The 'Purāṇa' Bulletin has been started by the Purāṇa Department of the All-India Kashiraj Trust with the aim of organising the manifold studies relating to the Purāṇas. It specially discusses the several aspects of text-reconstruction, of the interpretation of the vast cultural and historical material, and of the obscure esoteric symbolism of legends and myths of the Purāṇas. The editors invite contributions from all those scholars who are interested in the culture of the Purāṇa literature in which the religion and philosophy of the Vedas have found the fullest expression.
July, 1969] PURĀNIC THEORY OF YUGAS AND KALPAS

truth of the continuity of the creation, preservation and dissolution of the universe in clear words:

अनिधिमानवान कालो नानोपय द्वितीय ब्रह्माम इति
अधुनिच्छुव्यक्तबेव समाधिसमस्यमः।

(Viṣṇ., I. 2.26)

Thus the creation, preservation and dissolution (Sṛṣṭi, Shiśi and Pralaya) go on taking place after each other in the fixed order and after fixed intervals like the day and night.

The Purāṇas call the duration of the Universe in its manifest form (i.e. the time of its creation and preservation, or its Sṛṣṭi-kāla and Shiśi-kāla) as a Kalpa which is regarded as the Day of Brahma, the Creator, on the analogy of the day of man when he is active.

A Kalpa has been divided into 14 Manvantaras, and each Manvantara into 71 Catur-Yugas (a term generally used in the Purāṇas) or Daiva-Yugas (a term used in the Manu-Smṛti) or Mahāyugas (a term generally found used in the astronomical works). Each Mahāyuga consists of four Yugas, viz. Kṛta-Yuga, (or Satya-Yuga), Tretā-Yuga, Dvāpara-Yuga and Kali-Yuga, of descending duration of the ratio of 4:3:2:1. Thus, the Kṛta-Yuga is of 4,000 divine years with a Sandhi of 400 divine years in the beginning and a Sanāthāyaṇa of the similar length at the end, the Tretā-Yuga is of 3,000 divine years with a Sandhi and a Sanāthāyaṇa of 300 divine years each, the Dvāpara-Yuga of 2,000 divine years with a Sandhi and a Sanāthāyaṇa of 200 divine years each and the Kaliyuga of 1,000 divine years with a Sandhi and a Sanāthāyaṇa of 100 divine years each. All these four Yugas (with their durations in the descending order, i.e. of 4000+400+400, 3000+300+300, 2000+200+200, 1000+100+100 divine years) make a Mahāyuga of 12,000 divine years, each divine year being equal to 360 human years.

This computation of the length of the four Yugas has been considered by some modern scholars as ‘purely hypothetical’, ‘extravagant’ and ‘gigantic’. But considering the eternity and

infinity of the Time (kāla), no division of time, whatever may be its length, can properly be called as extravagant and gigantic. And according to the Indian philosophical conception, Time is one and indivisible and so any division of time by its very nature must be purely hypothetical and imaginary. It must be conceded, however, that this long computation of the Yugas as given in the Purāṇas may also be taken as representing the later Purānic view only, for the earlier view seems to favour a much smaller computation of the four Yugas.

The Manu-Smṛti gives the length of the four Yugas as follows:—

चतवार्षिक: सहस्राणि वर्षाणि तु कुन्तु युगां ||
तत्त्वातुत्तिको संघात संघातं तथाभिषी: ||
इतरेऽहु सास्त्रवेशु सास्त्रवेशशु च विष्णु ||
एकांशमेऽव वर्षाणि शताणि च ||
यदेवतत् परिसंहङ्गात्माद्वितेः च चुन्दुः ||
एतद्व द्राक्षाधारस्ते देवाणि युगाययें || (1.69-71)

From these ślokas it appears that the Manu-smṛti gives the length of the four Yugas most probably in the human years and not in the divine years: for, firstly, it does not mention here these years as divī (divine), and secondly, in the last śloka (71) quoted above, four human Yugas (पार्वत्य चतुर्वसां, कुन्तु युगां) of the collective length of 12,000 years (चुन्दु द्राक्षाधार) are said to make a devānām yugam (Divine Yuga) and if these four Yugas are mānuṣya (human), then the length of their duration might also have been intended as mānuṣya. But following the Purānic view the commentator Kullāka remarks here that the number of the years of the duration of the four Yugas mentioned here is divine (वर्षाणि चतवार्षिकमिति तत्त्वातुत्तिको).

The Mahābhārata (Vana-Parva, 188.22-26, Nīlakanṭha’s text) gives also the length of the four Yugas which is similar to that given by the Manu-Smṛti, but it (the Mbh.) does nowhere mention the years as divī. It does not even say that the four Yugas collectively make one divā Yuga; it simply mentions that the 12,000 years of the four Yugas are collectively called the yugākhyā—

पण द्राक्षाधारस्ते युगायां परिक्रोजिता || (27 cd)

But the Purāṇas clearly mention the years of the duration of the four Yugas as divā (divine); e. g.—

दिव्यर्चनं द्राक्षाधारं युगात संग्रहात ||
दिव्यादिक्षारस्ते सहस्राणि च मथुरां ||
दिव्यायात सहस्राणि च रुपान्तः ||
संघात: संघात: तत्त्वात्तिक: च ||
संघात: संघात: तत्त्वात्तिक: च ||
(Visṇu P., I. 3. 12-14)

This Purānic computation of the length of the four Yugas in the divine years seems to be a later elaboration, the earlier computation as given in the Manu-smṛti and the Mahābhārata being much smaller. But even the earlier Purānic view as represented by the Vāyu-Purāṇa (32.58 ff.) seems to favour the smaller computation in the human years. According to this Purāṇa the Catur-yuga (four Yugas taken collectively) of the length of 12,000 years has four Pādas or quarters in the form of the four Yugas; thus—

1. Kṛṣṇa-yuga 4,800 years Prakṛti-Pāda
2. Tretā-yuga 3,600 years Anuṣṭhāna-Pāda
3. Dvāpara-yuga 2,400 years Upadhyāya-Pāda
4. Kali-yuga 1,200 years Saṁhāra-Pāda

The Purāṇa is said to be also of the 12,000 ślokas and to have the similar four Pādas:—

पण द्राक्षाधारस्ते युगायां परिक्रोजिता || (27 cd)
Here the 12,000 years of the Catur-yuga and its four Pādas are said to be corresponding with the 12,000 ślokas and the four Pādas of the Purāṇa, which indicates that the computation of the four Yugas according to the Vāyu Purāṇa here is in the human years and not in the divine years. The context preceding these ślokas also leads to the same conclusion.

But later on the Purāṇas elaborated the computation of the length of the four Yugas, perhaps under the influence of the Siddhānta Jyotiṣa, and so the computation of the four Yugas in the human years was replaced by that in the divine years, which made a lot of difference. According to the earlier computation in the human years the length of a Catur-yuga was 12,000 years, while according to the later Purāṇic computation in divine years, the length of the Caturyuga comes to 43,20,000 (12,000×360) human years.

A Cunningham in his ‘Book of the Indian Eras’ has suggested the source of this longer Purāṇic computation in divine years. According to him the present Purāṇic system of computation is the invention of the astronomers “which they based on their newly acquired knowledge of the precession”. The precession of the equinoxes per year fixed by Parāśara was 46.5 seconds and that by Arya-bhaṭa was 46.2 seconds, Shri K. D. Sethna in his article ‘Megasthenes and Indian Chronology’ (Pub. in ‘Purāṇa’ X. 2) on the basis of these facts analyses this problem as follows:

Given the precession, what would be the period of one revolution through the whole circle of the ecliptic of 360 degrees? As 60 minutes make 1 degree and 60 seconds 1 minute, to cover the full circle of the ecliptic takes 1,296,000 (360×60×60) seconds divided by 46.5 or 46.2. Then we get \( \frac{12,960,000}{465} \) or \( \frac{12,660,000}{462} \) years, which by dividing them by three become \( \frac{43,20,000}{155} \) and \( \frac{43,20,000}{154} \) years. The numerator is exactly the number of years which goes into a Mahāyuga (or Caturyuga). And 43,20,000 years is the period in which the ecliptic would be circled 155 or 154 times.

According to both the earlier view and the later Purāṇic view 1,000 Caturyugas go to make the length of the duration of a Kalpa, i.e. the duration of the existence of the universe, which is also called Brahmā’s Day; cf.—

\[ \text{दैविकानां युगानां हु सहस्रं परिसंवयः} \]
\[ \text{ब्रह्मक्षेत्रमहाय तात्त्व रात्रिवेष च} \]
(Manu-Smṛti. 1.72)

\[ \text{ष्ठ द्रव्यवसाहस्ती युगस्या परिकृतिः} \]
\[ \text{पत्र सहस्यपथेनं भिक्षु वन्धुभाद्वस्तु} \]
(Mbh., Vana-P., 188.28)

\[ \text{हर्षं अन्तः दृष्टं चक्त्विवैं बलबुद्धिम} \]
\[ \text{पौष्पस्य तस्तस्यं} \]
(Viśṇu, P, I. 3. 15)

In the Nirukta and the Bhagavad-Gītā the Caturyuga or the Mahāyuga is simply called as the Yuga—

‘तदेवद्वयुगस्तत्तत्तते युगसंयुग सत्संवेदत्वे वाहिनीवबंधनं परिवर्तेते’—

Nirukta, 14. 4.

\[ \text{सहस्यपथेनं वैष्णवस्तु} \]
\[ \text{रात्रि युगसंयुगानां तं दृष्टेऽहारस्तत्वे जना} \]
(Bhag.-Gītā, 8. 17; Nirukta 14. 4)

By the word ‘Yuga’ used by Yāska here Prof. Mankad in his work Purāṇic Chronology, remarks that “the designation (Caturyuga or Kalpa or Divya-yuga) employed by the Purāṇas for units of extreme length are replaced by one (i.e. Yuga) which Purāṇically means a lesser duration”. But I think Yāska’s yuga is the same as the Daiva Yuga of the Manu-Smṛti or the Caturyuga of the Purāṇas, for the Manu-Smṛti uses the term ‘Yuga’ as a synonym for its ‘Daivika yuga’ also; cf.—

\[ \text{दैविकानां युगानां हु सहस्रं परिसंवयः} \]
\[ \text{ब्रह्मक्षेत्रमहाय तात्त्व रात्रिवेष च} \]
(Manu.-Smṛti, Adh. 1)

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Compare also the Vāyu-Purāṇa, 32, 67, quoted above, where the word Yuga is used for the Chatur-yuga.
YUGAS ASSOCIATED WITH DHARMA

The four Yugas are associated with dharma or moral virtues, and the dharma gradually decreases by one pāda (quarter) from Kṛta to Kali. Thus, the dharma in the Kṛta-Yuga is of all the four pādas (i.e. in its entirety), in the Tretā it loses one pāda and becomes of three pādas only, and so on up to Kali-Yuga when its one pāda only remains; cf. the Manu-Smṛti 1. 81-82:—

चतुर्दश सकले धर्मः सत्वश्रवः कः तृतीयः ।
नाथये ग्रहम्: काकिनमुपात्र प्रतिवर्तते ॥
इतरे पात्राग्निः धर्मः: पादास्तेन विवर्णता: ॥
धौरक्रियाकामानमिधर्ममेव पादशः: ॥

Thus, there is the gradual deterioration from Yuga to Yuga. The period of human age is also subject to this gradual deterioration. In the Kṛta yuga man lives for 400 years, in the Tretā 300 years in the Dwāpara 200 years and in the Kali-Yuga 100 years only:

अरोग्य: सर्वप्रथातः धार्मिकोपत्यायुः: ॥
कः तृतीयमेव क्षणमात्रायुः पादशः: ॥
(Ibid., Śl. 83)

This theory of the gradual deterioration in life from Yuga to Yuga is opposed to the modern theory of evolution.

The dharma of each Yuga differs from the other. In the Kṛta tapas (austerity) in the Tretā jñāna (knowledge of Self), in the Dwāpara Tajñā (Sacrificial cult) and in the Kali dāna (charity) is the main dharma :

अन्ये क्रतुपते धर्मार्थायां द्वारे परे ॥
अन्ये कलितये नर्मये युगासाधनम: ॥
तव: परे क्रतुपते क्षतर्ये शानष्टचते ॥
द्वारे वधेवाणवतामेव कधी युगे ॥
(Ibid., Śl. 85-86)

Human actions bear fruits according to the influence of a Yuga:—

वेदोक्तमायुः नामानामायुः कारणम् ॥
फलस्वयुः लोके मधुवध शरीरितम् ॥
(Ibid., Śl. 84)

The same view of the gradual deterioration from Yuga to Yuga and different characteristics and dharma of the Yugas is held by the Purāṇas and the Epics also. According to the Vāyu-Purāṇa even the different gods are worshipped in the different Yugas.—Brahmā in the Kṛta, Yaśas in the Tretā, Viṣṇu in the Dwāpara and Mahādeva in the Kali:—

व्रत्याः क्रतुपते पूज्यते तव उच्चते ।
द्वारे पूज्यते विष्णुः पूज्यते तुर्वमुहृत्ति ॥
(Vāyu. P., 32. 21)

Even the mode of worship differs from Yuga to Yuga—in the Kṛta dhārā (meditation) in the Tretā worshipping by means of Tajñā, in the Dwāpara arcā or puja, and in the Kali the chanting and repetition of God's name bear similar fruits:—

ध्यायान्ते श्रवण्यालेतायां द्वारे तुच्छवः ।
ब्रह्मायणित तदान्नित कधी संक्लीपं केवलम् ॥
(Viṣṇu-P. VI. 2. 19.)

MANVANTARAS

Neither Yāska, nor the Gītā, nor the Mbh.-Vana-Parva and nor even the Manu-Smṛti in the ślokas quoted above have inserted the computation of the fourteen Manvantaras within the frame of the scheme of computation of the Brāhma-ahaṅ (the Day of Brahmin) or the Kalpa, although the Manu-smṛti mentions seven Manu-s and their antara-s or durations during which they created and protected the creatures:—

स्वायम्बनायां मनो; पुर्वेद्या मनोदुर्वरे ।
छप्पवन: प्रजा; स्वा: स्वा महात्मानो महाहस: ॥ 61
स्वरूपिष्ठोच्चित्तविष्ठ: नामसो रैक्तलमः ।
चालुक्य महतोपमा विवस्तंतुरुष: च ॥ 62
स्वयम्बुराय: संपृदते मनो कृष्टविवर्ष: ।
स्ये स्ये तत्रे सर्वमिन्दुलालापुराज्ञास: ॥ 63
(Manu, Adh. 1. 1)

But in the Purāṇas as well as in the works of the Siddhānta- Jyotiṣa we have also the computation of the Manvantaras (the
periods of Manu-s, fourteen of which go to make the total period of a Kalpa or the Brahma-ahaś (the Day of Brahmā) inserted between Yuga (i.e. the Mahāyuga) and Kalpa; cf. Purāṇa

Thus, the first Manvantara in a Kalpa has two Sandhis, one in the beginning and the other in the end, so there are 15 Manvantara-sandhis of 4800 years each in a Kalpa, besides the 14 Manvantaras of 71 Caturyugas each. These 15 Sandhis (4800×15 = 72,000 years) and the 14 Manvantaras (71×14 = 994 Caturyugas, together make the total of 1006 Caturyugas.

The conception of the 14 Manvantaras forming the duration of a Kalpa or the Day of Brahmā is mainly Purānic. According to the Purāṇas a Manvantara is a period of 1000 or 71\frac{6}{14} Caturyugas and according to the Sūrya-sīdhanta, as quoted above, it is a period of 71 Mahāyugas+4900 divine years as its Sandhi except the first Manvantara which is of the period of 71 Mahāyugas+9600 divine years (the two Sandhis one in the beginning and the other at the end). Both these computations come to the same thing. Thus, according to this computation a Manvantara is a period of 8,52,000 divine years and 30,67,20,000 (12000×360×71+17,28000) mortal years.

A Manvantara is named after its presiding deity called Manu who is in charge of the preservation and protection of the universe during his period. According to the Viṣṇu-Purāṇa (III. 1f.) out of the 14 Manvantaras of the present Kalpa six Manvantaras have already passed, viz.—


The seventh called the Vaivasvata (वैवस्वत) is the present Manvantara and the seven future Manvantaras are as follows:—

8. Sāvarṣi (सावर्षि),
9. Dakṣa-sāvarṣi (दक्ष-सावर्षि),
10. Brahma-sāvarṣi (ब्रह्म-सावर्षि), or Meru-sāvarṣi (मेरु-सावर्षि) (Devī Bhāg. X. 13. 26).
11. Dharma-sāvarṣi (धर्म-सावर्षि) or Sūrya-sāvarṣi (सूर्य-सावर्षि) (D. Bhāg.)

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12. Rudra-sāvarṣi (रूद्र-सावर्षि) 
or 
Candra-sāvarṣi (चन्द्र-सावर्षि) (D. Bhāg.)
13. Raucya (रौच्य) (=Ag. P., Adh. 150; Hariv. I. 7. 5) 
or 
Deva-sāvarṣi (देव-सावर्षि) (Bhāg.-P. VIII. 13. 27)
14. Bhautya (भूत्य) (=Ag.-P.; Hariv.) 
or 
Indra-sāvarṣi (इंद्र-सावर्षि) (Bhāg.-P.) 
or 
Viṣṇu-sāvarṣi (विष्णु-सावर्षि) (D. Bhāg.)

Of these future Manus the 8th is the son of Viivasvan (Sun) from his wife Chāyā, and is therefore the step-brother of Vaivasvata-Manu and resembles him, whence he is called Sāvarṣi (of the same varna or form). The next four Manus (9-12) are the sons of Priyavrata and the grandsons of Śvāyambhuva-Manu (the first Manus). According to the Harivarṣa (I. 7. 6) these four Manus (9-12) are also called Meru-sāvarṣis, for they obtained the Manuhood by performing austerities on the Meru mountain (मेरुसावर्षिस्; देवसावर्षिस्; भूत्यसावर्षिस्; बुधसावर्षिस्। पृथ्वी तथा: इन्द्र विष्णु श्रवणे सर्वशक्तिः) (Purāṇa 478. 11). Raucya is the son of Prajapati Ruci and Bhautya is the son of Bhūti.

Each Manvantara has its own Saptarṣis (Seven Sages), gods, Indra, Manu and his royal sons who are in charge of the protection of the world and are simultaneously created in the beginning and destroyed at the end of their Manvantara:

सप्तर्षीं सुराः शको मनुस्तल्युतो नरः ।
एककथे हि सुजयं शंखिष्यन्ते च पूर्वप्राणि॥

In each Manvantara the Sātvatī Śakti of Viṣṇu is also incarnated in the form of his partial incarnation to help in the work of the protection of the universe.

Below are given gods (in their gātas), Indra, part-incarnation of Viṣṇu and principal Purāṇic episodes of each Manvantara according to the Viṣṇu.-P. (III. 1-2) and the Bhāg.-P. (VIII. 1-24):
7. Vaivasvata (Śrāddhadēva Manu)  
1. Āditya-s Purāṇa-Vāmana  
2. Vasu-s Vāmana  
3. Rudra-s dvara  
4. Viṣye-deva-s  
5. Rībhū-s  
6. Aśvin-s  

8. Śāvarṇī  
1. Sutapā-s Bali  
2. Amiṭābha-s Sārva  
3. Mukhya-s bhauma  

9. Dakṣa-sāvārṇī  
1. Pāra-s Adbhuta  
2. Marīci-garbhā-s Ṛṣabha  
3. Sudharmān-s ta  

10. Brahma-sāvārṇī  
1. Sudhāman-s Śānti  
2. Viṣudhā-dha-s Viṣvaksena  (Viṣ-P)  
3. Sudharmān-s  

11. Dharmasāvārṇī  
1. Vihaigama-s Viṣṇa  
2. Kāma-gama-s Dharmasetu  (Viṣ. P.)  
3. Nirvāpara-rata-s  

12. Rudrasāvārṇī  
1. Harita-s Rta-  
2. Rohita-s Svadhāman  
3. Sumanā-s dhāman  

2. War between Gods and Asuras—Jamba Namuci etc. killed  
Balī-Vāmana  

13. Raucya  
1. Sutrā- Divas-  
2. Sukarmān-s Yogeśvara  
3. Sukarmān-s paṭi  

14. Bhautya  
1. Cākṣu- Śuci  
2. Pavitra-s Bhṛdhānū  
3. Kaniṣṭha-s  
4. Bhṛjika-s  
5. Vācavṛddha-s  

KALPA  
As 1,000 Mahāyugas, each of 12,000 divine years or of 43,200,000 human years, make a Kalpa or cosmic period, the length or duration of a Kalpa comes to 1,20,000,000 divine years or 43,20,00,00,000 human years. Since a Kalpa is the Day of Brahmā (Creator), 30 such Kalpas make a Month of Brahmā. And as there are 30 tithis (lunar days) of different designations in a lunar month, on the same analogy the different names of the 30 Kalpas of Brahmā’s Month are given in the Matsya-Purāṇa (Adh. 290) as follows:  


Of these 30 Kalpas the 15th (Kaurma) is the Full-Moon Day (पौर्णमिः) and the 30th (Piṭrkalpa) the New-Moon Day (कृष्ण, भ्रमावस्था) of Brahmā's Month.

Out of the eighteen Mahāpurāṇas the following Purāṇas deal with the accounts of some of these Kalpas, as follows (see Matsya-P., Adh. 53):

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</tr>
<tr>
<td>Liṅga-P.</td>
<td>Āgniya-Kalpa (18)</td>
</tr>
<tr>
<td>Vārāha-P.</td>
<td>Māṇava-Kalpa (20)</td>
</tr>
<tr>
<td>Skanda-P.</td>
<td>Tat-puruṣa-Kalpa (21)</td>
</tr>
<tr>
<td>Vāmana-P.</td>
<td>Kṛma-Kalpa (15)</td>
</tr>
<tr>
<td>Kṛma-P.</td>
<td>Lakṣmi-Kalpa (23)</td>
</tr>
<tr>
<td>Garuḍa-P.</td>
<td>Garuḍa-Kalpa (14)</td>
</tr>
</tbody>
</table>

The Vāyu-Purāṇa (Adh. 21) gives a different list of the 28 Kalpas (perhaps on the analogy of the 28 Nakṣatras or Constellations in a lunar month) as follows:


In addition to the twenty-eight Kalpas the Vāyu-P. (Adh. 22) gives 5 more Kalpas—1. Kṣatriya, 2. Rāja, 3. Pītāmaḥsūtra, 4. Kṣitigarbha, 5. Vīṣṇu—of which the names of which are derived from the forms which the Creator assumes in these Kalpas.

July, 1969] PURĀNIC THEORY OF YUGAS AND KALPAS

Each Kalpa (Cosmic Period) or the Day of Brahma is followed by the Pralaya or the Ekāraṇa state (Great Deluge) in which the whole of the universe up to the Svār-Loka is destroyed. This Pralaya is called naimītikā as it is occasioned by the Night of Brahmac when he remains asleep or inactive;¹ At the end of Brahmac's life of his 100 years (360×100 Kalpas) the entire universe including even Brahma and all other Gods and all the fourteen Loka-s are destroyed and merge into their original cause or Prakṛti; hence this Pralaya is called the Prākṛtiya Pralaya.² (cf. Viṣṇu-P. VI. 1f.)

Brahma's full age of his 100 years is called Para, and half of this period is called Parārtha. One Parārtha of Brahmac's life has passed, the last Kalpa of this Parārtha is also called the Prāmāṇya-Kalpa, for the Earth (or the world) in that Kalpa is produced in the form of a Lotus from the navel of Viṣṇu; the present Kalpa, which is also the first Kalpa of the second Parārtha of Brahmac's life, is called the Śveta Vārāha-Kalpa. (Viṣṇu-P. I. 3. 26 ff.; Bhāg. III. 11. 33 ff., Mt.-P., 164. 5; 169. 2f).

As the scheme of the four Yugas is associated with the varying degrees of the dharma and adharma (i.e. the gradual deterioration of dharma), and gradual increase of adharma from the Kṛta-Yuga to the Kali-Yuga), this scheme is said to prevail in the Bhratavarṣa only out of the nine Varṣas of the Jambu-dvīpa, and not in the remaining eight Varṣas where there is no dharma and adharma and no gradation of high and low in their social order. (cf. Viṣṇu-P. II. 3. 19—तष्ठाय देवलोकात कृष्ण धर्माभावम् न बल्विडध|

In this respect these Yugas may be likened to the six Rūtas (seasons)

2. The jāla-plava (Deluge) after each Manvantara may not be universal, but this Naimītikā Pralaya is universal. A jāla-plava is mentioned in the Matsya-Purāṇa, when the Matsya incarnation of Viṣṇu narrated the Matsya-Purāṇa to Viśvavāman Manu. So this jāla-plava might have occurred after the sixth (Cākṣuṣa) Manvantara or in the beginning of the seventh Manvantara.
of Bhārata-varṣa, which do not take place elsewhere in the same number, order and degree. But the Kalpas are not confined to a particular Varṣa or Deśa, they are universal.

A table of the computation of the Yugas, Manvantaras and their Kalpa is given below, which also indicates the age of the present universe according to the Purāṇas: our Earth might have come into existence a little later in this cosmological scheme. It may be seen that this Purāṇa or astronomical computation comes close to the modern calculation of the present age of the Earth according to the science of geology.

**Srṣṭi Kāla or Kalpa**

(Manu-Smṛti 1.66 ff; Vishṇu-Purāṇa, I. 3.8 ff)

360 human years = 1 divine year
4000 divine years = Kṛța (Satya) Yuga
400 divine years = Kṛța-Sandhyā
400 divine years = Kṛța-Sandhyāṁśa
3000 divine years = Tretā Yuga
300 divine years = Tretā-Sandhā
300 divine years = Tretā-Sandhyāṁśa
2000 divine years = Dvāpara Yuga
200 divine years = Dvāpara-Sandhyā
200 divine years = Dvāpara-Sandhyāṁśa
1000 divine years = Kali-Yuga
100 divine years = Kali-Sandhyā
100 divine years = Kali-Sandhyāṁśa

4 Yugas combined = 1 Mahāyuga, or 1 Divine Yuga

1 Mahāyuga = 12,000 divine years

= 43,20,000 human years

71+⁶/¹⁴ Mahāyugās = 1 Manvantara

14 Manvantaras or 1000 Mahāyugās = 1 Day of Brahma

or

The period of a Kalpa

= 4,320,000,000 human years

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**THE PRESENT AGE OF THE EARTH**

The present Kalpa is the Varāha-Kalpa, of which the following period has already elapsed:

- 6 Manvantaras = 1,85,14,28,574 human years
- +27 Mahāyugas = 11,66,40,000 human years (of the present Vaiśvānara Manvantara).
- + 3 Yugas (Satya, Dvāpara, Kali) = 38,88,000 human years
- Past period of Kali (28th) = 5070 years (up to A.D. 1969).

Total Period elapsed = 1,97,19,61,544 years

This period may be taken, according to the Purāṇas, as the age of the present creation or srṣṭi. In the beginning the earth was only in the atomic form. It was in the womb of the cosmic water, and later on, it emerged from those waters as they gradually dried up by the Sun's rays, (that is what the episode of the Prthivi-uddāra by God Varāha may indicate). So the real age of the present solid earth may be less than the above calculation of the present age of the srṣṭi, which surprisingly comes close to the geological time scale calculation as given below.
### ORIGIN OF THE GEOLOGICAL PERIODS AND SYSTEMS

<table>
<thead>
<tr>
<th>Eras</th>
<th>Periods and Systems</th>
<th>Derivation of Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAINOZOIC</td>
<td>Quaternary</td>
<td>Holos = complete</td>
</tr>
<tr>
<td></td>
<td>Recent or Holocene</td>
<td>Pleiston = most</td>
</tr>
<tr>
<td></td>
<td>Glacial or Pleistocene</td>
<td>'cene' from</td>
</tr>
<tr>
<td></td>
<td>Tertiary</td>
<td>Pleion = more</td>
</tr>
<tr>
<td></td>
<td>Miocene</td>
<td>Meion = less</td>
</tr>
<tr>
<td></td>
<td>Oligocene</td>
<td>Oligos = few</td>
</tr>
<tr>
<td></td>
<td>Eocene</td>
<td>Eos = dawn</td>
</tr>
<tr>
<td>MESOZOIC</td>
<td>Cretaceous</td>
<td>Creta = chalk</td>
</tr>
<tr>
<td></td>
<td>Jurassic</td>
<td>Jura mountains</td>
</tr>
<tr>
<td></td>
<td>Triassic</td>
<td>Threefold division in Germany</td>
</tr>
<tr>
<td>PALEOZOIC</td>
<td>Permian</td>
<td>Permia, anc. kingdom E. of Volga</td>
</tr>
<tr>
<td></td>
<td>Carboniferous</td>
<td>Coal-bearing</td>
</tr>
<tr>
<td></td>
<td>Devonian or Old Red Sandstone</td>
<td>(Land sediments of same period)</td>
</tr>
<tr>
<td></td>
<td>Silurian</td>
<td>Silures anc. tribe of Welsh border</td>
</tr>
<tr>
<td></td>
<td>Ordovician</td>
<td>Ordovices, anc. tribe, N. Wales</td>
</tr>
<tr>
<td></td>
<td>Cambrian</td>
<td>Cambria = Wales</td>
</tr>
<tr>
<td>PRE-CAMBRIAN ERAS</td>
<td>Proterozoic</td>
<td>Proteros = Earlier</td>
</tr>
<tr>
<td></td>
<td>Archaeozoic</td>
<td>Archaos = Primaeval</td>
</tr>
<tr>
<td></td>
<td>Eozoic</td>
<td>Eos = Dawn</td>
</tr>
</tbody>
</table>

### THE EARTH TIME SCALE*

<table>
<thead>
<tr>
<th>Approximate dates in years</th>
<th>Distinctive Life</th>
</tr>
</thead>
<tbody>
<tr>
<td>25,000</td>
<td>Modern Man</td>
</tr>
<tr>
<td>1,000,000</td>
<td>Stone-Age Man</td>
</tr>
<tr>
<td>15,000,000</td>
<td>Mammals and Flowering Plants</td>
</tr>
<tr>
<td>35,000,000</td>
<td></td>
</tr>
<tr>
<td>50,000,000</td>
<td></td>
</tr>
<tr>
<td>70,000,000</td>
<td></td>
</tr>
<tr>
<td>120,000,000</td>
<td>Reptiles</td>
</tr>
<tr>
<td>150,000,000</td>
<td></td>
</tr>
<tr>
<td>190,000,000</td>
<td></td>
</tr>
<tr>
<td>220,000,000</td>
<td>Amphibians and Primitive Plant</td>
</tr>
<tr>
<td>280,000,000</td>
<td>Fishes</td>
</tr>
<tr>
<td>320,000,000</td>
<td>Invertebrates</td>
</tr>
<tr>
<td>350,000,000</td>
<td>First appearance of abundant fossils</td>
</tr>
<tr>
<td>400,000,000</td>
<td></td>
</tr>
<tr>
<td>500,000,000</td>
<td></td>
</tr>
<tr>
<td>at least 1,750,000,000</td>
<td>Scanty remains of Sponges and Seaweeds</td>
</tr>
<tr>
<td>Unrecorded Interval</td>
<td></td>
</tr>
<tr>
<td>at least 2,000,000,000</td>
<td>No direct fossil evidence of Life</td>
</tr>
</tbody>
</table>

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*This Geological Time Scale showing the date of the origin of the Earth has been taken from Arthur Holmes: *Principles of Physical Geology*, pp. 104-105. It has been kindly supplied by Dr. Arup Deb, Department of Geology, Banaras Hindu University, Varanasi.*