

# HaChama Betkufata

## An Overview of Birkat HaChama – The Blessing of the Sun – and the 28-year Solar Cycle

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### Introduction

On Wednesday morning, the 14<sup>th</sup> of Nisan, 5769, April 8<sup>th</sup>, Erev Pesach, we will all, with G-d's help, participate in a very special event that most people only merit to do up to three times in their lives. Once every 28 years we make the bracha, blessing "Oseh Maaseh Bereshith" when the sun returns to the exact spot, on the exact day of the week, that it was placed upon the creation of the world.

In this article, I will present the sources of the bracha – Birkat HaChama, an explanation of the astronomical, mathematical and halachic calculations of the sun's 28-year periodicity, as well as a summary of some of the many halachic issues regarding the reciting of the bracha.

Does anything actually happen once every 28 years? How do we calculate when the 28-year period starts? And how does it all fit into our calendar?

### Birkat HaChama Overview

The source for Birkat HaChama is the Gemara in Brachot<sup>2</sup> which states:

*Our rabbis taught: He who sees the sun at its season, the moon at its strength, the stars in their paths, and the constellations in their order recites "Blessed is the maker of creation".*

*And when does this happen? Abaya says: Every 28 years when the cycle returns and the season of Nisan falls in Saturn, on the evening of Tuesday going into Wednesday.*

תנו רבנן, הרואה חמה בתקופתה לבנה  
בגבורתה וכוכבים במסילותם ומזלות  
כסדרן, אומר ברוך עושה בראשית.  
ואימת הוי? אמר אביי כל כ"ח שנין והדר  
מחזור ונפלה תקופת ניסן בשבתאי  
באורתא דתלת נגהי ארבע.

This Gemara is brought as accepted Halacha by all the halachic authorities<sup>3</sup>.

"The sun at its season" is explained by Rashi as when the sun returns to the beginning of its orbit<sup>4</sup> where it was at the time when the heavenly bodies were placed during creation.

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<sup>1</sup> Yehudah Goldreich, a resident of Ramat Bet Shemesh, gives classes and presentations in schools on a wide variety of topics regarding the Jewish calendar.

<sup>2</sup> Mesechet Brachot, top of page 59B

<sup>3</sup> See Rambam, Hilchot Brachot, 10:18; Shulchan Aruch, Orach Chaim, 229:2; et al.

<sup>4</sup> Almost all traditional sources refer to the astronomical model described by Aristotle and the astronomer Ptolemy Claudius where all the heavenly bodies (sun, planets and stars) revolve around the earth (see Rambam, Hilchot Yesodei Hatorah, Perek 3; Rambam, Hilchot Kidush Hachodesh, Perek 11; et al) which was the accepted model of their times, rather than the present-day accepted model defined by Copernicus where the earth and planets revolve around the sun. In any case, all the measurements

The commentators understand the Gemara's question, "and when does this happen?", as well as Abaya's answer detailing the 28-year solar cycle, as referring to the first event – the sun at its season<sup>5</sup>.

Once every 28 years, the Vernal Equinox (first day of spring, Rosh T'leh<sup>6</sup>) falls exactly on the first hour of Wednesday evening<sup>7</sup>.

### **How is this calculated?**

The solar year, consisting of four equally long seasons (Tekufot) – Nissan, Tamuz, Tishrei and Tevet (spring, summer, autumn and winter, respectively), is defined as being exactly  $365\frac{1}{4}$  days long (which is 52 full weeks, one day and 6 hours).

Since the revolutions of the sun started at creation on the first hour of the fourth day<sup>9,10</sup>, after one full year the sun will return to its original location on Thursday midnight (one day and 6 hours after sunset on Wednesday). The next year it will return to its starting point on daybreak (6 am) Friday morning, and again the following year on Shabbat noon, etc. Only after 28 years will the sun once again return to its starting point at Wednesday nightfall (see Table 1 below).

This, although greatly simplified, is the calculation of the 28-year solar cycle where we commemorate the creation of the sun by blessing G-d – "Oseh Maaseh Bereshith" – "He who effects the work of creation".

But now, let us delve into these calculations a bit deeper and in particular answer the following questions:

Is the solar year actually  $365\frac{1}{4}$  days exactly?

What defines a season?

How does this calculation correspond with our regular, monthly Jewish calendar?

Why does Birkat HaChama fall each time on a different date in the Jewish calendar, and on the same date (April 8<sup>th</sup>) according to the secular calendar?

Wasn't the world created in Tishrei when we celebrate Rosh Hashana?

Isn't the Vernal Equinox (beginning of spring) on March 21<sup>st</sup>?

What is meant by the Gemara that "the season falls on Shabtai (Saturn)"?

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calculated by the traditional sources are extremely accurate in reference to any of the astronomical models.

<sup>5</sup> Note that the Talmud Yerushalmi (Perek 9, Halacha 2, Page 65B) has a different version (brought in the Aruch ("Chama") and as quoted by Rabenu Chananel) which refers to when the sun is once again seen after not being visible for three consecutive rainy days. Although there are some poskim that suggest that it should be considered an argument regarding the requirement of the bracha, in which case a bracha is not recited, (there is even a comment brought by the Chatam Sofer (56) that in previous generations it was not accustomed to recite the bracha) but most of the accepted halachic authorities (as the Chatam Sofer himself) do require Birkat HaChama as per the Talmud Bavli.

<sup>6</sup> Tekufat Nissan, the Vernal Equinox, the first day of spring, is also known in traditional sources as "Rosh T'leh" the head of the ram or the beginning of Aries.

<sup>7</sup> Keep in mind that for all calculations in the Jewish calendar, the night precedes the day (i.e. Wednesday is defined as the 24-hour period starting from after sunset on Tuesday evening until sunset Wednesday evening.)

<sup>8</sup> Also note that all calculations in the Jewish calendar are based upon a "perfect" day consisting of 12 night hours from sunset until morning and 12 day hours from sunrise until night, throughout the entire year and for all seasons.

<sup>9</sup> Bereshith 1:14-19

<sup>10</sup> The exact spot, in relation to Eretz Israel, where the sun was placed has halachic ramifications regarding the placing of the International Date Line (see Rav. Tukechinsky's classic sefer, HaYomam Bekadur Haaretz, and the Chazon Ish, Kuntress Yud-Chet Shaot.)

**Table 1 – The 28-year solar cycle – the start of Tekufat Nissan**

<b>Year</b>	<b>Day</b>	<b>Hour<sup>11</sup></b>
0	Wednesday	0
1	Thursday	6
2	Friday	12
3	Shabbat	18
4	Monday	0
5	Tuesday	6
6	Wednesday	12
7	Thursday	18
8	Shabbat	0
9	Sunday	6
10	Monday	12
11	Tuesday	18
12	Thursday	0
13	Friday	6
14	Shabbat	12
15	Sunday	18
16	Tuesday	0
17	Wednesday	6
18	Thursday	12
19	Friday	18
20	Sunday	0
21	Monday	6
22	Tuesday	12
23	Wednesday	18
24	Friday	0
25	Shabbat	6
26	Sunday	12
27	Monday	18
<b>28</b>	<b>Wednesday</b>	<b>0</b>

<sup>11</sup> In this table, as in many of the calculations in the traditional sources (e.g. calculating the Molad for Rosh Chodesh), the hours of the day start at nightfall referred to as “Hour 0” or sometimes as 6 pm, midnight is referred to as “Hour 6” or as 12 am, sunrise as “Hour 12” or as 6 am, and noontime as “Hour 18” or as 12 pm.

## The Tekufot – The Seasons

As is seen in Table 1 above, the beginning of Tekufat Nissan is always at nightfall, daybreak, midnight or noon (hours 0, 6, 12 or 18).

The Gemara in Eiruvim<sup>12</sup> quotes Shmuel who describes the calculations of the four seasons.

*Shmuel said: The Nissan (spring) season only occurs on one of the quarters of the day – either the beginning of the day or the beginning of the night or at midday or at midnight; the Tamuz (summer) season only occurs etc.*

*And the time between each of the seasons is exactly 91 days and 7½ hours.*

אמר שמואל אין תקופת ניסן נופלת אלא בארבעה רבעי היום או בתחלת היום או בתחלת הלילה או בחצי היום או בחצי הלילה ואין תקופת תמוז נופלת וכו'

ואין בין תקופה לתקופה אלא תשעים ואחד יום ושבע שעות ומחצה

Shmuel defines the year as exactly  $365\frac{1}{4}$  days long, divided equally into four seasons. This calculation is known as “**Tekufat Shmuel**” and is the basis of all halachic calculations that are dependent on the seasons. Birkat HaChama and saying “Vten Tal Umatar” outside Israel<sup>13,14</sup> are the two halachot that are defined by the seasons. They are both calculated according to Tekufat Shmuel<sup>15</sup>.

This  $365\frac{1}{4}$  day calculation is also the basis of the Julian calendar, used throughout most of the world from the days of the Roman Empire<sup>16</sup> until some changes were made (including skipping 10 days and redefining when leap years, February 29<sup>th</sup>, would occur) forming the Gregorian calendar in the year 1582, used in the secular world today<sup>17</sup>.

Therefore, out of convenience, the date for Birkat HaChama and saying “Vten Tal Umatar” outside Israel is usually defined by the secular date<sup>18</sup>.

Tekufat Nissan, according to Shmuel, will always fall on the Julian date March 26<sup>th</sup>. When the Gregorian calendar was set, this date corresponded to April 5<sup>th</sup>. In the year

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<sup>12</sup> Eiruvim 56A

<sup>13</sup> In Israel, “Vten Tal Umatar” (a prayer for rain) is added in the Shmone Esrei starting from the 7<sup>th</sup> of Marcheshvan. Outside Israel the prayer is added starting from 60 days after the beginning of Tekufat Tishrei (the autumn season) as defined by Shmuel (see Gemara Taanit 10A; Shulchan Aruch, Orach Chaim 117:1).

<sup>14</sup> Although the Gemara Taanit 10A is referring to praying for rain in Babylon, the accepted custom is to start the prayers at this date in all lands outside Israel. See the Rosh (on Taanit 10A, siman 4) who questions this, that it should be dependant on the rain requirement for each particular place and climate.

<sup>15</sup> In addition, there is another custom that is dependant on the tekufot (see Rama in Shulchan Aruch, Yoreh Deah, 116:5 and Bet Yosef, Orach Chaim, end of 455, in the name of the Mordechai) not to drink water (unless iron was placed on it) during the hour of the beginning of each of the four tekufot. See Shu”t Zemach Zedek (question 14) who discusses how the exact time of the tekufa is calculated and how it is reconciled to the day-length differences in winter and summer (unlike Birkat HaChama and Vten Tal Umatar which only the day of the tekufa, and not the hour, needs to be reckoned).

<sup>16</sup> The Julian calendar was set in the year 46 BCE.

<sup>17</sup> The Gregorian calendar was accepted only gradually throughout the years in the various European countries. Russia only converted to the Gregorian calendar in 1918 (by then they had to jump 13 days) and the Greek Orthodox church still uses the Julian calendar to calculate their holidays today.

<sup>18</sup> This is usually defined by the night (preceding) of the secular date December 5<sup>th</sup> or 6<sup>th</sup> (depending upon if the following year will be a leap year with February having 29 days.)

1700 (because a leap year is skipped) it changed to April 6<sup>th</sup>, and again to April 7<sup>th</sup> in 1800, and presently (since 1900) Birkat HaChama is recited on April 8<sup>th</sup>.<sup>19 20</sup>

### **Tekufat Rav Ada**

The Rambam in Hilchot Kidush Hachodesh<sup>21</sup> says that the calculation of the solar year is actually in dispute between the sages, as well as amongst the Greek and Persian astronomers.

They argue if the solar year is exactly 365 days and 6 hours (as Shmuel) or (as known as Tekufat Rav Ada) the solar year is measured as 365 days 5 hours 997 chalakim and 48 regaim<sup>22</sup> (365 days 5 hours 55 minutes and 25 seconds<sup>23</sup>).

The Rambam finishes his discussion of the two calculations stating that the second view (Rav Ada) is more exact<sup>24</sup> and closer to the calculations of the astronomers of his time, and that these calculations were used by the Great Bet Din to calculate the calendar.

### **The Standard Jewish calendar**

The standard Jewish calendar used today<sup>25</sup> is based on the lunar month with an average time between new moons (Molad) of 29 days, 12 hours and 793 chalakim. In order to coordinate the lunar “year” with the solar year (so that Pesach will always be in the spring and Sukkot on the fall) 12 regular 12-month years together with 7 leap years consisting of 13 months are integrated into a 19-year cycle.

This 19-year cycle of 235 months (12 x 12 + 7 x 13) is coordinated exactly with 19 solar years as defined by Rav Ada.

Standard calendar 19-year cycle:

235 months x 29 days 12 hours 793 chalakim  
= 6939 days 16 hours 595 chalakim

Rav Ada’s 19-year solar cycle:

19 x 365 days 5 hours 997 chalakim 48 regaim  
= 6939 days 16 hours 595 chalakim

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<sup>19</sup> The year 2000 was a leap year even in the Gregorian calendar, so the date stayed constant, but in the year 2100, the date of Birkat HaChama will once again change and will be on April 9<sup>th</sup>.

<sup>20</sup> Similarly, regarding saying “Vten Tal Umatar” the Avudraham (quoted by the Bet Yosef on the Tur, Orach Chaim 117) defines the 60 days after the tekufah as November 22 or 23, depending on the leap years (referring to the Julian calendar used in his time and place). Newer (18<sup>th</sup> century) printings of the Tur edited the dates to December 3 and 4 respectively (changing to the Gregorian calendar that was then accepted). The Kitzur Shulchan Aruch (siman 19) printed pre-1900 stated the starting dates for Vten Tal Umatar as December 4<sup>th</sup> and 5<sup>th</sup>, while today (until the year 2100) we start saying Vten Tal Umatar outside Israel the night preceding December 5<sup>th</sup> or 6<sup>th</sup>. (See Taamei Haminhagim, Inyanei Shmini Atzeret, #827, page 359-360 in the notes.)

<sup>21</sup> Rambam, Hilchot Kidush Hachodesh, Perek 9 and 10

<sup>22</sup> A “chelek” is defined as 1/1080 of an hour (or 3 $\frac{1}{3}$  seconds), and a “rega” as 1/76 of a chelek (0.04386 sec.)

<sup>23</sup> Compare this to the Gregorian year of 365 days 5 hours 49 minutes and 12 seconds.

<sup>24</sup> The Rambam does note that even Rav Ada’s calculations are only approximations and not astronomically exact, and that the actual season is a few days prior to the calculated tekufot.

<sup>25</sup> Set by Hillel II the Prince in the year 4119 (369 CE).

In addition, the rule that Pesach (the 16<sup>th</sup> of Nissan) must be within the spring season<sup>26</sup> (and if it “comes out” before that time, an extra month, Adar II, is added to the calendar) is only correct according to the calculations of Rav Ada. According to Shmuel’s calculations Tekufat Nissan comes out, in some years, even after Pesach!<sup>27</sup>

Since our “standard” calendar is based on Rav Ada’s calculations, why is Birkat HaChama (and saying “Vten Tal Umatar”) calculated according to Shmuel?<sup>28,29</sup>

Rav Avraham Ibn Ezra<sup>30</sup> explains this seemingly contradiction that Tekufat Shmuel is based on simpler (i.e. “rounded off”) numbers in order that the calculations required for halachot that are applicable to each and every individual (Birkat HaChama and Vten Tal Umatar) be easier to calculate. But the calendar, which is only calculated by the Great Bet Din, is calculated with the more exact numbers of Rav Ada<sup>31</sup>.

The Chazon Ish<sup>32</sup> similarly explains that Shmuel’s easier, average calculations are used so that even those people that are not able to figure the mathematical calculations can perform the mitzvot required of them. He adds that this was as defined by Moshe at Sinai to use these calculations<sup>33</sup>.

Rav Moshe Feinstein<sup>34</sup> strongly reprimands someone who called Shmuel’s calculations “wrong”. Rav Moshe emphatically states that any custom followed by all the people, including our great Rabbis, over the generations can never be called “wrong”, rather there are two variant, but both acceptable, ways to calculate the seasons, and the easier (although not so accurate) method of Shmuel is the method used in certain cases.

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<sup>26</sup> Rosh Hashana 21A; Sanhedrin 11B

<sup>27</sup> Birkat HaChama in the year 1953 was performed on the 23<sup>rd</sup> of Nissan. It has even occurred as late as the 26<sup>th</sup> of Nissan in 1785.

<sup>28</sup> See Shu”t Ma’asat Binyamin 101 who asks this, and also notes that our calendar is according to the view that the world was created in Tishrei and Shmuel’s calculations are according to the world being created in Nissan? This will be addressed later.

<sup>29</sup> See also Shu”t Chatam Sofer, Orach Chaim, siman 56 (also brought in Sefer Poalei Hashem, volume 3 and in the newly-published Meorot Hasofer, Inyanei Kidush HaChama Vehatekufa of the Chatam Sofer) which leaves this question unanswered as “Tzarich iyun gadol” – need a lot of thought.

<sup>30</sup> Sefer Haibur, page 8

<sup>31</sup> Actually, the Ma’asat Binyamin asks why we do not also make a bracha Birkat HaChama on the 19-year cycle as per Rav Ada? He answers that only according to Shmuel is the sun in the same position as when it was created on the same day of the week, Wednesday, while according to Rav Ada the cycle of the sun and the moon are in synchronization once every 19 years, but this never occurs on the beginning of a Wednesday as it was during creation.

<sup>32</sup> Chazon Ish, Orach Chaim, 138:4

<sup>33</sup> See Rav Chaim Kanyevsky, Sefer Shekel Hakodesh on Hilchot Kiddush Hachodesh of the Rambam, chapter 9, #20.

<sup>34</sup> Igrot Moshe, Orach Chaim, Chelek 4, Siman 17

## The Rule of Shabtai - Saturn

In the Gemara in Brachot<sup>35</sup>, Abaya defines Hachama Betkufata, the sun at its season:

*And when does this happen? Abaya says: Every 28 years when the cycle returns and the season of Nissan falls in Shabtai (Saturn), on the evening of Tuesday going into Wednesday.*

ואימת הוי? אמר אביי כל כ"ח שנין והדר מחזור ונפלה תקופת ניסן בשבתאי באורתא דתלת נגהי ארבע.

What is this referring to? When is “Shabtai”, Saturn’s time? And what does this have to do with the sun?

Rashi<sup>36</sup> explains that the hours of each of the days of the week are designated (or “ruled”) by one of the 7 heavenly bodies (planets) in the sky.

They are known as (in the order of their distance from the earth):

שצ"מ חנכ"ל – שבתאי, צדק, מאדים, חמה, נוגה, כוכב לבנה

Saturn, Jupiter, Mars, the Sun, Venus, Mercury and the Moon

Each planet “rules” for one hour at a time finishing an even round of each of the planets by the end of a week, as shown in Table 2 below<sup>37</sup>.

We see that the first hour of Sunday (i.e. Motzaei Shabbat at sunset) is “ruled” by Kochav (Mercury), the 2<sup>nd</sup> hour by Levana (the moon), the 3<sup>rd</sup> by Shabtai (Saturn), etc.

The first hour (at nightfall) of the days of the week are defined as **כצ"נ שחל"מ**, and the first daytime hour of the days of the week as **חל"מ כצנ"ש**, as Rashi explains in detail.

In our Gemara regarding Birkat HaChama, Abaya gives the time when the sun returns to its origin point as when Tekufat Nissan (the Vernal Equinox) is on Shabtai – the first hour of Wednesday.

It must be noted that the “rule” of the planets do not have any astronomical significance. The particular planet is not in any particular place at that time. The planet “ruling” connotation is used here only as a way to name the particular hour of the day<sup>38</sup>.

<sup>35</sup> Meschet Brachot, top of page 59B

<sup>36</sup> See Brachot 59B, Rashi starting Shabtai; and Eiruvim 56A, Rashi starting Ve'ein

<sup>37</sup> Rash in Eiruvim quotes Sefer Chakamoni that explains the reasoning for organizing the planets in such a way.

<sup>38</sup> See Gemara Shabbat 156A which does provides significances (astrological) to the ruling planet of the hour, that the “Mazal” (“luck” or personality) of a person depends on the hour of the day that he was born (or day of the week, defined by the first hour of the day or night). The conclusion of the Gemara, though, is that “Ein mazal leYisrael” – Israel is not ruled by mazal. In addition see Shulchan Aruch, Yoreh Deah, 179:1 – not to go to astrologers.

In addition, this is the background for the custom brought by the Magen Avraham (Orach Chaim 271:1) to make Kiddush on Friday before nightfall (which is ruled by Zedek-Jupiter) and not during the first hour after nightfall (which is ruled by Maadim-Mars). See the Machazit Hashekel there, who elaborates on the issue of reckoning the hour during the winter/summer time where the days are not even (i.e. not the first hour after nightfall, rather 6 -7 pm) as is discussed by the Shu"t Zemach Zedek (see footnote 15 above). The Aruch Hashulchan (271:11) questions this custom as it is forbidden to say that we are under the influence of the mazalot.

**Table 2 – The weekly cycle of the hourly “rule” of the planets**

Shabbat שבת	Friday יום ו'	Thursday יום ה'	Wednesday יום ד'	Tuesday יום ג'	Monday יום ב'	Sunday יום א'	hour
מ	ל	ח	ש	נ	צ	כ	night 1
ח	ש	נ	צ	כ	מ	ל	2
נ	צ	כ	מ	ל	ח	ש	3
כ	מ	ל	ח	ש	נ	צ	4
ל	ח	ש	נ	צ	כ	מ	5
ש	נ	צ	כ	מ	ל	ח	6
צ	כ	מ	ל	ח	ש	נ	7
מ	ל	ח	ש	נ	צ	כ	8
ח	ש	נ	צ	כ	מ	ל	9
נ	צ	כ	מ	ל	ח	ש	10
כ	מ	ל	ח	ש	נ	צ	11
ל	ח	ש	נ	צ	כ	מ	12
ש	נ	צ	כ	מ	ל	ח	day 1
צ	כ	מ	ל	ח	ש	נ	2
מ	ל	ח	ש	נ	צ	כ	3
ח	ש	נ	צ	כ	מ	ל	4
נ	צ	כ	מ	ל	ח	ש	5
כ	מ	ל	ח	ש	נ	צ	6
ל	ח	ש	נ	צ	כ	מ	7
ש	נ	צ	כ	מ	ל	ח	8
צ	כ	מ	ל	ח	ש	נ	9
מ	ל	ח	ש	נ	צ	כ	10
ח	ש	נ	צ	כ	מ	ל	11
נ	צ	כ	מ	ל	ח	ש	12

### **When did the cycle start? or, wasn't the world created on Rosh Hashana?**

Birkat HaChama is based on the premise that the sun returns to the exact spot on the day that it was created – at the beginning of the season of Nissan in the spring.

But when was the world created? Don't we say on Rosh Hashana: “Zeh hayom techilat maasecha” – “This is the day that Your creation commenced”<sup>39</sup>?

The Gemara in Rosh Hashana<sup>40</sup> brings an argument regarding the matter. Rabbi Eliezer says that the world was created in Tishrei, and Rabbi Yehoshua says that the

<sup>39</sup> See Rosh Hashana 27A

<sup>40</sup> Rosh Hashana 10B

world was created in Nissan<sup>41</sup>. Each one brings psukim to prove his point and explains the events in the Chumash (e.g. the dates of the flood<sup>42</sup>) according to his own view.

The Gemara<sup>43</sup> comes to a final decision regarding the time of creation.

*Our rabbis taught: The Jewish scholars count the flood as Rabbi Eliezer and the seasons as Rabbi Yehoshuah.* ת"ר חכמי ישראל מונין למבול כרבי אליעזר ולתקופה כרבי יהושע.

Rashi and Tosefot<sup>44</sup> both explain that **the world was actually created in Nissan** and therefore the calculations of the seasons are from Nissan, but even so, we calculate the events of Noah's flood, as well as our calendar calculations from Tishrei<sup>45</sup>.

Our traditional celebration of Rosh Hashana as the day that Adam was created, as well as all our (Rav Ada's) calendar calculations, is figured following the premise that the world was created in Tishrei. But the date of Birkat HaChama, as well as any calculation of the seasons, follows the view of Rabbi Yehoshua that the world was created in Nissan<sup>46</sup>.

### **How are the years counted? and why are we doing Birkat HaChama this year?**

This year, 5769, is not divisible by 28 (there is a remainder 1), so shouldn't we have done Birkat HaChama last year in 5768 (206 x 28 = 5768)?

It is true that the years from creation are incremented on Rosh Hashana. But both Rabbi Yehoshua (the world was created in Nissan) and Rabbi Eliezer (the world was created on the 25<sup>th</sup> of Ellul) take into account the partial year before creation (a half year per Rabbi Yehoshua or 5 days per Rabbi Eliezer) that is also counted. This "year", known as "Shnat Tohu" - the "Year of Void", is counted as Year 1<sup>47</sup>. Note that there is no Year 0.

Therefore, this year, "5769 years since creation" is actually the "5769<sup>th</sup> year since the counting started on the 1<sup>st</sup> of Tishrei **before** creation". The sun started its cycle on the beginning of Tekufat Nissan (per Rabbi Yehoshua) in the middle of Year 1. The first Birkat HaChama, 28 years later, was in Nissan of Year 29. Therefore, we recite Birkat HaChama this year, after 206 cycles, in 5769.

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<sup>41</sup> Actually they are referring to the season of Tishrei/Nissan (and not the months) where Rabbi Eliezer calculates the world being created on the 25<sup>th</sup> of Ellul, the sun and heavenly bodies (and the beginning of the Tekufat Tishrei) on the 4<sup>th</sup> day – the 28<sup>th</sup> of Ellul, and Adam was created on Friday which was Rosh Hashana the 1<sup>st</sup> of Tishrei. Similarly, Rabbi Yehoshua calculates the world being created on the 25<sup>th</sup> of Adar, the sun (and the beginning of tekufat Nissan) on the 28<sup>th</sup> of Adar, and Adam being created on Friday the 1<sup>st</sup> of Nissan.

<sup>42</sup> Bereishith chapter 7

<sup>43</sup> Rosh Hashana 12B

<sup>44</sup> Rashi starting Chachmei and starting Uletekufa, Tosefot 12B starting Lamabul.

<sup>45</sup> Rabenu Tam (in Tosefot Rosh Hashana 27A starting Keman) also says that we hold like Rabbi Yehoshua, but ends with saying "Eilu veelu divrei elokim chaim" that both the opinions can be reconciled by saying that G-d thought of creating the world in Tishrei but actually created it in Nissan.

<sup>46</sup> There are other commentaries (Ritba, Rosh Hashana 27A; Ran, Rosh Hashana 16A) that disagree and understand that the world was created in Tishrei (also see the Ramban to Bereshith 8:5).

<sup>47</sup> Adam was created on Rosh Hashana (per Rabbi Eliezer) of the Year 2!

## What about the other brachot?

Together with the source for Birkat HaChama, the Gemara states:

*Our rabbis taught: He who sees the sun at its season, the moon at its strength, the stars in their paths, and the constellations in their order recites "Blessed is the maker of creation".*

תנו רבנן, הרואה חמה בתקופתה לבנה בגבורתה וכוכבים במסילותם ומזלות כסדרן, אומר ברוך עושה בראשית.

When is the moon at its strength, the stars in their paths, and the constellations in their order<sup>48</sup>? And why don't we make a bracha at those occurrences?

The Rambam<sup>49</sup> describes these astronomical events:

*When the moon returns to the beginning of the constellation Aries at the beginning of the month and is not inclined to the north or south, and also when each of the remaining five planets<sup>50</sup> return to the beginning of the constellation Aries and are not inclined neither to the north or south, and also any time that the constellation Aries is seen rising from the east<sup>51</sup>, on each one of these events bless "Oseh Bereshith"*

וכן כשתחזור הלבנה לתחילת מזל טלה בתחילת החודש ולא תהיה נוטה לא לצפון ולא לדרום, וכן כשיחזרו כל כוכב וכוכב מחמשת הכוכבים הנשארים לתחילת מזל טלה ולא יהיה נוטה לא לצפון ולא לדרום, וכן בכל עת שייראה מזל טלה עולה מקצה המזרח, על כל אחד מאלו מברך עושה בראשית

The students of Rabenu Yona<sup>52</sup>, quoting Rabenu Yehonatan Hacoheh, describes "the constellations in their times" as an event known to the astronomers when they return to the exact spot that they were placed during creation.

We are not accustomed to make any of these calculations or to make a bracha on these events.

The Beit Ephraim<sup>53</sup> similarly explains that the sun's cycle is known by all but the other events can only be determine by experts in the field and therefore a bracha is not recited.

The Aruch Hashulchan<sup>54</sup> also explains that we don't make a bracha on these events since we do not know what they are and also because there are other explanations (other than that of the Rambam) as to what the Gemara means.

In addition, it seems, that even the Gemara Brachot that asks "And when does this happen?" and Abaya, who answers "Every 28 years etc." is only referring to the Sun's cycle and doesn't consider the other events or try to describe when they occur.

<sup>48</sup> Note that the Rif, Rosh (on Mesechet Brachot) and Shulchan Aruch (Orach Chaim 229:2) have slightly different versions, they quote: "לבנה בטהרתה, כוכבים במשמרותם ומזלות בעיתם", "The moon at its pureness, the stars in their watch and the constellations in their times", but the idea is similar.

<sup>49</sup> Rambam, Hilchot Brachot, 10:18

<sup>50</sup> Saturn, Jupiter, Mars, Venus, and Mercury

<sup>51</sup> While the first two events (the moon and planets meeting Aries) occur very infrequently and must be calculated astronomically as to when they will happen, Aries rising from the east occurs yearly exactly on the Vernal (Spring) Equinox. Is a yearly bracha required on the first day of tekufat Nissan? Or is the Rambam referring to different and infrequent astronomical event?

<sup>52</sup> Talmedei Rabenu Yona, Mesechet Brachot, page 43B (86) of the Rif

<sup>53</sup> Shu"t Beit Ephraim, Orach Chaim, siman 7

<sup>54</sup> Aruch Hashulchan, Orach Chaim, 229:4

## Halachic issues regarding the reciting of the bracha

The halachic discussions of Birkat HaChama are found in the Shulchan Aruch, siman 229:2. Many of the commentaries there delve into the various issues of the bracha. In addition, many contemporary books have written on the topic of Birkat HaChama dealing specifically with the halachic issues<sup>55</sup>.

I will only list here a few of the main halachic discussions regarding the reciting of the bracha, without, in any way, implying that I have done justice or completely covered the halachic discussions, and definitely not provide an authoritative psak on any of the issues.

### The time for saying the bracha

“Zrizim Makdimim Lamitzvah.” The earliest time for saying the bracha is at daybreak – Neitz Hachama. But unlike the normal calculation for “Neitz”, when the first sight of the sun peaks above the horizon, for Birkat HaChama the entire circle of the sun must be visible above the horizon (which is 2½-3 minutes after the traditional “Neitz”)<sup>56</sup>. In addition, since the sun must actually be seen, any mountains or buildings on the horizon which may block the sun at daybreak must also be taken into account (and see below regarding davening Shachrit first).

Lechatchilah, preferably, the bracha should be said within the first three hours of the day<sup>57</sup>. If it wasn't (e.g. clouds blocked the sun's visibility – also discussed below, or you missed the time) there is lengthy discussions (and disagreements) if the bracha is said after that time with G-d's name or not. Most allow saying the full bracha until noon<sup>58</sup>, but after that time (if not said yet) only “Baruch oseh maaseh bereshith”, without G-d's name, should be said.

### What about Shachrit?

Because of the rule “Tadir vesheaino tadir – tadir kodem<sup>59</sup>”, most authorities require that the morning prayers, Shachrit, in its entirety, be said prior to Birkat HaChama<sup>60</sup>. The custom is to daven Shachrit at Neitz (Vatikin) and Birkat HaChama immediately following.

### Berov Am

Notwithstanding what was mentioned above, most authorities require waiting for the community recitation of the bracha altogether rather than saying it individually earlier (as long as within the first three hour of the day).

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<sup>55</sup> Many of the sefarim relating to Birkat HaChama have been updated and newly reprinted this year. In particular, see the classic Sefer Tekufat Hachama Ubirkatah (first published 5684/1924), by Rabbi Yechiel Michel Tukechinsky, Sefer Yizrach Ohr (first published 5685/1925), and Seder Birkat Hachama, (5781/1981) by Rabbi Zvi Cohen, et al.

<sup>56</sup> On Erev Pesach 5769, sunrise, in Jerusalem, is at 5:17am.

<sup>57</sup> On Erev Pesach 5769, three hours into the day, in Jerusalem, is at 8:29am.

<sup>58</sup> On Erev Pesach 5769, noon, in Jerusalem, is at 11:40am.

<sup>59</sup> A rule defining that any common practice is to be done prior to a less common one.

<sup>60</sup> The commentaries deal at great length with this question deliberating if these two mitzvot are considered to be coming at the same time?, what if you originally planned to do one only later?, what if you usually pray at a later time?, and what if you will miss the community reciting of Birkat HaChama (i.e. “Berov Am”) if you go to pray first?, etc.

## The wording of the bracha

Almost all commentaries note that the bracha should be said “Beshem Umalchut”<sup>61,62</sup> and most edit the wording to be “Oseh Maaseh Bereshith”<sup>63</sup> and so is the custom. They explain that when the Gemara says to bless “Oseh Bereshith” it is only a shortened version telling which bracha is said, but actually implies to say the entire, full text of the bracha.

## No Shechianu

The Shechianu bracha (usually said on mitzvot that come at intervals) is not said. The main reason being that since Birkat HaChama is a blessing and is not a mitzvah<sup>64</sup>, nor is it any pleasure (hana'ah) to the body (e.g. a new fruit or a new suit), Shechianu is not said<sup>65</sup>. There are also those that explain that blessing “Oseh Maaseh Bereshith” – that G-d, today, is recreating the works of the creation, is similar to, and contains the same idea of Shechianu – that we arrive at this important time<sup>66</sup>.

## A cloudy day

The biggest issue dealt with, at great lengths, by all the commentaries is a cloudy day. If the sun is not clearly visible is the bracha said? Most agree that if the sun's “circle” can be seen through the clouds than the full bracha is recited<sup>67</sup>. If not<sup>68</sup>, how long should one wait for the clouds to disperse? Many say that the bracha should be recited without “Shem Umalchut” before the end of the first three hours of the day if the sun is not visible. Others<sup>69</sup> say to wait till noon. Once the bracha is said even without “Shem Umalchut” it cannot be repeated later on fully if the sun is then seen. After noontime, the full bracha is not recited in any case.

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<sup>61</sup> With G-d's name – i.e. “Baruch ata Hashem Elokeinu melech haolam”

<sup>62</sup> The Raavad's opinion is that all the brachot that are listed in the 9<sup>th</sup> chapter of Mesechet Brachot, including Birkat HaChama, are said without “Shem Umalchut”. In addition, the Sede Chemed (Maarechet Brachot 2:18) brings in the name of the Maharal MePrag that this bracha is said without “Shem Umalchut”, though some explain his reluctance to use G-d's name is because of the machloket between Shmuel and Rav Ada regarding the calculations of the yearly cycle (see Rabbi Akiva Eiger Orach Chaim 229:2).

<sup>63</sup> This is the version of the Rosh, Tur, and Shulchan Aruch. But the Tosefta (6:10), Rif, Rambam and others have the version as our Gemara – “Oseh Bereshith”. Rav Tukachinsky (Sefer Tekufat Hachama Ubirkata) explains that they too only copied the shortened version from the Gemara, but they also actually mean to recite the customary wording “Oseh Maaseh Bereshith”.

<sup>64</sup> There are discussions in the commentaries as to which mitzvot a Shechianu is recited and which ones not. (See Shach, Yoreh Deah, 28:5)

<sup>65</sup> There are other reasons given that Shechianu is not recited. See Ketav Sofer (Orach Chaim 35) that in the future the sun will grow 70 times larger, and see Shu”t Maharam Shick (90) that there is no visible difference seen on the sun.

<sup>66</sup> See sefer Yizrach Ohr, perek 11, Kuntress Omer Hasadeh

<sup>67</sup> See Shu”t Chatam Sofer Orach Chaim 56, et al.

<sup>68</sup> Some compare the halacha to that of Kidush Levana, where we make a monthly blessing on the new moon, where the moon must be visible enough to get benefit from its light in order to make the blessing. The sun, even if not seen and is completely covered with clouds, still lights up the world with daylight and provides benefit from its light. In addition, the Panim Meiros (Shu”t chelek 2, siman 38) writes that since the entire Birkat HaChama is based on a mathematical calculation of when the sun returns to its place at creation, and there is no physical change to be seen in the sun, therefore the bracha can be said in any case even if covered by clouds and not visible at all. Most authorities, though, disagree with this opinion, and with the comparison to Kidush Levana, and require actually seeing the sun (at least its circle through the clouds) in order to recite the bracha, as the Gemara writes “Haroeh Chama Betkufata”- “When one sees the sun in its season”.

<sup>69</sup> Chatam Sofer ibid, Rav Tukachinsky, et al.

## Women

Another issue dealt with extensively by the commentaries is whether women should/can recite the bracha of Birkat HaChama. Seemingly, this is an example of a “Mitzvah aseh shehazman grama” (a positive commandment that is time dependant) that women are not obligated<sup>70</sup>. The Ashkenazi custom is that women can recite the bracha if they wish to; while the Sephardic custom is that they do not. There are those that argue that this is not a case of performing a commandment, but rather just a bracha, and even the Ashkenazi women should not say the bracha. Alternately, there are those that argue that even Sephardic women that do not bless on commandments that they are not obligated to perform, but they do recite all the blessing in the prayers, even though not obligated. Here too they may recite the Birkat HaChama.

Most poskim do not see any halachic reason why women cannot participate in Birkat HaChama<sup>71</sup>, although it seems that the custom in the past was that women did not recite Birkat HaChama<sup>72</sup>. This may be the case because women then were not so accustomed to participate in the public prayers, and definitely not in instances of big public gatherings<sup>73</sup>.

Many poskim are quoted that, even though they may not be obligated, women may, and should, participate in the important bracha of Birkat HaChama<sup>74</sup>.

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<sup>70</sup> Similar to Kidush Levana, which the custom is that women do not recite. (See Magen Avraham, Orach Chaim, 226 which gives a separate reason for not having women recite Kidush Levana which is not applicable to Birkat HaChama.)

<sup>71</sup> Shu”t Chatam Sofer ibid.

<sup>72</sup> The Shoel Umashiv (Vol. 2, chelek 2, siman 168) writes that women should not make this bracha since there is a fear that they may understand this as praying to the sun as they did in the days of the prophet Yirmiyahu.

<sup>73</sup> Maasat Binyamin ibid

<sup>74</sup> Sefer Yizrach Ohr, perek 8,

### Table of Birkat HaChama Occurrences

Birkat HaChama, of the start of the 207<sup>th</sup> cycle, will occur on Wednesday morning, Erev Pesach, the 14<sup>th</sup> of Nisan, 5769, April 8<sup>th</sup>, 2009.

The calculation of the exact date in the Jewish calendar of past occurrences of Birkat HaChama is only possible starting from when the calendar was set by Hillel II, the Prince, in the year 4119 (369CE). Prior to that time, the start of each month, Rosh Chodesh, was declared monthly by the Great Bet Din, depending on witnesses that saw the new moon and other considerations, of which we have no historic knowledge.

The following table lists the Jewish and Julian/Gregorian<sup>75</sup> dates of past occurrences of Birkat HaChama for the previous 800 years.

4 Nissan	5741	April 8	1981
23 Nissan	5713	April 8	1953
14 Nissan	5685	April 8	1925
5 Nissan	5657	April 7	1897
26 Nissan	5629	April 7	1869
16 Nissan	5601	April 7	1841
7 Nissan	5573	April 7	1813
26 Nissan	5545	April 6	1785
16 Nissan	5517	April 6	1757
7 Nissan	5489	April 6	1729
27 Adar II	5461	April 6	1701
19 Nissan	5433	April 5	1673
9 Nissan	5405	April 5	1645
29 Adar II	5377	April 5	1617
19 Nissan	5349	March 26	1589
9 Nissan	5321	March 26	1561
29 Adar II	5293	March 26	1533
21 Nissan	5265	March 26	1505
12 Nissan	5237	March 26	1477
20 Nissan	5209	March 26	1449
23 Nissan	5181	March 26	1421
12 Nissan	5153	March 26	1393
2 Nissan	5125	March 26	1365
23 Nissan	5097	March 26	1337
14 Nissan	5069	March 26	1309
5 Nissan	5041	March 26	1281
25 Nissan	5013	March 26	1253
16 Nissan	4985	March 26	1225

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<sup>75</sup> For the sake of simplicity, the table will assume the Julian calendar up to the year 5349/1589 and the Gregorian calendar from the year 5377/1617 onwards.

### **Future dates of Birkat HaChama**

The following lists the dates of all the upcoming occurrences of Birkat HaChama until the year 6000.

14 Nissan	5769	April 8	2009
23 Nissan	5797	April 8	2037
2 Nissan	5825	April 8	2065
12 Nissan	5853	April 8	2093
21 Nissan	5881	April 9	2121
2 Nissan	5909	April 9	2149
11 Nissan	5937	April 9	2177
19 Nissan	5965	April 10	2205
29 Adar II	5993	April 10	2233

## The Birkat HaChama Prayers<sup>76</sup>

### סדר תפילות ברכת החמה

**הללויה** הללו את יי מן השמים הללוהו במרומים.  
הללוהו כל מלאכיו הללוהו כל צבאיו. הללוהו שמש  
וירח הללוהו כל כוכבי אור. הללוהו שמי השמים  
והמים אשר מעל השמים. יהללו את שם יי כי הוא  
צוה ונבראו. ויעמידם לעד לעולם חק נתן ולא  
יעבור:

### ברוך אתה יי אלהינו מלך העולם עושה מעשה בראשית

**אל אדון** על כל המעשים, ברוך ומברך בפי כל הנשמה,  
גדלו וטובו מלא עולם, דעת ותבונה סובבים הודו.  
המתנאה על חיות הקדש, ונהדר בכבוד על המרכבה,  
זכות ומישור לפני כסאו, חסד ורחמים מלא כבודו.  
טובים מאורות שבראם אלהינו, יצרם בדעת בבניה ובהשכל,  
כח וגבורה נתן בהם, להיות מושלים בקרב תבל.  
מלאים זיו ומפיקים נגה, נאה זיום בכל העולם,  
שמחים בצאתם ששים בבואם, עושים באימה רצון קונם.  
פאר וכבוד נותנים לשמו, צהלה ורנה לזכר מלכותו,  
קרא לשמש ויזרח אור, ראה והתקין צורת תלבושה.  
שבח נותנים לו כל צבא מרום,  
תפארת וגדלה שרפים וחיות ואופני הקדש.

**למנצח** מזמור לדוד. השמים מספרים כבוד אל  
ומעשה ידיו מגיד הרקיע. יום ליום יביע אמר ולילה  
ללילה יחנה דעת. אין אמר ואין דבריית בלי נשמע  
קולם. בכל הארץ יצא קולם ובקצה תבל מליהם  
לשמש שם אהל בהם. והוא כחתן יצא מחפתו  
ישיש כגבור לרוץ ארח. מקצה השמים מוצאו  
ותקופתו על קצותם ואין נסתר מחמתו. תורת  
הנה תמימה משיבת נפש עדות הנה נאמנה  
מחכימת פתי. פקודי הנה ישרים משמחי לב מצות  
הנה ברה מאירת עינים. יראת הנה טהורה עומדת  
לעד משפטי הנה אמת צדקו יחדו. הנחמדים  
מזהב ומפז רב ומתוקים מדבש ונפת צופים. גם  
עבדך נזהר בהם בשמרם עקב רב. שגיאות מי יבין  
מנסתרות נקני. גם מזדים חשך עבדך אל ימשלו  
בי אז איתם ונקיתי מפשע רב. יהיו לרצון אמרי פי  
והגיון לבי לפניך יהנה צורי וגאלי:

<sup>76</sup> As the custom of the Chatam Sofer as noted in Orach Chaim, section 56 (and as is the accepted custom brought by many of the commentaries). The Sede Chemed (end of volume 9, in a separate section dealing with Birkat HaChama) also brings a number of other additional prayers to be recited, as well as many of the contemporary sefarim and pamphlets regarding Birkat HaChama, who bring many other additional prayers as well.

עלינו לשבח לאדון הכל לתת גדלה ליוצר בראשית  
 שלא עשנו כגווי הארצות ולא שמנו כמשפחות  
 האדמה שלא שם חלקנו בהם וגורלנו ככל המונם  
 שהם משתחוים להבל וריק ומתפללים אל אל לא  
 יושיע. ואנחנו פורעים ומשתחוים ומוזים לפני מלך  
 מלכי המלכים הקדוש ברוך הוא. שהוא נוטה שמים  
 ויוסד ארץ ומושב יקרו בשמים ממעל ושכינת עזו  
 בגבהי מרומים. הוא אלהינו אין עוד אמת מלבנו  
 אפס זולתו כפתוב בתורתו וידעת היום והשבת אל  
 לבבך כי יהנה הוא האלהים בשמים ממעל ועל  
 הארץ מתחת אין עוד.

על כן נקוה לך יהנה אלהינו לראות מהרה בתפארת  
 עזך להעביר גלולים מן הארץ והאלילים פרות  
 ופירות לתקן עולם במלכות שדי וכל בני בשר יקראו  
 בשמך להפנות אליך כל רשעי ארץ. יבירו וידעו כל  
 יושבי תבל כי לך תכרע כל ברך תשבע כל לשון לפניך  
 יהנה אלהינו יברעו ויפלו ולכבוד שמך יקר יתנו  
 ויקבלו כלם את על מלכותך ותמלך עליהם מהרה  
 לעולם ועד. כי המלכות שלך היא ולעולמי עד תמלך  
 בכבוד כפתוב בתורתך יהנה ימלך לעולם ועד. ונאמר  
 והיה יהנה למלך על כל הארץ. ביום ההוא יהיה  
 יהנה אחד ושמו אחד:

77

קריש יתום

יתגדל ויתקדש שמה רבא. אמן בעלמא די ברא כרעותה וימליך מלכותה,  
 ויצמח פורקנה ויקרב משיתה. אמן בתיבון וביוטיבון, ובתי דכל  
 בית ישראל, בעגלא ובזמן קריב, ואמרו אמן: יהא שמה רבא מברך לעלם  
 וקעלמי עלמאי. ויתברך, וישתבח, ויתפאר, ויתרום, ויתגשא, ויתקדר  
 ויתעלה, ויתהלל, שמה דקדשא בריך הוא. אמן לעלא מן כל ברקתא  
 ושירתא, השבתתא ונחמתא, דאמירן בעלמא, ואמרו אמן:

יהא שלמא רבא מן שמאי ותים טובים עלינו ועל כל ישראל ואמרו  
 אמן:

עשה שלום במרומוי הוא יעשה שלום עלינו ועל כל ישראל ואמרו  
 אמן:

<sup>77</sup> There is much discussion if the Aleinu prayer is said. The custom is to include it, although care must be taken when saying “va’anachnu korim” not to bow in the direction of the sun.