

MARRIAGE AND PERIODIC ABSTINENCE

THE NATURAL METHOD OF SCIENTIFIC FAMILY
REGULATION

BY

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PART I

**THE MEDICAL ASPECT OF
PERIODIC ABSTINENCE**

Chapter I

THE BIOLOGICAL BASIS OF THE OGINO-SMULDERS' METHOD

I INTRODUCTION

AMONG the majority of people, including the medical profession, the opinion prevails that a young woman can conceive at any time. Some believe she is most apt to become pregnant in the days immediately preceding and immediately following menstruation. In the course of the last few years careful investigation has shown more and more certainly that there are alternately fertile and infertile (or sterile) periods in a woman's monthly cycle; the fertile period lying somewhere in between two menstruations. Surprising as it may seem, it has now been definitely ascertained that there are *only a few days* in a cycle on which a woman is able to become pregnant. Moreover, science has enabled us to discover and indicate these days for each particular woman, and to do so in advance.

We may either avail ourselves of the fertile period with the definite intention of procreating life or abstain definitely and purposely from intercourse during the fertile period in order to avoid procreation. The aim of this present book is to explain

how and on what grounds this knowledge may be applied.

But let us begin with an historical *aperçu* of the question. In Genesis xii. 2, we read that God promised Abraham to make his name and people great. We read in Genesis xiii. 16: "I will make thy seed as the dust of the earth so that if a man can number the dust of the earth then shall thy seed also be numbered." I do not know if any exegete has quoted Leviticus xv. 19-28 in this connection where we read that any woman, suffering from the monthly discharge, had to live in separation (Vulg: *separabitur*) for seven days.¹ According to the Talmud this should be interpreted as follows: A woman becomes "Niddah" as soon as she sees any show of blood and remains so as long as there is any red or reddish show seen, in any case for five days at least. After this Niddah there follow seven days of purification. On the evening of the seventh day the woman is allowed to take the purifying bath, called the Tewila. From the onset of the Niddah till after the purifying bath intercourse and even the slightest intimacy between husband and wife is prohibited. Marital intercourse is not allowed until the evening of the twelfth day of the cycle at the earliest. In the author's opinion the observance of this custom is the explanation of

¹ Leviticus xv. 19. "And if a woman have an issue and her issue in her flesh and her blood she shall be put apart for seven days."

²⁸. "But if she be cleansed of her issue then she shall number to herself seven days, and after that she shall be clean."

the remarkable fertility of the Jews. For even if we take Professor Knaus's formula for the conception period, which says that it lies from the eighteenth up to and including the fourteenth day before menstruation¹, then the first intercourse after abstinence would fall *exactly in the fertile days*—at least it would do so in all cycles lasting longer than twenty-four days, which is the case in about ninety per cent of all cycles. We could hardly think of a more effective procedure for supporting the fertility of a nation.

Whether the Israelites were aware of the fact we do not know, but it is certain that it was not unknown to some of them that the period of fertility had its limits—for in the Babylonian Talmud, Rabbi Jochanan (third century), says in a treatise called *Bawli Niddah* 31 b: "A woman is only capable of fertilization immediately after the bath of purification."

It was also known to the Old Testament Jews that the fertilizing capacity of the seed would certainly not last longer than three days. This is the common opinion in the Talmudic scriptures, especially in *Misjna Sabbath* 9, 3, and *Misjna Mikwaot* 8, 3 (*Tosefta Mikwaot* 6, 4). In these last two we find a slight divergence of opinion: Rabbi Elngazar ben Ngazarja says the duration is thirty-six hours, Rabbi Ismael takes it to be forty-eight to sixty or seventy-two hours, Rabbi Akiba says it

¹ The present writer considers this estimate too narrow, as will be explained later.

is always sixty hours. The renowned physician Maimonides, in *Hilg. Sjear Hattum-a* 5, 11 and 12, decides that the duration is not more than thirty-six hours. Note that none of these opinions is at variance with the term we have accepted as the maximal duration of the fertilizing capacity of the male germ-cells.

It was not only the Jews of the Old Testament who were familiar with the periodicity of human fertility. In the *Charaka-Ayurveda* which contains the medical writings of the highest antiquity and importance among the Hindus¹, written about a thousand years before Christ, we read that a woman is only capable of conception immediately after menstruation. The same may be read in the ancient Indian *Kamasutram* of Vatsyayana, annotated by Yasodhara². In these documents we find, besides the records of a periodical sterility, the false notion that the rutting time in animal life is analogous to menstruation in woman. Menstruation, however, is an occurrence that is met with only in the anthropoid apes or higher monkey types and in woman. The female monkey, in contrast to other animals which generally copulate only in the rutting time, can admit her mate at any time without necessarily becoming pregnant. In the other mammals which are not domesticated practically any copulation will lead to conception, for

¹ Comp. A. F. Lash: *The Gynecology of the Ancients*. Am. J. of Obst. and Gyn. XV, 1928, p. 262 and C. Bakker: *De Geneeskunst der oude Arische volken*. Nederl. Tijdschr. v. Geneeskunde 1932, 6, p. 568.

² Comp. W. F. Nuyens. R. K. Artsenblad 1932, 3, p. 99.

the reason that copulation takes place only at the rutting time, i.e. the ovulation time which is, as we shall see, the fertile period. Hence it appears that monkeys also have periods of sterility; Hartman in 1932 and 1933 wrote even of their "safe period." The duration of a monkey's cycle is twenty-seven to thirty days on an average. Now Hartman stated that, out of four hundred and twenty copulations which he observed to occur on different days in the cycle, only fifty-two led to conception. Out of these fifty-two copulations, forty-nine occurred between the eleventh and the sixteenth day of the cycle. We will revert later to the subject of comparative physiology; let us now return to history.

In Dr. Pouchet's interesting book, *Théorie positive de la fécondation des mammifères, basée sur l'observation de toute la série animale*, published in 1842, we again find the confusion of the animal rut with menstruation. On this false notion he formed the following conclusion: "Conception can only take place from the first to the twelfth day following on the menstruation and will never occur after this period." This was a remarkable statement for the year 1842. Dr. Pouchet's work managed to draw so much attention that it gave rise to a dispute on the lawfulness of using this knowledge for the purpose of avoiding pregnancy. The great moralist Ballerini discusses it in the first edition of his manual on moral law. In the meantime, in 1843, Bischoff had written: "In woman too an egg-cell is expelled from the ovaries every four weeks regularly,

which process is simultaneously accompanied by a sanguineous discharge from the uterus. This periodical ripening of an egg-cell is the first and foremost condition for conception and pregnancy. Only in these days will sexual intercourse lead to conception; at all other times conception will be impossible." Disregarding the error, we have here also the definite idea of a sterile period.

In 1863 Pflüger expounded his renowned *Reizschwelletheorie* further emphasizing the faulty notion about the relation between menstruation and ovulation. Capellmann's method of periodic abstinence (viz. abstinence during the first fourteen days from the beginning of menstruation and the three to four days before the next), published for the first time in 1877, is entirely based on this publication. Pflüger's theory ran as follows: The process of growth of the follicle in the ovaries causes a continuous stream of impulses to be sent from the ovaries to the central nervous system. These stimuli then accumulate in some part of the nervous system to a certain maximum (which Pflüger called the *Reizschwelle*—the threshold of the stimuli). As soon as this maximum is passed a reflex or response is returned from the central nervous system to the genital organs which causes a congestion there. This congestion then completes the ripening of the egg-cell, thus causing the follicle to burst and release it. The congestion of the organs also causes a sanguineous discharge from the womb, namely menstruation.

From this theory it was inferred that ovulation and menstruation almost coincided; much the same as ovulation in animals coincides with the rutting bleeding. This ingenious theory was accepted everywhere for many years. The results of other experiments, seemingly in opposition to this thesis, were explained otherwise. Thus it was thought that the proofs of Strassmann and the thesis of Leopold, Mironow, and Ravano were confirmations of Pflüger's theory. Afterwards they turned out to be wrong interpretations.

The wide spreading of Pflüger's theory explains how it became possible for so many medical men, especially those of the older generation, to remain under the delusion that ovulation and menstruation almost coincided.

It was only in 1898 that Pflüger was refuted, first by Knauer and later by Halban in 1901. It then became known that the relation between ovulation and menstruation was not yet understood; a positive explanation was still wanting. Later, when the laws of asepsis were discovered and more generally put into practice, a close examination on the occasion of surgical operations on the ovaries became possible and thus more accurate data about the ovulation period could be ascertained. The history of this last episode, which was concluded by the investigations of Ogino, we will discuss further in the chapter on Researches before Dr. Ogino.

2. BIOLOGICAL ASPECTS OF SEXUALITY

In order that the following chapters may be more easily understood we will first explain the elements of human sexual physiology.

The reproductive glands in the female are a pair of ovaries placed one on each side of the uterus or womb in the cavity of the pelvis. They are solid bodies about the size and shape of an almond. They produce the ovules or egg-cells which are single cells of microscopic size. The uterus is a hollow muscular organ resembling a flattened pear, with the large end upwards, occupying a median position in the pelvis. The vagina is the passage leading from the uterus to the exterior.

In connexion with each ovary is a tube, the uterine or Fallopian tube, about four inches in length, which leads to and opens into the cavity of the uterus. An ovule, when shed from the ovary, passes into the open end of the tube next the ovary and travels along it to the cavity of the uterus. Here, if fertilized, it becomes an embryo; the uterus enlarges enormously and the embryo finally develops into a fully formed child. The shedding of an ovule from the ovary is termed ovulation.

The process of ovulation directly governs the menstrual cycle. It is a very complicated process, but the principal facts about it must be grasped if this book is to be properly understood.

Before it is shed the egg-cell or ovule is to be

found actually in the wall of a minute cyst, the Graafian follicle, near the surface of the ovary. There are enormous numbers of follicles in each ovary but only a small proportion of them are used in a lifetime. In every menstrual cycle several of them undergo development but usually only one reaches maturity at a time. As it ripens the follicle increases in size and bulges on to the surface of the ovary, where it may be seen at abdominal operations, at the appropriate time, as a small cystic projection. Eventually it bursts and collapses, discharging its fluid contents and the egg-cell or ovule, which finds its way into the open end of the Fallopian tube. This constitutes ovulation.

The collapsed follicle now begins the important stage of development into a body known as the Corpus Luteum. Proliferation of cells takes place from the wall of the collapsed follicle towards the centre so that it once more becomes a spherical body, this time packed with cells, the Lutein cells. About eight days after ovulation it has reached the size of a small pea. On about the fourteenth day of its existence, if the ovule has not been fertilized, the corpus luteum begins to degenerate (it takes on a yellow colour from which the name is derived) and at this point menstruation sets in. The degeneration is a slow process and the corpus luteum's ultimate fate is to become a very small nodule of hyaline tissue.

If fertilization does occur the corpus luteum does

not degenerate but continues to grow for about four months and increases greatly in size, reaching as much as a third of the size of the ovary. In the later months of pregnancy it degenerates in the same way as before.

The Graafian follicles and the corpus luteum each produce different secretions, which, through the medium of the bloodstream, have a profound influence on the changes which occur in the uterus during the menstrual cycle and in pregnancy. Much experimental work has been done on this subject, chiefly in animals. The problem is extremely complicated but it is generally agreed that there are two secretions which directly influence the uterus:

(1) Oestrin or folliculin, derived from the Graafian follicles, which is responsible for the proliferative changes in the lining of the uterus in the first half of the menstrual cycle up till the moment of ovulation.

(2) The corpus luteum secretion which controls the further changes, in second half of the cycle, which prepare the lining of the uterus for the embedding of the fertilized ovule (premenstrual changes).

Other important functions are also attributed to the corpus luteum:

(1) It inhibits the further development of other ripening Graafian follicles and causes them to regress, therefore preventing ovulation from occur-

ing more than once during a cycle and also prohibiting ovulation during pregnancy. It may of course happen that two or even more follicles rupture simultaneously, in which case two corpora lutea will form; and if both ovules become fertilized twins will be born. But there is evidence to show that in man at any rate once the corpus luteum is formed and while it exists further ovulation does not occur.

(2) The maintenance of pregnancy in the early months. Corpus luteum secretion is thought to be antagonistic to follicular secretion. In pregnant animals the injection of large quantities of the latter causes abortion. The corpus luteum secretion apparently overrides the action of folliculin and its removal, by destruction of the corpus luteum of pregnancy, is followed by abortion. This is found to happen in pregnant women also.

(3) The development of the breasts in pregnancy.

These problems are still subjects of research and discussion and it must be understood that the above is only a statement of the more important facts about which there is a majority of agreement at the present day.

In describing the functions of the genital organs we cannot do better than follow the example of Dr. R. W. Johnstone who, in a brilliant article in the *American Journal of Obstetrics and Gynecology*, 19: 167, 1930, compares from a physiological point of view the sexual functions of men with those of

animals, with deep insight into their analogy and their differences.

In animals the female genital organs have two distinct functions, the copulative and the reproductive. The copulative function is that whereby the female receives the spermatozoa or male-cells into her genital tract. The reproductive function includes ovulation (the discharging of the ovule from the ovary), gestation or pregnancy, parturition or maternal labour, and lactation or breast feeding of the young. We must keep these two functions quite distinct in our minds, for upon this distinction depends our understanding of the physiology of the female organs.

The spermatozoa are microscopic thread-like organisms, furnished with a pin-head and a long tail and in shape resembling a tadpole. The length of a spermatozoon is about one five-hundredth of an inch. In man they may number about five hundred millions in the secretion or sperm discharged into the vagina at sexual intercourse. By means of their wriggling tails the spermatozoa can move up the uterine cavity and thence into the uterine or Fallopian tube towards the ovaries in two to three hours. The normal function and aim of every spermatozoon is to enter the ovule or egg-cell. This union, which results in profound changes, is known as "fertilization." It is designed that this union should usually take place in the Fallopian tube.

The copulative function of the lower animals is

characterized by the regular recurrence of periods of "heat" or rut (*œstrus*) and for the performance of the sexual act the genitalia of the female require special preparation. The opening of the vagina becomes enlarged, the vaginal lining becomes cornified, etc., all with a view to the reception of the spermatozoa and to facilitating their progress up into the uterine tubes. After the sexual congress, which almost inevitably occurs at this period in animals living in a state of nature, the genitalia begin to regress and in some species, especially carnivorous animals, there is actually a sanguineous discharge at this regressive stage, due to a bleeding from the congested uterine blood-vessels. It was the regular recurrence of this discharge that led to its being generally regarded as analogous to menstruation in monkeys and in women; but though the analogy is tempting it is false, for recent researches have proved the opposite. It is now known that the *œstrus* or rut of animals is an outward sign manifesting a complete preparation for conception whereas menstruation manifests the failure of this.

The second or reproductive function begins with ovulation. In all mammals ovulation is followed by a series of changes in the ovary and the uterus designed to prepare for the nesting of the fertilized and already developing ovule, now called the ovum. These changes which consist in the development of the corpus luteum or yellow body in the ovary, the swelling, thickening and congestion of the lining membrane of the uterus and its metamorphosis into

what is called the "decidua" are known as pseudo-pregnancy. If the ovule becomes fertilized—and in animals living in a state of nature it may be assumed that it almost always does—the course of the reproductive function continues over the period of gestation and lactation and ends by the return of the ovary and uterus to their usual "resting" condition.

If the ovule does not become fertilized these changes in the ovary and uterus only reach the stage of thickening and congestion; after which the uterus and ovaries gradually return to their original resting state. The important point is that the preparatory reproductive function always begins, whether an ovule has been fertilized or not; but its duration is determined by the presence or absence of the ovum (i.e. fertilized ovule). An important characteristic of animals is that the copulative function and the reproductive function are synchronized in the rut.

Now, when we come to consider the human species and the higher monkeys we find that the genitalia of the adult female require no special preparation for the sexual act, and therefore there is no true periodicity nor any restriction of the time of copulation. The periodicity of the sexual functions has become faint in these species; there is no longer any period in which sexual union is impossible, neither is there any biologically necessary synchronization between the sexual and reproductive functions. These two functions have become less dependent on each other.

In women, as in animals, the reproductive function begins with the maturation of the ovule and its release from the ovary, and continues with the development of the corpus luteum in the ovary and the swelling and congestion of the mucous membrane of the uterus, which we will call, after Schröder, the secretion phase of the uterus. It may be compared with the formation of the "decidua" in the lower mammals, for the mucous membrane of the uterus in the secretion phase is prepared in the same way for the nesting of the ovule should it become fertilized. The changes in the ovary and the uterus may be summed up in the words "premenstrual changes" and, like pseudo-pregnancy in the lower mammals, they take place irrespective of whether fertilization occurs or not.

If fertilization occurs the reproductive function proceeds uninterrupted to the end. Now the difference that exists between women and monkeys on the one hand and the lower mammals on the other only becomes clear when fertilization does not take place. The cycle will proceed in both cases up to a certain point; but in women and monkeys there is no gradual regress of the uterus as in the lower mammals: the secretion phase of the uterus ceases abruptly and the lining membrane is shed. The uterus expels the blood and débris of cast-off cells which constitute the menstrual flow. The whole phenomenon is called "menstruation."

Menstruation, therefore, is the abrupt ending of

the premenstrual changes in the uterus. It is not analogous to the œstral sanguineous discharge of the rutting period of some animals. For the latter manifests the complete preparation of the genital organs for conception, whereas menstruation is as it were, the demolition of scaffolding following on the failure of conception.

3. RESEARCHES BEFORE DR. OGINO

In the last few decades many researches have been made to discover the time of ovulation. The day or days in the cycle on which ovulation may occur is known as the ovulation period.

As early as 1872 Loewenhardt¹ had said that when pregnancy occurred it was not "the ovule of the past menses"—as it was expressed according to the notions of that time—but the ovule "of the expected menses" that was impregnated, thereby implying that ovulation is connected with the following and not with the preceding menstruation. This important conclusion, however, was overlooked by his contemporaries.

In calculating the ovulation period they always counted up from the past menstruation, though it is now clear that they ought to have counted back from the expected menstruation. This mistake was a constant source of confusion and made any concurrence in thought impossible, for only those who carefully selected women menstruating at the

Arch. Gynäk., 1872, III, p. 456.

same interval could be sure of getting the same result. Before 1924, however, there was only one investigator who realized this. Schröder in 1913 strictly limited his researches to women with a cycle of twenty-eight days. He found that in these women ovulation occurred on the fourteenth to the sixteenth day after the beginning of menstruation. Referring to the conception table (page 47) it will be seen that this is in keeping with Ogino's conclusions for the twenty-eight days' cycle.

The confusion was further increased by the startling researches of Siegel, Jäger, and Nürnberger. During the War they questioned pregnant women concerning their menstrual cycles at the time their husbands had been home on leave. From the information they collected they believed they were able to draw conclusions regarding the ovulation period and hence the fertile period in a woman's cycle. Their work, however, cannot claim to be scientifically accurate and is open to serious criticism. First of all, the information had to be given exclusively from memory. Now, a woman's information from memory about the duration of her menstrual cycle can never be accepted as a basis for serious scientific work, and at the time the inquiries were made the women were pregnant and consequently had not had menstruation for several months. Secondly: although Siegel himself gives no accurate figures it can be derived from his publications that 45 per cent of the women were unmarried. Many of these

may have been afraid to give true information about the time of cohabitation. Thirdly: the investigators could not exclude from the statistics those conceptions resulting from adultery, which were common in war time.

As Siegel's investigations are still much quoted, we wish to give them due consideration here. It is not clear from his publications what limits Siegel has put for the soldiers' furloughs. For example: in *Deutsche Med. Wochenschrift*, 1915, page 1251, he states that his final results would have a different interpretation if "among his cases he had not included those women whose husbands were at home from the tenth to twenty-first day after the beginning of the last menstruation." From this we infer that twelve days' furloughs have been included in the calculations. In *Münch. Med. Wochenschrift*, 1916, page 748, again he does not state his limits exactly, but speaks of: "only furloughs of a short duration, viz. those lasting a few days." Also in *Münch. Med. Wochenschrift*, 1916, page 1787, more exact data are wanting. In 1917, however, in his book *Gewollte und ungewollte Schwankungen der weiblichen Fruchtbarkeit*, Siegel writes that for his calculations he has exclusively made use of furloughs lasting nine days at most. Though this is at variance with his earlier statements we will take this last number as a basis for further discussion.

Siegel made statistics of those cases of which were known the dates of the woman's last menstruation and the days on which the husband had been home

on leave. In this way Siegel hoped to find out the position of the period of conception with reference to the menstrual cycle. Now this method is in itself extremely inexact, for it is clear that conception can have occurred on only *one* of the nine days of the husband's furlough. Siegel, however, was compelled to mark down *all nine* days for the time at which it occurred. This gives a very wide margin of error.

Next, it is not clear how Siegel calculated the percentages of conceptions occurring on each respective day of the cycle. His publications contain no explanations of the way of calculation, nor of the true significance of his "percentages." He merely gives a curve, saying (*Münch. Med. Wochenschrift*, 1916, page 749): "Consequently the chance of conception in a woman is enhanced immediately after the menstruation has stopped; it will attain its greatest height on the sixth day after the beginning of the menstruation with 52 per cent, maintaining this level till about the twelfth or thirteenth day. Then the curve falls sharply till on the twenty-second day it falls to almost absolute sterility." Although the general significance of these percentages is clear these calculations cannot serve as a serious scientific work.

Next, we call attention to another thing which we cannot account for. At the time Siegel had collected 212 cases he declared the last six days of the cycle before the next menstruation to be "almost absolutely sterile." But when the number of cases had

mounted to 300 he calculated the chance of conception for the twenty-third to twenty-sixth day as 3 per cent and for the twenty-seventh and twenty-eighth day as 5 per cent. To account for this the last 88 cases must have produced 9-15 conceptions in the last six days of the cycle!

Finally, we come to the most striking mistake of Siegel's investigations, albeit the same mistake was being made at that time by all investigators; he takes into account the 28 days' cycle exclusively, saying that he "of course took only women that had their menstruations regularly and exactly every 28 days." But from the recent investigations of Obata, King, Allen, Fluhman, Miller, von Mikulicz-Radecki, Knaus and the author it has been proved that *there are no women, who have their menstruations regularly every 28 days! It is a fact that the conception period of a woman varies with every cycle. No two women are alike in this respect.* These are very important practical points to remember. We can no more use such statistics for finding the conception period of a particular woman than we can give a collective prescription for the observance of periodic abstinence. It is strange that this error of judgment should not have been observed by the investigators themselves, nor by their critics afterwards. This can only be explained by the fact that almost everybody still believed that a normal woman should always menstruate every 28 days. It was only after the present writer in 1935 had pointed out that an invariably regular cycle in a woman was

nothing but a myth, that Professor Knaus, who had been engaged in the study of the menstrual cycles for years, did fully rid himself from this "traditional belief and lunar superstition" (Fluhman).

Even in 1931 and 1932 Dickinson and Bryant¹ published statistics, which for the same reasons cannot be considered to be founded on a sound basis. Out of the reports of thirteen different observers between the years 1853 and 1917 (note these dates!) they collected data re 1342 cases in which pregnancy had resulted from a single cohabitation. The conclusions which their figures suggest are almost the same as Siegel's: They too are open to the principal points of the above criticism.

Dr. R. C. Dickinson² had some intelligent and reliable patients who observed that, during a certain time in the menstrual cycle, intercourse did not result in conception, whereas at other times it did. From this and other facts he drew the interesting conclusion that for every woman there is a certain space of time in the course of the cycle when she is sterile; although this varies in individuals. The week previous to menstruation he considered comparatively the "safest" time.

We know of two very interesting cases published by Dr. Kurzrock in 1928.³ They concern two pious Jewish couples whose marriage, owing to a

¹ Dickinson and Bryant. *The Control of Conception*. Baillière, Tindall and Cox. London 1931 and 1932.

² The 'Safe Period' as a Birth Control Measure. *Am. J. of Obst. and Gyn.* XIV, 1922, No. 6.

³ R. Kurzrock *The Combination of a Short Menstrual Cycle and delayed Coitus as a Factor in Sterility*. *Am. J. of Obst. and Gyn.*, XV, 1928, p. 546.

wrong interpretation of religious rites, remained childless. One marriage had remained sterile for two and a half years. The woman was in perfect health. A special and minute examination of the genital organs of the couple failed to indicate any abnormality. Contraceptives had never been used. There were no menstrual complaints. The couple had, however, always postponed sexual intercourse till fourteen days after the menstrual flow had stopped. Menstruation occurred every twenty-four days. Only five or six times in these two and a half years of married life had it appeared one or two days late. The duration of menstruation was three days; consequently abstinence had always been observed till after the seventeenth day. Now on referring to the conception table (page 47) we see that with this woman whose cycle was twenty-four days, intercourse has always taken place in the pre-menstrual period. Quite unconsciously this couple had for two and a half years been practising a certain form of periodic abstinence. On 6 March, Dr. Kurzrock advised them to have intercourse the week after the onset of menstruation, which for religious motives they at first refused. After the menstruation of 9 May, however, they decided to make a trial, and for the first time since their marriage they had intercourse a few days after the cessation of the menses. The next menses promptly failed to appear, and on examination on 25 July, 1923, the woman was found to be two months pregnant.

The same woman also happened to observe another peculiarity worth mentioning. Between the 10th and 14th day of every cycle she had a sensation of pain low down in the abdomen for about twelve hours. The pain was felt alternately on either side. There is no doubt that we have here a case of intermenstrual pain in a woman with perfectly healthy genitalia (for further details about this symptom compare Chapter IV) and it gives further evidence for the cause of sterility in this marriage as it proves that ovulation occurred at about this time.

The other case also deals with a Jewish marriage, in which for two years intercourse had always been delayed till a fortnight after the cessation of menstruation. The genital organs were normal; there was no impotence. Menstruation occurred every twenty-six days and lasted three to five days. Consequently they never had intercourse till about the nineteenth day after the onset of menstruation. It is not surprising that the marriage was sterile, for they also had unconsciously observed a periodic abstinence which had prevented conception. When in August and September 1926, intercourse took place at an earlier time than usual the woman became pregnant.

4. DR. OGINO'S DISCOVERY

Dr. Kyusaku Ogino, of Niigata, Japan, was the first who emphatically insisted that the conception

period should be determined for every woman individually. In some women the fertile days are those immediately following menstruation, in others the fertile period lies in the second or third week of the menstrual cycle or even later. Ogino perceived that this difference was exclusively due to the cycle length. This important discovery, with one master-stroke, put an end to the obscurities and contradictions that beset this problem.

It had long since been established that ovulation was connected with the following menstruation and not with the preceding one. Now Ogino reasoned that in calculating the ovulation term we should count back from the following menstruation. He drew the simple and obvious conclusion that the fixed point from which to calculate the ovulation period was the first day of the menstruation following on an ovulation. Professor R. Remmelts, M.D., of Batavia, has said: "the splendid thing in Ogino's discovery is not that some investigators are put in the wrong at the cost of others being put in the right, but that this enlightening research logically explains the existing contradictions. It all seems so surprisingly simple that, as gynæcologists, we ought to be ashamed at not having hit upon the idea ourselves."¹

Dr. Ogino insists on working out the cycle not in terms of weeks but in terms of days. Only in this way can we determine the beginning of the next menstruation with sufficient accuracy.

¹ *Geneesk. Tijdschr. v. Nederl. Indië*. 72: 818, 1932.

The following was a testimony to the truth and brilliance of the new discovery. Ogino applied his way of calculating to the findings of his predecessors, Schröder, Ruge II (1913, 1917), Reusch, Halban and Kehrler, Seitz and Wintz, Fränkel (1904, 1910, 1911), and Tschirdewahn. He arranged their conclusions, which stated widely diverging ovulation data, according to the new method. The result was that only fifteen out of the five hundred and fifty-seven cases reported on could not be brought into harmony with his theory and with each other. All other variance disappeared. This striking result is all the more convincing when we consider that Ogino's predecessors spoke in terms of weeks, and that Ogino simply took the so-called four-weekly cycles for twenty-eight days' cycles. He would have been justified in including in the four-weekly cycles all cycles within an interval of twenty-five up to thirty-two days, since these cannot be classed either among the three-weekly or the five-weekly cycles. Moreover, the information on the menstrual cycle had generally been collected in a rather careless way and many of the cases applied were more than ten years old and the working methods of the investigators varied. Professor Robert Schröder, the only investigator, who, before 1929, confined his researches to a strictly limited group of women with a cycle within four weeks, and to whom we are indebted for his research concerning the importance of the corpus luteum and the phases of the mucous

coat of the uterus, entirely agrees with Dr. Ogino's result.¹ Professor Schröder made a restriction only in the cases of anticipated menstruation. This, however, is not in contradiction to Ogino, as we will explain in the chapter on anticipated and delayed menstruation.

The third investigator to whom we are indebted for his research concerning human fertility is Professor Hermann Knaus of Prague. Whereas Ogino studied all forms of cycles, Knaus, like Schröder, limited himself to the "four-weekly" cycle. In 1929 Professor Knaus discovered that the uterus fails to respond to the action of pituitrin in producing uterine contractions if a developing corpus luteum is present in either of the ovaries. He considered that the corpus luteum began to exert its influence directly after ovulation (see pages 11-13) and was able to determine the period of ovulation *via* this indirect method.

On these data Knaus based "a rule for periodic abstinence," which we will refer to in the chapter on Knaus's Rule.

As far back as 1924 Dr. Ogino published his researches in Japan.² Since that time he has been gathering considerable practical experience, which entirely confirms his research. In 1930 he published his theory in Europe³.

In 1929 Professor Knaus independently had

¹ Zbl. Gyn., 1932, 12, p. 723.

² *Nippon Funzinka Gakukaizasshi*, 1924, No. 6.

³ Zbl. Gyn. 1930, 8.

published his Rule which entirely confirmed Ogino's theory.

From 1930 up to this day the Dutch physician, Dr. J. N. J. Smulders, has been applying Ogino's theory in hundreds of cases without having to record a single fact that is contradictory to Ogino's conclusions.

5. THE PERIOD OF OVULATION ACCORDING TO OGINO

In 1934 Dr. Ogino recorded that there had been ninety-three women among his numerous patients who had a "regular course of menstrual periodicity." This is by no means a small number, for an entirely regular cycle is very unusual. The cycles of these patients varied from twenty-three to forty-five days. Cycles extending over thirty-four days were naturally among the rarest. Whenever Ogino performed an abdominal operation he had an opportunity of examining the ovaries to see whether the follicles were ripe or had burst, and of searching for corpora lutea. In many cases the corpus luteum was histologically examined; and it was frequently possible at the same time to determine the phase of the mucous coat of the uterus. From the records of his careful observations he arrived at the remarkable conclusion that *in any cycle in normal individuals ovulation always occurs twelve to sixteen days before the next menstruation.* (See conception table, page 47.)

In his Japanese book of 1935 Ogino gives evidence

TABLE I.

Duration of cycle	Days before the next menstruation on which operation was performed.														Number of cases
	25	23	21	19	17	15	13	11	9	7	5	3	1	0	
45												I			1
41								I							1
39					o			o							2
37	o														1
36		o													1
35												I			1
34				o									I		2
33							o	I	I						3
32		o			o	I				I			I		6
31		o													1
30		o	o	o	o	o	o	I	I	I	I	I	I	I	32
29				o	o			I	I			I			6
28		o	o		o	o	I	o	I	I	I	I	I	I	18
27						I		I	I		I		I	I	7
26							I					I		I	4
25										I		I			2
24											I				1
23									I			I	I		3

o=Ovulation has not yet occurred; I=Ovulation has passed.

of 36 cases of minor operations (e.g. for salpingostomy, abrasion of adhesions), during which he examined the ovaries regarding ovulation or non-ovulation. He also recorded the dates of the women's menstruations after and previous to these operations. His conclusions are clearly shown by Table I, which gives a record of his examinations. *Ovulation had always occurred before the last eleven days of every cycle, and never before the sixteenth day before the next menstruation.*

As further evidence for his view Ogino, in his Japanese book *Fujinno Jutai* (September 1935), gives two observations of intermenstrual pain, in *Zbl. Gyn.*, 1930, 8, he quotes Tschirdewahn's case and in *Zbl. Gyn.*, 1932, 12, the case of Ando. Cases are given in this book (see Chapter III, page 69, Test Case 7, page 137, Test Case 22, page 145) which also support this statement.

6. THE PREMENSTRUAL STERILE PERIOD.

We have now to determine the length of the sterile period preceding the menses. We know that from the sixteenth to the twelfth day before menstruation an ovule may be released from the ovary. But how long does this cell remain capable of being fertilized? If it may be fertilized at any time from the moment it leaves the ovary till the onset of the menstrual flow, then there is no premenstrual sterile period. But there is evidence to show that this is not so.

The well-known Dutch expert on eugenics, Dr. Marianne van Herwerden, says, in her popular scientific book entitled *De ontwikkelingsgeschiedenis van den mensch voor de geboorte* (*The Ontogenesis of Man*), page 41: "Every ripe ovule is destined to die unless impregnation saves its life. This is a remarkable phenomenon which occurs in the whole animal kingdom and no doubt also in man."

Owing to recent elaborate researches we are now well-informed about the processes at work in the ovule of mammals at the time of ovulation. Quite recently this process was demonstrated again by the German anatomist Stieve.¹ He examined the ripe follicles of sheep in their rutting season. The nuclei of their ova all showed the condition of the first maturation division. The first maturation division always occurs whilst the ovule is still in the ovary and before the spermatozoon has entered it. The second maturation division and the separation of the second polar bud or "polar projection" follows only after the male germ-cell has penetrated into the ovule. Both maturation divisions must necessarily succeed each other immediately, if the ovule is to remain fertilizable. For once the ripening process has set in, the different phases succeed each other fairly rapidly so that if it is not fertilized the ovule will soon degenerate. The ovule is not equal to such intense processes if it is not rejuvenated by impregnation. Impregnation saves the life of the ovule. Fischel in his *Lehrbuch der*

¹ *Zeitschr. f. Mikrosk.-anat. Forschung*, 36, 481. *Zbl. Gyn.* 1936, 3, 189.

Entwicklung des Menschen says: "As the second maturation division in mammals will only follow on the penetration of the male germs into the ovule, the ripening and the fertilization of these ovules imperceptibly pass into each other. If no impregnation occurs the second maturation division does not occur. Very soon the ovule will exhibit the signs of decay and in a short time it breaks down into detritus which disappears." This view is approved by reputed anatomists and cytologists. We mention van Herwerden, Sobotta, Corner, Hartman, Grosser, Graf Spee, and Walton. Sobotta even considers a long lifetime to be inappropriate, as the ovule would otherwise be fertilized too late in its passage down the genital tract.

The recent researches of G. Pincus¹ throw more light on the cause of this short duration of fertility. Soon after its entering the Fallopian tube there develops an albuminous coat round the ovule which prevents the sperms piercing it. Similar observations were made by Marshall (1922) and by Hartman (1924) with monkeys and marsupial animals.

Allen, Pratt, Newel and Bland (1930) tried to collect human ovules by syringing the tubes during operations. They also examined the newly formed corpus luteum. They found five ovules, one on the fifteenth day of the cycle, two twin-ovules (so here occurred in two cases a plural ovulation, but ovulated simultaneously. There was an ovule in

¹ "Observations on the Living Eggs of the Rabbit." *Proc. Roy. Soc., B.*, 1930, Vol. 107.

each tube; each ovary contained a corpus luteum with a fresh ovulation burst) also on the fifteenth day, the fourth and the fifth ovule on the sixteenth day of the cycle. From these examinations they conclude: "If fertilization does not take place within a relatively short interval, the ovum undergoes rapid degeneration and there is little chance of conception until the next intermenstruum."

Dr. Ogino himself did not directly experiment upon the duration of fertility of the ovum. He tried to find out the duration of the premenstrual sterile period in a clinical-statistical way. To begin with, he examined thirteen cases of pregnancy the conception day of which was accurately known. Some of these cases have been illustrated by tables in which the times of menstruation, ovulation and coition have been exactly marked out. One of these is reproduced in Table 3. It deals with a physician's wife of twenty-seven, whose last parturition was in April 1930. In four years intercourse took place most frequently after the ovulation period with the object of avoiding conception. When on 8 November, 1934 the couple deliberately had intercourse in the ovulation period, pregnancy was the immediate result. Similar cases will also be met with in our chapter on "Test Cases."

Another method followed by Dr. Ogino for determining the premenstrual sterile period was by questioning newly married couples. Knowing the date of their wedding and of the woman's last

(OGINO. FUJINNO JUTAKI, p. 121)



~~~~~ Ovulation period

**X Intercourse**

menstruation, he found that in forty-three cases menstruation did not recur after the wedding, indicating that pregnancy had set in at once. In all these cases the wedding occurred before or within the period of ovulation. But thirty-nine others who menstruated at least once before they became pregnant had all been married after the ovulation term.

An analogous research was published as early as 1915 in the *Deutsche Med. Wochenschrift* (1915, page 1251) differing only in that they had counted in weeks instead of days. In the clinics of the University of Freiburg in Breisgau, Dr. Wohlers instituted an inquiry into the cases of a hundred and sixty primiparous<sup>1</sup> women in whom conception had occurred within the first five weeks of the marriage. Among these were sixty-five couples whose wedding-day had happened to be in the last week preceding menstruation. All these women menstruated only once after their marriage and then became pregnant.

After his own research, Professor Knaus, independently of Dr. Ogino, came to the conclusion that the last eleven days of every cycle are "*völlig steril*." In the *Münch. Med. Wochenschrift* he says that, allowing for all possible physiological fluctuations, we are justified in maintaining that conception is impossible from the eleventh day preceding menstruation. Since 1929 Knaus has been successfully applying this rule in his practice. In 1933

<sup>1</sup> Parturient for the first time.

he presented two cases with an exact record of the dates when intercourse took place and of the beginning of menstruations. Fifty-three of the cohabitations all happening in the premenstruum did not result in pregnancy.

Miller, Schulz and Anderson in 1933 gave a record of 401 premenstrual cohabitations, without pregnancy resulting.

Ogino in 1935 reported a statistic of 601 cohabitations during the period of the eleven days before the subsequent menses, all without conception.

Since March 1930 the Dutch physician, Dr. J. N. J. Smulders, has seen Ogino's theory confirmed in hundreds of cases and the present writer may add his voice to Dr. Smulders', who kindly allowed him to participate in his experience.

From data reported by his own patients the present writer has made statistics of records of those couples who had regularly informed him of the dates of their sexual unions and of the beginning of their menstruations. Before that time all these women had given birth to one or more children. From their reports the author could collect 293 sexual unions, occurring on the first day before the subsequent menstruation, 296 on the second day, 307 on the third day, etc.; altogether 2746 cohabitations during the premenstruum, which have all proved sterile. Table 4 shows the cases of Knaus, Miller, Ogino and Holt. Taken together it is a record of 3801 cohabitations in the premenstruum, not one of which led to conception.

TABLE IV.

| Author | Number of days previous to menstruation. |     |     |     |     |     |     |     |     |     |     | Total number<br>of intercourses |
|--------|------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------------------------|
|        | 11                                       | 10  | 9   | 8   | 7   | 6   | 5   | 4   | 3   | 2   | 1   |                                 |
| KNAUS  | 4                                        | 4   | 11  | 1   | 3   | 3   | 7   | 6   | 7   | 3   | 4   | 53                              |
| MILLER | 15                                       | 5   | 16  | 13  | 21  | 44  | 50  | 44  | 47  | 64  | 82  | 401                             |
| OGINO  | 41                                       | 21  | 47  | 55  | 60  | 55  | 61  | 62  | 70  | 56  | 73  | 601                             |
| HOLT   | 89                                       | 155 | 199 | 231 | 262 | 306 | 281 | 327 | 307 | 296 | 293 | 2746                            |
|        | 149                                      | 185 | 273 | 300 | 346 | 408 | 399 | 439 | 431 | 419 | 452 | 3801                            |

Summarizing, we consider it proved on clinical evidence that *there is a physiological entirely sterile period during the last eleven days before menstruation.*

## 7. THE CONCEPTION PERIOD

Impregnation, also called fecundation, fertilization or conception, is the union of a male spermatozoon and a female ovule, out of which union there proceeds a new human germ. This is the ovum or fertilized egg. It is about 1-120th of an inch in diameter.<sup>1</sup>

The days during which coitus may lead to impregnation we call "the conception period."

The last day of this period we have already found when ascertaining that ovulation takes place at the very latest on the twelfth day before menstruation and that the ovule then becomes unfertilizable within a few hours. Therefore any coitus after the twelfth day before menstruation will not result in pregnancy.

The first day of the conception period must now be found, that is to say the earliest day in the cycle on which sexual intercourse will lead to conception. Now the earliest day on which ovulation may occur is the sixteenth day before menstruation. Will intercourse before this day result in conception? The answer depends on how long the spermatozoa are able to live in the female genital

<sup>1</sup> As the fertilized ovum develops and grows it is called an "embryo" up to the end of the third month when it is called a "foetus."

organs and retain their ability to fertilize. If it is for a short time only, like the ovule, then intercourse during the early part of the cycle will not lead to conception since the spermatozoa will be dead or unable to fertilize by the time the ovule appears. If on the other hand it is a long time, then conception would result from any coitus between menstruation and ovulation, as the ovule would find spermatozoa waiting for it which would still be able to fertilize.

On the problem of the duration of the fertilizing capacity of the male germs there have appeared so many publications, especially after 1922, and so many new sides to the question have been opened up that we must confine ourselves to a brief survey only.

From puberty onwards there takes place in the testicles an uninterrupted formation of millions of male germ-cells or spermatozoa. Formerly it was believed that the continuous production of new spermatozoa caused the elder ones to move up and that they were stored up in the seminal vesicles<sup>1</sup> till an ejaculation would expel them, mixed with the products of several genital glands. Nowadays it is known that the young spermatozoa when not yet quite full-grown, are actively moving on towards the principal reservoir, which is not the seminal vesicle but the epididymis.<sup>2</sup> It seems strange that these important germs should be kept

<sup>1</sup> The seminal vesicles are a pair of hollow-sacculated structures placed in front of the rectum and behind the bladder.

<sup>2</sup> The epididymis is a somewhat crescentic oblong body, attached to the upper part of each testicle, composed of closely convoluted tubules.

in the scrotum where they are easily exposed to injury or change of temperature, and no less that the testicles should also be thus exposed.

But there is a reason for this as will be explained later. When they arrive in the tail of the epididymis the sperms ripen and lose their motility. Now Redenz (1924-1929) and von Lanz (1924) have demonstrated that these spermatozoa possess a considerable but latent energy. Their activity, however, is stopped in the epididymis mainly on account of the withdrawal of oxygen. The spermatozoa are lying closely packed in a passage with an enormous width, relatively speaking, and as the oxygen can enter only through the walls they get in want of oxygen. This can be proved thus: if in a vacuum we take spermatozoa out of the epididymis, these germs will move slowly. As soon as air or oxygen is admitted a lively motion will appear which is checked again by the admittance of carbon dioxide.

Redenz proved that in the epididymis of the rabbit the spermatozoa remained able to fecundate for two months. Hammond and Asdell (1926) divided the epididymis from the testis in rabbits. Up to twenty days after this the animals remained fertile and it was only after forty days that all animals had become sterile. But their spermatozoa retained their *motility* up to the sixtieth day. Here we encounter for the first time the distinction between *motility* and *fertilizing capacity*. Knaus had already pointed this out, but in 1931 it was

once more emphasized by Moench, who after extensive investigations came to these conclusions:

1. The motility of spermatozoa as seen by microscopic inspection is not necessarily of the same intensity as it is in the female genitalia.

2. A motionless spermatozoon is not necessarily a dead one.

3. Motility is not a certain indication of the power of fecundation.

4. The spermatozoa lose their power to fecundate much earlier than their power to move.

5. Abnormal spermatozoa retain their motility longer than the normal ones.

6. For the power of fecundation of an ejaculation other factors than motility are of almost equal importance. Locomotion or motility though essential is by no means the only determining factor. Among these other factors we may mention the acidity of the vaginal secretions, the number of spermatozoa, the quantity of the ejaculation, the properties of the spermatozoa themselves, the chemical and biological conditions of the cervical mucus, etc.

Hammond (1930) and Walton (1930) showed that at a lower temperature the spermatozoa remained capable of fertilization longer than with the normal bodily temperature. The optimum lying between 50° and 59° F. This is borne out by the observation of Hoehne and Behne (1914), who found that the spermatozoa in the vagina of dead animals live longer than those in the vagina

of live animals, and by the work of Stigler, Nürnberger and Guggisberg, and Iwanoff. Moench found that sperms, kept in any fluid suspension, live shortest when kept at bodily temperature. The critical reader may say, that these are nothing more than laboratory proofs and will ask for proofs from the behaviour of sperms in organic relation. But with this also experiments have been made, from which it appears that by raising the temperature of the testicle and epididymis (achieved by various means) the formation of new sperms is stopped and the remaining spermatozoa disappear. Moore and Oslund (1924) and Crew (1927) even proved that the external application of warmth is unnecessary, but that enveloping the scrotum for fifty days with insulating material renders an animal sterile for a year. This clearly proves that the task of the scrotum is to keep the temperature of the testicles lower than bodily temperature. In Holland Harrenstein (1928) and Esser (1931) proved this with exact measurement of the temperature. The anatomical structure of the scrotum is excellently adapted for the regulation of temperature, but we shall not further dwell on this subject here. Esser also proved that the temperature of the human testicle itself is  $1^{\circ}$ – $2^{\circ}$  C. lower than the body temperature. We now understand why males with undescended testicles<sup>1</sup> after puberty, are sterile. If

<sup>1</sup> The testicles in the foetus are developed inside the abdominal cavity. Before birth they descend through the abdominal wall and out into scrotum. But sometimes it happens that their descent is arrested and then they remain within the abdominal cavity. This "retention of the testis" is called cryptorchism.

the testicle of an animal is transplanted to the abdominal cavity, the production of sperms will stop in a few days. Knaus demonstrated in 1932 and 1933 with rabbits that in the head of the epididymis of an undescended testicle the fertilizing capacity is lost after seven days and in the tail after four days. The oldest spermatozoa, which lie in the ejaculatory duct and seminal vesicles, remain able to fecundate for only two days after ligature of the deferent duct. Consequently: the older the spermatozoa the more sensitive to high temperature. The seminal vesicles, lying in the abdominal cavity, are at body temperature and therefore can never be a storing place for the spermatozoa; their main task is to resorb the decayed spermatozoa.

Now in the female organs the sperms are again exposed to this higher temperature which we know to be detrimental to their fertility. They are also exposed to the harmful acidity of the vaginal secretions, and further, to an active phagocytosis,<sup>1</sup> which, according to the examinations of Popa and Marza (1929), increases higher up in the genital tract. Hence rather few spermatozoa reach the ovary. Prof. Knaus says, that this explains why, according to an analysis of Walton (1927), the fertility as determined by artificial insemination of rabbits will decrease as soon as there are less than one million spermatozoa present per cubic centimetre of the spermatic fluid and that when there are only 3000

<sup>1</sup> Phagocytosis is a process by which bacteria, foreign bodies or other microscopic particles (e.g. spermatozoa) are destroyed through the activity of the white blood-cells.

spermatozoa per cubic centimetre the spermatid fluid is sterile. Hence the enormous number of sperms in one ejaculation. The probability of any one spermatozoon reaching the fertilizable ovule is small. There is a struggle for existence and survival of the fittest. Only the most powerful spermatozoa are able to reach their goal. Hammond and Asdell (1928) demonstrated that the fertilizing capacity of the spermatozoa in the female reproductive tracts of rabbits holds no longer than 30 hours at the utmost: "The sperms may retain their fertility in the male tract up to 38 days, but in the female tract only up to 30 hours."

Sobotta stated the maximum duration of the spermatozoa's motility in the mouse to be 10 hours; Yochem, in the rat, to be 16 hours and in the guinea-pig 41 hours. Lewis, in the pig, and Anderson for the horse not more than 48 hours. As we stated above fertilizing capacity lasts shorter than the sperm's motility. Now if we remember:

1. that man also has a scrotal testicle;
2. that in man cryptorchism causes sterility as in animals with scrotal testicles;
3. that in man too the temperature in the scrotum is lower than body temperature;

Then we may reasonably assume that the behaviour of human spermatozoa does not differ greatly from those of animals and that their fertilizing capacity lies below 48 hours. We, in practice, reckon with 72 hours and from our many cases it

is proved that this term is cautious and even ample.

Kurzrock and Miller (1928), Mall (1918), Graf Spee (1915), Bryce and Teacher (1908), Triepel (1914) and others have contributed to this problem and though their estimates of the duration of fertility of the sperms in the female genital organs differ considerably they are all under 3 days. Furthermore, although spermatozoa have been recovered alive from the female organs three weeks or more after coitus, Hoene, Behne, Lillie and others maintain that such sperms are incapable of fertilizing. From the evidence we have collected we consider that the length of time a spermatozoon remains capable of fertilizing is not more than three days after its entrance into the vagina.

So, in the Ogino-Smulders method, these *three* days are added to the five-days' period of ovulation. *Therefore in every cycle we observe a conception period of eight days which precedes the premenstrual sterile period. We call this "the normal conception period."*

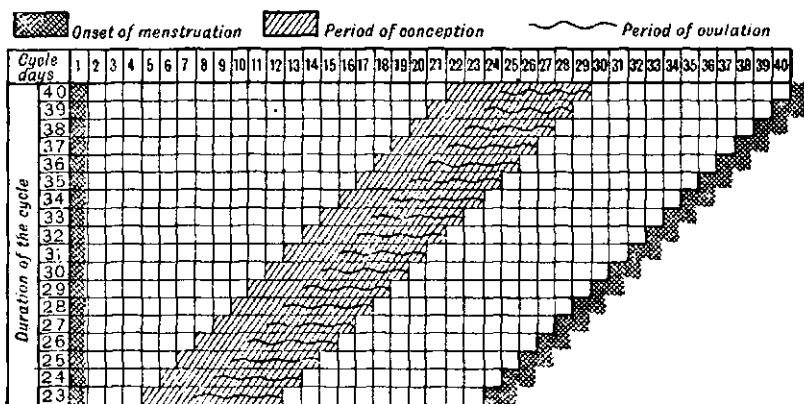
## 8. THE POSTMENSTRUAL STERILE PERIOD

Counting back from the expected menstruation we have found in every normal cycle:

1. a premenstrual sterile period during the last eleven days;
2. a normal conception period of eight days preceding this.

But there remain a number of days before the conception period. Practice has fully verified that these, too, are entirely sterile. In the conception table on this page the different periods have been separately marked out for every cycle length. Observe that the actual days of menstruation are also included in this period; the name *postmenstruum* does not indicate the days following on the cessation but the onset of menstruation. It makes no difference at what point in the cycle the menstrual flow stops. Only the beginning of menstruation is of significance.

CONCEPTION TABLE



The postmenstrual period is just as sterile as the premenstrual period, for in the postmenstruum there is no ovule set free for impregnation while the spermatozoa that may have entered the female genital tract will have died or at least become incapable of fecundating by the time ovulation does occur.

Ogino demonstrated the infertility of the postmenstruum by giving statistics of 179 cohabitations occurring during this period. He arranged them according to the number of days before the ovulation period. Compare Table 5.

TABLE V.

Ogino's statistics of 179 cohabitations in the postmenstruum.  
(Ogino. *Fujinno Jutaihi*. Sept. 1935, p. 143).

| Number of days before<br>ovulation period ... | 11 | 10 | 9  | 8  | 7  | 6  | 5  | 4  | 3  | 2  | 1 |
|-----------------------------------------------|----|----|----|----|----|----|----|----|----|----|---|
| Number of cohabitations                       | 4  | 7  | 14 | 30 | 27 | 27 | 26 | 23 | 16 | 15 | 0 |

From statistics of our own material we can give evidence of 701 postmenstrual cohabitations of fertile couples, none of which resulted in pregnancy. The dates of the cohabitations and also the dates of the menstruations before and after intercourse were all exactly known. In Table 6 the records of these cases are given. The table shows clearly that the period of postmenstrual sterility is longer or shorter in proportion to the duration of the cycle.

#### 9. THE PERIOD OF ABSTINENCE

After the division of the cycle into periods of fertility and sterility, we pass on to the practical question: How long is abstinence to be observed in every cycle? If a woman always had the same

TABLE VI.

The author's statistics of 701 postmenstrual cohabitations of fertile couples.  
None resulted in pregnancy.

| cycle day | 1 | 2 | 3 | 4  | 5  | 6  | 7  | 8  | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
|-----------|---|---|---|----|----|----|----|----|---|----|----|----|----|----|----|----|----|----|----|----|----|
| 40        |   |   |   |    | 1  | 1  | 1  | 1  | 1 |    |    |    | 1  | 1  |    |    |    |    |    |    |    |
| 39        |   |   |   |    |    |    |    |    |   |    |    |    |    |    |    |    |    |    |    |    |    |
| 38        |   |   |   |    | 1  | 1  | 1  | 1  |   |    | 1  |    |    |    |    |    |    |    |    |    |    |
| 37        |   |   |   |    | 1  |    |    |    |   |    | 2  |    |    |    |    |    |    |    |    |    |    |
| 36        |   |   |   |    | 1  | 4  | 2  | 1  | 1 |    | 1  |    |    |    |    | 1  |    |    |    |    |    |
| 35        |   |   |   | 1  | 3  | 3  | 2  | 1  | 1 |    |    | 1  |    |    |    |    |    |    |    |    |    |
| 34        |   |   |   |    | 3  | 3  | 3  | 1  | 2 |    | 1  |    |    |    |    |    |    |    |    |    |    |
| 33        |   |   |   |    | 5  | 6  | 5  | 4  | 4 | 1  |    |    |    |    |    |    |    |    |    |    |    |
| 32        |   |   | 1 | 2  | 9  | 11 | 8  | 4  | 2 | 1  |    |    |    |    |    |    |    |    |    |    |    |
| 31        |   |   |   | 3  | 9  | 11 | 14 | 6  | 8 | 1  | 5  |    | 1  |    |    |    |    |    |    |    |    |
| 30        | 3 | 1 | 1 | 9  | 15 | 21 | 16 | 6  | 3 |    |    | 1  |    |    |    |    |    |    |    |    |    |
| 29        | 1 |   | 1 | 6  | 33 | 29 | 26 | 10 | 3 | 2  |    |    |    |    |    |    |    |    |    |    |    |
| 28        | 3 | 3 | 6 | 19 | 33 | 41 | 29 | 9  | 1 | 2  |    |    |    |    |    |    |    |    |    |    |    |
| 27        | 1 | 3 | 9 | 17 | 31 | 31 | 19 | 13 | 1 |    |    |    |    |    |    |    |    |    |    |    |    |
| 26        | 3 |   | 3 | 7  | 13 | 6  | 7  | 2  | 1 |    |    |    |    |    |    |    |    |    |    |    |    |
| 25        |   |   |   | 7  | 3  | 2  | 6  |    |   |    |    |    |    |    |    |    |    |    |    |    |    |
| 24        |   |   | 1 | 2  | 1  |    |    |    |   |    |    |    |    |    |    |    |    |    |    |    |    |
| 23        |   |   | 2 | 5  |    | 1  |    |    |   |    |    |    |    |    |    |    |    |    |    |    |    |

interval between two menstruations—in other words, if she proved to have a regular simple cycle-form—it would be an easy matter to decide. The only thing we should have to do would be to study the following figures:

| OVULATION PERIOD.                 |  |  |  |  |                       |                    |                                    |     |  |  |  |                                            |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|--|--|--|--|-----------------------|--------------------|------------------------------------|-----|--|--|--|--------------------------------------------|--|--|--|--|--|--|--|--|--|--|
| XXX...23, 22, 21, 20              |  |  |  |  | 19, 18, 17,           | 16, 15, 14, 13, 12 | 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1. | XXX |  |  |  |                                            |  |  |  |  |  |  |  |  |  |  |
| Sterile                           |  |  |  |  | Conception Period     |                    |                                    |     |  |  |  | Sterile.                                   |  |  |  |  |  |  |  |  |  |  |
|                                   |  |  |  |  | Period of Abstinence. |                    |                                    |     |  |  |  |                                            |  |  |  |  |  |  |  |  |  |  |
| 1st day of the past menstruation. |  |  |  |  |                       |                    |                                    |     |  |  |  | 1st day of the next menstruation expected. |  |  |  |  |  |  |  |  |  |  |

In the shortest cycle, one of twenty-three days, menstruation occupies practically all the days before the conception period. The longer the cycle, the more sterile days do we find. This has been clearly demonstrated in the Conception Table.

However, *the application of the theory is by no means so simple, because scarcely any woman has a regular simple cycle-form: it is nearly always variable.* Moreover, we cannot rely on the functioning of a living organism as surely as on a modern chronometer. A biological function is not mechanical. And yet, as everywhere in nature, there is a rhythm in its processes and under normal circumstances it fluctuates between measurable physiological limits. This enables us to formulate a separate prescription for the conception period of

every particular case. For further details study Chapter IV.

## 10. DISCUSSION OF SOME OBJECTIONS

Before concluding this chapter we wish to discuss some of the objections that have been made against the fundamental principles of the method. I know of four different objections.

The first is: that there might occur several ovulations in one cycle. This may indeed be so. It is quite certain that plural ovulation is possible, but even so they occur only in the calculated period of ovulation. That a second ovulation, more than forty-eight hours after the first, would be possible in the same cycle cannot be accepted since within forty-eight hours the corpus luteum of the first ovulation has fully displayed its effect, preventing further development of follicles in the ovaries up to the time just before menstruation.

The second objection is: that the duration of the cycle may vary under the influence of abnormal circumstances such as illness, anæmia, diseases of the genital organs, etc., and surpass the limits of the estimated cycle-form. This is also true. But it need not be concluded that the practice of "periodic abstinence" is unreliable for this reason. In the method explained in this book allowance has been made for such circumstances. There are two possibilities in this connexion. The first is that the abnormal circumstance exerts its influence

in that part of the cycle which lies after ovulation. In that case conception cannot be the result for ovulation has then passed. The only consequence may be that menstruation appears at an unusual time. There may occur a "delayed" or an "anticipated" (comp. Chapter II, 3, page 65) menstruation, but not conception.

The second possibility is that the influence in question carries effect in the ripening time of the follicle, which begins at about two days before the past menstruation and ends with ovulation. In this case the time of ovulation may be delayed and even surpass the calculated conception period. Hence our imperative warning that in such a case the period of abstinence should be enlarged. Those practising periodic abstinence must be constantly on the look-out for any abnormal influence, especially matters of health which may upset the rhythm of the monthly cycle.

It is surprising that Dr. Ogino<sup>1</sup> attaches little importance to these deviations of the cycle. He founds his opinion on the fact that in his statistics, in which he has collected in one frame the cycles of two hundred and fifty-three girls all of different constitutions and sensibilities and with different cyclic types, he could not discover any influence of a catastrophe—namely an earthquake—which all these girls had experienced. Here Ogino has made the same mistake as his opponents formerly made in the calculation of the conception period. If he

<sup>1</sup> *Conception Period of Women*. Harrisburg 1934, pp. 28-29, 33.

had had records of the menstruation of each girl separately he might have observed considerable deviations appearing in each individual cycle type. But as the menstruation of one woman will be delayed while that of another will be anticipated on account of a shock, the different effects will neutralize each other when gathered into one frame. It is strange that Dr. Ogino, who has always avoided this statistical error in the question of conception, should now fall into it himself when referring to the influence of a psychological shock on menstruation. It proves once more how difficult it is to rid oneself of a commonly adopted line of thought.

Third objection: from an investigation of Schröder<sup>1</sup> it might be inferred that Dr. Ogino's theory would not do for cycles of twenty to twenty-two days.

We answer that Ogino did not compose his theory for cycles shorter than twenty-three days. Further, we maintain that Schröder had met with anticipated menstruations here (comp. Chapter II, 3, page 65). In his latest publication he says: "Normally the ripening of the ovule lasts nine to eleven days (fifth to fifteenth day of the four-weekly cycle), the corpus luteum phase about twelve days (fifteenth to twenty-seventh day). If the latter is abridged on account of an early degeneration of the corpus luteum, menstruation is anticipated. The duration of the ripening phase remains the same. Also in three-weekly cycles ovulation occurs about every

<sup>1</sup> *Veit-Stoeckel*. Band 1, 2. p. 282.

fortnight so that the ripening phase lasts nine days, but the corpus luteum phase only six to seven days instead of twelve days as in normal cases."

This quotation unmistakably proves that Schröder's three-weekly cycles are what we have called "anticipated menstruations." Among thousands of cycles we have seen many as short as three weeks or even less, but we have never known such a short cycle-form to be regular. We accept that in normal short cycles the corpus luteum phase is a little shorter on the average (this is one of the reasons why we reject Knaus's Rule in its present form), but we do not accept that here Ogino's conception period falls in the wrong part of the cycle; there are still eleven sterile days before menstruation.

Fourth objection: this is the objection that is most frequently raised, and it is that a so-called "violent-ovulation" might at any time be provoked by the stimulus of the sexual act. It is believed to happen thus in man. Among all mammals there are only three—the cat, the rabbit and the ferret—in which ovulation occurs as the immediate result of copulation. In all others it is spontaneous. One cannot make experiments with human beings on this subject, but we know that the follicles in the ovary are only mature and therefore capable of being ruptured by "violence" at the beginning of the conception period.

If violent ovulation were possible in woman we ought to observe the following four phenomena:

1. That menstruation becomes more irregular after marriage. We notice on the contrary that the normal marital intercourse has a regulating influence rather than a disturbing one.

2. That women who regularly record their intermenstrual pain (comp. Chapter III, page 69) would be able to make an experiment and bring about this symptom at any time in the cycle merely by a sexual union. But intermenstrual pain occurs quite independently of the sexual intercourse: it appears spontaneously.

3. In some marriages circumstances lead to very irregular cohabitation (e.g. on account of the husband's business). Long periods of abstinence alternate with periods of regular intercourse. If violent ovulation existed we should notice a change in the duration of the cycles in these different circumstances. But we see nothing of the sort.

4. Women practising periodic abstinence give the best proof. For suppose we wanted to make experiments the procedure would be as follows: to abstain from intercourse at the time when the spontaneous ovulation is to be expected, but confine intercourse exclusively to the other periods of the cycle in order to stimulate a violent ovulation. If violent ovulation was possible the result would be an increase of irregularity of the cycles during the observance of periodic abstinence. But this does not follow. Study the test-cases, Part III.

## *Chapter II*

### THE NORMAL AND THE PATHOLOGICAL PERIOD OF CONCEPTION

#### I. PHYSIOLOGY AND PATHOLOGY

WHEN speaking of human physiology, we mean the science of the normal vital functions and phenomena of the human body. Opposed to this is pathology, the science of the cause, nature, course and results of disease or of any deviation from the normal functions of the body.

For example the normal average temperature of the human body is  $98.4^{\circ}$  F. A temperature higher or lower than this may be considered as pathological.

Now menstruation is a normal process that occurs thirteen to seventeen days after every ovulation when the ovule has not been fertilized. But exceptions to this rule may be met with in abnormal or pathological cases. Ogino mentions two: "First of all menstruation may occur earlier in the case of the corpus luteum being destroyed in the period of its development; secondly, when the mucous coat of the uterus has been diseased to such a degree that it remains refractory to the activity of the corpus luteum and does not undergo normal menstrual changes."

Diseases of the genitalia in most cases exert some

influence on the cycle, though it may be in a less degree than would be expected, for the tissue of the ovaries is remarkably resistant to local processes. Nearly always some part of the ovary survives to carry on the work. There may also occur disturbances in the follicle or in the corpus luteum itself.

In some women with irregular cycles one meets with a condition in the ovaries known to physicians as "degeneratio microcystica" (or, according to Ziegler, "hypertrophia folliculi"), in more serious cases leading to a condition known as persistence of the follicle.<sup>1</sup> This gives rise to the symptoms of "hyperplasia mucosae uteri (metropathia hæmorrhagica)." A counterpart to these processes are the disturbances of the corpus luteum, among which we may mention the cystic degeneration of the corpus luteum, the "corpus luteum persistens" and the "corpus luteum hæmorrhagica." These conditions cannot be fully discussed here. It stands to reason that they may appear more or less suddenly and may give rise to unexpected modifications in the cycle.

One need not be afraid that in the above cases pregnancy would occur unawares. But there are other influences that may interfere with the normal course of the cycle which it is of great importance for physicians as well as laymen to note, that they may duly reckon with them in the practice of periodic abstinence.

<sup>1</sup> According to Schröder.

The ovaries are very sensitive to injurious influences that affect the whole body—influences which are more often met with than the local disease processes referred to above. We will mention some of them.

Physicians generally agree that the use of contraceptives is often the cause of irregular menses. Whether this is due to psychological or to local effects (inflammation of the cervix among other things) is no matter for discussion here. The fact has been thoroughly established. By returning to a normal intercourse the cycle may frequently be restored to normal.

We should also emphasize the influence of lactation on menstruation. There is a close association between the genital organs and the mammary glands. Menstruation often ceases, or appears at longer intervals than usual, during lactation. Typical instances of this will be found in Part III, cases 9–18, page. 140. We might regard this as an attempt on the part of nature to prevent one pregnancy succeeding another too soon, for the chance of a new impregnation is thereby diminished. But there is no means of knowing when the first ovulation will occur and consequently it is impossible to foretell the first period of renewed fertility. So if one wants to prevent conception following too soon after the last pregnancy total abstinence must be observed until the appearance of the first menstruation, after which the method can be practised again but only with great reserve. The further procedure for the

practice during lactation will be dealt with in Chapter IV, sub 4, G.

When a serious disorder attacks the whole body, the function of the ovaries comes to a standstill and amenorrhœa (arrest of the menses) sets in. In slighter cases the ripening of the follicle is merely delayed or the function of the corpus luteum modified.

Not only physicians but anyone practising the method should be fully familiar with these factors, for if they appear in the ripening phase of the follicle (i.e. from two days before menstruation up to and inclusive of the time of the following ovulation) they may delay, or sometimes accelerate, the time of ovulation. In such cases the period of abstinence should be enlarged accordingly. (Comp. Chapter IV, 1.) We will mention the conditions that may have a disturbing effect on the course of the cycle:

1. Over-exertion, either mental or physical, and the worries and fatigues of "spring-cleaning" we know from experience are worth mentioning. In many people emotions such as trouble, fright, anxiety, sorrow, excessive joy, influence the cycle. Strong emotion may cause even a temporary arrest of the menses. On the other hand an approaching menstruation may be hastened by it.

2. Change of climate, a different mode of living or of occupation (for example, the exertions of holiday-times), etc. may have an influence.

3. Diseases such as anæmia, chlorosis, malnutrition, endocrine disturbances (diabetes, hypo- and hyperthyreosis, pituitary disturbances) and also certain medicines (preparations containing iodine or extracts of certain organs, especially thyroid), early tuberculosis, heart diseases, chronic abscesses and other suppurative processes, intoxications and all surgical operations and acute infectious diseases. In serious mental diseases (states of depression, melancholy, paralysis, amentia, dementia præcox) disturbances in the menstrual cycle are manifold.

All women are not equally sensitive to the above-mentioned influences. Constitution plays an important part; the more asthenic constitution seems to be more sensitive than others.

Finally we should remember the possibility of the approaching climacteric or "change of life."

We often encounter borderline-cases in which it is difficult to make out whether we have to do with a pathological or with a physiological but irregular form of cycle. In medical practice when dealing with these problems it is very important to distinguish between the pathological irregularity of menstruation due to actual disease of the genital organs or to the conditions we have just mentioned and the physiological irregularity of the cycle-form. In our opinion Dr. Ogino makes insufficient distinction between these two.

## 2. THE PHYSIOLOGICAL CYCLE-FORMS

The idea prevails that a twenty-eight day cycle is the most normal and most often met with. If, however, the onset of the menstrual flow is ascertained in exact dates, it appears that the entirely regular twenty-eight day cycle-form is indeed a "rare bird." It is seen a few months together at the utmost.

If we take all forms of cycle into consideration we notice that the twenty-eight day cycle is not even the commonest. Cycles of thirty and thirty-one days appear to occur more often. Our experience in this matter is entirely in keeping with Ogino's. He made a statistical record of eight hundred and eighty-three cycles of six hundred and ninety-four healthy multiparae (women who have borne more than one child).<sup>1</sup> The frequency with which the various cycles appeared is shown in Table 7, which shows that the thirty-one days' cycle occurs most frequently. Cycles of more than thirty-one days form no less than 32.9 per cent of all types and those of less than twenty-five days do not exceed 10 per cent. Ogino informs us that Obata<sup>2</sup> and Nakagawa<sup>3</sup> come to the same conclusions.

Now if a woman notes down with exactitude the initial day of every menstruation, calculating at the same time the length of each cycle, she will notice after some time, that *in normal circumstances the*

<sup>1</sup> *Zbl. Gyn.* 1932, 12, p. 727.

<sup>2</sup> Obata. *Nihon fujinkagakukai zasshi* 24, Nr. 8 (quoted *Zbl. Gyn.*, 1932, 12).

<sup>3</sup> Nakagawa. *Jap. J. of Obst.* 14, Nr. 3 (quoted *Zbl. Gyn.* 1932, 12).

TABLE VII.

Frequency of different cycles, as found by Ogino.

| 19 days' cycle.....          | 1.1  | per Cent. |        |
|------------------------------|------|-----------|--------|
| 20 " " .....                 | 1.8  | " "       |        |
| 21 " " .....                 | 2.1  | " "       | 10.3 % |
| 22 " " .....                 | 1.1  | " "       |        |
| 23 " " .....                 | 1.4  | " "       |        |
| 24 " " .....                 | 2.8  | " "       |        |
| 25 " " .....                 | 4.1  | " "       |        |
| 26 " " .....                 | 5.5  | " "       | 56.7 % |
| 27 " " .....                 | 5.4  | " "       |        |
| 28 " " .....                 | 9.0  | " "       |        |
| 29 " " .....                 | 7.6  | " "       |        |
| 30 " " .....                 | 11.5 | " "       |        |
| 31 " " .....                 | 13.6 | " "       | 32.9 % |
| 32 " " .....                 | 6.5  | " "       |        |
| 33 " " .....                 | 6.9  | " "       |        |
| 34 " " .....                 | 3.5  | " "       |        |
| 35 " " .....                 | 2.8  | " "       |        |
| 36 " " .....                 | 3.6  | " "       | 32.9 % |
| 37 " " .....                 | 1.2  | " "       |        |
| 38 " " .....                 | 1.3  | " "       |        |
| 39 " " .....                 | 1.4  | " "       |        |
| 40 " " .....                 | 1.1  | " "       |        |
| 41 " " .....                 | 0.8  | " "       |        |
| 42 " " .....                 | 0.4  | " "       |        |
| 43-or-more days' cycle ..... | 3.4  | " "       |        |

*cycle lengths fluctuate within certain limits.* This fluctuation is *different in every woman.* We say that *each woman has a certain "form" of cycle*, e.g. one fluctuating between twenty-six and thirty-two days. We express this as "*cycle-form 26-32.*" It requires long observation to determine the cycle-form with accuracy. We have to make allowance for the effect of unusual influences and determine the cycle-form as far as possible when the woman is in her ordinary sphere of life.

As this detail has great importance in practice we will give an example to make it clear. A woman under our observation has noted down the following forty-four cycles: 27-27-34-27-30-25-28-28-28-

26-29-27-27-27-26-28-28-25-26-26-27-28-29-32-29-27-27-27-23-30-30-28-28-18-27-27-25-28-28-28-28-29-25. Now, the irregularity of the cycles printed in heavy type appears to be due to the extraordinary circumstances, viz. considerable emotions, or extraordinary fatigue. These cycles should not be reported for making out the cycle-form. This woman's cycle-form should be regarded as 25-30.

The number of cycle-forms is legion, but there are several definite types which we have endeavoured to form into groups.

GROUP A. The physiologically Regular types.

1. the regularly constant form of cycle or "entirely regular" menses, as Ogino calls it (e.g. always thirty days)—a manifestation of perfectly normal genital functions. This type is rarely met with.

2. the regularly fluctuating form of cycle. This is a cycle-form with oscillations of five days at most (five-day varying cycle-form)

GROUP B. Physiologically normal cases in which the cycles fluctuate more than five days. We will call these physiologically irregular, as contrasted with pathologically irregular types. In these the conception period (the period of abstinence) gets longer as the difference between shortest and longest cycle increases. But in the majority of cases there will be a reasonable number of free days left. We sub-divide these types as follows:

1. The stationary type, which keeps constantly

within certain limits (for example a seven-days varying cycle-form which is never exceeded).

2. The regressive type, which used to be distinctly irregular, but which under certain influences (e.g. abolition of contraceptive practices or devices, change of climate, quieter way of living, solution of moral conflicts) have a tendency to become less irregular.

3. The progressive type, which tends to become more and more irregular. These cases demand great caution. They form a gradual transition to pathological conditions.

Scheme of division of the physiological cycle-forms:

- |                                                       |                                                                                                                                                                                                                               |
|-------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A. Regular forms<br>(up to five-days variation)       | {<br>1. Regularly constant<br><br>2. Regularly fluctuating<br>(two- to five-days variation)                                                                                                                                   |
| B. Irregular forms<br>(more than five-days variation) | {<br>1. Stationary (not passing certain limits)<br><br>2. Regressive (having a tendency to increasing regularity)<br><br>3. Progressive (having a tendency to increasing irregularity. Transition to pathological conditions) |

To find the characteristic cycle-form in a woman is not so simple as it may appear; a good deal of medical experience and insight are required.

### 3. ANTICIPATED AND DELAYED MENSTRUATIONS

From the preceding chapters the reader will have understood that there is no exact limit between the physiological and the pathological genital functions, and therefore between the physiological and pathological conception periods. We have already mentioned in this connexion the progressively irregular forms. Here we will discuss another irregularity, anticipated and delayed menstruations.

Cycles with anticipated or delayed menstruation are characterized thus: the ovulation occurs within the ordinary conception period as calculated according to the cycle-form; but menstruation does not occur at the usual time (twelve to seventeen days after this) owing to some influence modifying the duration of the corpus luteum phase (the pre-menstruum).

We speak of "anticipated menstruation" when such influences cause menstruation to appear before the twelfth day after ovulation, and of "delayed menstruation" when they cause the regression of the corpus luteum to be delayed so that menstruation appears after the seventeenth day after ovulation.

The unusual circumstances that give rise to these anticipated or delayed menstruations are the same

as those enumerated in Chapter II, 1. If such conditions occur after ovulation is past it stands to reason that though they may be the cause of a delayed or an anticipated menstruation, they do not affect the conception period or the chance of conception.

It is possible that such an influence—illness or shock—occurring in the latter part of the premenstruum, i.e. just before the coming menstruation, may be severe enough to affect the next postmenstruum, thus causing a pathological conception period in the following cycle. But generally it is typical of delayed and anticipated menstruations that they should be preceded and followed by normal menstrual cycles. On the other hand, when meeting with a deviating cycle, we should be thoroughly familiar with the typical cycle-form peculiar to the woman before calling it a delayed or anticipated menstruation. Only when ovulation symptoms have announced the time of ovulation are we able to diagnose delayed or anticipated menstruation without first knowing the cycle-form. The delay might, for instance, be the first symptom of a real modification of the cycle-form of the progressively irregular type. Therefore after a deviating cycle a longer period of abstinence should be observed, till the normal form of cycle has returned.

Our own experience in this is extensive and entirely confirms our theory. The data will be found in the chapter on "Test-Cases." Delay may sometimes be considerable. We observed a case where

the premenstruum lasted as long as fifty-five days. During this time intercourse occurred frequently.

Menstruation may occasionally be so far anticipated that it appears as early as a few days after ovulation. This is due to a breaking-off of the cycle; the secretion phase in the mucous lining of the uterus and the ripening of the corpus luteum that have just set in are, as it were, suddenly interrupted.

Professor Knaus in *Die Med. Welt*, 1930, Nr. 10, makes the following comment about married couples who had applied his rule.

“I was called to account by three husbands whose wives had failed to menstruate at the expected time, and who were consequently afraid that although they had abstained from intercourse during the fertile period, their wives had nevertheless become pregnant. In all these three cases it appeared in the end that menstruation occurred four to eight days later, so that there was no conception. These oscillations in the duration of the menstrual cycle are not—as the experimental examination of one woman has shown—to be attributed in the first place to delays of the period of ovulation, but principally find their cause in the shorter or longer lifetime of the corpus luteum.”

Here, then, were three typical cases of “delayed menstruation.” Many others are to be found in the literature of this subject—e.g. in Tschirdewahn’s

case of intermenstrual pain,<sup>1</sup> where the menstruation of 22 September, 1918, is an anticipated one.

Ogino does not mention anticipated menstruation. He only speaks of normal short cycles, which is essentially different; for in normal cycles, short though they may be, menstruation follows at the usual time after ovulation.

#### 4. THE ABNORMAL OR PATHOLOGICAL CONCEPTION PERIOD

In Chapter II, 1 we briefly stated that the time of ovulation may be influenced by unusual circumstances in a woman's life. This is possible only when these influences are exerted in the ripening phase of the follicle, i.e. in *the period beginning about two days before menstruation and ending at the time of ovulation, a period during which we should always be on the alert*. Though the calculated period allows for ordinary variations, we must remember the possibility of ovulation in unusual circumstances occurring outside the limits of this period. In such cases Dr. Smulders speaks of an abnormal or pathological conception period. In these cases the period of abstinence should, of course, be extended.<sup>2</sup> We should bear in mind that it is a biological process we have to deal with, and not an automatism. We have to control the subtleties of nature and submit them to our intentions; and this requires our most attentive observation.

<sup>1</sup> Comp. p. 75.

<sup>2</sup> Comp. Chapter IV.

## Chapter III

### INTERMENSTRUAL PAIN AND OTHER SYMPTOMS OF OVULATION

#### I

INTERMENSTRUAL pain<sup>1</sup> is a sensation of a particular character from which many women suffer about a fortnight before the coming menstruation. The pain generally lodges low down in the abdomen and frequently runs down into the thigh. As a rule it is not felt exactly in the mid line but a little more to the right or left.<sup>2</sup>

The pain is generally described as spasmodic or griping in character, frequently as a sensation of tension, a "dull" pain very like the sensation many women feel low down in the abdomen towards the time when the menstrual flow begins. The resemblance sometimes is so striking that the woman wrongly supposes that menstruation is about to set in.

<sup>1</sup> *German*: Mittelschmerz, Intermenstrualkolik (R. Schröder), Inter-menstrualschmerz (Fehling).

*French*: Crise Intermenstruelle, Dysmenorrhée Intermenstruelle (Dalché), Douleurs intermenstruelles (Fassina), Crise intercalaire (Faure), Molimen intermenstruel.

*Latin*: Dysmenorrhœa intermenstrualis.

<sup>2</sup> It is important for medical men to note that during the intermenstrual pain there seems to be a definite tenderness to the touch at the point of contact of the *linea ilio-pubica* and a line drawn from the *umbilicus* to the *eminentia ileo-pectinea*.

The intensity of the pain may vary in different people and at different times. Only a few women feel it as an actual pain. In the vast majority it passes almost unobserved. They generally say that movement and pressing of the abdomen increase the pain; rest, especially with the legs drawn up a little, alleviates it.

The duration of the symptoms may vary from a few minutes to a few days. The pain sometimes sets in in the evening, disappearing again after one or two hours, independent of rest or movement, to reappear the next morning. There are women who suffer from intermenstrual pain for a period of several months and afterwards seldom or never again.

Formerly, the majority of gynæcologists believed that intermenstrual pain betrayed some affection of or in the region of the internal genital organs. But nowadays the opinion is gradually prevailing that it does not in any way indicate the existence of such a condition. It is known to occur in perfectly normal women with healthy genital organs.

It was also regarded as a comparatively rare phenomenon. Mlle. L. Popelin<sup>1</sup> stated that the phenomenon was met with only seventy-five times among 1521 women (i.e. five per cent). We presume that this small number is due to the fact that the pain is usually not severe and not obtrusive so that either no attention is paid to it or it is forgotten; anyone may feel a little pain or cramp sometimes

<sup>1</sup> Mlle L. Popelin: *Etude Clinique de la Crise Intermenstruelle*, Thèse, Paris, 1914.

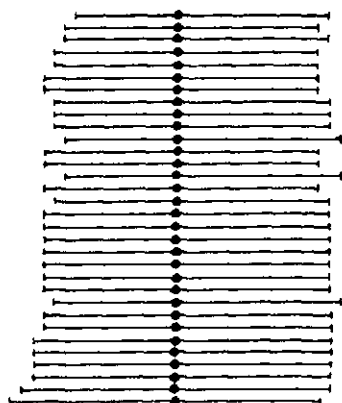
but will not usually remember it. Those women, however, who practice periodic abstinence will find these matters worth their attention; the majority of people fail to notice little things that have not been pointed out to them, but after reading our description of it many will probably discover the symptom occurring in themselves. Our experience, gathered from a great many cases, has taught us that intermenstrual pain is by no means rare. We entirely agree with Dr. R. de Guchteneere, who wrote in the *Rev. Médic. de Louvain*, 1931, No. 5, page 70: "One may frequently make use of the symptoms of intermenstrual pain, for however inconstant they may be, they are far less rare than the French medical school supposes. For anyone who takes the trouble to find it out and explain its symptoms to women who are self-observant, it will cease to be a rarity and will provide valuable information."

In our opinion there is no doubt that this symptom is closely connected with ovulation. Opinions differ as to its exact cause, but all authors (e.g. Opitz, Schröder, Riebold, Fasbender, Groom, Addinsell, von Jaschke, Menge, Theilhaber, Rosner, Courty, Bouilly, Fehling, Dalché, Knaus, Tschirde-wahn, Ogino, Ando) agree that it is a symptom of the process of ovulation. The cases in which it has been recorded give valuable support to Ogino's conclusion that ovulation takes place from the twelfth to sixteenth day before menstruation.

By way of illustration we will give one carefully recorded case with well-marked symptoms:

CHART 1

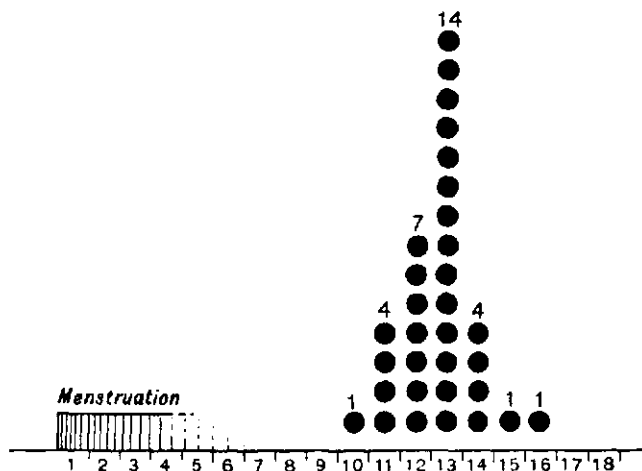
THE AUTHOR'S CASE OF INTERMENSTRUAL PAIN.



32 cycles arranged according to their duration. The intermenstrual pain of the cycles is placed in one line.

CHART 2

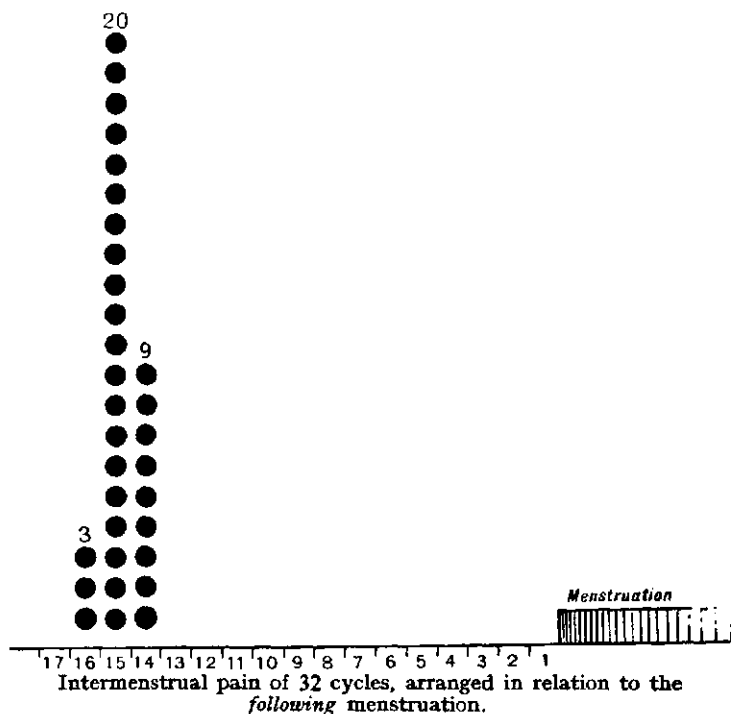
THE AUTHOR'S CASE OF INTERMENSTRUAL PAIN.



Intermenstrual pain of 32 cycles, arranged in relation to the *preceding menstruation*.

## CHART 3

THE AUTHOR'S CASE OF INTERMENSTRUAL PAIN.



The woman of whom forty-four cycles have been given on page 62 has given birth to twelve children, is in excellent state of health and has entirely normal genital organs. Formerly this woman had often observed a peculiar pain occurring in the interval between two menstruations. At that time, however, she did not know anything about intermenstrual pain. After her attention had been drawn to it she has made very accurate notes from the beginning of 1932.

From the forty-four cycles there were forty which were uninfluenced by any emotional or physical disturbance. In thirty-two of the latter occurred a typical intermenstrual pain. For briefness' sake we will give the several data in three charts. In Chart 1 we give the thirty-two cycles, arranged according to their duration. The lengths of the lines exactly indicate the durations of the cycles. The dots in the middle represent the days on which intermenstrual pain occurred. Note that this dot accurately indicates the proportion of the two parts of the cycle. We see at a glance that the distance between intermenstrual pain and the *following* menstruation (i.e. the length of the line to the right of the dot) is more constant than the distance between intermenstrual pain and the *preceding* menstruation (to the left of the dot). This becomes even clearer in the Charts 2 and 3. Chart 2 shows how many days *after* menstruation intermenstrual pain occurred. Chart 3 shows how many days before menstruation it occurred. Chart 3 is of most importance. It shows that in thirty-two normal cycles of our patient ovulation occurred on the fourteenth to sixteenth day before menstruation and most often on the fifteenth day before menstruation.

It will be interesting to reproduce here a case of nineteen cycles recorded by Dr. Tschirdewahn.<sup>1</sup>

<sup>1</sup> Zeitschr. f. Geb. u. Gyn. Bd. XXXIII (1921), pp. 80-113. In consulting the original it appeared to us that in Ogino's reproduction of this case (Zbl. Gyn. 1930, 8, p. 470) a mistake had been made.

## TSCHIRDEWAHN'S CASE OF INTERMENSTRUAL PAIN.

| Date of the intermenstrual pain | Date when menstruation sets in | Number of days after beginning of last menstruation up to intermenstrual pain | Number of days from interm. pain up to following menstruation | Duration of the cycle |
|---------------------------------|--------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------|-----------------------|
| June 6th, 1917                  | May 23rd, 1917                 | 14                                                                            | 12                                                            | 26                    |
| July 2nd                        | June 18th                      | 14                                                                            | 14                                                            | 28                    |
| Aug. 6th                        | July 16th                      | 21                                                                            | 15                                                            | 36                    |
| Sept. 6th                       | Aug. 21st                      | 16                                                                            | 12                                                            | 28                    |
| Oct. 4th                        | Sept. 18th                     | 16                                                                            | 13                                                            | 29                    |
| Oct. 31st                       | Oct. 17th                      | 14                                                                            | 13                                                            | 27                    |
| Nov. 27th                       | Nov. 13th                      | 14                                                                            | 15                                                            | 29                    |
| Dec. 27th                       | Dec. 12th                      | 15                                                                            | 15                                                            | 30                    |
| Jan. 26th, 1918                 | Jan. 11th, 1918                | 15                                                                            | 14                                                            | 29                    |
| Feb. 24th                       | Feb. 9th                       | 15                                                                            | 14                                                            | 29                    |
| March 25th                      | March 10th                     | 15                                                                            | 14                                                            | 29                    |
| ?                               | April 8th                      | —                                                                             | —                                                             | 27                    |
| May 20th                        | May 5th                        | 15                                                                            | 14                                                            | 29                    |
| June 20th                       | June 3rd                       | 17                                                                            | 14                                                            | 31                    |
| July 18th                       | July 4th                       | 14                                                                            | 15                                                            | 29                    |
| Aug. 15th                       | Aug. 2nd                       | 13                                                                            | 14                                                            | 27                    |
| Sept. 12th                      | Aug. 29th                      | 14                                                                            | 10                                                            | 24                    |
| Oct. 9th                        | Sept. 22nd                     | 17                                                                            | 13                                                            | 30                    |
| Nov. 6th                        | Oct. 22nd                      | 15                                                                            | 14                                                            | 29                    |
| Dec. 5th                        | Nov. 20th                      | 15                                                                            | 12                                                            | 27                    |
| Dec. 31st                       | Dec. 17th                      | 14                                                                            | —                                                             | —                     |

We have rearranged the calculations in the same way as our own case.

According to Tschirdewahn this table is a record from "a most intelligent private patient who came to me with complaints about intermenstrual pain." For months at a stretch she had observed the day this pain occurred. She was unacquainted with the relation of ovulation and menstruation, nor did she know anything of intermenstrual pain signifying ovulation."

The intermenstrual pain of September 12th, 1918, is the only one that was followed by menstruation within twelve days. This must have been a case of anticipated menstruation.

ANDO'S CASE OF INTERMENSTRUAL PAIN.

| Date of the intermenstrual pain | Date when menstruation sets in | Number of days after beginning of last menstruation up to intermenstrual pain | Number of days from interm. pain up to following menstruation | Duration of the cycle |
|---------------------------------|--------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------|-----------------------|
| Sept. 11th                      | Sept. 26th                     | —                                                                             | 15                                                            | —                     |
| Oct. 12th                       | Oct. 27th                      | 16                                                                            | 15                                                            | 31                    |
| Nov. 14th                       | Nov. 30th                      | 18                                                                            | 16                                                            | 34                    |
| Dec. 15th                       | Dec. 30th                      | 15                                                                            | 15                                                            | 30                    |
| Jan 13th                        | Jan. 28th                      | 14                                                                            | 15                                                            | 29                    |
| Feb. 13th                       | March 1st                      | 16                                                                            | 16                                                            | 32                    |
| March 13th                      | March 29th                     | 12                                                                            | 16                                                            | 28                    |
| April 14th                      | April 28th                     | 16                                                                            | 14                                                            | 30                    |

We also give a case of eight cycles reported by Dr. Ando.<sup>1</sup>

In 1935 the present writer discovered a most remarkable case of intermenstrual pain in a thirty-year-old woman, related by Sorel in *Gazette médicale de Picardie*, 1886. This case demands our special attention for two reasons. First of all Sorel had not the least notion how to explain the peculiar symptom. He merely gives an account of his observations without interpreting them in any way. Secondly his report covers a period of as much as ten years, during which all dates of menstruations and of intermenstrual pain were carefully noted down. In addition, short annotations were frequently made regarding the exact spot and the intensity of the pain.

He describes it as follows: "The pain in question will appear in the abdomen all of a sudden on one side or the other. After that it will extend to the entire hypogastric region, in combination with some tenderness of the loins and a sensation of compression in the perineal region. The pain is not increased by any pressure, but it sometimes causes nausea and is occasionally so intense that the woman is unable to stand. . . . In the beginning the pain lasted on only for a few hours. As a girl she used to suffer much from this indisposition, but a few hours after its onset she could join a party as if nothing had happened. At an older age the pain lasted a longer time

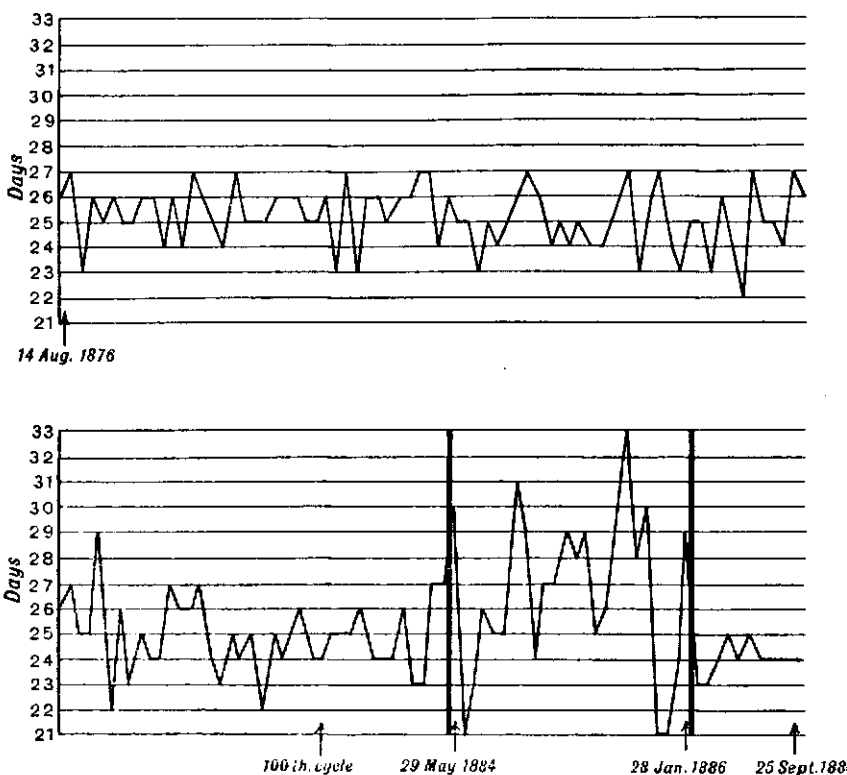
<sup>1</sup> Chiryō oyobi shohō 4, H.5, cited from Ogino, Zbl. Gyn. 1932, 12, p. 723. The calculation of the third number was wrong in the third column of Ogino's reproduction

and at present [that is to say in 1886—the woman was then forty years old. H.] it may last for many days."

If we are to draw conclusions from this account as to the normal time of ovulation we should exclude the abnormal cycles and those cycles that passed under extraordinary circumstances. However Sorel

CHART 4.

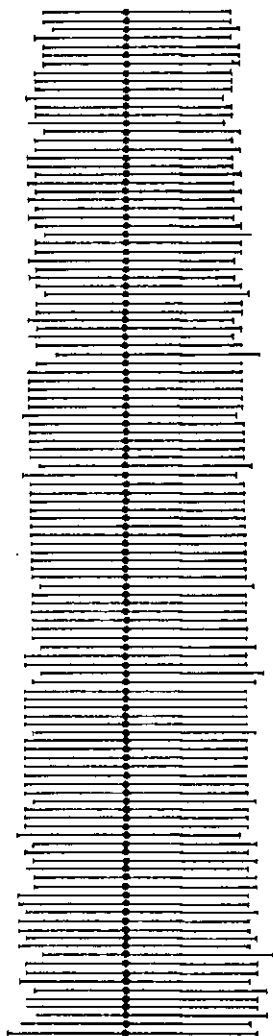
SOREL'S CASE OF INTERMENSTRUAL PAIN.



Statistics of 146 successive cycles.

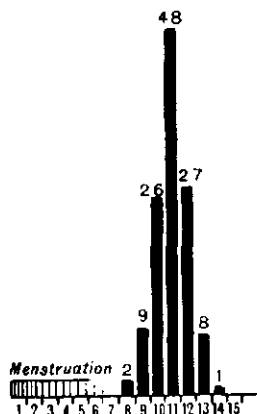
## CHART 5.

## SOREL'S CASE OF INTERMENSTRUAL PAIN.



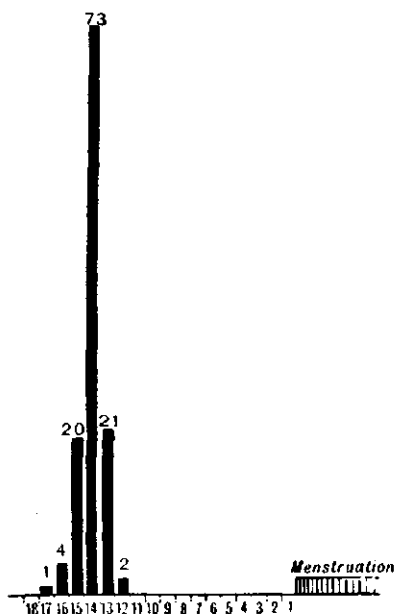
121 cycles arranged according to their duration. The intermenstrual pain of the cycles is placed in one line.

CHART 6.  
SOREL'S CASE OF INTERMENSTRUAL PAIN.



Intermenstrual pain of 121 cycles, arranged in relation to the preceding menstruation.

CHART 7.  
SOREL'S CASE OF INTERMENSTRUAL PAIN.



Intermenstrual pain of 121 cycles, arranged in relation to the following menstruation.

gives us no help in this matter, except for the remark that after the hundredth cycle the woman felt slightly ill. So we will try to discover this period in order to eliminate it from the further analysis of the case.

Chart 4 represents the durations of the 146 cycles as they were originally noted down. After the hundredth cycle there follows a period of unusual fluctuations (the period indicated between two vertical lines). We presume that the "illness" covered this period; so we will eliminate this group of cycles. We are left with 121 cycles, which are arranged in Chart 5 according to the duration of the cycle and with the intermenstrual pain on one line in the middle, as in Chart 1. The regularity of the right half of the cycle (indicating the premenstruum) is striking. If we record the days of the pain in relation to the onset of the *previous* menstruation we get Chart 6. In Chart 7 we demonstrate the much greater constancy of the relationship between the intermenstrual pain and the *following* menstruation.

Sorel himself has also noticed this, for he says: "It is easy to see that there is a more constant relationship between the pain and the following menstruation than between the pain and the previous menstruation." Later he even adds: "Provided a case has a regular course and is rightly interpreted a woman is able to know with considerable probability on what day the next menstruation is to be expected."

Our Chart 7 clearly shows with one single exception what Ogino has taught us: that ovulation occurs in the period from the sixteenth up to and inclusive of the twelfth day preceding the next menstruation. Though Sorel omits to relate what is the cause of this one exception we may take it that probably it should be attributed to some unusual circumstance that disturbed the premenstruum.

On page 136 (case 7) we reproduce the case of one of our woman-patients, who observed intermenstrual pain in twenty-six successive cycles. Our case 22, page 145, also contains records.

Ovulation, whether or not accompanied by the characteristic pain, is usually attended by one or more outward signs. Almost always a slight mucous discharge is perceptible for some days round about the time of ovulation.

I am of opinion that this symptom will occur in *all* healthy women. Any woman can observe it provided she pays sufficient attention to it. The secretion sometimes is rather thick and tough, at other times thinner, but it is always distinctly mucous and can consequently be distinguished from other sorts of "whites." As this secretion is an objective symptom it gives a safe indication for those women who want to find out their special "*ovulation syndrome*" and more especially their inter-menstrual pains. We advise them to try to find other ovulation symptoms especially in those days when they notice this mucous secretion.

Occasionally this mucous discharge may be mixed

with blood to a pink or light red colour, and may easily be mistaken for menstruation. The French call it "*règles surnuméraires*," but it is by no means a real menstruation. The mucous membrane of the uterus as well as the follicle in the ovary are in an entirely different stage. The blood leaves the uterus "per diapedesin"—to use the technical term—that is to say oozing through the walls of the blood vessels without rupturing them. It is this sort of bleeding, and not menstruation—as is often wrongly believed—that is analogous to the bleeding of female animals in the rutting season. It is better, therefore, to speak of "ovulation bleeding" and not use the word menstruation in this connexion.

"Ovulation bleeding" seems to occur rather frequently some time after childbirth, during the period of lactation, and also after a sudden interruption of lactation. In several of our cases the couple mistook this bleeding for menstruation. Even doctors make this mistake<sup>1</sup> and one of the errors that follows is the belief that the period during which a woman is most apt to be fecundated is at or near menstruation.

During the ovulation period many women also suffer from headache, generally of a migraine character, nausea, a sense of mental and physical depression, sleeplessness or a slight nervous irritability. Many women complain of a peculiar sensation of dullness in the legs. Varicose veins will

<sup>1</sup> Also of recent date, e.g., Bolaffio, *Ueber den Konzeptionstermin*. Zbl. f. Gyn, 1932, No. 25, pages 1514 and 1515. Comp. case 19, page 141.

frequently smart in the period of ovulation. Some women note a diarrhœa or a feeling of pressure in the rectum. Many inform us that they have a sensation as if the external organs were slightly gaping open, especially so at the time when there is a mucous discharge. Occasionally there occur peculiar dreams of an erotic character.

There is another symptom which indicates that ovulation is past. It is a premenstrual symptom and consists of a swelling of the breasts sometimes of such intensity that the slightest pressure is painful. Many women never observe this, some always do, especially when they are in good health. It is a sign of corpus luteum activity and therefore cannot appear till after ovulation (comp. page 11-13). Occasionally it is possible to express some clear secretion from the nipples, in some cases it may even flow spontaneously. The symptom will disappear as soon as menstruation sets in.

We have reason to dwell at length on these things, for the observation of intermenstrual pain and its equivalents is of great importance for establishing the moment of ovulation, not only for scientific purposes but for the practice of periodic abstinence. If we know for certain that ovulation has taken place we know that, after a certain interval, intercourse will not result in pregnancy. In cases of irregular cycle-forms, when the calculated conception term should be long for the sake of safety, it is especially useful to be certain of the time of ovula-

tion. Therefore a woman who believes she notices one of these symptoms should at once make a memorandum of the time that she felt it together with a description of the character of the symptom. By doing so she enables the physician to decide whether she has ovulation symptoms or not. At the same time she becomes acquainted with the characteristics of her ovulation symptoms and learns to distinguish them from all other sensations.

If, then, a woman is quite certain that she has observed her ovulation symptoms, she can have intercourse again but not until at least seventy-two hours have passed after the cessation of all these symptoms or three days after the first appearance of the breast-symptom.<sup>1</sup>

*We emphatically warn people against relying on these symptoms and sensations if they are easily influenced by suggestion.* One should be able to declare with full certainty that one has experienced intermenstrual pain or some equivalent symptoms, and that it could not possibly have been anything else. If one is not perfectly sure one should keep to the original procedure in every particular. For those who practise periodic abstinence the appearance of ovulation bleeding, if not recognized as such, may give rise to unfortunate complications. If, as is not unlikely, they mistake the bleeding for menstruation, the entire calculation and application

<sup>1</sup> This rule should not be followed when unusual circumstances may have taken effect in the time when the symptoms occurred.

of the prescription are thrown out. Therefore they should seek a physician's advice whenever they meet with irregularities in the course of the cycle and refrain from intercourse till the situation has been elucidated.

## *Chapter IV*

### PROCEDURE FOR PRACTISING THE OGINO-SMULDERS' METHOD

#### I. GENERAL RULES

THE key to the successful practice of this method is the accurate determination of the conception period. Since this is calculated by counting back from the first day of the approaching menstruation, it is of the utmost importance to be able to predict this date with certainty. The initial dates of many menstruations must be recorded before the limits of variation of the cycle length can be fixed. If reliable notes have already been made, these may be used; but one should never rely on dates given from memory. The more detailed the information available, the more accurately can the cycle-form peculiar to any particular woman be determined. It will take a longer or shorter time according as the intervals between the menstruations are more or less regular.

So long as there is any uncertainty about the cycle-form it would be well to be content with a provisional prescription. Only when there is absolute certainty can a definite prescription be given.

Regular recording of the cycle lengths and of special phenomena during a cycle is always necessary at first; but even when a definite prescription has been given control cannot be dispensed with. Modifications in the way of living, constitutional variations, change of climate, etc., may all alter the cycle-form as already explained, and the prescription should be altered accordingly. Women may find themselves pregnant, or on the other hand unnecessarily keep too many days of abstinence, through omitting to have their cycle-form and their line of conduct inspected regularly.

Therefore we advise the following routine:

*Every new case should be controlled monthly by an expert, i.e. at every menstruation, for six to twelve months (in proportion as the case is more or less complicated). After that a report should be issued after every third cycle.*

*Any prescription will only be valid provided the woman remains in her usual circumstances during the period which we will call "the period of attention."* This period of special attention corresponds with the ripening phase of the follicle, which, we will repeat for emphasis, *sets in two days before menstruation and ends together with the disappearing of ovulation symptoms.*<sup>1</sup> *When ovulation symptoms are vague or lacking, the period of attention ends with the end of the prescribed period of abstinence.*

In the case of extraordinary influences occurring in the period of attention compare sub C, pages 97-98.

<sup>1</sup> Comp. Chapter III and ripening of follicle Pages 11, 13, 52 and 68.

2. TO BE ASSURED OF SUCCESS THE METHOD SHOULD  
NOT BE APPLIED WITHOUT THE ADVICE OF A  
PHYSICIAN

In contradistinction to the previous empirical methods, which give one single collective prescription applicable with more or less accuracy to any cycle-form, the Ogino-Smulders' method makes allowances for the variations in the special cycle-form of each woman judged individually. It is not a simple method. Many factors must be taken into account, as complications of various kinds may occur. It is not, therefore, advisable to practise the method without the aid of a physician.

The old Capellmann method prescribed fourteen days abstinence after the past menstruation and a few days before the next. That was all. Anyone could at once and without medical assistance proceed to apply it. The effect was doubtful. For a certain number the experiment worked satisfactorily; for others it failed.

The Ogino-Smulders' method requires that the case of any married woman who wishes to obtain a prescription should be carefully examined and put under observation. The physician is the only expert person, as he alone has the necessary knowledge and insight into these matters.

It is of the utmost importance to prescribe neither more nor less than the correct number of days of abstinence; for whereas too short a period may allow conception to occur, too long a period may defeat

its own ends by tempting the couple to trespass on the prescription. Too great restraint may be hard to bear, especially for persons inclined to neurosis. We do not wish to imply that reasonable periodic abstinence may do harm. Even in persons of neurotic tendencies the method, provided its rules are duly observed, will not give rise to nervous symptoms. On the contrary, the temporary abstinence, by removing a source of worry, will have a favourable effect on their married life. It is a perfectly natural and unobjectionable method. The common marriage, tried frequently by cares, anxieties, poverty, compelling total abstinence or a life of uncertainty, will be relieved and strengthened by the more intimate relationship in body and soul.

Though bearing in mind the importance of these considerations, extra caution will generally be necessary in the beginning, until one is fully familiar with the form of cycle in the woman. The period of abstinence should be rather ample or intercourse should be restricted exclusively to the last eleven days.

Care should be taken that the patient has actually obtained a proper insight into the method as well as an understanding of her individual prescription. What seems clear to an expert may not be understood by lay people. Each prescription should therefore be in writing and expressly limited. For this purpose we have constructed the "datometer" (to be found at the end of this book).

We are of the opinion that total abstinence should never be prescribed for a long time to a married couple without serious reasons. It always means a considerable interference with their life and certain temptations and dangers ensue in respect to the physical and moral health of the couple.<sup>1</sup> It stands to reason that on some occasions total abstinence over a short period of time will be necessary to all married persons and will be willingly accepted. The physician ought to bear in mind, however, that there is all the difference between even the most limited application of periodical abstinence and total abstinence in cases where this would otherwise be necessary.

### 3. HOW TO CALCULATE THE PERIOD OF ABSTINENCE

To apply the method only with the aid of the information given in the previous chapters, or only

<sup>1</sup> The following passage is quoted from *Sex Problems of Women*, by a woman doctor, Dr. E. Gläsmér of Stuttgart (1930): "Continence can be observed by the celibate and becomes for them a source of character-development without doing injury to the individual's well-being. For married people continence should be maintained only in exceptional cases. . . . Inter-course in marriage is an expression and a bond of love that helps married people over many difficulties and conflicts and can lead them back to deeper unity. Through continence the meaning and content of marriage are jeopardised and the health of the wife is endangered. Congestions in the abdomen, pathological secretions, irregularities of menstruation, but especially injuries of a psychological nature, are the result. The intimacy of married life represents a constantly recurring conflict between the sex urge and sex control, a conflict which is not satisfactorily solved. Unconsciously a "repression" in Freud's sense develops, and may lead in the woman's case to emotional derangement, to fear and dread complexes, and to hysteria. Further dangers are: recourse to sexual substitutes, sexual infidelity on the part of the weaker spouse and, in consequence, possible disruption of their married life and a blasting of the family." (pages 31-32).

by means of the conception table, would be no simple matter. What is principally required for a successful application is that mistakes should be practically excluded, that an ample provisional period of abstinence should first be fixed, while the necessary data are being collected.

The period of abstinence should always be expressed in calendar-days. For this purpose one may use an ordinary calendar, marking the days of abstinence on it; but the "datometer" at the back of the book will be found more convenient. With the aid of the datometer one will get a complete survey of the past cycles and at the same time one will see how to act during the current cycle. Full directions are given at the end of the book.

To find the period of abstinence using an ordinary calendar, the procedure is as follows:

1. Mark the initial date, i.e. the day on which the first "show" of blood becomes visible, by drawing a circle in red round the date.<sup>1</sup>

2. Then determine the length of the last cycle. Day No. 1 is the first day of the previous menstruation, day No. 2 is the next, and so on. We count ahead up to and inclusive of the last day *preceding* the date of the menstruation that has just been marked. The number of days must be noted down beside the marked initial day of the present menstruation.

<sup>1</sup> The exact hour within the 24 hours when menstruation appears is of no importance in the calculation. The calculation is worked out exclusively in full days, just as the calculation of the days of abstinence. So suppose the period of abstinence sets in on June 20th, intercourse will be allowed up to June 19th at 12 p.m. At that time the period of abstinence has set in. We believe that some people are in doubt about this detail.

3. Now follows the most important part—the calculation of the period of abstinence in the newly begun cycle. Several procedures may be followed, one of which we will set forth.

Whatever technique is followed, it is an essential condition that the cycle-form should be known in exact figures. That is to say, that one should apprehend the shortest as well as the longest cycle that might possibly occur in a particular woman under the circumstances during the current cycle. It will be understood that the accuracy of these figures will be in proportion to the amount of accurate data one has at one's disposal. The procedure to be observed in the various abnormal circumstances will be set forth in the following Chapters.

The cycle-form being ascertained, the period of abstinence is determined by means of the following formula, according to the present Author.

*Formula according to Dr. Holt.*

The first day of abstinence = shortest cycle minus 18. The last day of abstinence = longest cycle minus 11. The days outside these limits are "safe." (Refer again to pages 39 and 41, and the conception table, page 47.)

*Example:* With the cycle-form 31-27, the first day of abstinence is 27-18, or the ninth day; the last day of abstinence is 31-11, or the twentieth day. So the period of abstinence extends from the ninth up to and including the twentieth day

of the new cycle. Mark these days on the calendar.

*They cover the earliest possible conception period in the shortest cycle and the latest possible conception period in the longest cycle. The remaining days are free.*

There are many more ways of calculating the period of abstinence. There is one worked out by Ogino, another by Smulders, another by Georg, etc. The best thing is to stick to one, and the method set forth in this book is the one we recommend. But the calculation made at the beginning of every cycle must always be liable to alteration if, during the period of attention (see page 88), anything happens which may influence the time of ovulation.

#### 4. THE DETERMINATION OF THE CYCLE-FORM

The first step is to estimate the longest and the shortest cycle that may possibly occur in the period for which the prescription is to be valid. The cycle length must be recorded for many months before this estimate can be considered as exact. Every prescription is to be based on one particular cycle-form only.

To illustrate the practice we have arranged the cases in several groups according to the circumstances of each type of case. We will here mention the ones we come across most frequently and at the same time how to deal with each. It may be regarded as a working scheme.

### *A. The Form of Cycle at the Beginning of Periodical Abstinence*

The majority of beginners have no data, or very little to offer as to the initial days of menstruation. Most women wrongly suppose that they know "for sure" at what intervals their menstruations appear, but, as we have already mentioned, data from memory are never reliable. We can rely only on notes extending right up to the last menstrual period. Consequently one will generally have to begin by collecting accurate data for a few cycles at least.

At the beginning of the application of the method a deviation should never be assumed to be an anticipated or a delayed menstruation. Any cycle should be accepted as it presents itself.

Using these early data one may make a careful start. The cycle-form should at first be more ample than the several data suggest. In proportion to the gravity of the case, the regularity of the menstrual intervals, the amount of data one has collected, and the special circumstances of the case, allowance should be made of one to four extra days of abstinence, sometimes even more, on either side of the period of abstinence calculated according to the objective data. A preliminary prescription should then be calculated; but it should be understood that this is only provisional.

In cases where in the postmenstruum only four days or even fewer remain "free," our advice is to use the premenstrual sterile period only.

The number of "free" days is rather limited at the beginning. This, however, will not be a serious drawback, for the couple at that time will probably be used to total abstinence or to living in uncertainty and doubt, whereas now intercourse, though restricted, may take place freely at certain times.

It is advisable to give the preliminary prescription with rather too much than too little reserve, especially if the first data raise suspicions of an irregular cycle-form.

During the observance of the preliminary prescription the data will gradually increase, so that in course of time the "free" days may be extended. Thus the true cycle-form and correct prescription will gradually become apparent, as will be seen again and again in the chapter on Test-Cases. The records of Case 22 are a clear demonstration.

Occasionally it will occur that the woman possesses a list with accurate notes of the initial days of her menstruations. If such a list happens to extend over a comparatively long period, one may act according to B.

### *B. When the Cycle-Form is Accurately Known.*

If accurate data have been collected extending over several months, one is at once able to form a precise estimate of the cycle-form. A year, on the average, of accurate observation will be sufficient. If, however, the cycle appears to be very irregular, an ample prescription should be maintained, even

if one is in possession of data of more than a year. With a cycle-form of the progressively irregular type, the procedure for abnormal or pathological conditions should be followed.

### *C. Abnormal or Pathological Conditions.*

In Chapter II, 1 we mentioned several abnormal or unhealthy conditions that might possibly cause an abnormal or pathological conception period (comp. Case 8) by altering the normal time of ovulation. In many cases ovulation will yet occur within the period of abstinence, but sometimes it is delayed till after this period. Occasionally—though very rarely—the ripening of the follicle is accelerated so that ovulation may occur before the usual calculated period.

Therefore to be absolutely safe obey the following rules:

1. Be on the alert during the period of attention if such circumstances appear as those mentioned above on pages 59 and 60; these may alter the time of ovulation.

2. If anything untoward should happen, pass at once into abstinence and seek a physician's advice.

3. Pay careful attention to the symptoms that announce ovulation. If unmistakable ovulation symptoms appear, one may avail oneself of this fact with care and attention. After three days have passed without any further sign of ovulation, inter-

course may be resumed unless the unusual circumstances have exerted their influence during the time of ovulation. In this case see under 4.

4. If no ovulation symptoms occur, or if the symptoms seem not fully reliable, or if conditions are abnormal during the appearance of ovulation symptoms, abstinence should be continued up to the appearance of the next menstruation.

One abnormal cycle may sometimes be followed by another; so it is necessary to observe an ampler period of abstinence during this cycle too. Here again a physician's advice should be sought without fail.

If the illness or disturbance is of a serious character or of long duration, the original physiological cycle-form may fail to return after recovery. In such a case a few menstruations will have to be awaited until renewed certainty of the reappearance of the normal cycle-form is felt; and meantime a limited prescription should be followed.

#### *D. Aggravated Circumstances.*

We speak of aggravated circumstances when for some reason or other—for instance if life or health would be endangered—a new pregnancy should be avoided by all lawful means. As the method, when practised according to the rules, is entirely reliable, it may also be applied in circumstances as critical as these. However, in such cases, the addition of one or two days at the beginning and at the end of

the normal period of conception will be found reassuring.

Nervous people, who worry about everything and are fearful of trusting their doctor's advice, may be reassured by pointing out that they are naturally quite free to add some more days of abstinence to the prescribed period. As a rule their anxiety will disappear after a few months' application of the method, and give place to a feeling of safety and rest.

#### *E. Modifications of the Cycle-Form.*

Modifications in a cycle-form are not uncommon, especially after childbirth or miscarriage. They frequently occur at the approach of the climacteric or change of life, when menstruation ceases. We know of a case where before the twelfth pregnancy menstruation always occurred every twenty-eight or twenty-nine days, but after that time at intervals of about thirty-five days. This is one of the reasons why we always insist upon regular medical supervision.

#### *F. Deviations that Do Not Affect a Well-Established Cycle-Form.*

On the appearance of a true anticipated or delayed menstruation the prescription need not be altered. However, it is important to be sure that it actually was an anticipated or delayed menstruation as described in Chapter II, 3 and not a modification of

the cycle-form itself. The latter is not to be excluded a priori. For the sake of safety one or two or sometimes more days should be added at the beginning and end of the period of abstinence in the cycle following on the menstruation regarded as anticipated or delayed. If the next cycle proves that the cycle-form is unchanged one may safely return to the ordinary period of abstinence. (Comp. Case 5.) When, following on an anticipated or delayed menstruation there is no return to the original cycle-form, one has to reckon with a modification of the cycle-form, either of a temporary or a lasting nature, and act accordingly.

*G. The Form of Cycle after Childbirth, during the Lactation Period, and after Miscarriage.*

After childbirth, there will often follow a cycle of extraordinary length, e.g. extending over thirty-five, forty, forty-five or even more days. During lactation menstruation will frequently stop for some time. This will differ in individual cases, and depends more or less on the abundance of secretion in the mammary glands and on the woman's constitution. If menstruation reappears during lactation, long cycles will sometimes occur quite unexpectedly. Especially if lactation is given up suddenly or within a short space of time may an unexpectedly long cycle ensue, probably owing to a resorption of accumulated secretion in the mammary glands. If lactation is gradually lessened

so that there is no accumulation, no irregularity will follow in the cycle.

From this it is obvious that after childbirth or miscarriage and until the mammary glands have regained their normal condition, extreme care must be taken in using the method. The longest cycle should be taken to be forty, forty-five, or even more days, in proportion to the duration of the common cycles of the woman. The shortest should be taken to be twenty-six or twenty-seven days, and in the case of some women who normally have very short cycles, twenty-five or twenty-four days. Throughout lactation this cycle-form should be followed for the calculation of the prescription, for an extraordinarily long cycle may occur at any time.

After lactation the normal prescription should be assumed only gradually.

We should like here to draw attention to a kind of bleeding that may appear after the lochial discharge<sup>1</sup> has ceased, and even after the first menstruations, especially in nursing mothers. It shows itself as little streaks of blood, generally pale or light red in colour, and if a larger quantity appears the blood will clot. Such irregular bleeding may easily be mistaken for menstruation (which it is not) so that a wrong application of the method might be the result. (Comp. Cases 7 and 19.)

We should therefore advise all nursing mothers to make sure that menstruation has actually

<sup>1</sup> The lochial discharge is the bloodstained fluid that escapes from the womb for 10-20 days after childbirth.

appeared before resuming marital intercourse. Generally the character of the flux will remove all doubt; but should there be any uncertainty about it abstinence should be observed until medical advice has been obtained.

It can easily be understood that the application after childbirth and during lactation forms one of the most difficult parts of the practice. The cases quoted in Part III clearly demonstrate that for its effective application medical assistance is required.

#### *H. Cases in which it is Impossible to Apply the Method.*

Periodical abstinence cannot be applied if the essential data are absent, i.e. if it is impossible to determine the cycle-form in terms of days, or when an existing cycle-form is being interrupted. Thus:

1. During the physiological amenorrhœa after childbirth; i.e. during such time as no menstruation occurs after childbirth. Not until the first true menstruation has been observed can the rules under G be followed.

2. After miscarriage up to the first menstruation. Here too it is safest to follow the rules under G.

3. In cases of pathological amenorrhœa (cessation of menstruation on account of other reasons than pregnancy or lactation), or when amenorrhœa alternates with very irregular menstruation.

4. In cases where there are abnormal conditions

of the genital organs which induce irregular bleedings which cannot be distinguished from genuine menstruations.

5. In cases where there are such irregular cycles that it is impossible to determine any cycle-form.

## *Chapter V*

### A FEW COMMENTS ON PROFESSOR KNAUS'S RULE

#### I. COMMENT ON PROFESSOR KNAUS'S RULE

ACCORDING to Professor Knaus's rule, conception may be avoided if sexual intercourse in any form is avoided from the eighteenth to the fourteenth day of the cycle, inclusive, before the onset of the next menstruation. Variations in the length of the cycle must be known and allowed for, as explained in this book. Professor Knaus allows two days for the duration of the fertilizing power of spermatozoa and maintains that ovulation in healthy women invariably occurs on the fifteenth day before the onset of menstruation. He insists that provision must be made for circumstances which modify the length of the cycle and mentions conditions such as those given in Chapter II.

In our opinion this rule has too small a margin of safety. We consider that Knaus underestimates the degree of variation in cycle length which occurs in many normal women. We also maintain that in practice the duration of fertilizing capacity of spermatozoa should be taken to be three days and that it is very doubtful that ovulation takes place invariably

on the fifteenth day before menstruation. Nevertheless we will not fail to acknowledge our indebtedness to Professor Knaus for his brilliant and valuable research in this subject; but we feel that a few comments on his method, as it presents itself, should be made.

First of all, the Ogino-Smulders' method is more careful than Knaus's Rule. It accounts for the ordinary oscillations of the cycle which occur in the daily practice. Let us analyse Knaus's prescription in this respect. In a regular five-days-varying cycle-form in healthy women when circumstances remain constant, Knaus prescribes nine days of abstinence. The Ogino-Smulders' method, however, prescribes twelve days of abstinence. We consider this an absolutely necessary margin of safety.

We may also start the comparison at the other end. The period of ovulation according to Ogino-Smulders would last five days for every cycle. Knaus would take only the first three days of this considering the two last as belonging already to the premenstrual sterile period. Consequently a prescription according to Ogino-Smulders would, according to Knaus, also hold good for a cycle-form which is two days longer. Further, Smulders for the sake of safety allows three days for the fertilizing power of the spermatozoa, whereas Knaus allows only two. So a prescription by Ogino-Smulders would, according to Knaus, also be safe for a cycle-form that is one day shorter.

With a twenty-six days' cycle the best chance of conception would lie on the eleventh and twelfth days; with the thirty-days' cycle on the fifteenth and sixteenth days. In a woman menstruating irregularly this time cannot, in Knaus's opinion, be determined with accuracy to within a day. Moreover he believes that there is only a comparatively small number of women having a cycle-form of twenty-six to thirty days whose conception period is from the ninth to the seventeenth day. All these conception periods hold good exclusively "provided the circumstances remain constant" as Professor Knaus expresses it. Observe that he also accounts for unusual and pathological circumstances.

Professor Knaus also draws attention to the fact that the initial day of menstruation should be noted down and that the calculation should start from the first day of menstruation and not from the first day after menstruation. Further, he says, that after childbirth at least two menstruations should be awaited before applying the Rule anew.<sup>1</sup>

In *Mitteilungen des Volksgesundheitsamtes* (Wien), 10 October, 1931, Knaus discusses "the possibility of intentional procreation," i.e. the possibility, opened up by the new discoveries, of performing the act of procreation so that the germs meet in full energy and under the best circumstances.<sup>2</sup>

In the beginning Professor Knaus established his Rule by experiments on entirely healthy women

<sup>1</sup> Comp. our method after childbirth on page 100.

<sup>2</sup> Comp. Part II, page 112.

with regular twenty-eight to thirty days' intervals between their menstruations. Later he extended his field to other cycle-types including irregular ones though of these he has not furnished sufficient evidence.

Now, from the very beginning of his investigations in 1929, Knaus, in calculating the period of ovulation, counted from the onset of the past menstruation onwards. It was only in 1934, in imitation of Ogino, that he followed the physiological way of counting, i.e. counting backwards from the onset of the next menstruation. In his book, published in 1934, he gives his formula for the first time thus: "Ovulation in women with physiological genital functions invariably appears on the fifteenth day before the onset of menstruation."<sup>1</sup> As we stated above, Knaus has not sufficiently proved this for all cycle-types and we believe that for all cycle-types, physiological though they may be, nobody will be able to prove this for the ovulation period of one day, as Knaus suggests, is far too limited. We hold that only the conception periods stated by Ogino come up to the requirements of actual practice.

Nor do we agree with the following point: In 1933 Professor Knaus wrote that at least ninety per cent of all European women menstruate 'entirely regularly.' By this he means that they have cycle-forms with fluctuations of three

<sup>1</sup> Orig. "Die Ovulation erfolgt bei Frauen mit physiologischen Genitalfunktionen stets am 15. Tage vor Eintritt der Menstruation."

days at the most (three-days-varying cycle-forms). In his book of 1934, however, he does not mention this cipher although he still says that the number of regular three-days-varying cycle-forms seems to be exceedingly high.<sup>1</sup> On the contrary we believe that the number of three-days-varying cycle-forms is exceedingly small. We know of a few cases, but it is only a small percentage of our extensive material. Note that even Knaus himself, among the several cases he demonstrates in his book, has not one with such a regular cycle-form.

Whereas formerly, when Professor Knaus restricted his Rule to the twenty-eight days' cycle in constant circumstances, we could agree with him in the main, at present we no longer do so for these reasons. Especially in short cycles may Knaus's method be regarded as unreliable.

We observed, among others, a woman with short cycles having distinct ovulation symptoms recurring on the fourteenth to twelfth day before menstruation. (Comp. Case 7); another with three normal but short cycles with ovulation symptoms on the twelfth day before menstruation. In such cases Knaus's method would almost certainly have led to conception. Ogino's method, however, would then have been safe.

In saying this we do not wish to give the impression that we do not acknowledge the great respect which we hold for Professor Knaus in his solution

<sup>1</sup> In *Zbl. Gyn.*, 1935, page 2651, Knaus joined the author's view on this point.

of the problems of the fertility of women with twenty-six to thirty days' cycles. But we feel it our duty to warn people against the unwarranted extension of Knaus's Rule to all cycles.

The above may serve to show that the Ogino-Smulders' method is prudent and safe. But it is not fool-proof. On the contrary, the method can be considered prudent and safe only if a strict and careful application is observed according to the given rules.

## **PART II**

# **INTENTIONAL PROCREATION**

## INTENTIONAL PROCREATION

OUR knowledge of the fertile and infertile periods in the menstrual cycle may be turned to different account by reversing the process described in the preceding Chapters. Instead of avoiding pregnancy, the fertile period may be used for the deliberate begetting of children.

In every cycle there is a moment when a spermatozoon entering the uterus will, within a short time, encounter a recently shed ovule. Allowing for variations in the length of the cycle and in the day that ovulation occurs in the cycle, this moment can be predicted to within a few days. These days we call the Optimal Conception Period. The object of this variation of the system is to make sure that sexual intercourse takes place within this period so that the spermatozoon may encounter the ovule at the most favourable moment and under the most favourable conditions.

From all sources of evidence, particularly cases of intermenstrual pain and ovulation symptoms, we have concluded that *ovulation usually takes place on the fourteenth or fifteenth day before menstruation*. Now, whereas the ordinary conception period allows for the greatest possible variation in the time of ovulation and also allows three days for the duration of fertilizing capacity of the sperms, the

optimal conception period is limited exclusively to the fourteenth and fifteenth days before menstruation, the correction for variation in cycle length must be made as before.

The spermatozoa are able to reach the egg-cell very shortly after cohabitation and they retain their fertilizing capacity for about thirty-six hours. The egg-cell, on the other hand, will soon become incapable of being fecundated. So the intercourse from which impregnation is expected should occur as near as possible to the exact moment of ovulation.

To calculate the Optimal Conception Period the cycle-form must be known. This being duly verified the period can then be found in this way:

The first day of the Optimal Conception Period is the shortest cycle less fifteen.

The last day of the Optimal Conception Period is the longest cycle less thirteen.

As an example to illustrate this simple calculation for a woman whose cycle has been fixed as 33-28:

The first day of the Optimal Conception Period is 28 less 15 (the thirteenth day of the cycle). The last day of the Optimal Conception Period is 33 less 13 (the twentieth day of the cycle). Intercourse should therefore occur from the thirteenth up to and including the twentieth day, a period of eight days. This being an even number, our advice is: use the thirteenth, fourteenth, sixteenth, eighteenth and twentieth day of the cycle.

Of course a couple may have intercourse more often—but we are of the opinion that those who take our advice will have the best chance of conception.

It is most desirable that sexual rest should precede the Optimal Conception Period especially during the days from the onset of menstruation up to the intended conception period. Undoubtedly abstinence will render the coming union effective and is an important part of the preparation.

If a woman has become familiar with her ovulation symptoms she may make use of these to determine her Optimal Conception Period. She then has no need to use the above formula. The best thing for her to do is to wait from the beginning of menstruation up to the distinct appearance of the first ovulation symptoms and then have intercourse regularly as long as the symptoms last. In this way she relies entirely on the guide that nature herself provides to find the most fertile period, which is, of course, a more ideal guide than any calculation.

From the investigations of Seguy and Vimeux it appears that the spermatozoa are strongly attracted by the mucus in the entrance of the uterus. This mucus offers a refuge as it were against the harmful influence of the acid contents of the vagina. The spermatozoa are unable to pass the entrance of the uterus unless there is an abundant, clear (not purulent) and liquid secretion which we have already described on page 82 as being one of the ovulation symptoms. Intercourse should occur during the time of this mucus secretion.

Knowledge of the period of optimal fertility may be used in the treatment of sterility. It may happen—and the cases quoted by Kurzrock on page 23 are instances of it—that infertility is due only to intercourse not taking place at the right moment. Professor Albrecht of München collected sixty-five of such cases. After having been instructed about the optimal period of fertility, in twenty-six per cent of the cases pregnancy resulted; and this, even after the marriages in question had been infertile for two to eight years.

Furthermore, there are marriages where there is indeed no absolute sterility and yet no children are born. Here exists a relative sterility or a decreased fertility. Very often the spermatic fluid contains rather few or perhaps not very potent spermatozoa so that conception is only likely to occur if the condition with regard to both partners are favourable. Alcohol, tobacco, fatigue, insufficient rest at night, excitement and an irregular life are unfavourable to fertility and should be avoided during the cycle preceding the intended conception period.

Professor Knaus and Dr. Dickinson point out that intentional procreation may be of use to such women who are unable or hardly able to feed their babies from the breast. These women might choose to conceive at such a time that childbirth, or rather the time when they usually have to fall back on artificial feeding, will not fall in the hot months of the summer when there is a greater risk of digestive troubles.

The knowledge of the Optimal Conception Period is also of importance for the following gynæcological investigation. In the search for the cause of sterility in women, the gynæcologist occasionally takes an X-ray photograph of the Fallopian tubes to make sure if they are open or not. Now it is already known that even in normal tubes the ease of passage of the opaque liquid that is injected to show up the tubes varies at different times in the cycle. Since it is mainly of importance that there should be a free passage through the Fallopian tubes at about the time of ovulation, our advice in this matter is that before embarking on this investigation, the gynæcologist should first ascertain the woman's Optimal Conception Period. The examination may then be profitably executed in this period.

**PART III**  
**TEST CASES**

## TEST CASES

IN this part of the book we will reproduce a number of cases from actual practice. We have purposely selected cases that presented difficulties, abnormalities and complications. Besides furnishing evidence in support of the theory of the infertile period they are at the same time excellently adapted for getting conversant with the proper application of the system.

Dr. Smulders first began to apply the method in March 1930. Since 1932 he and the author of this book have co-operated in the work and have dealt with hundreds of cases and gained great experience. Throughout this period careful records have been kept. We are both convinced that if the method is correctly applied we may confidently expect correct results in practice, and that even in cases of serious chronic illness the method may frequently be applied without reserve.

*Case 1.* After Dr. Smulders' first publication a colleague consulted him on a case of a woman suffering from heart disease who, in spite of the fact that she had applied Capellmann's method, had had a miscarriage three times in a short period. Smulders' advice: "The last eleven days before menstruation, counted backwards from the longest

cycle, are decidedly sterile" has been applied ever since August, 1930, without conception resulting.

*Case 2.* The head doctor of a sanatorium for lung patients informed us that the Ogino-Smulders' method had rendered them great service. The female patients who have recovered sufficiently to return home apply periodical abstinence successfully. We asked him whether he prescribed a minimum number of days' abstinence and he replied: "Not exactly, but as these patients are bound to avoid conception and would otherwise be obliged to observe total abstinence, they were quite contented even if their free periods were restricted."

*Case 3.* Periodic abstinence has been practised in this case ever since September 1930.

Before that time total abstinence was observed after every childbirth for seven or eight months at a stretch. After that cohabitation took place exclusively on the fourteenth to the eighteenth day after the onset of menstruation. The couple believed that these days were most likely to be sterile. However, conception was the immediate result on three occasions; nor is this surprising considering the woman's cycle-form was about 30-28 and the Optimal Conception Period would be from the thirteenth to the seventeenth day. It will be seen that the conceptions bear out Ogino's theory exactly, as also the failure of conception since September 1930, in spite of frequent inter-

course. After the menstruation of 14 April, 1933 the couple decided—as they were rather longing to have another child—to have intercourse one single time during the period of ovulation and for the rest stick purposely to the prescribed system. This one cohabitation on the twelfth day of the cycle had indeed an immediate result, proving that fertility was not wanting. Also the day of conception is in accordance with the theory, for seventy-five per cent of the previous cycles have a length of twenty-nine to twenty-six days. The Optimal Conception Period then falls from the eleventh to the seventeenth day. So the twelfth day had been very well chosen. The table below will illustrate this clearly.

This woman's cycle appears to be rather sensitive to outside influences. The Table states five "delayed" and two "anticipated" menstruations. One delayed menstruation is in November to December 1930: possible cause: anxious suspense during the premenstruum as to whether some important enterprise undertaken would succeed. Menstruation appeared on the day when the favourable result became known.

One anticipated menstruation in September 1931; cause: the mother was very startled on account of her two-year-old child meeting with a slight accident. On the evening of that day menstruation appeared prematurely.

One delayed menstruation in February to March 1932; cause: anxiety that menstruation would not appear as they had deviated from the prescription

TABLE OF CASE 3.

| Initial date of menstruat. | Cycle length | Last coition before period of conception | First coition after period of conception |
|----------------------------|--------------|------------------------------------------|------------------------------------------|
| May 29th, 1930             | 29           | total abstinence                         | total abstinence                         |
| June 27th "                | 29           | " "                                      | " "                                      |
| July 26th "                | 27           | " "                                      | " "                                      |
| Aug. 22nd "                | 29           | " "                                      | " "                                      |
| Sept. 20th "               | 28           | abstinence                               | 20th day                                 |
| Oct. 18th "                | 27           | 8th day                                  | 19th day                                 |
| Nov. 14th "                | 32           | abstinence                               | 20th day                                 |
| Dec. 16th "                | 29           | "                                        | 20th day                                 |
| Jan. 14th, 1931            | 28           | 7th day                                  | 20th day                                 |
| Feb. 11th "                | 28           | abstinence                               | 19th day                                 |
| Mar. 11th "                | 25           | 7th day                                  | 19th day                                 |
| April 5th "                | 29           | abstinence                               | 19th day                                 |
| May 4th "                  | 31           | 8th day                                  | 20th day                                 |
| June 4th "                 | 30           | 8th day                                  | 20th day                                 |
| July 4th "                 | 32           | abstinence                               | 19th day                                 |
| Aug. 5th "                 | 31           | abstinence                               | 21st day                                 |
| Sept. 5th "                | 24           | 8th day                                  | 22nd day                                 |
| Sept. 29th "               | 29           | abstinence                               | 20th day                                 |
| Oct. 28th "                | 27           | 8th day                                  | 19th day                                 |
| Nov. 24th "                | 29           | abstinence                               | 20th day                                 |
| Dec. 23rd "                | 29           | 8th day                                  | 19th day                                 |
| Jan. 21st, 1932            | 29           | 9th day                                  | 19th day                                 |
| Feb. 19th "                | 33           | 10th day                                 | 20th day                                 |
| Mar. 23rd "                | 29           | 8th day                                  | 19th day                                 |

| Initial date of menstruat. | Cycle length | Last coition before period of conception | First coition after period of conception |
|----------------------------|--------------|------------------------------------------|------------------------------------------|
| April 21st, 1932           | 36           | 8th day                                  | 20th day                                 |
| May 27th "                 | 31           | abstinence                               | 21st day                                 |
| June 27th "                | 36           | 7th day                                  | 20th day                                 |
| Aug. 2nd "                 | 26           | only the 8th day                         | 22nd day                                 |
| Aug. 28th "                | 28           | 8th day                                  | 20th day                                 |
| Sept. 25th "               | 30           | 8th day                                  | 24th day                                 |
| Oct. 25th "                | 29           | 9th day                                  | 19th day                                 |
| Nov. 23rd "                | 32           | 8th day                                  | 20th day                                 |
| Dec. 25th "                | 29           | abstinence                               | 23rd day                                 |
| Jan. 23rd, 1933            | 28           | 8th day                                  | 20th day                                 |
| Feb. 20th "                | 26           | 9th day                                  | 20th day                                 |
| Mar. 18th "                | 27           | 8th day                                  | 19th day                                 |
| April 14th "               |              |                                          |                                          |

Deliberate intercourse on April 25th (twelfth day of the cycle), Conception.

and had intercourse on the tenth day. We frequently witness a delayed menstruation on account of this.

The delayed menstruation in May 1932 was attributed to excessive fatigue owing to spring-cleaning. The one in August 1932 to emotion and fatigue as her three children all had whooping-cough at the same time.

The anticipated menstruation in March 1933 was due to the fatigue of spring-cleaning. Note that in this case the same thing caused, in 1932 a delayed, and in 1933 an anticipated, menstruation.

*Case 4.* Here a bony deformity of the pelvis had always necessitated a Cæsarian operation. This had happened no less than three times in four years. After a full year of total abstinence the first intercourse promptly caused pregnancy. The last Cæsarian operation was in February 1931. The baby was breast-fed until June. The family physician naturally advised the utmost caution and prescribed total abstinence. The abdominal wall was very thin: he pronounced it a wall of parchment without any muscles.

In May 1931 the couple sought Smulders' advice. He told them to await the first two menstruations before starting upon anything. The abdominal wound had not yet quite healed but after the second menstruation the couple started to have intercourse according to the method.

Very striking is the sudden long cycle of forty-five days (October to November 1931) as seen in the Table. Smulders conscientiously inquired into special circumstances that might have caused this delay. The only cause the husband could attribute it to was a week's journey made by his wife in the premenstruum, that is at the end of the usual duration of the cycle.

Every expert will admit that there was every indication here for avoiding another pregnancy, but we felt convinced that our method could be applied with confidence. In this case the post-menstrual sterile period could be extended up to nine or eight days. In medical circles there is a

TABLE OF CASE 4.

| Initial date of menstruat. | Cycle length | Prescript. acc. to cycle-form: | Notes                                                                                                                                                                  |
|----------------------------|--------------|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| June 29th, 1931            |              | total abstinence               | First cycle after latest childbed.                                                                                                                                     |
| Aug. 1st "                 | 32           |                                |                                                                                                                                                                        |
| Sept. 2nd "                | 32           | 35/19                          |                                                                                                                                                                        |
| Oct. 6th "                 | 35           | 33/29                          | Delayed menstr. after week's journey in premenstruum.                                                                                                                  |
| Nov. 20th "                | 45           | 34/28                          |                                                                                                                                                                        |
| Dec. 25th "                | 34           | total abstinence               |                                                                                                                                                                        |
| Jan. 28th, 1932            | 34           | 37/28                          |                                                                                                                                                                        |
| Feb. 26th "                | 29           | "                              |                                                                                                                                                                        |
| Mar. 27th "                | 30           | "                              | Slightly anticipated menstr. The whole family spent a few weeks holiday elsewhere. They had before been warned about the possible effect this might have on the cycle. |
| April 25th "               | 29           | "                              |                                                                                                                                                                        |
| May 25th "                 | 30           | 35/28                          |                                                                                                                                                                        |
| June 27th "                | 33           | 34/28                          |                                                                                                                                                                        |
| July 24th "                | 27           | "                              |                                                                                                                                                                        |
| Aug. 24th "                | 31           | "                              |                                                                                                                                                                        |
| Sept. 26th "               | 33           | "                              |                                                                                                                                                                        |
| Oct. 26th "                | 31           | "                              |                                                                                                                                                                        |
| Nov. 28th "                | 33           | "                              |                                                                                                                                                                        |
| Dec. 30th "                | 32           | "                              |                                                                                                                                                                        |
| Feb. 1st, 1933             | 33           | "                              |                                                                                                                                                                        |
| Mar. 1st "                 | 28           | "                              |                                                                                                                                                                        |
| Mar. 30th "                | 29           | "                              |                                                                                                                                                                        |
| April 27th "               | 28           | "                              |                                                                                                                                                                        |
| May 29th "                 | 32           | "                              |                                                                                                                                                                        |
|                            | 28           | "                              |                                                                                                                                                                        |

TABLE OF CASE 4—(continued)

| Initial date of menstruat. | Cycle length | Prescript. acc. to cycle-form: | Notes                                                            |
|----------------------------|--------------|--------------------------------|------------------------------------------------------------------|
| June 26th, 1933            | 28           | 33/27                          | Because of worries the couple observed abstinence acc. to 34/27. |
| July 24th "                | 31           | "                              |                                                                  |
| Aug. 24th "                | 35           | "                              |                                                                  |
| Sept. 28th "               | 27           | "                              |                                                                  |
| Oct. 25th "                | 29           | "                              |                                                                  |
| No. 23rd "                 | 28           | 34/27                          | Intermenstrual pain on Nov. 7th & 8th.                           |
| Dec. 21st "                | 31           | "                              |                                                                  |
| Jan. 21st, 1934            | 29           | "                              |                                                                  |
| Feb. 19th "                | 27           | "                              |                                                                  |
| Mar. 18th "                | 30           | "                              |                                                                  |
| April 17th "               | 29           | "                              |                                                                  |
| May 16th "                 | 29           | "                              |                                                                  |
| June 14th "                | 32           | "                              |                                                                  |
| July 16th "                | 29           | "                              |                                                                  |
| Aug. 14th "                | 27           | "                              |                                                                  |
| Sept. 10th "               | 28           | "                              |                                                                  |
| Oct. 8th "                 | 32           | "                              |                                                                  |
| Nov. 9th "                 | 25           | "                              |                                                                  |
| Dec. 4th "                 | 29           | "                              |                                                                  |
| Jan. 2nd, 1935             | 27           | "                              |                                                                  |
| Jan. 29th "                | 30           | "                              |                                                                  |
| Feb. 28th "                | 29           | "                              |                                                                  |
| Mar. 29th "                | 30           | "                              |                                                                  |
| April 28th "               |              |                                |                                                                  |

Conception.

prevalent fear of the postmenstruum. This period is still reputed to be most unsafe, and all critics of this system warn people against it. But in our opinion the postmenstruum is entirely sterile in every cycle, just as much as the premenstruum.

In the beginning of 1935 the woman began to long for another child and frequently abandoned the prescription. During a period of nervous strain she ignored the effect that this strain might have on her menstrual cycle. Evidently it disturbed the length of the cycle and she became pregnant in May 1935.

*Case 5.* This is the case of a couple that trespassed on the prescriptions and had intercourse in the beginning of the ovulation period with conception as the result.

After the last parturition, menstruation reappeared on 13 September, 1930 (breast-feeding had ceased at that time). The duration of the cycle used to be twenty-nine days on an average. The prescription was observed. Menstruation appeared on 12 October. After this the couple deviated from the prescription and had intercourse on 25 October, i.e. on the evening of the sixteenth day before the expected menstruation, therefore in the beginning of the period of ovulation or in the middle of the period of conception; hence conception occurred. Parturition on 23 July, 1931 (271 days after the conception day). (See Table.)

After the child had been born the couple again

TABLE OF CASE 5.

Eight Children. Latest parturition May 22nd, 1930. In September, 1930, the application of the method was started according to cycle-form 29/19 (first day of abstinence is : the first day of the cycle ; last day of abstinence is : the eighteenth day of the cycle, see middle row of figures). Cycle was said to be 29 days on the average. Latest menstruation September 13th, next October 12th. In the second cycle the prescription was deviated from. Coition on October 25th, i.e., on the 16th day before the next menstruation, conseq. in the most fertile period. (X = coition).

Bottom row of figures shows cycle days in relation to next menstruation.

| Sept.                |    |       |    |    |                     |    |    |    |    |    |    |    | Oct. |    |    |    |    |    |    |    |    |  |  |  |  |
|----------------------|----|-------|----|----|---------------------|----|----|----|----|----|----|----|------|----|----|----|----|----|----|----|----|--|--|--|--|
| 13                   | 14 | 15... | 23 | 24 | 25:ovulation period | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8    | 9  | 10 | 11 |    |    |    |    |    |  |  |  |  |
| 1                    | 2  | 3...  | 11 | 12 | 13:                 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21   | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 |  |  |  |  |
| 29                   | 28 | 27... | 19 | 18 | 17:                 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9    | 8  | 7  | 6  | 5  | 4  | 3  | 2  | 1  |  |  |  |  |
| period of conception |    |       |    |    |                     |    |    |    | X  |    | X  |    | X    |    | X  |    | X  |    |    |    |    |  |  |  |  |
| Oct.                 |    |       |    |    |                     |    |    |    |    |    |    |    | Nov. |    |    |    |    |    |    |    |    |  |  |  |  |
| 12                   | 13 | 14... | 22 | 23 | 24:ovulation period | 30 | 31 | 1  | 2  | 3  | 4  | 5  | 6    | 7  | 8  | 9  |    |    |    |    |    |  |  |  |  |
| 1                    | 2  | 3...  | 11 | 12 | 13:                 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21   | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 |  |  |  |  |
| 29                   | 28 | 27... | 19 | 18 | 17:                 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9    | 8  | 7  | 6  | 5  | 4  | 3  | 2  | 1  |  |  |  |  |
|                      |    |       |    |    |                     |    |    |    |    |    | X  |    | X    |    | X  |    | X  |    | X  |    |    |  |  |  |  |
| period of conception |    |       |    |    |                     |    |    |    |    |    | X  |    | X    |    | X  |    | X  |    | X  |    |    |  |  |  |  |

Conception. Parturition July 23rd, 1931 (271 days after conception day). Reappearance of menstruation December 1st, 1931. Cessation of lactation.

| Initial date of menstruat. | Cycle length | Prescript. acc. to cycle-form. | Notes.                                                          |
|----------------------------|--------------|--------------------------------|-----------------------------------------------------------------|
| Dec. 1st, 1931             | 29           | 31/25                          |                                                                 |
| Dec. 30th "                | 31           | 31/26                          |                                                                 |
| Jan. 30th, 1932            | 29           | 31/27                          |                                                                 |
| Feb. 28th "                | 31           | "                              |                                                                 |
| Mar. 30th "                | 30           | "                              |                                                                 |
| April 29th "               | 49           | "                              |                                                                 |
| June 17th "                | 27           | 37/27                          | Excessive fatigue owing to spring cleaning in the premenstruum. |
| July 14th "                | 29           | 32/27                          |                                                                 |
| Aug. 12th "                | 29           | 31/27                          |                                                                 |
| Sept. 10th "               | 29           | 31/28                          |                                                                 |
| Oct. 9th "                 |              |                                |                                                                 |

resorted to periodic abstinence. Lactation had stopped when, on 1 December, 1931, menstruation reappeared. The woman was in perfect health.

Observe the considerably delayed menstruation after an interval of forty-nine days owing to excessive fatigue in the premenstruum. (See Table.)

In this cycle the given prescription has been accurately kept. On 19 May, the second period of free days set in, and after these there was no menstruation but intercourse occurred on 29 May and 3 and 16 June. On 17 June the delayed menstruation appeared. So conception did not result though in 1930 one cohabitation within the calculated fertile period had proved sufficient to cause impregnation.

*Case 6.* From this case we learn that even an intelligent couple may make the most serious mistakes owing to misunderstanding.

A considerably anticipated menstruation (an interrupted cycle) was simply ignored, which caused this couple, parents of nine children already, to experience conception once more.

From the husband's letter we read: "The labours have had a normal course, except that after the last but one my wife had been ill for months owing to a tumour in the uterus. This was a very serious affair and ever since that time a 'sensitive spot' remained which hurts now and then.

"Formerly we frequently used to apply a certain form of abstinence, viz. abstinence during the first

ten days, after which some free days followed, and then abstinence again. This procedure must have been exactly the worst we could follow, or rather the best to get children."

These were the husband's words.

After the last childbirth seven months of total abstinence followed. Menstruation reappeared on 19 June, 1931. On inquiry some short lists were supplied, with annotations and dates. On calculating the cycle lengths we made notes as follows:

In 1926: 52, 31, 19, 26, 34, 31, 36.

After which followed the eighth conception.

In 1928: 39, 56, 34, 40, 47.

After which followed the ninth conception.

In 1930: 33, 34.

After which followed the tenth conception.

It seemed no easy matter, this variable cycle in a woman who a few years before had "tumour in the uterus" accompanied or followed by inflammation of the pelvis from which a "sensitive spot" had remained, and it was with some hesitation that we proceeded to apply the method here.

However, everything went well. After a long cycle of forty-six days (by no means unusual after childbirth) the cycle-form appeared to be regular 32-29 and the couple got a prescription accordingly, taking the cycle somewhat more amply, viz. 33-27. With this they expressed themselves fully satisfied. For further data compare the Table.



On 4 January, 1932, a definite prescription was given and they were asked to let us hear of them after three months unless anything unusual had happened before that time.

On 31 May the first news came: "The three months have elapsed but even if this were not the case we would have sought your advice, for we are between hope and fear.

"On 10 April menstruation had set in. April 19 a vehement pain was felt in the right of the abdomen at what we call the 'sensitive spot.' On 23 April a slight discharge of blood; on 24 April a discharge of dark blood accompanied by a violent aching in the abdomen rather like what is felt at menstruation. This lasted quite a day.

"We had expected menstruation on 11 or 12 May, but it fails to come and consequently it is almost three weeks overdue by now.

"We observed the following procedure: 10-16 April, free days; 17-29 April, abstinence; 30 April till menstruation, free days.

"On 30 April we had intercourse and also a few times in the following eleven days. At present, however, we have not had intercourse for three weeks as we are so alarmed."

The fertile and sterile periods calculated on 10 April were allowed to stand unaltered notwithstanding the bleeding on 23 and 24 April!

Although the couple experienced something quite unusual, they continued as if nothing had happened! They should have informed us immedi-

ately and asked our advice as to what would be their best mode of procedure.

The advice would have been: You cannot rely on the further course; observe total abstinence till the next menstruation.

In a letter dated 3 June the husband writes: "You are right, on second thoughts. We have behaved like idiots. The occurrence on 23 and 24 April was an extraordinary one, though not so very uncommon for us as my wife has often experienced such a thing before. The fact is my wife had been extraordinarily busy the day before; she had a most exciting time and consequently supposed this would be the cause of the whole thing. When after one and a half days the disturbance was over we did not think of it any longer. Of course we should have informed you and repent it even now, but honestly we had the idea that it had nothing whatever to do with it. Now we see the situation through different spectacles. In the meantime, fortunately, my wife is doing well under the circumstances. Never mind, we shall see what comes of it. Indeed, it is the only thing we can do, and if God wills that number eleven shall arrive we will receive it with open arms and make a fresh start with periodic abstinence next year."

On 22 July we are informed that the pregnancy has terminated in a miscarriage. The reason why we give such a detailed account of the above is to emphasize:

1. that even intelligent couples may make errors through misunderstanding;
2. that it is necessary to seek a doctor's advice for the application of periodic abstinence, especially in cases where conception should by all means be avoided.

*Case 7.* The woman whose case is recorded here by means of the datometer (opposite page 138) is thirty-six years of age and has been married seven years. She first had two miscarriages and after that four children. At every parturition excessive hæmorrhages occurred, due to a retention of the placenta (afterbirth). The last parturition was on 29 December, 1933. The child was at first entirely breast-fed, but soon a "mixed" feeding had to be started which lasted until 18 June, 1934. On 11 March we were asked advice for periodic abstinence. The first two prescriptions contained long periods of abstinence because lactation had not yet ended (comp. Chapter IV, 4, G, page 100). Now if we consult the datometer we observe red dots indicating that there was a sanguineous discharge on 25 and 26 January, 9 and 14 February, 10, 13, 30 and 31 March, and on 1 April. These bleedings were very scanty and could not be recorded as proper menstruations. The first proper menstruation set in on 19 April.

The woman when relating from memory supposed that her menses returned at intervals of 26-28 days, but from the datometer it appears that the



headache (indicated by *h*). When taking the measuring strip, which is to be found at the end of the book, we can easily see that in the successive cycles following May 1934 the intermenstrual pain occurred as demonstrated in the Table.

Details about the ovulation syndrome are to be found on the back of the datometer.

This case and the cases with intermenstrual pain, reported in Chapter III, clearly demonstrate that Professor Knaus is wrong in stating that with all cycle types ovulation will always occur on the fifteenth day before menstruation.

It should also be noted that this couple might have successfully applied the old Capellmann rule, the cycle never exceeding twenty-five days.

*Case 8.* A mother, after giving birth to six children, had a miscarriage four times in two years. The woman is weak and ailing, suffering from anæmia and oligomenorrhœa (scanty menses). The husband is always wanting to reduce the period of abstinence to the first fifteen days. In a healthy woman and under ordinary circumstances there would be little objection to this, but in this abnormal case, with menstruation lasting only one or two days, very little discharge and abnormally short cycles, it would be venturesome. As this cycle-form is pathologically irregular the prescription should be made ample. Only when menstruation and the cycle-form become more normal and regular through a general improvement in the woman's

**Last Parturition Dec. 29 1933**

1934

Datometer of Case 7 folio 1

[illegible]

## Back of Datometer—1934

|           |                      |                                                                                                                                                                           |
|-----------|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| May       | 24th.                | In the afternoon a crampy pain in the lower abdomen for some hours at a stretch.                                                                                          |
| June      | 16th.                | Crampy pain in the abdomen during the whole evening.                                                                                                                      |
| July      | 9th, at 7 p.m.       | During a quarter of an hour severe pain in the lower abdomen.                                                                                                             |
| July      | 25th-27th.           | Headache.                                                                                                                                                                 |
|           | 29th.                | In the afternoon a sensation of intense fatigue.                                                                                                                          |
|           | 30th.                | Sensation of great fatigue. Pain in the left thigh. Mucous discharge.                                                                                                     |
| August    | 1st.                 | Headache. The mucous discharge is continuing.                                                                                                                             |
|           | 2nd.                 | Headache. At 5-8½ p.m. a slight pain is felt in the abdomen.                                                                                                              |
| August    | 23rd.                | On getting up in the morning a slight headache.                                                                                                                           |
|           | 24th.                | Sensation of great fatigue. Pain in the back and left thigh.                                                                                                              |
|           | 25th.                | During the whole day pain in the left groin and upper part of left thigh. Slight and transitory headache on awakening.                                                    |
|           | 26th.                | The same pain as on the previous day.                                                                                                                                     |
|           | 27th.                | In the morning the same pain in the left groin. At 11¼ a.m.-12½ p.m., at 2 p.m.-5½ p.m. and at 9¼ p.m. crampy pain in the abdomen. The pain in the groin has disappeared. |
|           | 28th.                | From 9½ p.m. up to the time when going to bed slight pain.                                                                                                                |
| September | 20th.                | Profuse mucous discharge.                                                                                                                                                 |
|           | 21st.                | Profuse mucous discharge. At 10 p.m. a slight pain in the abdomen.                                                                                                        |
|           | 22nd.                | At 6 a.m. pain in the abdomen for about an hour. From 3 p.m. headache.                                                                                                    |
| October   | 10th and 11th.       | Mucous discharge.                                                                                                                                                         |
|           | 12th.                | Headache.                                                                                                                                                                 |
|           | 13th.                | Headache and mucous discharge.                                                                                                                                            |
|           | 16th.                | In the afternoon and evening slight cramp below in the abdomen, scarcely noticeable.                                                                                      |
| November  | 4th.                 | Alternately headache and mucous discharge.                                                                                                                                |
|           | 5th.                 | Profuse mucous discharge. At 4 and at 5½ p.m., during a few moments pain in the abdomen and in the back.                                                                  |
|           | 6th.                 | Throughout the whole day profuse mucous discharge. In the afternoon a slight crampy pain; the same at 5½ p.m. In the evening pain in the loins.                           |
| November  | 25th, 26th and 27th. | Profuse mucous discharge.                                                                                                                                                 |
|           | 28th.                | Profuse mucous discharge. In the afternoon headache, which disappeared towards the evening.                                                                               |
|           | 29th.                | In the morning pain in the abdomen and in the loins. The same at 3½ p.m. and in the evening                                                                               |
|           | 30th.                | Considerable pain in the abdomen throughout the day.                                                                                                                      |
| December  | 25th.                | At 2¼ p.m. and from 4 till night much pain in the abdomen and profuse mucous discharge.                                                                                   |

## Back of Datometer——1935

|          |              |                                                                                                                                         |
|----------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| January  | 14th.        | In the morning a distinct pain in the abdomen and after that a slight cramp was felt throughout the day. Very viscous mucous discharge. |
|          | 15th.        | Tenacious mucous discharge.                                                                                                             |
|          | 16th.        | The discharge is less than yesterday. At 2 p.m. all of a sudden a sensation of great fatigue in the thighs set in.                      |
|          | 17th & 18th. | Profuse discharge. In the evening a slight crampy pain.                                                                                 |
| February | 8th & 9th.   | Mucous discharge.                                                                                                                       |
|          | 10th.        | From 9 $\frac{3}{4}$ p.m. up to the night a crampy pain in the abdomen.                                                                 |
|          | 11th.        | Mucous discharge.                                                                                                                       |
|          |              | The woman states that during the ovulation period libido is distinctly increased. Secretion is very mucous, thick and sticky.           |
| March    | 2nd.         | At 10 p.m. slight cramp.                                                                                                                |
|          | 3rd.         | At 8 a.m. slight cramp lasting five minutes. At 4 $\frac{1}{2}$ p.m. slight cramp and mucous discharge.                                 |
|          | 4th.         | At 3 $\frac{1}{2}$ p.m. till night severe abdominal cramp at intervals.                                                                 |
| March    | 24th.        | At 4 $\frac{1}{2}$ p.m. one moment of slight cramp.                                                                                     |
|          | 25th.        | At evening again one moment of slight cramp.                                                                                            |
|          | 27th.        | From 4 $\frac{1}{2}$ p.m. till 10 p.m. severe abdominal cramp. Much mucous secretion.                                                   |
| April    | 19th.        | At 4 p.m. slight cramp.                                                                                                                 |
|          | 20th.        | Up from 12 a.m. continual cramp.                                                                                                        |
| May      | 9th.         | Towards the evening slight cramp                                                                                                        |

constitution by medical treatment can the period of abstinence be shortened.

TABLE OF CASE 8.

Married in 1921. Six children, after that four miscarriages.

In 1929 miscarriage on December 24th.

In 1930, cycles: 25-26-23-24-24-miscarriage-25-25-25-23.

In 1931: miscarriage-17-24-25-25-25-22-25-miscarriage-21-25.

The cycle length has never exceeded 26 days.

Feeble woman. Anæmia, Oligomenorrhœa (Scanty menses),

Pathological cycle-form.

| Initial date of menstr. | Cycle length | Prescr. acc. to cycle-form: | Notes.                                                                                                                                                                                                                     |
|-------------------------|--------------|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nov. 21st, 1931         | 21           | 32/19                       | From the beginning of Feb. up to July 15th the man proceeded to apply the method of his own accord acc. to 27/19 As the case is pathological it plainly indicated that the period of abstinence should be somewhat longer. |
| Dec. 12th ..            | 25           | "                           |                                                                                                                                                                                                                            |
| Jan. 5th, 1932          | 21           | 28/19                       |                                                                                                                                                                                                                            |
| Jan. 26th ..            | 26           | "                           |                                                                                                                                                                                                                            |
| Feb. 21st ..            | 23           | "                           |                                                                                                                                                                                                                            |
| Mar. 15th ..            | 26           | "                           |                                                                                                                                                                                                                            |
| April 10th ..           | 26           | "                           |                                                                                                                                                                                                                            |
| May 6th ..              | 25           | "                           |                                                                                                                                                                                                                            |
| May 31st ..             | 24           | "                           |                                                                                                                                                                                                                            |
| June 24th ..            | 22           | "                           |                                                                                                                                                                                                                            |
| July 16th ..            | 23           | "                           |                                                                                                                                                                                                                            |
| Aug. 8th ..             | 26           | "                           |                                                                                                                                                                                                                            |
| Sept. 3rd ..            | 24           | "                           |                                                                                                                                                                                                                            |
| Sept. 27th              | 24           | "                           |                                                                                                                                                                                                                            |
| Oct. 21st ..            | 26           | "                           |                                                                                                                                                                                                                            |
| Nov. 16th ..            | 25           | "                           |                                                                                                                                                                                                                            |
| Dec. 11th ..            | 26           | "                           |                                                                                                                                                                                                                            |
| Jan. 6th 1933           | 21           | "                           |                                                                                                                                                                                                                            |
| Jan. 27th ..            |              |                             |                                                                                                                                                                                                                            |

## CYCLES AFTER CHILDBIRTH AND DURING LACTATION

We now come to a group of cases in which are recorded the cycles after childbirth and during lactation.

LENGTH OF CYCLES AFTER CHILDBIRTH, IN DAYS.

| Case No. | 1st Cycle         | 2nd.                                                 | 3rd.               | 4th.                    | 5th. | 6th. | 7th. | 8th. |
|----------|-------------------|------------------------------------------------------|--------------------|-------------------------|------|------|------|------|
| 9        | 28                | 41                                                   |                    |                         |      |      |      |      |
| 10       | 44                | 45                                                   | 38                 | 32                      | 32   |      |      |      |
| 11       | 30                | 50                                                   | 33                 | 32                      | 28   | 33   | 32   | 33   |
| 12       | 50                | 36                                                   | 36                 | 38                      | 52   | 28   | 31   |      |
|          |                   |                                                      |                    | Lactation ceased.       |      |      |      |      |
| 13       | 30                | 47                                                   | 36                 | 32                      | 28   |      |      |      |
|          |                   | Lactation ceased.                                    |                    |                         |      |      |      |      |
| 14       | 40                | 30                                                   | 29                 | 30                      |      |      |      |      |
|          | Lactation ceased. |                                                      |                    |                         |      |      |      |      |
| 15       | ? 13              | 28                                                   | 21                 | 32                      | 46   | 32   | 35   |      |
|          |                   |                                                      |                    | Lactation much reduced. |      |      |      |      |
| 16       | 25                | 37                                                   | 49                 | 31                      | 28   | 29   |      |      |
|          |                   |                                                      | Lactation reduced. |                         |      |      |      |      |
| 17       | 28                | 44                                                   | 31                 | 30                      | 30   |      |      |      |
|          |                   | Lactation ceased in 6 days owing to serious illness. |                    |                         |      |      |      |      |

It will be seen from this Table that an abnormally long cycle is to be expected when the infant is weaned or when the breast milk fails or is artificially suppressed.

*Case 18.* After a childbirth in 1931 the cycles were 34-29-31. Then intercourse took place on the ninth and twenty-third day of the cycle. Conception

resulted, showing that the cycle in question would have been either shorter than twenty-eight days, or (more probably) longer than thirty-three days. If the reader has grasped the method he will be able to reason this out for himself. We recommend him to do this as an exercise.

Parturition on 20 March, 1932. Lactation cycles of 27-48-40 days followed. Meanwhile medical advice was sought in order to apply periodical abstinence. A prescription was given according to cycle-form 45-27. The following cycles were thirty-one and thirty-four days long.

*Case 19.* In this case slight bleedings of short duration occurred more than once during lactation in the first months after childbirth. It was quite different from ordinary menstruation. Our advice was to await two proper menstruations. These appeared on 22 November and 20 December, 1931, forming a 28-day cycle. In the meantime lactation had entirely stopped. A prescription was given according to a cycle-form of 33-19, that is to say: abstinence during the first twenty-two days and after that a free period until the next menstruation. On 8 January (the twentieth day of abstinence) the following information was given: "Yesterday evening my wife felt a crampy pain in the abdomen together with the beginning of menstruation—a discharge of clear blood. Thinking it was menstruation setting in, we had intercourse for the first time after six months of total abstinence. But the

bleeding stopped at once and my wife did not see anything further of it."

We answered that here there was certainly no question of an ordinary menstruation, but that the pain together with the light red colour of the blood suggested an ovulation-bleeding, more particularly as bleeding of this kind not infrequently occurs after childbirth. The couple were advised to follow the original prescription as if nothing had happened, seeing that, but for conception, menstruation was to be expected at the usual time. In the following eleven days intercourse occurred several times, but on 19 January (twelve days after the pain and bleeding) an ordinary menstruation appeared. This makes it very probable that the slight bleeding on 7 January actually was an ovulation-bleeding.

But supposing their intercourse had led to conception; the menstruation of 19 January would never have occurred and the ovulation-bleeding would have been mistaken for a menstruation. The events might then have been interpreted as evidence that intercourse shortly before menstruation may lead to conception. In *Zentralblatt für Gynäkologie*, 1932, 25, page 1510 Professor Bolaffio of Modena has recently published cases of this sort in support of the hypothesis that a woman is fertile round the time of menstruation.

*Case 20.* This couple stated that menstruation occurred every thirty to thirty-four days, and asked for a completely "safe" prescription. On receiving

it, however, they suffered a good deal of anxiety, so that two somewhat "delayed" menstruations occurred. It was their misfortune that they found it very difficult to observe the period of abstinence; for in the beginning an ample number of days of abstinence should always be prescribed. However they observed the prescription during four cycles. In order to reassure them the prescription was modified according to then reported cycles, viz. 31-31-29-36-35: cycle-form 36-29. But fifteen days of abstinence proved too much for them; they knocked off four days and actually followed a cycle-form 31-28. Fortune favoured them: a cycle of thirty-one days followed. They then obtained the most liberal prescription possible, the success of

TABLE OF CASE 20.

| Initial date of menstruat. | Cycle length | Prescription acc. to cycle-form: | Notes.                                                           |
|----------------------------|--------------|----------------------------------|------------------------------------------------------------------|
| Nov. 6th, 1931             | 31           | total abstinence                 | Comp. text.                                                      |
| Dec. 7th ..                | 31           | 33/27                            |                                                                  |
| Jan. 7th, 1932             | 29           | "                                |                                                                  |
| Feb. 5th ..                | 36           | "                                |                                                                  |
| Mar. 12th ..               | 35           | "                                |                                                                  |
| April 16th ..              | 31           | 36/29                            | Deviation from the prescr. The couple observed cycle-form 31/28. |
| May 17th ..                | 33           | "                                |                                                                  |
| June 19th ..               |              | "                                |                                                                  |
|                            |              |                                  | Deviation from the prescr. Conception. Comp. text.               |

which could only be assured if they observed it quietly and strictly. This they did during the next cycle, but in the subsequent one they again deviated from the prescription, following once more a cycle-form 31-28. This time fortune did not favour them: menstruation failed to appear, and soon (on 4 August) they reported the actual symptoms of pregnancy.

It will be noticed that there is a great difference in the ease with which different people get through the time of abstinence. In cases such as this the period of abstinence should be as limited as possible, but its strict observance must be insisted on if conception is to be successfully avoided.

*Case 21. Dr. Capellmann's Rule.* Capellmann himself rightly appeals to the experience that his Rule (abstinence during the first fourteen days after the onset of menstruation) may work satisfactorily, though not in every case. These last few years we have frequently seen this statement confirmed. Since 1930 it has become quite clear that if a cycle-form never exceeds twenty-five days Capellmann's Rule will undoubtedly work. One glance at the Conception Table (page 47) is sufficient.

Among our patients there are some who applied Capellmann's Rule successfully till they voluntarily deferred from it when they wanted a child. After the child had been born, however, the rule would sometimes fail to fulfill its purpose. Indeed, the cycle-form may prove to have altered after child-

birth, or changes in the way of living, constitution, etc.

The most striking example we ever came across, is that of a married couple that had applied Capellmann's Rule with complete success for twelve years, voluntarily deviating from the Rule whenever they wished to increase their family. One of their relatives had done the same for ten years.

From January 1932 the couple made accurate annotations of the dates of menstruation. The cycles proved to be: 24-25-24-24-24-20-25-25-24-24-25-23-24-23-25-26-23-25-24-23-24-23-26-24-25-21-24-25-24-23-24-24-26-24-22-23-22-25-24. Small wonder that with such a regular cycle-form Capellmann's Rule had success during a period of twelve years. However, even this regular cycle-form may in extraordinary circumstances produce a deviation. This appeared after the last menstruation of 29 July, 1934. At that time (from 20 July) the couple made a trip to Norway and Iceland, which gave rise to several emotions with the result that the next cycle turned out to be thirty-two days.

*Case 22.* To this case belongs the datometer opposite page 146. On this datometer we notice that all cohabitations have been marked with a cross.

In this marriage the very first cohabitation after childbirth invariably resulted in conception. For this reason total abstinence was observed for a time after every parturition—once even for a year at a stretch. The next time, however, that they had to

refrain from intercourse they decided to adopt the Ogino-Smulders' method. Their family physician, however, would not hear of it. "No doubt the last eleven days may be less fertile," he said; "but on the days immediately after menstruation the contrary would be more likely." Therefore the couple decided to use the last eleven days exclusively. Of their own accord they calculated their cycle-form to be 32-30. The two recent cycles of thirty-two and thirty days they considered at once to be the actual limits of their cycle-form! It was a good thing that they did not avail themselves of the postmenstruum (the first sterile period), for after these two cycles there followed one of twenty-six days!

Self-taught, self-reliant people can be very reckless. They think the intervals will no doubt be twenty-eight days, or perhaps they take the first cycle recorded as the normal, allow for eight days of abstinence, and so commit themselves, without any knowledge of the true cycle-form. No wonder such people court failure and then blame the method.

In the case now being considered, a twenty-six-day cycle opened the couple's eyes to the fact that they had better seek medical advice. With this couple, as with others who on several occasions in their married life have observed total abstinence, it was not very difficult to practise the method, as, owing to the opinion expressed by the family physician, the woman was rather fearful of the days following menstruation, and a prescription according to an ample cycle-form 32-26 could easily be

| JAN. | FEB.    | MAR. | APR. | MAY  | JUNE     | JULY | AUG.     | SEPT.   | OCT.    | NOV.  | DEC.    |
|------|---------|------|------|------|----------|------|----------|---------|---------|-------|---------|
| -1   | -1      | -1   | -1   | -1   | -1       | -1   | -1       | -1      | -1      | -1    | -1      |
| -2   | -2      | -2   | -2   | -2   | -2       | -2   | -2       | -2      | -2      | -2    | -2      |
| -3   | -3      | -3   | -3   | -3   | -3       | -3   | -3       | -3      | -3      | -3    | -3      |
| -4   | -4      | -4   | -4   | -4   | -4       | -4   | -4       | -4      | -4      | -4    | -4      |
| -5   | -5      | -5   | -5   | -5   | -5       | -5   | -5       | -5      | -5      | -5    | -5      |
| -6   | -6      | -6   | -6   | -6   | -6       | -6   | -6       | -6      | -6      | -6    | -6      |
| -7   | -7      | -7   | -7   | -7   | -7       | -7   | -7       | -7      | -7      | -7    | -7      |
| -8   | -8      | -8   | -8   | -8   | -8       | -8   | -8       | -8      | -8      | -8    | -8      |
| -9   | -9      | -9   | -9   | -9   | -9       | -9   | -9       | -9      | -9      | -9    | X-9     |
| -10  | -10     | -10  | -10  | -10  | -10      | -10  | -10      | -10     | ●       | -10   | X-10    |
| -11  | -11     | -11  | -11  | -11  | -11      | -11  | -11      | -11     | -11     | X-11  | -11     |
| -12  | -12     | -12  | -12  | -12  | -12      | -12  | -12      | -12     | -12     | X-12  | X-12    |
| -13  | -13     | -13  | -13  | -13  | -13      | -13  | -13      | ●       | -13     | -13   | -13     |
| -14  | -14     | -14  | -14  | -14  | -14      | -14  | -14      | -14     | X-14    | X-14  | -14     |
| -15  | -15     | -15  | -15  | -15  | -15      | -15  | -15      | -15     | X-15    | -15   | -15     |
| -16  | -16     | -16  | -16  | -16  | -16      | ●    | ●        | -16     | X-16    | -16   | -16     |
| -17  | -17     | -17  | -17  | -17  | -17      | -17  | -17      | X-17    | -17     | -17   | ● -17   |
| -18  | -18     | -18  | -18  | -18  | -18      | -18  | -18      | X-18    | -18     | -18   | -18     |
| -19  | -19     | -19  | -19  | -19  | ●        | X-19 | X-19     | -19     | -19     | ● -19 | -19     |
| -20  | -20     | -20  | -20  | -20  | -20      | -20  | -20      | -20     | -20     | ● -20 | -20     |
| -21  | -21     | -21  | ●    | -21  | -21      | -21  | -21      | -21     | -21     | -21   | -21     |
| -22  | -22     | -22  | -22  | ●    | X-22     | X-22 | X-22     | -22     | -22     | -22   | -22     |
| -23  | ●       | -23  | -23  | -23  | -23      | -23  | -23      | -23     | -23     | -23   | -23     |
| -24  | -24     | -24  | -24  | -24  | -24      | -24  | -24      | -24     | -24     | -24   | -24     |
| -25  | -25     | -25  | -25  | X-25 | X-25     | -25  | -25      | -25     | ? ● -25 | -25   | X-25    |
| -26  | -26     | ●    | -26  | -26  | -26      | -26  | -26      | -26     | -26     | -26   | X-26    |
| -27  | -27     | -27  | -27  | -27  | -27      | -27  | -27      | -27     | -27     | -27   | -27     |
| -28  | -28     | -28  | -28  | -28  | -28      | -28  | -28      | ? ● -28 | -28     | X-28  | X-28    |
| -29  | 1 (29)  | -29  | -29  | -29  | -29      | -29  | -29      | -29     | -29     | -29   | -29     |
| -30  | -2 (1)  | -30  | -30  | -30  | -30      | -30  | -30      | -30     | -30     | X-30  | X-30    |
| -31  | -3 (2)  | -31  | -31  | -31  | -31      | -31  | -31      | -31     | X-31    | -31   | -31     |
| -1   | -4 (3)  | -1   | -1   | -1   | -1       | ● -1 | -1       | -1      | X-1     | -1    | -1      |
| -2   | -5 (4)  | -2   | -2   | -2   | -2       | -2   | -2       | X-2     | X-2     | X-2   | 28 ● -2 |
| -3   | -6 (5)  | -3   | -3   | -3   | -3       | -3   | -3       | X-3     | -3      | -3    | -3      |
| -4   | -7 (6)  | -4   | -4   | -4   | -4       | -4   | -4       | X-4     | X-4     | -4    | -4      |
| -5   | -8 (7)  | -5   | -5   | -5   | -5       | -5   | -5       | X-5     | -5      | -5    | -5      |
| -6   | -9 (8)  | -6   | -6   | -6   | -6       | X-6  | X-6      | X-6     | X-6     | -6    | -6      |
| -7   | -10 (9) | -7   | -7   | -7   | -7       | -7   | X-7      | -7      | -7      | -7    | -7      |
| -8   | 11 (10) | -8   | -8   | -8   | -8       | X-8  | X-8      | X-8     | 28 ● -8 | -8    | -8      |
| -9   | 12 (11) | -9   | -9   | -9   | -9       | X-9  | -9       | 27 ● -9 | -9      | -9    | -9      |
| -10  | 13 (12) | -10  | -10  | -10  | X-10     | -10  | X-10     | -10     | -10     | -10   | -10     |
| -11  | 14 (13) | -11  | -11  | -11  | X-11     | X-11 | X-11     | -11     | -11     | -11   | -11     |
| -12  | 15 (14) | -12  | X-12 | -12  | X-12     | -12  | -12      | -12     | -12     | -12   | -12     |
| -13  | 16 (15) | -13  | X-13 | X-13 | -13      | X-13 | -13      | -13     | -13     | -13   | -13     |
| -14  | 17 (16) | -14  | -14  | -14  | -14      | -14  | 28 ● -14 | -14     | -14     | -14   | -14     |
| -15  | 18 (17) | -15  | X-15 | X-15 | 27 ● -15 | X-15 | -15      | -15     | -15     | -15   | -15     |

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| JAN. | FEB. | MAR. | APR. | MAY  | JUNE | JULY | AUG. | SEPT. | OCT. | NOV. | DEC. |
|------|------|------|------|------|------|------|------|-------|------|------|------|
| -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1    | -1   | -1   | -1   |
| -2   | -2   | -2   | -2   | -2   | -2   | -2   | -2   | -2    | -2   | -2   | -2   |
| -3   | -3   | -3   | -3   | -3   | -3   | -3   | -3   | -3    | -3   | -3   | -3   |
| -4   | -4   | -4   | -4   | -4   | -4   | -4   | -4   | -4    | -4   | -4   | -4   |
| X-5  | -5   | -5   | -5   | -5   | -5   | -5   | -5   | -5    | -5   | -5   | -5   |
| -6   | -6   | -6   | -6   | -6   | -6   | -6   | -6   | -6    | -6   | -6   | -6   |
| -7   | -7   | -7   | -7   | -7   | -7   | -7   | -7   | -7    | -7   | -7   | -7   |
| -8   | -8   | -8   | -8   | -8   | -8   | -8   | -8   | -8    | -8   | -8   | -8   |
| X-9  | -9   | -9   | -9   | -9   | -9   | -9   | -9   | -9    | -9   | -9   | -9   |
| -10  | -10  | -10  | -10  | -10  | -10  | -10  | -10  | -10   | -10  | -10  | -10  |
| -11  | -11  | -11  | -11  | -11  | -11  | -11  | -11  | -11   | -11  | -11  | -11  |
| -12  | -12  | -12  | -12  | -12  | -12  | -12  | -12  | -12   | -12  | -12  | -12  |
| -13  | -13  | -13  | -13  | -13  | -13  | -13  | -13  | -13   | -13  | -13  | -13  |
| -14  | -14  | -14  | -14  | -14  | -14  | -14  | -14  | -14   | -14  | -14  | -14  |
| -15  | -15  | -15  | -15  | -15  | -15  | -15  | -15  | -15   | -15  | -15  | -15  |
| -16  | -16  | -16  | -16  | -16  | -16  | -16  | -16  | X-16  | X-16 | -16  | -16  |
| -17  | -17  | -17  | -17  | -17  | -17  | -17  | -17  | -17   | -17  | -17  | -17  |
| -18  | -18  | -18  | -18  | -18  | -18  | -18  | X-18 | -18   | -18  | -18  | -18  |
| -19  | -19  | -19  | -19  | -19  | -19  | -19  | -19  | X-19  | -19  | -19  | -19  |
| -20  | -20  | -20  | -20  | -20  | -20  | -20  | -20  | -20   | -20  | -20  | -20  |
| -21  | -21  | -21  | -21  | -21  | -21  | X-21 | X-21 | -21   | -21  | -21  | X-21 |
| X-22 | -22  | -22  | -22  | -22  | -22  | -22  | X-22 | -22   | -22  | -22  | -22  |
| X-23 | -23  | -23  | -23  | -23  | -23  | X-23 | -23  | -23   | -23  | -23  | -23  |
| -24  | -24  | -24  | -24  | -24  | -24  | -24  | -24  | -24   | -24  | X-24 | X-24 |
| X-25 | -25  | -25  | -25  | -25  | X-25 | X-25 | -25  | -25   | -25  | -25  | -25  |
| -26  | -26  | -26  | -26  | -26  | -26  | -26  | -26  | -26   | -26  | X-26 | -26  |
| -27  | -27  | -27  | -27  | X-27 | X-27 | -27  | -27  | -27   | -27  | -27  | X-27 |
| X-28 | -28  | -28  | X-28 | -28  | -28  | -28  | -28  | -28   | X-28 | X-28 | -28  |
| -29  | -29  | -29  | -29  | X-29 | -29  | -29  | -29  | -29   | -29  | -29  | X-29 |
| -30  | X-2  | -30  | -30  | -30  | -30  | -30  | -30  | X-30  | X-30 | X-30 | -30  |
| -31  | -3   | X-31 | X-1  | -31  | -31  | -31  | -31  | X-1   | -31  | -31  | -31  |
| X-1  | -4   | -1   | -2   | -1   | -2   | -1   | -1   | -2    | X-1  | -1   | -1   |
| -2   | -5   | X-2  | -3   | -2   | -3   | -2   | X-2  | X-3   | -2   | -2   | -2   |
| -3   | X-6  | -3   | -4   | -3   | -4   | -3   | -3   | -4    | X-3  | -3   | -3   |
| X-4  | -7   | -4   | -5   | -4   | -5   | -4   | X-4  | X-5   | X-4  | -5   | X-4  |
| -5   | -8   | -5   | -6   | -5   | -6   | -5   | -5   | -6    | -5   | -6   | -5   |
| -6   | -9   | -6   | -7   | -6   | -7   | -6   | X-6  | -7    | -6   | -7   | X-6  |
| -7   | -10  | -7   | -8   | -7   | -8   | -7   | -7   | -8    | -7   | -8   | -7   |
| -8   | -11  | -8   | -9   | -8   | -9   | -8   | X-8  | X-8   | -8   | -9   | -8   |
| -9   | -12  | -9   | -10  | -9   | -10  | -9   | -9   | -10   | -9   | -10  | -9   |
| -10  | -13  | -10  | -11  | -10  | X-11 | X-10 | X-10 | -11   | -10  | -11  | -10  |
| -11  | -14  | -11  | -12  | X-11 | -12  | X-11 | -11  | -12   | -11  | -12  | -11  |
| -12  | -15  | -12  | X-13 | -12  | X-13 | -12  | -12  | -13   | -12  | -13  | -12  |
| -13  | -16  | -13  | -14  | X-13 | -14  | -13  | -13  | -14   | -13  | -14  | -13  |
| -14  | -17  | -14  | X-15 | -14  | -15  | -14  | -14  | -15   | -14  | -15  | -14  |
| -15  | X-18 | X-15 | -16  | -15  | X-16 | -16  | -15  | -16   | -15  | -16  | -15  |
| -16  | -19  | -16  | X-17 | X-16 | -17  | -16  | -16  | -17   | -16  | -17  | -16  |
| X-17 | X-20 | X-17 | -18  | -17  | X-18 | -17  | -17  | -18   | -17  | -18  | X-17 |
| -18  | -21  | -18  | X-19 | X-18 | -18  | -18  | -18  | -19   | -18  | -19  | -18  |
| -19  | X-22 | X-19 | -20  | -19  | -20  | -19  | -19  | -20   | -19  | -20  | -19  |
| X-20 | -23  | -20  | X-21 | -21  | -21  | -20  | -20  | -21   | -20  | -21  | X-20 |
| -21  | -24  | -21  | -22  | -21  | -22  | -21  | -21  | -22   | -21  | -22  | -21  |
| X-22 | -25  | -22  | -23  | -22  | -23  | -22  | -22  | -23   | -22  | -23  | X-22 |
| -23  | X-27 | X-23 | -24  | -23  | -24  | -23  | -23  | -24   | -23  | -24  | -23  |
| X-24 | -28  | -23  | -25  | -24  | -25  | -24  | -24  | -25   | -24  | -25  | -24  |
| -25  | -29  | -25  | -26  | -25  | -26  | -25  | -25  | -26   | -25  | -26  | -25  |
| X-26 | -30  | -26  | -27  | -26  | -27  | -26  | -26  | -27   | -26  | -27  | -26  |
| -27  | -31  | -27  | -28  | -27  | -28  | -27  | -27  | -28   | -27  | -28  | -27  |
| -28  | -31  | -28  | -29  | -28  | -29  | -28  | -28  | -29   | -28  | -29  | -28  |
| -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1    | -1   | -1   | -1   |
| -2   | (1)  | -2   | -3   | -2   | -3   | -2   | -2   | -3    | -2   | -3   | -2   |
| -3   | (2)  | -3   | -4   | -3   | -4   | -3   | -3   | -4    | -3   | -4   | -3   |
| -4   | (3)  | -4   | -5   | -4   | -5   | -4   | -4   | -5    | -4   | -5   | -4   |
| -5   | (4)  | -5   | -6   | -5   | -6   | -5   | -5   | -6    | -5   | -6   | -5   |
| -6   | (5)  | -6   | -7   | -6   | -7   | -6   | -6   | -7    | -6   | -7   | -6   |
| -7   | (6)  | -7   | -8   | -7   | -8   | -7   | -7   | -8    | -7   | -8   | -7   |
| -8   | (7)  | -8   | -9   | -8   | -9   | -8   | -8   | -9    | -8   | -9   | -8   |
| -9   | (8)  | -9   | -10  | -9   | -10  | -9   | -9   | -10   | -9   | -10  | -9   |
| -10  | (9)  | -10  | -11  | -10  | -11  | -10  | -10  | -11   | -10  | -11  | -10  |

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[illegible]

given for the beginning. During the first cycle the couple had much anxiety over using the fourth day. On being reassured, before long they used the sixth and seventh day, and now all uneasiness and anxiety have entirely disappeared. In fact, they have to be warned against too reckless experiments. Further details, including intermenstrual pain, are to be found in the datometer. The first observations of the intermenstrual pain are not very reliable, but in the last cycles the woman felt sufficiently certain to apply the method according to Chapter III, page 85. The menstruation of 9 August, 1934, appeared on the nineteenth day after the intermenstrual pain, so it must be considered to be a delayed menstruation. The delay may be attributed to the excessive fatigues of 6-13 August.

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For readers who take interest in moral considerations on the matter contained in this book, we here give a list of publications on this subject, the principal of which we have marked \*.

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## DR. HOLT'S DATOMETER

THE datometer is a simple contrivance for annotating everything that may be of importance for the practice of periodic abstinence, such as the dates of menstruations, ovulation symptoms, cohabitations, the periods of abstinence, etc., and for keeping these annotations together in order to have a survey during the whole year. Besides it facilitates turning over the days of a cycle into calendar dates and the reverse.

It consists of a special calendar leaf which indicates the calendar dates of one whole year, and a measuring strip which, when placed on the calendar leaf, serves to transform these dates into cycle days. One side of the measuring strip has been adapted for the usual way of counting, the other for counting backwards. On the calendar leaf underneath the dates of each month the dates of the following month have been printed in red, and below these the first seven to ten days of the succeeding month in bold type. The dates within brackets are meant for leap years.

All data should be noted down on the datometer by means of little marks, e.g.:

the initial date of menstruation by drawing a circle round the date or making a cross through it in red;

the period of abstinence by drawing a line in black against the whole period;

cohabitations by a little cross (X) against the date. For noting down intermenstrual symptoms we suggest the following signals:

- intermenstrual pain
- S mucous discharge

- T sensation of pressure in the genital organs
- V sensation of dilation or of protrusion of the genital organs
- Λ sensation of fatigue in the legs
- general fatigue
- > pain in the back
- distension of the abdomen
- ∩ headache
- nausea
- + nervous irritability
- || libido sexualis
- ⊥ pressure in the rectum
- ↵ frequent micturition
- U swelling, or pain, in the breast.

#### HOW DOES THE DATOMETER INDICATE THE CYCLE LENGTH?

As soon as menstruation has newly appeared the initial date is indicated by a mark in the same column as the previous menstruation was annotated. Then the strip is taken to hand and letter M at the side which serves for counting onwards is put on a level with the initial date of the preceding menstruation. The figure on the strip which will then be on a level with the day *just previous* to the new menstruation (this being the last day of the cycle, as the day of menstruation is already the first day of the new cycle) will indicate the duration of the past cycle. This is noted down on the calendar just beside the date of the new menstruation. If the date of the new menstruation happened to be in the next month, it is also noted down in the next column of the calendar leaf as the initial date of the new cycle; or, if it happens to be in the boldly printed part, in the next column but one.

*Example.*—Suppose the date of the last menstruation was 18 November. There will then be a red circle drawn round the black figure 18 of the November column. Now

NOV.

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| NOV.     | DEC. |
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| —9       | —9   |
| —10      | —10  |
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| —20      | —20  |
| —21      | —21  |
| X-22     | —22  |
| —23      | —23  |
| X-24     | —24  |
| —25      | —25  |
| —26      | —26  |
| X-27     | —27  |
| —28      | —28  |
| —29      | —29  |
| —30      | —30  |
| —1       | —31  |
| —2       | —1   |
| —3 s'll  | —2   |
| —4 s'~   | —3   |
| —5 s vll | —4   |
| —6 ● SAV | —5   |
| —7 so    | —6   |
| —8 o     | —7   |
| —9       | —8   |
| —10      | —9   |
| X-11     | —10  |
| X-12 ~   | —11  |
| —13 ~    | —12  |
| —14      | —13  |
| —15      | —14  |
| X-16 ~   | —15  |
| —17 ~    | —16  |
| X-18 ~   | —17  |
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| —30      | —29  |
| —31      | —30  |
| —1       | —31  |
| —2       | —1   |
| —3       | —2   |
| —4       | —3   |
| —5       | —4   |
| —6       | —5   |
| —7       | —6   |
| —8       | —7   |

suppose the new menstruation appears on 21 December. Another red circle is now drawn round the red figure 21 in the November column. After that, the strip is placed on the calendar leaf, its letter M on a level with the black figure 18. One will see that on a level with the red figure 20 (which is the day just previous to menstruation) the strip will indicate the number 33. From this we state that the duration of the cycle amounted to 33 days. This number 33 is written down beside the red figure 21. Finally a red circle is drawn round the black figure 21 in the next column.

#### HOW IS THE PERIOD OF ABSTINENCE INDICATED?

After having calculated this period by means of the formula on page 93 and according to the principles set forth in this book, letter M of the strip is put on a level with the initial date of the menstruation that has just begun, in order to see at a glance the first and the last day of abstinence. These days and all those lying between them are marked by a black line.

*Example.*—If we continue the example given above, supposing further that in the new cycle the method is to be applied according to a cycle-form 29-34,—i.e. that the first and the last days of abstinence are the eleventh and the twenty-third day—proceed as follows. Letter M of the measuring strip is put on a level with the figure 21 in the December column (21 December being the date of the new menstruation). It will be seen that figure 11 on the measuring strip, indicating the eleventh day of the cycle, will then be on a level with the black figure 31, and figure 23 on a level with the red figure 12 in the lower column. Now this black figure 31 together with all following figures up to and inclusive of the red figure 12 are marked in black, thus indicating the first day of abstinence to be 31 December, and the last day of

abstinence 12 January. So on 21 December the calendar leaf looks thus:—

The first and last day of abstinence can also be found by referring to the horizontal figures adjacent to the figures in vertical columns.

The calendar leaf provided with marks and annotations is very convenient for interviewing the consultant physician. It will give him a complete survey, enabling him to state the period of abstinence and enter his prescription directly on the calendar leaf. By doing so misunderstandings cannot possibly occur.

The calendar leaf can be torn out of the book and kept apart.

**WARNING :** Always keep in mind the general rules given on page 87-88

| JAN.    | FEB.     | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. | OCT. | NOV. | DEC. |
|---------|----------|------|------|-----|------|------|------|-------|------|------|------|
| -1      | -1       | -1   | -1   | -1  | -1   | -1   | -1   | -1    | -1   | -1   | -1   |
| -2      | -2       | -2   | -2   | -2  | -2   | -2   | -2   | -2    | -2   | -2   | -2   |
| -3      | -3       | -3   | -3   | -3  | -3   | -3   | -3   | -3    | -3   | -3   | -3   |
| -4      | -4       | -4   | -4   | -4  | -4   | -4   | -4   | -4    | -4   | -4   | -4   |
| -5      | -5       | -5   | -5   | -5  | -5   | -5   | -5   | -5    | -5   | -5   | -5   |
| -6      | -6       | -6   | -6   | -6  | -6   | -6   | -6   | -6    | -6   | -6   | -6   |
| -7      | -7       | -7   | -7   | -7  | -7   | -7   | -7   | -7    | -7   | -7   | -7   |
| -8      | -8       | -8   | -8   | -8  | -8   | -8   | -8   | -8    | -8   | -8   | -8   |
| -9      | -9       | -9   | -9   | -9  | -9   | -9   | -9   | -9    | -9   | -9   | -9   |
| -10     | -10      | -10  | -10  | -10 | -10  | -10  | -10  | -10   | -10  | -10  | -10  |
| -11     | -11      | -11  | -11  | -11 | -11  | -11  | -11  | -11   | -11  | -11  | -11  |
| -12     | -12      | -12  | -12  | -12 | -12  | -12  | -12  | -12   | -12  | -12  | -12  |
| -13     | -13      | -13  | -13  | -13 | -13  | -13  | -13  | -13   | -13  | -13  | -13  |
| -14     | -14      | -14  | -14  | -14 | -14  | -14  | -14  | -14   | -14  | -14  | -14  |
| -15     | -15      | -15  | -15  | -15 | -15  | -15  | -15  | -15   | -15  | -15  | -15  |
| -16     | -16      | -16  | -16  | -16 | -16  | -16  | -16  | -16   | -16  | -16  | -16  |
| -17     | -17      | -17  | -17  | -17 | -17  | -17  | -17  | -17   | -17  | -17  | -17  |
| -18     | -18      | -18  | -18  | -18 | -18  | -18  | -18  | -18   | -18  | -18  | -18  |
| -19     | -19      | -19  | -19  | -19 | -19  | -19  | -19  | -19   | -19  | -19  | -19  |
| -20     | -20      | -20  | -20  | -20 | -20  | -20  | -20  | -20   | -20  | -20  | -20  |
| -21     | -21      | -21  | -21  | -21 | -21  | -21  | -21  | -21   | -21  | -21  | -21  |
| -22     | -22      | -22  | -22  | -22 | -22  | -22  | -22  | -22   | -22  | -22  | -22  |
| -23     | -23      | -23  | -23  | -23 | -23  | -23  | -23  | -23   | -23  | -23  | -23  |
| -24     | -24      | -24  | -24  | -24 | -24  | -24  | -24  | -24   | -24  | -24  | -24  |
| -25     | -25      | -25  | -25  | -25 | -25  | -25  | -25  | -25   | -25  | -25  | -25  |
| -26     | -26      | -26  | -26  | -26 | -26  | -26  | -26  | -26   | -26  | -26  | -26  |
| -27     | -27      | -27  | -27  | -27 | -27  | -27  | -27  | -27   | -27  | -27  | -27  |
| -28     | -28      | -28  | -28  | -28 | -28  | -28  | -28  | -28   | -28  | -28  | -28  |
| -29     | -1 (29)  | -29  | -29  | -29 | -29  | -29  | -29  | -29   | -29  | -29  | -29  |
| -30     | -2 (1)   | -30  | -30  | -30 | -30  | -30  | -30  | -30   | -30  | -30  | -30  |
| -31     | -3 (2)   | -31  | -1   | -31 | -1   | -31  | -31  | -1    | -1   | -2   | -1   |
| -1      | -4 (3)   | -1   | -2   | -1  | -2   | -1   | -2   | -2    | -2   | -3   | -2   |
| -2      | -5 (4)   | -2   | -3   | -2  | -3   | -2   | -3   | -3    | -3   | -4   | -3   |
| -3      | -6 (5)   | -3   | -4   | -3  | -4   | -3   | -4   | -4    | -4   | -5   | -4   |
| -4      | -7 (6)   | -4   | -5   | -4  | -5   | -4   | -5   | -5    | -5   | -6   | -5   |
| -5      | -8 (7)   | -5   | -6   | -5  | -6   | -5   | -6   | -6    | -6   | -7   | -6   |
| -6      | -9 (8)   | -6   | -7   | -6  | -7   | -6   | -7   | -7    | -7   | -8   | -7   |
| -7      | -10 (9)  | -7   | -8   | -7  | -8   | -7   | -8   | -8    | -8   | -9   | -8   |
| -8      | -11 (10) | -8   | -9   | -8  | -9   | -8   | -9   | -9    | -9   | -10  | -9   |
| -9      | -12 (11) | -9   | -10  | -9  | -10  | -9   | -10  | -10   | -10  | -11  | -10  |
| -10     | -13 (12) | -10  | -11  | -10 | -11  | -10  | -11  | -11   | -11  | -12  | -11  |
| -11     | -14 (13) | -11  | -12  | -11 | -12  | -11  | -12  | -12   | -12  | -13  | -12  |
| -12     | -15 (14) | -12  | -13  | -12 | -13  | -12  | -13  | -13   | -13  | -14  | -13  |
| -13     | -16 (15) | -13  | -14  | -13 | -14  | -13  | -14  | -14   | -14  | -15  | -14  |
| -14     | -17 (16) | -14  | -15  | -14 | -15  | -14  | -15  | -15   | -15  | -16  | -15  |
| -15     | -18 (17) | -15  | -16  | -15 | -16  | -15  | -16  | -16   | -16  | -17  | -16  |
| -16     | -19 (18) | -16  | -17  | -16 | -17  | -16  | -17  | -17   | -17  | -18  | -17  |
| -17     | -20 (19) | -17  | -18  | -17 | -18  | -17  | -18  | -18   | -18  | -19  | -18  |
| -18     | -21 (20) | -18  | -19  | -18 | -19  | -18  | -19  | -19   | -19  | -20  | -19  |
| -19     | -22 (21) | -19  | -20  | -19 | -20  | -19  | -20  | -20   | -20  | -21  | -20  |
| -20     | -23 (22) | -20  | -21  | -20 | -21  | -20  | -21  | -21   | -21  | -22  | -21  |
| -21     | -24 (23) | -21  | -22  | -21 | -22  | -21  | -22  | -22   | -22  | -23  | -22  |
| -22     | -25 (24) | -22  | -23  | -22 | -23  | -22  | -23  | -23   | -23  | -24  | -23  |
| -23     | -26 (25) | -23  | -24  | -23 | -24  | -23  | -24  | -24   | -24  | -25  | -24  |
| -24     | -27 (26) | -24  | -25  | -24 | -25  | -24  | -25  | -25   | -25  | -26  | -25  |
| -25     | -28 (27) | -25  | -26  | -25 | -26  | -25  | -26  | -26   | -26  | -27  | -26  |
| -26     | -29 (28) | -26  | -27  | -26 | -27  | -26  | -27  | -27   | -27  | -28  | -27  |
| -27     | -30 (29) | -27  | -28  | -27 | -28  | -27  | -28  | -28   | -28  | -29  | -28  |
| -28     | -31 (30) | -28  | -29  | -28 | -29  | -28  | -29  | -29   | -29  | -30  | -29  |
| -1 (29) | -1 (31)  | -29  | -30  | -29 | -30  | -29  | -30  | -30   | -30  | -31  | -30  |
| -2 (1)  | -2 (1)   | -30  | -31  | -30 | -31  | -30  | -31  | -31   | -31  | -1   | -1   |
| -3 (2)  | -3 (2)   | -1   | -1   | -1  | -1   | -1   | -1   | -1    | -1   | -2   | -1   |
| -4 (3)  | -4 (3)   | -2   | -2   | -2  | -2   | -2   | -2   | -2    | -2   | -3   | -2   |
| -5 (4)  | -5 (4)   | -3   | -3   | -3  | -3   | -3   | -3   | -3    | -3   | -4   | -3   |
| -6 (5)  | -6 (5)   | -4   | -4   | -4  | -4   | -4   | -4   | -4    | -4   | -5   | -4   |
| -7 (6)  | -7 (6)   | -5   | -5   | -5  | -5   | -5   | -5   | -5    | -5   | -6   | -5   |
| -8 (7)  | -8 (7)   | -6   | -6   | -6  | -6   | -6   | -6   | -6    | -6   | -7   | -6   |
| -9 (8)  | -9 (8)   | -7   | -7   | -7  | -7   | -7   | -7   | -7    | -7   | -8   | -7   |
| -10 (9) | -10 (9)  | -8   | -8   | -8  | -8   | -7   | -8   | -8    | -8   | -8   | -7   |