

# NEW NANAKSHAHI CALENDAR

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## ABSTRACT

**A new Nanakshahi Calendar has been prepared. The Calendar Reform Committee under the aegis of the Institute of Sikh Studies, Chandigarh, recommended some changes. In this article these changes and why they were necessary are discussed. Shiromani Gurdwara Parbandhak Committee (SGPC), Amritsar has decided to implement the new Reformed Nanakshahi Calendar from 1999 CE. For ready reference the New Nanakshahi Calendar has been tabulated in such a way that all important events can be easily figured out (see the back cover).**

## INTRODUCTION

Calendars are an important part of the culture of a nation. The religious festivals, celebrations, the sowing season, the harvest season, recording of dates of events, and planning for the future are all related to calendars. For this reason all major nations of the world evolved their own calendars. Hindus have their Bikarami, and Saka calendars, the Christians have the Gregorian Calendar (now called Common Era), and Muslims have the Hijri calendar. Even Bahais, whose faith started only in the beginning of the 19<sup>th</sup> century having now a population of 5 million all over the world, have a calendar of their own.

The Sikhs followed the Bikarami calendar to all intents and purposes until the early 20<sup>th</sup> century. Then some Punjabi *Jantri* (almanac) publishers started giving the Nanakshahi Samvat also in their *Jantris*. Dr Bhai Vir Singh was perhaps the only scholar who used Nanakshahi Samvat as an element of date. Nanakshahi Samvat that had been in use was nothing but the change in name of the Bikarami Samvat. Its *tithis* (*sudis/vadis* – lunar dates), *sankrantis* (*sangrands* - beginning of the solar months) were the same. Having been linked with the Bikarami Samvat it had the same shortcomings as those in the Bikarami Samvat.

## DISCUSSION

### Problems

1 The Bikarami Calendar is luni-solar, which means its one part is solar according to which all *Sangrands* (*sankrantis*), the first day of the month, are decided; and the other part is lunar which

determines *tithis* (*sudis* and *vadis*) according to which dates of all *Gurpurbs* are determined. The problem with the solar part is that *Vaisakhi* has shifted in relation to seasons. According to Surya Siddhantic calculations *Vaisakhi* occurred on the day of the Spring Equinox in 532 CE [8]. Now a days the Spring Equinox occurs on 20/21 March, but *Vaisakhi* on 13/14 April. In another thousand years it will start occurring in May.

- In 1902 for the first time it occurred on April 13. The cycle of April 12/13 continued until 1940.
- In 1940 it occurred on April 12 for the last time.
- In 1971 it happened on April 14 for the first time. The current cycle of 13/14 April, according to the Bikarami calendar, will continue well into the 21<sup>st</sup> century, when in the later part it will change again.
- In 1999 it will fall on the 14<sup>th</sup> day of April.

2 In the lunar Bikarami Calendar dates of *tithis*, according to which *Gurpurbs* are celebrated, change from year to year in relation to the solar calendar, sometimes occurring 10 or 11 days earlier, and sometimes 18 to 19 days later.

3 The mean length of the solar year of the Bikarami Samvat is 365 days 6 hours 9 minutes 9.8 seconds, and that of the tropical year, from spring equinox to next spring equinox is 365 days 5 hours 48 minutes 45.2 seconds [5]. The Bikarami year currently is longer than the tropical year by about 20 minutes. The Surya Siddhantic solar year was in use until sixties. Its length is 365 days 6 hours 12 minutes

### The Vaisakhi Dates for Certain Epochs

Current Era (CE) Year	Vaisakhi Date
1000	22 March [9]
1469	27 March [10]
1699	29 March
1752	29 March
1753	9 April (due to change from Julian to Gregorian Calendar)
1799	10 April
1899	12 April

and 36 seconds [13], which is about 23 minutes longer than that of the tropical year. If the months of any given Era are to recur consistently in the same seasons, then the year length has to be that of the tropical year.

Over a period of time this difference builds up, and shows in those calendars, which are not based on the tropical year. The seasons in relation to the months begin shifting. This is the reason why *Vaisakhi* has shifted by 8/9 days from 1469 CE to the present times. If Nanakshahi Calendar had not been de-linked from the Bikarami calendar, this shift would have continued and in 13000 years *Vaisakhi* would have occurred in the middle of October. The seasons would be opposite to those which are mentioned in the *Baramaha Manjh* [2], and *Barahmaha Tukhari Banis* [3].

- 4 The days in the months are not fixed. The number can vary from 31 to 32 days for the summer months and from 29 to 30 days for the winter months. The rules for determination of *Sankrantis*, beginning of the months, are complicated and public has to rely on the almanac makers for such a simple thing as the beginning of the month.
- 5 The lunar portion of the calendar, according to which most of the religious festivals are fixed, has its share of peculiarities. Since, it is based on 12 months of the lunar cycle (full moon to full moon or new moon to new moon), its year length is about 11 days shorter than that of the solar year. Therefore, its year begins 11 days earlier in the following year in relation to the solar year. This is why the *Gurpurb* dates shift by about 11 days from one year to the other.
- 6 To make the lunar year keep in step with the solar, every two or three years an extra month is added to the lunar year. This month is called *malmas* or intercalary month. That lunar year contains 384 or so days. This makes the *Gurpurb* dates to occur by about 18 or 19 days later when such a month is introduced.
- 7 The lunar month of *Jeth* that will occur in 1999 CE year, will be intercalated, i.e. there would be two months of *Jeth* one *sudha* and the other *mal*. In the *malmas* or the extra month religious festivals are not celebrated. This is quite a complicated set up. Moreover, this is contrary to *Gurbani*, according to which no month or day in itself is good or bad [4].
- 8 The festivals and *Gurpurbs* (birthday, day of assumption of *Guruship*, and the day of merging

into the Eternal Light) that are celebrated according to the lunar calendar are called movable, and those that are celebrated according to the solar calendar are called fixed. The movable festivals are called as such, because their dates are not fixed in relation to the solar year. From year to year they occur on different dates of the solar year, though their lunar date is the same every year. *Gurpurbs* of the Sikh Gurus are all movable. *Vaisakhi* and *Maghi* are fixed festivals.

An example of movable celebration is the *Parkash* (birthday) *Gurpurb* of Guru Gobind Singh. It is celebrated on the 7th day of the bright half of the lunar month of Poh (*sudi* 7). This lunar date occurred on the following dates of the Common Era (CE) and Bikarami Era (solar) during the following years:

Common Era	Bikarami (Solar)
24 Dec 1990	10 Poh 2047
12 Jan 1992	28 Poh 2048
31 Dec 1992	17 Poh 2049
19 Jan 1994	6 Magh 2050
7 Jan 1995	24 Poh 2051
28 Dec 1995	13 Poh 2052
15 Jan 1997	3 Magh 2053
5 Jan 1998	22 Poh 2054

This *Gurpurb* did not occur in the years 1991, 1993, and 1996 of Common Era. It would not have occurred in 1999 (the year of 300th anniversary of the creation of the Khalsa), and would have occurred twice in 1998, if we had not instituted the reforms. It occurred twice in 1992 and 1995. According to the Bikarami calendar (solar) the actual date of *Parkash* of the Guru is 23 Poh 1723 Bikarami. During the above period this *Gurpurb* does not occur on that date even once. Rather, it occurred in the month of Magh twice.

## 2. Reforms to the Nanakshahi Calendar

During my visits to India, I made several suggestions for the reform of the Nanakshahi and Khalsa Samvats. A committee, under the aegis of the Institute of Sikh Studies, was formed to study this matter. This committee held meetings at Chandigarh and formulated proposals. These were formally accepted, in principle, in a larger meeting in which about 40 eminent scholars, from universities and other institutions, participated.

The main suggestions given below were submitted to the SGPC.

- a. De-link the Nanakshahi Samvat from the Bikarami Samvat

- b. Begin the year from the month of Chet - as in the *Baramahas*
- c. Fix the number of days in the months as follows:  
Chet 31, Vaisakh 31, Jeth 31, Harh 31, Sawan 31  
Bhadon 30, Asu 30, Katik 30, Maghar 30,  
Poh 30, Magh 30  
Phagun 30 in ordinary year, and 31 days in a  
year in which the month of February has  
29 days.
- d. Fix the beginning of the months in relation to the  
Common Era calendar as follows:

<u>Month</u>	<u>Begins on</u>
Chet	14 March
Vaisakh	14 April (Vaisakhi in 1999 CE is on 14 April)
Jeth	15 May
Harh	15 June
Sawan	16 July
Bhadon	16 August
Asu	15 September
Katik	15 October
Maghar	14 November
Poh	14 December
Magh	13 January
Phagun	12 February

With the above scheme any given date of any month of the Nanakshahi Calendar, will always occur on the same date of the Common Era calendar. Except in the month of Phagun in a leap year when the corresponding dates of Phagun from March 1 to March 13 will differ by 1 day from those of the same month in non-leap years. This is a simple scheme, easier to remember; and the calendar is good for ever. The seasons will always occur in the same months, as mentioned in *Gurbani*.

- e. Celebrate the *Gurpurbs* according to the solar dates, and not according to the *sudis* and *vadis* of the lunar calendar. *Vaisakhi*, *Maghi*, and *shaheedi purbs* (martyrdom days) of Sahibzadas are already being celebrated according to the solar dates.

In this context the following excerpts from works of earlier learned scholars are very pertinent:

"ਨੋਟ: ਇਹ ਖਰੜਾ ਸੰ: 1906 ਈ: ਦਾ ਲਿਖਿਆ ਤਿਆਰ  
ਪਿਆ ਸੀ, ਪਰ ਕਈ ਕਾਰਨਾਂ ਕਰਕੇ ਇਸ ਦੇ ਛਪਣ ਦੀ ਵਾਰੀ

ਨਾਂ ਆਈ। ਸਿੱਖ ਇਤਿਹਾਸ ਸੰਬੰਧੀ ਮੇਰਾ ਬਹੁਤ ਸਾਰਾ ਅਕੱਠਾ  
ਕੀਤਾ ਮਸਾਲਾ ਗਵਾਚਦਾ ਜਾਣ ਕਰਕੇ ਮੈਂਨੂੰ ਡਰ ਲੱਗਾ ਕਿ ਕਿਤੇ  
ਇਹ ਖਰੜਾ ਵੀ ਗਵਾਚ ਨਾਂ ਜਾਏ। ਇਸ ਤੋਂ ਬਿਨਾਂ ਜਦ  
ਸਰਦਾਰ ਬਹਾਦਰ ਸੂਬੇਦਾਰ ਰਾਮ ਸਿੰਘ ਜੀ ਚੱਕ ੧੨੬  
(ਸਰਗੋਧਾ) ਤੇ ਸੂਬੇਦਾਰ ਠਾਕਰ ਸਿੰਘ ਜੀ ਲੀਲ (ਗੁਰਦਾਸਪੁਰ)  
ਆਦਿ ਕਈ ਸੱਜਣਾਂ ਨੇ ਗੁਰਪੁਰਬਾਂ ਦੀਆਂ ਪ੍ਰਵਿਸ਼ਟਾ ਤ੍ਰੀਕਾਂ  
ਆਪਣੇ ੨ ਗੁਰਦੁਵਾਰਿਆਂ ਵਿੱਚ ਪਰਚਲਤ ਕਰਨ ਲਈ ਮੈਥੋਂ  
ਮੰਗੀਆਂ ਤਾਂ ਮੈਂ ਜ਼ਰੂਰੀ ਸਮਝਿਆ ਕਿ ਇਹ ਖਰੜਾ ਛਪਵਾ ਹੀ  
ਦਿੱਤਾ ਜਾਵੇ।" -- ਗੁਰਪੁਰਬ ਨਿਰਣਯ - ਸ: ਕਰਮ ਸਿੰਘ  
ਹਿਸਟੋਰੀਅਨ, 1 ਨਵੰਬਰ 1912

"ਸਿੱਖ ਪੰਥ ਹੁਣ ਤੱਕ ਸੁਦੀ / ਵਦੀ ਦੀਆਂ ਥਿੱਤਾਂ ਅਨੁਸਾਰ  
ਗੁਰਪੁਰਬ ਮਨਾਂਦਾ ਆ ਰਿਹਾ ਹੈ। ਪਰ ਇਸ ਵਿੱਚ ਦੋ ਘਾਟੇ  
ਟਿਕੇ ਰਹਿੰਦੇ ਹਨ। ਇਕ ਤਾਂ ਅਸੀਂ ਗੁਰਪੁਰਬ ਅਸਲੀ ਤਰੀਕ  
ਤੋਂ ਅਗਾਂਹ ਪਿਛਾਂਹ ਕਰਕੇ ਮਨਾਂਦੇ ਹਾਂ, ਕਿਉਂਕਿ ਬੱਝਵੀਂ ਰੁੱਤ ਤੇ  
ਬਿੱਤ ਸੂਰਜ ਦੇ ਹਿਸਾਬ ਹੀ ਹੋ ਸਕਦੀ ਹੈ। ਦੂਜੀ ਵੱਡੀ ਭਾਰੀ  
ਘਾਟ ਹੁਣ ਤੱਕ ਇਹ ਪੈਂਦੀ ਆ ਰਹੀ ਹੈ ਕਿ ਥਿੱਤਾਂ ਦੇ ਬਿ-ਠੁਕੇ-  
ਪਨ ਦੇ ਕਾਰਨ ਗੁਰਪੁਰਬਾਂ ਦੀਆਂ ਤਰੀਕਾਂ ਚੇਤੇ ਰਹਿਣੀਆਂ ਬਹੁਤ  
ਹੀ ਔਖੀ ਗੱਲ ਹੈ। ਇਸ ਦਾ ਕੋਝਾ ਸਿੱਟਾ ਇਹ ਨਿਕੱਲ ਰਿਹਾ ਹੈ  
ਕਿ ਸਿੱਖ ਗੁਰਪੁਰਬਾਂ ਦਾ ਪ੍ਰੇਮੀ ਹੋਣ ਦੇ ਥਾਂ ਸੰਗਰਾਂਦਾਂ, ਮੱਸਿਆ,  
ਪੁੰਨਿਆ ਦਾ ਸ਼ਰਧਾਲੂ ਬਣ ਗਿਆ ਹੈ, ਤੇ ਇਹ ਦਿਹਾੜੇ ਸੂਰਜ  
ਚੰਦ ਦੀ ਪੂਜਾ ਨਾਲ ਮੇਲ ਖਾਂਦੇ ਹਨ। ਇਸ ਤਰ੍ਹਾਂ ਬੇ-ਮਲੂਮੇ ਹੀ  
ਮੁੜ ਭਰਮ-ਵਹਿਮ ਦੇ ਜਾਲ ਵਿੱਚ ਫਸਦਾ ਜਾ ਰਿਹਾ ਹੈ  
। ਕੁਦਰਤ ਵੱਲੋਂ ਸੱਭੇ ਦਿਨ ਹੀ ਇੱਕੋ ਜਿਹੇ ਹਨ। ਪਰ ਮੈਂਨੂੰ ਉਹ  
ਦਿਨ ਵਧੀਕ ਪਿਆਰੇ ਲੱਗਣੇ ਚਾਹੀਦੇ ਹਨ, ਜਿਨ੍ਹਾਂ ਨਾਲ ਸਾਡੇ  
ਸਤਿਗੁਰ ਪਾਤਿਸ਼ਾਹ ਦਾ ਜੀਵਨ-ਸੰਬੰਧ ਬਣਿਆ। ਸਿੱਖ ਦੇ  
ਹਿਰਦੇ ਵਿੱਚ ਗੁਰੂ ਪਾਤਿਸ਼ਾਹ ਵਾਸਤੇ ਚਾਉ-ਮਲੂਮ ਪੈਦਾ ਕਰਨ  
ਲਈ ਇੱਕ ਸੁਚੱਜਾ ਤਰੀਕਾ ਇਹ ਹੋ ਸਕਦਾ ਹੈ ਕਿ ਗੁਰਪੁਰਬ  
ਬੱਝਵੀਆਂ ਸੂਰਜੀ ਤਰੀਕਾਂ ਤੇ ਮਨਾਇਆ ਜਾਇਆ ਕਰਨ।" --  
---ਸਲੋਕ ਗੁਰੂ ਅੰਗਦ ਸਾਹਿਬ ਸਟੀਕ - ਪ੍ਰੋਫੈਸਰ ਸਾਹਿਬ  
ਸਿੰਘ ਡੀ ਲਿਟ (1948)

"ਥਿੱਤਾਂ ਦੇ ਆਧਾਰ ਪੁਰ ਚੰਦ੍ਰ-ਵਰਖ ੩੫੪-- ਦਿਨਾਂ ਦੇ ਏੜ-  
ਗੋੜ ਵਿੱਚ ਹੁੰਦਾ ਹੈ, ਪਰ ਸੂਰਜ-ਵਰਖ ਦੇ ਪ੍ਰਵਿਸ਼ਟੇ (ਤਾਰੀਖਾਂ)  
੩੬੫-੬੬ ਹੁੰਦੇ ਹਨ। ਇਸ ਫਰਕ ਦੇ ਕਾਰਨ ਕੁੱਝ ਗੁਰਪੁਰਬ ਤੇ  
ਤਿਉਹਾਰ ਇਕ ਸਾਲ ਅੰਦਰ ਦੋ ਵਾਰੀ ਆ ਜਾਂਦੇ ਹਨ, ਕਿਸੇ ਸਾਲ  
ਆਉਂਦੇ ਹੀ ਨਹੀਂ। ਇਹ ਘਾਟ ਅਕਸਰ ਹੈਰਾਨੀ ਦਾ ਕਾਰਨ  
ਬਣੀ ਰਹਿੰਦੀ ਹੈ। ਇਸ ਕਰਕੇ, ਅਨੇਕ ਸਿਅਣੇ ਸੱਜਣਾਂ ਦਾ  
ਵਿਚਾਰ ਹੈ ਕਿ ਗੁਰਪੁਰਬ ਸਾਰੇ ਸੂਰਜ-ਸੰਮਤ ਵਿੱਚ,  
ਪ੍ਰਵਿਸ਼ਟਿਆਂ ਦੇ ਆਧਾਰ ਪੁਰ ਮਨਾਏ ਜਾਣੇ ਚਾਹੀਦੇ ਹਨ। ਸੋ,  
ਸਾਰੀਆਂ ਮੁਖੀ ਸਭਾ ਸੋਸਾਇਟੀਆਂ ਨੂੰ ਇਸ ਮਸਲੇ ਤੇ ਪੂਰੀ ਗਹੁ  
ਨਾਲ ਵਿਚਾਰ ਕਰਕੇ, ਦੋ-ਟੁੱਕ ਫੈਸਲਾ ਕਰਨਾ ਚਾਹੀਦਾ ਹੈ, ਤਾਂ ਜੋ  
ਅੱਗੋਂ ਲਈ ਝਗੜੇ-ਝਮੇਲੇ ਮਿਟ ਜਾਣ ਤੇ ਸਹੀ-ਸਿੱਧੀ ਤੇ ਸੌਖੀ  
ਪ੍ਰਾਪਤੀ ਪੈ ਜਾਵੇ।" -- ਗੁਰ-ਪ੍ਰਣਾਲੀਆਂ - ਸੰਪਾਦਕ ਸ:  
ਰਣਧੀਰ ਸਿੰਘ ਰੀਸਰਚ ਸਕਾਲਰ ਸ਼੍ਰੋਮਣੀ ਗੁ: ਪ੍ਰ: ਕਮੇਟੀ,  
ਅਪ੍ਰੈਲ 1977

If all *Gurpurbs* were celebrated according to the solar dates, then no complicated calculations for fixing the dates would be required. For example, the birthday of Guru Gobind Singh is:

Poh *Sudi* 7, 1723      Bikarami (lunar)  
23 Poh, 1723          Bikarami (solar)

It means it was 23 Poh on Poh *sudi* 7 in 1723 Bikarami (*please see notes at the end*).

If the *Gurpurb* is celebrated according to the solar date of the Guru's birth on 23 Poh, instead of Poh *sudi* 7, then this date will always occur on the 5th January each year according to the new Nanakshahi Calendar.

f. Gurpurbs according to the solar dates.

It must be noted that the dates given above of the Nanakshahi Calendar are the original dates of the solar Bikarami year. The corresponding dates of the Common Era are those of the Common Era calendar that is now in use in most countries of the world along with local calendars. The conversion to the Common Era dates has been done not according to the Bikarami calendar but

according to the new modified Nanakshahi Calendar.

The Bikarami calendar has an error of 1 day in about 71 years. The Common Era has similar error in 3300 years. Since the new Nanakshahi Calendar has been linked with the Common Era, it will also have an error of 1 day in about 3300 years, but this error will automatically be corrected whenever the correction to the Common Era calendar is made.

The new Nanakshahi Calendar is simple, rational, more accurate than the Bikarami calendar, and conforms to Gurbani. Dates of *Sankrantis* in CE year will not differ from year to year. All *Gurpurbs* will also occur on the same date every year, with one exception noted above. There will not be any need to consult Jantri publishers to find out when a *Gurpurb* is to occur. S. Gurcharan Singh Tohra, President SGPC, announced in October, 1997 that SGPC would adopt this calendar and implement it in the historic year of 1999 CE, when Khalsa Panth celebrates its tercentenary [14].

## GURPURBS ACCORDING TO SOLAR DATES

Names of the Sikh Guru Sahiban	Parkash Utsav (Birthday)	Gurgaddi Utsav (Assumption of Guruship)	Jyoti Jot Utsav (Merging into Eternal Light)
1. <b>Guru Nanak</b>	1 Vaisakh */14 April	From Parkash	8 Asu /22 Sep
2. <b>Guru Angad</b>	5 Vaisakh /18 April	4 Asu /18 Sep	3 Vaisakh /16 April
3. <b>Guru Amar Das</b>	9 Jeth /23 May	3 Vaisakh /16 April	2 Asu /16 Sep
4. <b>Guru Ram Das</b>	25 Asu /9 Oct	2 Asu /16 Sep	2 Asu /16 Sep
5. <b>Guru Arjun</b>	19 Vaisakh /2 May	2 Asu /16 Sep	2 Harh /16 June
6. <b>Guru Hargobind</b>	21 Harh /5 July	28 Jeth /11 June	6 Chet /19 March
7. <b>Guru Har Rai</b>	19 Magh /31 Jan	1 Chet /14 March	6 Katik /20 Oct
8. <b>Guru Har Krishan</b>	8 Sawan /23 July	6 Katik /20 Oct	3 Vaisakh /16 April
9. <b>Guru Tegh Bahadur</b>	5 Vaisakh /18 April	3 Vaisakh /16 April	11 Maghar /24 Nov
10. <b>Guru Gobind Singh</b>	23 Poh* /5 Jan	11 Maghar /24 Nov	7 Katik /21 Oct

<b>Completion of Aad Granth Sahib</b>	1 Bhadon /16 Aug
<b>First Parkash Aad Granth Sahib</b>	17 Bhadon /1 Sep
<b>Gurgaddi Aad Guru Granth Sahib</b>	6 Katik /20 Oct
<b>Creation of the Khalsa</b>	1 Vaisakh /14 April
<b>Hola muhalla (New Year Day)</b>	1 Chet /14 March

\*Please see notes at the end of the article regarding the birthdays of Guru Nanak and Guru Gobind Singh.

**NOTES****i) Guru Nanak's Birthday**

So far as Guru Nanak's *Parkash Gurburb* is concerned we have mentioned that though the actual date is on *Vaisakhi* [11, 12], but since the *Panth*, because of certain reasons, has been celebrating it on *Katik pooranmashi*, it will continue to be celebrated on this date until the *Panth* decides otherwise. S.G.P.C has already received letters that the celebration of this Gurburb should also have been changed to the correct date.

**ii) Guru Gobind Singh's Birthday**

In Nanakshahi Calendar we have given 23 Poh / 5th January 1999 CE, as the date for *Parkash Gurburb* of the Guru. Poh 23 of 1723 Bikarami is the commonly believed birth date of the Guru. However, some historians [7] and scholars [6] have come up with 19 Poh of 1718 Bikarami as the date of birth, based mainly on *Bhatt Vahis* evidence. If we believe the latter date then Guru's age at the time of martyrdom of Guru Tegh Bahadur becomes about 14 years instead of 9 years. In response to D. R. Narang's 'Correct Date of Birth of Guru Gobind Singh' [6] I have pointed out certain inconsistencies of some dates in *Bhatt Vahis*. As such their evidence cannot be taken for granted. *I believe that 23 Poh 1723 Bikarami is the correct date of birth of the Guru.* However, if the *Guru Panth* ever decides on 19 Poh instead of 23 Poh, then the *Parkash Gurburb* will always fall on First January, since 19 Poh according to new Nanakshahi Calendar is on 1st January. I had kept this in my mind when working out the scheme for the New Nanakshahi Calendar.

**REFERENCES**

1. AGGS = Aad Guru Granth Sahib. 1983 (reprint) 1430 p. Publishers: Shiromani Gurdwara Parbandhak Committee, Amritsar. (M = Mahla, i.e. succession number of the Sikh Gurus to the House of Guru Nanak, P = Page of the AGGS).
2. AGGS, M 5, P 133-136.
3. AGGS, M 1, Pp 1107-1110.
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## Scientific Literacy

***Scientific literacy allows us to be logical in our convictions, rational in our fears, realistic in our hopes, and reasonable in our decisions.***

**Joe Schwarcz, The Gazette, Montreal, Sunday, October 25, 1998**