or by interrupting the act. An unexpected pregnancy occurs and is then attributed to normal intercourse occurring during the period of sterility. Many people find it difficult to believe that an interrupted coition during the fertile period may be the cause of conception, while the normal act performed during the period of sterility has no consequences.

6. *False menstruation mistaken for real menstruation.* People may mistake for real menstruation losses of blood of a very different nature, or vice versa; they do not take into account the slight oscillatory movement, or the possible break in the form of variation due to a confinement or a miscarriage. They continue to follow the ordinary instructions and are then surprised when an unexpected pregnancy occurs.

With all certainty, failures may be avoided. If the teachings of Knaus-Ogino-Smulders are clearly understood and applied as outlined in previous chapters of this book, there should be no failures.

The Importance of the Family

Effects of Small Families on the Rearing of Children

Healthy married people realize that children are the fulfillment of any normal marriage. However, many couples feel that they should have only one or two children for two reasons. "Our income does not allow us to have more," they say. Or they add: "We prefer to have no more than one or two children so that we may rear them better."

It is impossible to underestimate the great difficulties which parents frequently have in raising several children. We have dealt with the subject at length in Chapter Three. Nevertheless our ancestors viewed these difficulties in a very different light. They accepted children when they came, and if we ourselves are here, it is because they acted according to the voice of nature. Their saying was: "The Lord is not sparing of food to the leveret he has called in being."

The objection that, "We prefer to have only one or two children and to bring them up better," gives proof of a great illusion in those who put it forward, for the extreme difficulty of raising only one or two children is exactly the reason—and the strongest one—that induces parents to have more children. A healthy upbringing depends

nearly as much upon brothers and sisters as on the parents themselves. One or two children are not enough for one another. However, we do not wish to infer that healthy education of the children already present is an abstract duty. On the contrary, it is a very definite duty. This dictates the principle that the couple should have at least three or four children, even in difficult conditions, and more if possible.

We should like to try to justify this demand, first of all from the educational point of view. It is an undeniable fact that no child can develop normally unless it is in a favorable environment. An environment that consists only of grown-up people, who are much too mature for the child, is not a favorable one. A favorable environment includes brothers and sisters who not only play with the child, but who can be companions to the youngster. Even father and mother suit the child only in the measure in which they are capable of coming down to his level. On the contrary, brothers and sisters suit one another admirably because of their age.

The family, large or small, provides the social environment in which the development of the child takes place. Therefore, the size of the family is extremely important. It is a small child's universe. In the family the child meets society for the first time. The smaller the family, the greater will be their influence on the psychological development of the child. In a large family, this influence on the child is diffused among a wider group.

In an environment of brothers and sisters, the child is able to develop his strength, and to show his aptitudes in a natural way. Brothers and sisters also help one another in the development of personality and formation of character. Children like the same things and can, therefore, entertain each other happily; the older children help to develop the intelligence of the younger ones. In return the younger children awaken in the older ones a sense of responsibility. An only child is usually not easily satisfied and is very often spoiled.

The more numerous the children, the easier will be their education by the parents, and the less difficult for the children. There is a very popular saying that big families bring themselves up; this seems to be quite true.

The child's companions are not the same as brothers and sisters. Coming from families of different mentality and different social habits, children very often find in their companions more sources of conflict than of happiness. The tie of the blood and the fraternal love that settle all the little quarrels arising between brothers and sisters is missing. Moreover, companions are not always available. Also, a mother cannot keep watch over her child's companions as she can over her own children. Very often these companions exert a bad influence on a child. It is a fact that a child becomes corrupt not in the bosom of its own family but among its fellows.

Lastly, it is in the home that both sexes become accustomed to one another most easily. In a family of any size, there are nearly always boys and girls. Many girls who have been "an only child" will later bitterly regret that they have not had the companionship of a brother, nor have they become accustomed to a man in the person of a brother. It is also true that many men suffer for a long time through not having learned from a sister the distinctive characteristics of a woman.

All of the above advantages are missed by an only child. If there are but two children, they can enjoy these advantages only in a limited measure, because the grown-ups are then obliged to pay too much attention to them. The parents feel obligated to devote much of their time to the child; the child becomes a little tyrant, and everyone must bow to its whims.

An only child usually gets everything it demands simply because the parents cannot bear to deny it. Anyone who has ever been present at these little scenes—scenes played daily by the father, mother, and only child—know quite well who gets the best of the situation. Later

the child becomes refractory and in a few years he is ruling the house-hold. To bring up five children is relatively easy; to bring up one or two is much more difficult. Experience gives abundant proof of this.

The fruits of this upbringing only appear later on. The child, having been too much in the company of grown-ups, may be precocious, but he has not matured normally. Brought up with too much tenderness, he risks being crushed by the realities of life. The only child may be-come timid, or accustomed to seeing others give in to all of his whims and desires. Often the only child is both timid and a tyrant at the same time.

Therefore, those parents who without serious reasons refuse to give to their first child two or three brothers and sisters are acting very cruelly toward him. It is certainly not the good of the child that makes them act thus; it is their own selfish interests.

Effects of Small Families on the Parents

Ordinarily the parents are the first to suffer as a result of having their child grow up in isolation. When the boy or the girl reaches his majority, and the parents then refuse to give in to his wishes and de-mands, painful scenes occur. What can one then say to the mother in tears, or a father in a rage, except that they are reaping what they have sown? Have not they always insisted that they could not assume the burden of many children? Let them now suffer for it, when the only child or the two children abandon them!

When the only child has come of age, he wishes to marry as he has a right to do. But father and mother cling to him; they do not allow him to divide his affection, or perhaps to withdraw his financial help. Any pretext is then valid to postpone the marriage: the girl is too young; the son does not earn enough money to keep a family, etc. The moral danger of a long engagement is not even considered by

them. A tense situation that gives rise to bitter quarrels results. The love of the fiance or of the fiancee usually prevails, but the child is embittered and the parents, deeply hurt, are left alone.

Thus unwise limitation of the number of children is sooner or later turned to the parents' grave disadvantage. Generally speaking, an only child is an unbearable child; two children are a source of anxiety. This is the experience of thousands of years.

Effects of Small Families on Society

If a minimum of three children is ordinarily necessary for a good upbringing, then it is no less useful for the good of society. Up to the beginning of this century, children could ordinarily assume the responsibility of caring for their aged parents and grandparents. The more the children, the easier was the task because the burden was shared by several rather than by an individual. However, only one or two children cannot usually support four grandparents, in addition to their own families. A life annuity is usually not enough, and without the financial help of the children, the old people thus become a burden to society. And yet these same old people may have thought that by having a very small family they would make their old age more pleasant!

If each married couple produced but two children as an average, the population of a country would be reduced by half in ninety-seven years. The population begins gradually to increase only when there is an average of three children per family. Now a healthy society does not want either a reduction or too rapid an increase in population; neither does it merely wish to maintain the *status quo*. A healthy society requires a moderate increase, which presupposes an average of four to five children in each family.

It is often said that married people who have no children do not

even know they are alive. This statement could be transposed so as to read: it is soon forgotten that married people who have no children have ever been alive. This book calls married people to life and not to death. It teaches sexual periodical abstention so that parents and children may live in a healthier and happier atmosphere; an atmosphere of close harmony. And it is quite fitting that this book be concluded with statements about the many attributes of the large family and the myriad of pleasures which it embraces. One of the greatest benefits of the large family is the pleasure and satisfaction which married people have in knowing that they are perpetuated in a joyous garland of children and grandchildren.