COWASJEE PATELL'S

CHRONOLOGY,

CONTAINING

Corresponding Dates of the Different Eras

USED BY

CHRISTIANS, JEWS, GREEKS, HINDUS, MOHAMEDANS, PARSEES, CHINESE, JAPANESE, &c.

BY

COWASJEE SORABJEE PATELL,

AUTHOR OF "THE ACCOUNT OF CHINA."

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TO THE READER.

AN intelligent reader, about to peruse a book, desires to know something of the Author; and the candid reader will not set down to vanity the few words relating to himself by which an author seeks only to supply such information. I should state that this personal notice is not designed for my Parsee readers, as it would be a reflection on their intelligence to suppose them ignorant of the history of one of the oldest families of their people. It is with some feelings of pride, however, that I inform my English readers that the founder of my family was the only Parsee in the island of Bombay when the English first landed there.

As a work of this nature would be incomplete without some account of how my ancestors conducted themselves with the English, and assisted them in political matters on their advent into that country, the following minute description of them, from the "Deccan Herald" of the 11th March, 1863, is given for the information of the reader:—

"It has frequently occurred to us that a few brief sketches of the rise and progress of some of the leading Native families amongst us would be interesting in a historical point of view, and useful to some future Macaulay purposing to write a history of Western India. To show what we mean, we have much pleasure in introducing our readers to the Patell family, the various members of which have long been connected with Englishmen in these parts. The founder of the family was Mr. Dorabjee Nanabhoy, who was the only Parsee inhabitant of the island of Bombay when the Portuguese flag waved from the Castle ramparts. Dorabjee Nanabhoy was the first and only Parsee who, with his family, resided there at that time, and was employed by that power to transact all their business. When the island and its dependencies were ceded to England, he was employed by the English Government in a similar situation to that which he held under the Portuguese. The English were quite ignorant of the place, as well as of the manners, language, and customs of the people and country; and in their service he discharged his duty to their entire satisfaction. On his death Rustom Dorab was employed by the Government in the same situation, and for the performance of similar service. He was the right-hand man of the Government in every department in those days connected with the jurisdiction of the island. The Seedee, who was at that time a powerful and independent neighbour, came with a large force and took possession of the island, together with Dungerry Fort (now called Fort George). He landed an army of twenty-five thousand men at Sewree without opposition, and in a few hours the Crescent waved from the summit of almost every eminence on the island. Although the governor of Bombay had several vessels belonging to the marine in the harbour which, in conjunction with the land forces of the Company, might have successfully opposed the disembarkation of the Sciddee's army at Sewree, yet no orders were issued to them, and they had the mortification of being made passive spectators of their own defeat and humiliation. Redoubt after redoubt was captured, and fort after fort was taken, almost without the exchange of a shot, the European soldiers either falling back with precipitation, or joining the ranks of the conquering Moguls. The Sciddee marched into the village of Mazagon, where he established his head-quarters. In this village we had a fort mounting fourteen guns, which, to our shame be it spoken, was abandoned with such a degree of unseemly haste that its so-called defenders not only left behind them eight or ten chests of treasure, but their arms and ammunition. All the chief forts of the island, including those of Worlee, Mahim, and Sion, fell into the hands of the Sciddee without opposition; and, with the exception of the Castle, at present used as the grand arsenal of the Western Presidency, the whole of the Portuguese dowry was in the possession of the Chief of Junjeera. Captain Pean, with two companies of the Bombay Fusiliers, now her Majesty's 103rd Royal Regiment of Foot, was then ordered out to drive back an army of 25,000 men in position! The attempt was heroically made; but soldiers cannot perform impossibilities; and Captain Pean, with his gallant band, had, in consequence, to seek the protection of the Castle batteries. Yakut Khan, the Sciddee, was a man of great bravery, and fully justified the confidence which his master Aurungzebe had reposed in him. Having secured all the strongholds of the island, he erected batteries on Doongaree Hill, within two hundred yards of the Fort walls. He was thus able to keep the garrison not only under his eyes, but under his guns, and was, moreover, in a position at any time to annoy them either with shot or shell. How different is the scene now! At the base of the hill upon which the Sciddee's batteries were erected there is a railway-terminus, from which lines of steam communication will soon diverge—like radii from a common centre—not only over India, but throughout Asia. The frowning guns of Fort George, mounted on the present ramparts, would have swept away the army of the Mogul in an hour if it had ventured within their line of fire, and a single vessel of the magnificent steam fleet belonging to the Peninsular and Oriental Steam Navigation Company now lying off Mazagon, if it had paddled in amongst the Sciddee's fleet, would have sunk his whole navy without firing a shot. But, unfortunately for the English in Bombay in 1689, the genius of modern civilization still slept weak and helpless in the lap of Time.

" Watt of Greenock, the father of the steam-engine, was not born until nearly half a century after the date upon which the Sciddee landed at Sewree. Miller of Dalswinton and Fulton of Pennsylvania, the parents of the paddle-wheel, appeared still later on the stage of human existence; and the place which was to be filled by the genius of Stephenson, the conqueror of distance, was then but a vacant space in the cradle of Science. Gloomy days, indeed, must they therefore have been for the poor beleaguered Englishmen; and, had it not been for their marine, it is not improbable that the garrison of Bombay might have been eventually starved into submission. During the monsoon the distresses of the English were very great, the privations which they endured being of the most severe character; but, when the season opened, and the heavy vessels of the Company were able to leave their anchorage, the aspect of affairs brightened. The Mogul's vessels were captured in dozens, and their cargoes relieved the wants of the garrison. But our position was still perilous. The army of the Sciddee had been strongly reinforced, upwards of 40,000 of Aurungzebe's best-equipped soldiers having established themselves before the Fort walls. The Jesuits of Bandora kept the Sciddee well supplied with provisions, and, as he had free communication with the mainland, he was never at a loss for stores of any description. The governor, who had placed the English in such a critical position, finding, when too late, that he lay almost at the mercy of the Sciddee, tried to bribe his officers; but the mean attempt proved abortive, and he had to undergo the humiliation of seeing his base offers spurned with the contempt which they so richly merited. He then sent envoys to Delhi to sue for peace; but, after being subjected to every indignity, they managed only to procure a new firman. The terms of the negotiation were also most degrading to the English character—so much so, indeed, that, even at this distance of time, the blush of shame must suffuse the cheek of every high-minded Briton when he reads them. Sir John Child was ordered to leave India immediately; a full recompense was to be made for every loss that had been sustained by the Mogul Government; and the officers of the Company, instead of being regarded as subjects, were for the future to be treated as slaves. The new arrangement was entered into in April 1690, but the Sciddee did not evacuate the island until the following June. Before quitting Bombay, he fired the fort of Mazagon, and his troops left behind them a pestilence which in a few months destroyed a greater number of men than had perished by the sword. This was the Company's first essay in the art of war, and the experiment, in addition to the humiliation and disgrace to which their servants were subjected, is said to have cost them nearly half a million of pounds sterling. The terrible lesson which had been taught them was not, however, thrown away; and from this period they resolved to strengthen the positions which belonged to them before attempting any further extension of their sovereignty.

"The fortifications of Bombay were therefore repaired, and the defences of the island generally greatly strengthened. Rustom Dorab was called to aid the Government with his counsel; and, in 1692, when the plague broke out in the city, and when every European and all the garrison were more or less prostrate, he rose with the emergencies, took upon himself the charge of the government, and mustered and called out the militia, which was chiefly composed of the fishermen-class of Bombay. He fought with the Seedee and his men, who had again invaded the place without orders from Delhi, drove them out of the island and retook the Dungerry Fort, despatched messengers to Surat to the chief of the English factory there with the news, and, on his arrival in Bombay, delivered into his hand the reins of government. For that service Rustom Dorab was honoured with the hereditary title of Patell of Bombay, which means chief or lord, with a privilege that the whole of the fishermen of the island, who so bravely fought under him, were to be placed under his immediate control. He was to collect their taxes for the Government, and also decide all civil and religious disputes amongst themselves; which privilege, up to this very day, is continued to his descendants. On the death of Rustom Dorab, his son Cawasjee Rustomjee was invested with a dress of honour by Governor Hornby, and became Patell in his own right. Since that time the family of Cawasjee Patell have continued to hold this office, with credit to themselves and to the satisfaction of the State. In time of war in India the Government have always found much difficulty in providing tonnage for transporting troops from one place to another. In the old time Cawasjee Patell was entrusted with the management of the department for providing all boats and tonnage for the public service, and at all times most honourably discharged his duty to the satisfaction of the British Government. The State then conferred upon him the contract for supplying all public tonnage, which has been held by, and renewed to, the family from time to time ever since; and for eighty-five years past the Patell family has had a contract from Government for the supply of boats and craft. When the British, in alliance with the late Rugoonath Rao Dada Sahib, took possession of Tanna and Bassian, the Government entrusted Cawasjee Patell with the charge of the place for several years; to which town (Tanna) he conveyed a colony of Parsees, and built all the religious places for them, such as fire-temples, towers of silence, &c., at an expense of more than a lakh of rupees from his own purse. He also did everything in his power to improve the place. On his death his son Sorabjee Cawasjee became Patell, then his brother Rustomjee Cawasjee—all of whom are known by the name of Cawasjee Patell. It will from this be perceived that the family, in one way or another, have served the British Government, from the time of their taking possession of the island of Bombay to the present day, with unstained honour and an unspotted character."

PREFACE.

CHRONOLOGY and Geography are the eyes of History. Many attempt to read History without their aid; but, in their absence, the whole body of it must be full of darkness. No one is excusable in these days for not availing himself of the use of one of these eyes; for geographies and atlases are among the cheap publications of the age. It must be admitted, however, that similar facilities are not available as regards Chronology. With the want of this other eye of History my own experience first made me acquainted. I found, by observation and inquiry, that the want was generally felt. I thought I might make myself useful by an effort to supply it. This is exclusively the object of the work which I have now the pleasure to present to the public—a work which is the result, I am sure, of far more labour and care than will appear at the first view to those who may be led to make use of it. It is chiefly designed to aid the reader of History, especially of Eastern History, the sources and channels of which are now being more fully opened up and cleared, in fixing accurately the dates of events. If History without Chronology is dark and confused, Chronology without History is dry and insipid. The reader of History will find in this work such help as will be afforded by an account of the different eras that have been employed by historians and by the different nations of the world in recording the succession of time and events, by a determination of the epochs at which the eras respectively began, by a knowledge of the form and of the initial day of the year made use of, and of their correspondence with the years before and after Christ. He will be enabled, by the help here given, to compute with accuracy the eras of every nation, and to reduce them to the Christian era.

I wish to disarm anything like severe criticism by a frank acknowledgment of the many defects of the work, of the greatest of which I am fully aware, and which I hope to remove in a future edition. Originality will not be looked for in a work of this kind; but I am persuaded that more of it will be found than could be reasonably expected. The Tables are my own work, on which patient labour has been bestowed. They will be found more extended and complete, as well as more accurate, than any previously published. The articles on the different eras and chronologies are many of them original; and even those for which I am greatly indebted to works of reference or Chronology inaccessible to the general reader have been re-written, and are here given after, in many instances, important and material corrections. It might be thought an unfair omission if I do not name the authors from whom I have received great help. I acknowledge, therefore, with frankness and gratitude, my indebtedness to the "Kala-Sankalita" of Colonel Warren, to the celebrated French work "L'Art de Vérifier les Dates," to Prinsep's Essays on Indian Antiquities, to Dhunjeebhoy Framjee's learned work on "The Origin and Authenticity of the Arian Family of Languages," and to Dr. Smith's Dictionary of Antiquities. I have endeavoured to make my work practically useful, and to present it in a form which will render it accessible to all. The labour that I have taken to accomplish these objects has been pleasant to myself; and I trust the results of it will prove both pleasant and useful to others.

"Omne tulit punctum qui miscuit utile dulci."

COWASJEE SORABJEE PATELL.

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PATELL'S CHRONOLOGY.

THE Great Creator of the world, mindful of the wants of men in regard to the measurement of time, has furnished them with the means of marking its progress in the lights which He has placed in the firmament of the heaven to be for days, and months, and seasons, and years. Even men in the lowest degree of intelligence have been able to make some use of the way-marks which He has thus established on the face of His creation. The periods most intimately connected with the affairs of mankind, as well as most conspicuously marked out by the motions of the heavenly bodies, are the solar day, distinguished by the diurnal revolution of the earth, and the alternation of light and darkness; and the solar year, which completes the circle of the seasons. In the earlier ages of the world, however, when men were chiefly engaged in rural occupations, the phases of the moon must have been objects of great attention and interest; hence the "month," and the practice adopted by many nations of reckoning time by the motions of the moon, as well as the still more general practice of combining lunar with solar periods. The solar day, the solar year, and the lunar month, or lunation, may therefore be called the natural divisions of time. All others, of however ancient and general use, are only arbitrary and conventional. The solar day, or the division of day and night, as being the most obvious, could be employed by people of the lowest degree of intelligence to mark the lapse of time: the distinction of new and full moon, although scarcely less obvious than that of day and night, would require more observation and intelligence in order to be used to mark the progress of time, and is still the chief means of computing time amongst all half-civilized nations: the solar year, as the least obvious of the natural divisions of time, would require far more observation and intelligence to determine its accurate length; and its use in the computation of time implies a degree of advancement in the arts of civilized life which could only be the result of the accumulated experience of many generations.

The invention of the art of writing afforded the means of preserving an exact record of the succession of events. In order to this, however, conventional epochs, or fixed points of time, required to be taken as the origin of the reckoning, and standard periods to be assumed with which to compare the successive intervals. A great diversity of such epochs and standard periods have been assumed by the chronologists of different nations; thus, amongst ancient nations, we have, in Greece, the Olympiad of Corœbus; in Rome, the foundation of the city; in Babylon, the era of Nabonassar, etc.; and, amongst more modern nations, the Christian era, the Hegira era, the era of Yezdézerd, etc. My object is to give some account of the different eras and periods that have been employed by different nations in recording the succession of time and events; to fix the epochs at which the eras respectively began; to explain the form of the years made use of; and to furnish the means of establishing their correspondence with the years of the Christian era.

It will facilitate the conversion of dates if I explain the difference between solar and lunar years. A solar year is the time occupied by a complete circle of the seasons—that is, 365 days, 5 hours, 48 minutes, and 49 seconds. In order not to begin every new year at a different hour of the day, 365 days have been taken as the length of the year, and the odd hours and minutes have been allowed to accumulate until they amount to a whole day, which is added to the year, forming an intercalary year of 366 days, called by the English leap-year. A lunar year consists of 12 lunar months, and contains only 354 days. Its beginning anticipates that of the solar year by 11 days, and passes through the whole circle of the seasons in about 34 lunar years. It is, therefore, obviously ill adapted to the computation of time; and almost all nations who have regulated their months by the moon, except the modern Jews and Mahomedans, have employed some method of intercalation by means of which the beginning of the year is retained at nearly the same fixed place in the seasons. The luni-solar year regulates the months according to the course of the moon; but from time to time a month is added to prevent the year from departing too widely from its original situation. I wish to afford the means of enabling any one, by a simple arithmetical operation, to convert any historical date, of which the chronological characters are given according to any era, into the corresponding date of the Christian era.

The Era of Rome.—The era of the foundation of Rome is the chronological epoch adopted by all the Roman historians, and that most frequently met with in ancient history, after the Olympiads. There are various computations as to the year in which Rome was founded. The authorities most deserving of credit are the five following:—

1st. Fabius Pictor, who places the epoch of the foundation of Rome in the latter half of the first year of the eighth Olympiad, which corresponds with the 3967th of the Julian period, and with the year 747 before Christ.

2nd. Polybius, who places it in the second year of the seventh Olympiad, corresponding with 3964 of the Julian period, and 750 before Christ.

3rd. Cato, who places it in the first year of the seventh Olympiad—that is, in 3963 of the Julian period, and 751 before Christ.

4th. Verrius Flaccus, who places it in the fourth year of the sixth Olympiad—that is, in the year 3962 of the Julian period, and 752 before Christ.

5th. Terentius Varro, who places it in the third year of the sixth Olympiad—that is, in the year 3961 of the Julian period, and 753 before Christ.

These different computations should be borne in mind, as different Roman historians, and sometimes, indeed, the same historian, adopt different epochs. Modern chronologers generally adopt the account of Varro, which was followed by Cicero, and which is supported by a passage in Censorinus (*De Die Natali*), where it is stated that the 991st year of Rome commenced with the festival of the Palilia, in the consulship of Ulpius and Pontianus. This consulship corresponded with the 238th year of the Christian era; therefore, deducting 238 from 991, we have 753 to denote the year before Christ. The Palilia commenced on the 21st of April: all the accounts agree in regarding this date as the epoch of the foundation of Rome. This era is designated by the letters A.U.C. (*ab urbe conditâ*, from the building of the city). To find out the year before Christ (A.C., *ante Christum*, or B.C., before Christ), corresponding to the year of the foundation of Rome, subtract the year A.U.C. from 754; thus, 605 A.U.C. = 149 A.C., or B.C. To find out the year after Christ (marked in Christian books by the letters A.D., *anno Domini*, in the year of the Lord) corresponding to the year A.U.C., subtract 753 from the year A.U.C.; thus, 767 A.U.C. = 14 of the Christian era. That is, if the year A.U.C. be less than 754, deduct the year from 754; in which case the difference is the year A.C. or B.C. If the year A.U.C. be not less than 754, deduct 753 from it, and the remainder will be the year after Christ, which I shall indicate by the letters A.C.

Example 1.—Required the year before Christ of the year of Rome 685.

754
— A.U.C. 685

Year A.C. 69

Example 2.—Required the year after Christ of the year of Rome 792.

A.U.C. 792
— 753

Year A.C. 39

The old Roman year, often called the Romulian year, consisted of only ten months, which were called Martius, Aprilis, Maius, Junius, Quinctilis, Sextilis, September, October, November, December. That March was the first month in the year is implied in the last six names. Of these months, four—Martius, Maius, Quinctilis, and October—consisted of thirty-one days, the other six of thirty. The Romulian year thus consisted of 304 days, and contained thirty-eight *nundinæ*, or weeks; every eighth day, under the name of *nonæ* or *nundinæ*, being especially devoted to religious and other public purposes. The next division of the Roman year was said to have been made by Numa Pompilius, who instituted a lunar year of twelve months, having added January at the beginning and February at the end of the year. This arrangement continued till the year 452 B.C., when, by the Decemviral legislation, the lunar year was abandoned and the order of the months changed. By the change then made the year consisted of twelve months, the length of each of which was as follows:—

Martius	31 days.	September	29 days.
Aprilis	29 "	October	31 "
Maius	31 "	November	29 "
Junius	29 "	December	29 "
Quinctilis	31 "	Januarius	29 "
Sextilis	29 "	Februarius	28 "

Thus the year consisted of 355 days, and this was made to correspond with the solar year by the insertion every second year of an intercalary month, called Mercedonius or Mercidonius, consisting of 22 and 23 days alternately; so that four years contained 1465 days, and the mean length of the year was consequently 366¼ days. The year, by this arrangement, was one day too long. As the error amounted to 26 days in as many years, octennial periods, borrowed from the Greeks, were introduced to correct it: every third period of eight years, instead of containing four intercalary months, amounting in all to 90 days, was made to contain only three of those months, consisting of 22 days each. The mean length of the year was thus reduced to 365¼ days. The length of the intercalary month was not regulated by any certain principle. The pontiffs had discretionary power to intercalate days so as to make the year correspond to the celestial motions. This power they abused, and the calendar was thrown into confusion. In the time of Cicero the year was three months in advance of the real solar year. In the year 46 B.C. Cæsar employed his authority as Pontifex maximus to correct this serious evil. He inserted between November and December two intercalary months of 67 days—the month of February having already received an intercalation of 23 days—and thus made the whole year to consist of 445 days. At the same time he provided against a repetition of similar errors, by casting aside the intercalary month, and adapting the year to the sun's course. Accordingly, to the 355 days of the previously existing year, he added ten days, which he so distributed between the seven months having 29 days that Januarius, Sextilis, and December received two each, the others but one; and these additional days he placed at the end of the several months—no doubt with the wish not to remove the various festivals from those positions in the several months which they had so long occupied. Lastly, in consideration of the quarter of a day which he regarded as completing the true year, he established the rule that, at the end of every four years, a single day should be intercalated where the month had been hitherto inserted—that is, immediately after the Terminalia (a festival celebrated on the last day of the old Roman year)—which day is now called the bissextum.

The Romans employed the following division of the month:—They counted backwards from three fixed epochs—namely, the Kalends, the Nones, and the Ides. The Kalends were placed invariably on the 1st day of the month, and were so denominated because it had been an ancient custom of the pontiffs to call the people together on that day to apprize them of the festivals for the month. The Ides (from an obselete verb *iduare*, to divide) were at the middle of the month, either the 13th or the 15th day. The Nones were the *ninth* before the Ides, counting inclusively. From these three terms the days received their denominations in the following manner:—Those which were comprised between the Kalends and the Nones were called *the days before the Nones;* those between the Nones and the Ides were called *the days before the Ides;* and, lastly, all the days after the Ides to the end of the month were called *the days before the Kalends* of the succeeding month. In the months of March, May, July, and October the Ides fell on the 15th day, and the Nones consequently on the 7th. Each of these months, therefore, had six days named from the Nones. In all the other months the Ides were on the 13th and the Nones on the 5th. These months had only four days named from the Nones. Every month had eight days named from the Ides. The number of days receiving their denomination from the Kalends depended on the number of days in the month, and the day on which the Ides fell. The reckoning was in all cases inclusive of the day from which it was made; so that, *e.g.*, what was really the third day before the Kalends was spoken of as the fourth—the second day before the Ides was spoken of as the third, &c. Thus, *Ante diem quintum Kalendas Apriles*, which, according to Roman fashion, means "Before the Kalends of April, the fifth day;" that is, on the fifth day before the 1st of April, counting the 1st of April as one of the days, which is the 28th of March, according to the unreformed calendar.

THE OLYMPIADS.—The Olympiad was the most ancient and celebrated era among the Greeks. The name is taken from the Olympic Games, the greatest of the Grecian national festivals, which were celebrated at Olympia, a sacred place of temples and public buildings, in the plain of Elis, which lies at the foot of Mount Olympus. The Olympic festival was a Pentaëteris—that is, according to the ancient mode of reckoning, a space of four years elapsed between each festival. This period of four years between each celebration of the Olympic Games was an Olympiad. The origin of this great national festival of the Greeks is buried in obscurity, but it was of very great antiquity.

It was not, however, until Corœbus, an Elean, gained the victory in the stadium or foot-race course at the Olympic Games that the Olympiads began to be employed as a chronological era. The Olympiad of Corœbus was in B.C. 776, or in 3938 of the Julian period. Timæus of Sicily, who flourished B.C. 264, was the first writer who regularly arranged events according to the conquerors in each Olympiad. His practice of thus recording events by Olympiads was followed by succeeding historians. These writers usually give the number of the Olympiad, and then the name of the conqueror in the foot-race. Some writers also speak of events as happening in the first, second, third, or fourth year, as the case may be, of a certain Olympiad; but others do not give the separate years of each Olympiad.

The Greek year was divided into twelve lunar months, depending on the actual changes of the moon. The first day of the month was not the day of the conjunction, but the day on the evening of which the new moon appeared; consequently full moon was the middle of the month. The lunar month consists of twenty-nine days and about thirteen hours; accordingly some months were necessarily reckoned at twenty-nine days, and rather more of them at thirty days. The latter were called *full* months, the former *hollow* months. As the twelve lunar months fell short of the solar year, they were obliged every other year to interpolate an intercalary month of thirty or twenty-nine days. The ordinary year consisted of 354 days, and the interpolated year, therefore, of 384 or 383. This interpolated year was seven days and a half too long, and, to correct the error, the intercalary month was from time to time omitted. The Attic year began with the summer solstice: its months, in their regular sequence, and the number of days in each, were as follows:—

1. Hecatombaeon	30.	7. Gamelion	30.
2. Metageitnion	29.	8. Anthesterion	29.
3. Boedromion	30.	9. Elaphebolion	30.
4. Pyanepsion	29.	10. Munychion	29.
5. Maemacterion	30.	11. Thargelion	30.
6. Poseideon	29.	12. Scirophorion	29.

The intercalary month was a second Poseideon inserted in the middle of the year. Every Athenian month was divided into three decades. The days of the first decade were designated as *histamenou*, or *archomenou menos*, and were counted on regularly from one to ten; thus, *deutera archomenou*, or *histamenou*, is "the second day of the month." The days of the second decade were designated as *epi dekaor mesuntos*, and were counted on regularly from the 11th to the 20th day, which was called *eikas*. There were two ways of counting the days of the last decade: they were either reckoned onwards from the 20th (thus, *prōtē epi eikadi* was the 21st), or backwards from the last day, with the addition *phthinontos*, *pauomenou*, *lēgontos*, or *apiontos*; thus the 21st day of a hollow month was *enatē phthinontos*; of a full month, *dekatē phthinontos*. The last day of the month was called *henē kai nea*, "the old and new," because, as the lunar month really consisted of more than twenty-nine and less than thirty days, the last day might be considered as belonging equally to the old and new month.

The Olympic Games were celebrated about midsummer, and the Attic year commenced at about the same time—that is, on the first full moon after the summer solstice, about the 1st of July, from which day the commencement of each Olympiad is usually reckoned. The festival lasted from the 11th to the 15th days of the month inclusive, and the fourth day of the festival was the 14th of the month, which was the day of the full moon and which divided the month into two equal parts. As the Games were celebrated two hundred and ninety-three times, there were 293 Olympic cycles—that is, 1172 years—of which 776 fell before Christ and 396 after Christ. The first year of Christ is usually considered to correspond with the first year of the 195th Olympiad; but, from what has been said regarding the commencement of the years of the Olympiads, it follows that the first six months of one year of Christ correspond with one year of the Olympiads and with the last six months of another. For example, when it is said that the first year of the Christian era agrees with the first year of the 195th Olympiad, it must be understood that it corresponds only with the last six months of the 195th Olympiad; for the first six months of the first year of Christ correspond with the last six months of the 194th Olympiad; so that the second year of the 195th Olympiad does not commence until the 1st of July in the second year of Christ. Further, it follows that, if an event happened in the second half of the Attic year, the year B.C. must be reduced by one. Thus, Socrates was put to death in the first year of the 95th Olympiad, which corresponds to B.C. 400; but, as his death happened in Thargelion, the 11th month of the Attic year, the year B.C. must be reduced by one, which gives B.C. 399, the true date of his death.

To reduce any given Olympiad to years before Christ—*e.g.*, Ol. 87—take the number of the Olympiads actually elapsed—that is, 86—multiply it by 4, and deduct the number obtained from 776; so that the first year of the 87th Ol. will be the same as the year 432 B.C. If the number of Olympiads amounts to more than 776 years—that is, if the Olympiad falls after the birth of Christ—the process is the same as before; but from the sum obtained by multiplying the Olympiads by 4, deduct the number 776, and what remains is the number of the years after Christ.

Examples.—To find the year before Christ of the 2nd year of the 146th Olympiad.

```
  145 the Olympiad preceding the 146th.
×   4
  ---
  580
+   2 year of the Olympiad.
  ---
  582 subtracted from 777,
  777 there remain
  ---
   95 the year before Christ of the 2nd year
          of the 146th Olympiad.
```

To find the year A.C. (that is, after Christ) of the 2nd year of the 222nd Olympiad.

```
  221
×   4
  ---
  884
+   2
  ---
  886
− 776
  ---
  110 year of the Christian era of the 2nd year
          of the 222nd Olympiad.
```

The computation by Olympiads ceased after the 364th Olympiad, in the year of Christ 440.

THE CHRISTIAN ERA.—The Christian or Vulgar Era, called likewise the Era of the Incarnation, is now almost universally employed in Christian countries, and is even used by some Eastern nations. Its epoch or commencement is the 1st of January in the 4th year of the 194th Olympiad, the 753rd from the foundation of Rome, and the 4714th of the Julian period.

The Julian calendar supposes the mean tropical year to be 365 days 6 hours; but this exceeds the real amount by 11 minutes 12 seconds, the accumulation of which, year after year, caused at last considerable inconvenience. The Julian method of intercalation could not, therefore, long answer the purpose for which it was devised—namely, that of preserving always the same interval of time between the commencement of the year and the equinox. The excess of the Julian year above a true solar year amounted to a day in 129 years. In the course of a few centuries therefore the equinox sensibly retrograded towards the beginning of the year. When the Julian calendar was introduced the equinox fell on the 25th March. At the time of the Council of Nice, which was held in the year of Christ 325, it fell on the 21st; and, when the reformation of the calendar was made in 1582, it had retrograded to the 11th. In order to restore the equinox to its former place, Pope Gregory XIII., in the year 1582, again reformed the calendar. The ten days by which the year had been unduly retarded were struck out by a regulation that the day after the 4th of October in that year should be called the fifteenth; and it was ordered that, whereas hitherto an intercalary day had been inserted every four years, for the future three such intercalations in the course of four hundred years should be omitted—viz., in those years which are divisible without remainder by 100, but not by 400. According to the Gregorian rule of intercalation therefore every year of which the number is divisible by four without a remainder is a leap-year, excepting the centurial years, which are only leap-years when divisible by four after suppressing the two zeroes. Thus, 1600 was a leap-year, but 1700, 1800, and 1900 were common years; 2000 will be a leap-year, and so on. The Bull which effected this change was issued February 24th, 1582. It immediately took effect in all Roman Catholic countries. The Protestant parts of Europe resisted what they called a Papistical invention for more than a century. In England the Gregorian calendar was first adopted in 1752. In Russia, and those countries which belonged to the Greek Church, the Julian year, or *Old Style*, as it is called, still prevails. The Gregorian mode of computing is called the *New Style*. The Protestants of Germany introduced it by omitting the last ten days of 1699, and consequently began the year 1700 with the New Style; and in England it was introduced, in the month of September 1752, by omitting eleven days, to which the difference between the styles then amounted, the day which would have been the third being called the fourteenth.

As the Gregorian method of intercalation has been adopted in all Christian countries, Russia excepted, it becomes interesting to examine with what degree of accuracy it reconciles the civil with the solar year. According to the best determinations of modern astronomy, the solar year consists of 365 days, 5 hours, 48 minutes, 49·62 seconds, or 365·242241 days. Now the Gregorian rule gives 97 intercalations in 400 years; 400 years, therefore, contain $365 \times 400 + 97$—that is, 146,097 days; and, consequently, one year contains 365·2425 days, or 365 days, 5 hours, 49 minutes, 12 seconds. This exceeds the true solar year by 22·38 seconds, which amount to a day in 3866 years. It is, perhaps, unnecessary to make any formal provision against an error which can only happen after so long a period of time; but, as 3866 differs little from 4000, it has been proposed to correct the Gregorian rule by making the year 4000, and all its multiples common years. With this correction, the rule of intercalation is as follows:—Every year, the number of which is divisible by four, is a leap-year; excepting the last year of each century, which is a leap-year only when the number of the century is divisible by four; but, if, as a correction of the Gregorian rule, we make 4000 and its multiples, 8000, 12,000, 16,000, &c., common years, the uniformity of the intercalation, by continuing to depend on the number 4, is preserved; and, by adopting this last correction, the commencement of the year would not vary more than a day from its present place in a thousand centuries.

To turn the Old Style into the New. From the alteration of style to the 29th February, 1700, add 10 days. From 1st March, 1700, to 29th February, 1800, add 11 days. From 1st March, 1800, to 29th February, 1900, add 12 days. From 1st March, 1900, to 29th February, 2000, add 13 days.

Examples.—	17th March, 1801, O. S.,	is	29th March, 1801, N. S.
	19th February, 1703, O. S.,	is	2nd March, 1703, N. S.
	24th December, 1690, O. S.,	is	3rd January, 1691, N. S.
	20th December, 1829, O. S.,	is	1st January, 1830, N. S.

There will sometimes be a difference of one year in a date, from the fact that, in many countries, the time of beginning the year has varied. In England, until the year 1752, the year was considered to begin on the 25th March; any date, therefore, from the 1st January to the 24th March will be a year too little. It had been the practice for many years preceding the change of style to write both years, by way of obviating mistakes, as 1st February, 170⅞, or 1707-8, meaning the year 1708 if begun in January, or 1707 if begun in March.

All nations at present using either the Old or New Style begin the year on the 1st January.

Cæsarean Era of Antioch.—The Cæsarean era of Antioch was established to commemorate the victory obtained by Julius Cæsar on the plains of Pharsalia on the 9th August, B.C. 48, and the 706th of Rome. The Syrians computed it from their month Tishrin 1; but the Greeks threw it back to the month Gorpiæus of the preceding year. There is thus a difference of eleven months between the epochs assumed by the Syrians and the Greeks. According to the computation of the Greeks, the 49th year of the Cæsarean era began in the autumn of the year preceding our history, and, according to the Syrians, the 49th year began in the autumn of the first year of the Incarnation. This era is followed by Evagrius in his Ecclesiastical History.

Era of Alexandria.—The Christians of Alexandria adopted the chronological computation of Julius Africanus. They accordingly reckoned 5500 years from the creation of Adam to the birth of Christ. Julius Africanus, however, placed the epoch of the Incarnation three years earlier than it is placed in the usual accounts, and thus the initial day of the Christian era fell in the year 5503 of the Alexandrian era. This correspondence continued from the introduction of the era till the accession of Diocletian, when an alteration was made by dropping ten years in the Alexandrian account. Diocletian became emperor in the year of Christ 284. According to the Alexandrian computation, this was the 5787 of the world and 287 of the Incarnation; but, on this occasion, ten years were omitted, and that year was thenceforth called the year 5777 of the world and 277 of the Incarnation. Consequently there are two distinct eras of Alexandria, the one being used before, and the other after, the accession of Diocletian. It is not known why the alteration was made; it is, however, conjectured that it was for the purpose of causing a new revolution of the cycle of nineteen years, introduced into the ecclesiastical computation about this time by Anatolius, bishop of Hierapolis, to commence with the first year of the reign of Diocletian. Indeed, 5777, divided by 19, leaves 1 for the year of the cycle. The Alexandrian era was used by the Copts in the fifteenth century, and is still used in Abyssinia.

Dates according to this era are reduced to the common era by subtracting 5502 till the Alexandrian year 5786 inclusive, and after that year by subtracting 5492. If, however, the date belongs to one of the four last months of the Christian year, we must subtract 5503 till the year 5786, and after that year 5493.

Era of Antioch.—The era of Antioch also is based on the chronological computation of Julius Africanus. It was adopted by the Christians of Syria, at the instance of Panodorus, an Egyptian monk, who flourished about the beginning of the fourth century. Panodorus struck off ten years from the account of Julius Africanus with regard to the years of the world, and he placed the Incarnation three years later, referring it to the fourth year of the 194th Olympiad, as in the common era. The era of Antioch thus differed from the original era of Alexandria by ten years. After the alteration of the latter, however, at the accession of Diocletian, the two eras coincided. In reckoning from the Incarnation there is a difference of seven years, that epoch being placed, in the reformed era of Alexandria, seven years later than in the era of Antioch, or in the Christian era.

The Syrian year began in autumn; and thus the year of Christ, corresponding to any year in the era of Antioch, is found by subtracting 5492 if the event falls between January and September, and 5493 if between September and January.

Era of Constantinople.—The era of Constantinople dates from the creation of the world. It was followed by the Russians till the time of Peter the Great, and is still used in the Greek Church. The Incarnation, according to this era, falls in the year 5509, and corresponds, as in our era, with the fourth year of the 194th Olympiad. The civil year begins with the 1st of September—the ecclesiastical year sometimes with the 21st of March, sometimes with the 1st of April. Whether the year was considered at Constantinople as beginning with September previous to the separation of the Eastern and Western Empires is uncertain.

5508 years and 4 months of the era of Constantinople had elapsed at the beginning of our era. Hence the first eight months of the Christian year 1 coincide with the Constantinopolitan year 5509, while the last four months belong to the year 5510. In order, therefore, to find the year of Christ corresponding to any given year in the era of Constantinople, we have the following rule:—If the event took place between the 1st January and the end of August, subtract 5508 from the given year; but, if it happened between the 1st September and the end of the year, subtract 5509.

The Abyssinian Era.—The Abyssinian epoch is the Creation. From this they compute their years, placing it in the 5493rd year B.C. They reckon the birth of Christ to have taken place in the 5500th year of the Creation—that is, eight years after the Christian era. Their year consists of twelve months of thirty days, with five days added at the end, which they denominate Pagomen, from the Greek word *epagomenai*, added. At the end of every fourth year they add another day. Leap-year may be found by dividing the date by 4: if 3 remain, the year will be leap-year. It is always one year and four months earlier than the Julian leap-year. The names of the months, with their beginnings, referred to the Old Style, are as follows:—

Mascaram	29 August.	Miyazia	27 March.
Tekemt	28 September.	Genbot	26 April.
Hedar	28 October.	Sene	26 May.
Tahsas	27 November.	Hamle	25 June.
Ter	27 December.	Nahasse	25 July.
Yacatit	26 January.	Pagomen	24 August.
Magabit	25 February.		

The correspondence of Abyssinian time with the Julian year is ascertained by subtracting 5942 years and 125 days.

THE ANCIENT JEWISH ERA.—The Jewish era is referred to by chronologists only for times before Christ. I have not succeeded in obtaining any very clear and satisfactory account of it. The following may answer the purpose of this treatise:—

This ancient era consisted of lunar years, reckoned from the Creation, which Jews of the olden, as well as of the latter times place 3761 years before the birth of Christ. The year consisted of twelve lunar months, but at first it was made to correspond with the solar year, by the addition of eleven, and sometimes twelve days at the end of it. When it was made to assume a more regular shape, it became an embolismic year, with a thirteenth lunar month. I have not found anywhere the series of the intercalations in a systematic form. It is probably the same as that of the modern Jewish. The month Adar was repeated in intercalary years, as it consisted of 29 days in common years, and 30 days in embolismic years; the former called defective, the latter redundant. Moreover, in the defective year, Chisleu consisted of 29 days, and, in the redundant, Marchesvan of 30 days.

The names of the months were the same in ancient as in modern times. The old Jewish style began the year, however, with Nisan, and ended it with Adar: the modern style begins it with Tisri, and ends it with Elul. The ancient Jews made use of the era of Nabonassar, of which some account has been given. Their luni-solar year is the ecclesiastical one at present—that is, as regards the season when it begins and ends.

The Indian and Jewish years of both styles are contradistinguished by the fact that the embolismic months of the former may fall on any of the five long solar months of the year, but those of the Jewish fall invariably on the month Adar.

MUNDANE ERA OF THE JEWS.—This era is also called the modern Jewish era. It consists of lunar years of twelve and thirteen months. The intercalations fall on the 3rd, 6th, 8th, 11th, 14th, 17th, and 19th of the Metonian cycle. Chronologists generally agree that this era was not known before the fourteenth century A.C., although some consider that it may be traced up to the eleventh century. The modern Jewish claim of great antiquity for it is unsupported. The expired duration embraced in this era is divided into cycles of 19 years; and 198 of these had elapsed at the birth of Christ, the last of which ended in the autumn of the first Christian year.

The lunar months of the modern era bear the same names as those of the ancient era. They are alternately of 30 and 29 days, and are reckoned, like those of the Hegira, to begin on the first appearance of the moon after the conjunction.

As already observed, the modern year begins with the month Tisri, instead of Nisan—that is, six months later than the ancient. In embolismic years the month Adar is repeated, as in the ancient, but the name of the 2nd Adar is changed into Ve-Adar, and is the 7th in the calendar. Thus, Nisan becomes the 8th, Jyar or Zius 9th; and so on to Elul, which, in this case, is the 13th.

The civil year of the Jews is according to the modern calendar, and begins with the new moon of September; the ecclesiastical year follows the ancient calendar, and begins with the new moon of March.

The modern year is not only distinguished as common and embolismic, but each of these also has a threefold distinction—the deficient, the mean, and the redundant.

To understand how the Jews determine practically these different species of years, it must be remembered that they have certain discarded days, on which it is not permitted to celebrate their great yearly festivals, the Passover, the Pentecost, and the Feast of Tabernacles. When these happen to fall, in the ordinary course, on any of the unlawful days, they are respectively transferred to the next lawful day. These contingencies are ruled by the two following precepts in Latin :—

1. Nunquam Nisan in Badu.
2. Nunquam Tisri in Adu.

Badu expresses the numbers 2, 4, and 6, and Adu the numbers 1, 4, and 6—the prohibited *feriæ*, or weekly days. Suppose the new moon of Nisan to fall on the 2nd, 4th, or 6th *feria*, its observance on these days is prohibited, lest the Passover, which is always kept on the 15th of that month, should fall on an unlawful day. The days on which the ecclesiastical year is permitted to begin are called Kebies.

From the same notion of unlawful days the observance of the new moon of Tisri, which marks the beginning of the civil year (called Rosh Ashana), is prohibited when it falls on the 1st, 4th, or 6th *feria* of the week; because, in that case, the Feast of the Tabernacles cannot be celebrated as usual; and, as Pentecost is the 50th day after the Passover, and must consequently fall on the *feria* next to that of the Passover, the holy day is not to be kept on either the 3rd, 5th, or 7th day of the week.

The lawful day, or Kebie, on which the year is to begin is first determined. The Jews then find whether it is a common or an embolismic year, and then, whichever of these it may prove, whether it be a deficient, mean, or redundant year. The following is the method :—

First Precept.—Subtract the Kebie of the proposed year from that of the following one, and, if the latter be less than, or equal to the former, add to it 7 days; if the remainder be 3, 4, or 5, the current year is a common one. It is deficient, mean, or redundant according as it corresponds with these numbers.

Second Precept.—If the remainder be 5, 6, or 7, the proposed year is embolismic. It is deficient, mean, or superabundant according as it corresponds with these numbers.

The three species of years of each class consist of the following number of days:—Of the common year the deficient is 353^d; the mean, 354^d; the redundant, 355^d. Of the embolismic, the deficient is 383^d; the mean, 384^d; the redundant, 385^d.

Example 1.—Let the Kebie of any proposed year be 3, and that of the following one 7: if we subtract the former from the latter, the remainder will be 4; which, according to the preceding rule, shows that the given year is a common one, and, of that class, a mean year.

Example 2.—Let the Kebie of the proposed year be 5, and that of the following one also 5. Then $5+7=12$, and $12-5=7$, which shows that the current year is embolismic, and also a redundant year.

TABLE *exhibiting the Names of the Jewish Months, and the Duration of each sort of Year and Month.*

Common Jewish Years.					Embolismic Years.				
Names of Jewish Months.		Years.			Names of Jewish Months.		Years.		
		Deficient.	Mean.	Redundant.			Deficient.	Mean.	Redundant.
		Days.	Days.	Days.			Days.	Days.	Days.
1	Nisan, or Abib	30	30	30	1	Nisan, or Abib	30	30	30
2	Jyar, or Zius	29	29	29	2	Jyar, or Zius	29	29	29
3	Sivan	30	30	30	3	Sivan	30	30	30
4	Thammuz	29	29	29	4	Thammuz	29	29	29
5	Ab	30	30	30	5	Ab	30	30	30
6	Elul	29	29	29	6	Elul	29	29	29
7	Tisri	30	30	30	7	Tisri	30	30	30
8	Marchesvan, Chesvan, or Bul	29	29	30	8	Marchesvan, Chesvan, or Bul	29	29	30
9	Chisleu	29	30	30	9	Chisleu	29	30	30
10	Thebet	29	29	29	10	Thebet	29	29	29
11	Sebat	30	30	30	11	Sebat	30	30	30
12	Adar	29	29	29	12	Adar	30	30	30
					13	Ve-Adar	29	29	29
	Totals of Days	353	354	355		Totals of Days	383	384	385

Era of Nabonassar.—The era of Nabonassar, as Prinsep observes, received its name from that of a prince of Babylon, under whose reign astronomical studies were much advanced in Chaldæa. This era was generally followed by Hipparchus and Ptolemy, and is famous in astronomy. It had been in use for some centuries among the Chaldæan astronomers; for the ancient observations of eclipses, which were collected in Chaldæa by Callisthenes, the general of Alexander, and transmitted by him into Greece to Aristotle, were for the greater part referred to the commencement of the reign of Nabonassar, founder of the kingdom of the Babylonians. The epoch from which it is reckoned is precisely determined by numerous celestial phenomena recorded by Ptolemy, and corresponds to Wednesday, at mid-day, the 26th February of the year 747 B.C. The year consisted of twelve months of thirty days each, with five complementary days added at the end. No intercalation was used; and it is therefore in all respects the same as the ancient Egyptian year. From this circumstance the initial day of the year falls one day earlier every four years than the first of the Julian year; so that 1460 Julian years are equal to 1461 Babylonian years. On account of this difference in the length of the year, the conversion of dates according to the era of Nabonassar into years before Christ is attended with considerable trouble. The surest way is to follow a comparative table. Frequently the year cannot be fixed with certainty unless we also know the month and the day.

The Greeks of Alexandria formerly employed the era of Nabonassar, with a year of 365 days; but, soon after the reformation of the calendar by Julius Cæsar, they adopted, like the other Roman provincials, the Julian intercalation. At this time the first of Thoth had receded to the 29th August. In the year 136 of the Christian era, the first of Thoth, in the ancient Egyptian year, corresponded with the 20th of July, between which and the 29th of August there are forty days. The adoption of the Julian year must, therefore, have taken place about 160 years before the year 136 of the Christian era (the difference between the Egyptian and Julian years being one day in four years)—that is to say, about the year 25 B.C. In fact, the first of Thoth corresponded with the 29th of August, in the Julian calendar, in the years 25, 24, 23, and 22 B.C.

Prinsep gives the following practical rules in reference to this era:—

To find the day of any Julian year on which the year of Nabonassar begins, subtract the given year, if before Christ, from 748, and, if after Christ, add it to 747. Divide the result by 4, omitting fractions, and subtract the quotient from 57 (*i.e.*, the number of days from January 1 to February 26). If the quotient exceed 57, add 365 as often as necessary before subtraction. The remainder will be the day of the year given. The first result before the division by 4, increased by a unit for each 365 added to 57, will be the year of Nabonassar then beginning.

The day of the week on which the year of Nabonassar begins may be known by dividing by 7. If there be no remainder, the day will be Tuesday; if there be a remainder, the day placed below it in the following table will be the day required:—

0.	1.	2.	3.	4.	5.	6.
Tu.	W.	Th.	F.	Sa.	Su.	M.

As the above-stated rule may be one day in error from the omission of fractions, it may be corrected by the help of this little table.

The year of Nabonassar being given, to find when it begins:—

Rule.—Divide the year by 4, subtract the quotient from 57, adding 365, if necessary, as before; the remainder will be the number of days from the 1st January.

The given year, diminished as often as 365 has been added, will show the number of Julian years from 747 B.C. If it be less than 748, subtract from that number, and the remainder will be the year before Christ; if equal, or more, subtract 747 from it, and the remainder will be the year after Christ.

THE EGYPTIAN ERA.—The reformed Egyptian year coincides exactly with that of the era of Diocletian. Previous to its reformation it was identical with that of the era of Nabonassar. It consisted of 365 days, and began on the 26th February, 747 B.C. The reformation was made thirty years before Christ. At that period the beginning of the year, by continually receding, fell on the 29th August; and that was fixed as the first day of the year for the future. It is certain that the 29th August was the date adopted as the beginning of the year, and that the number of the year was one more than it would have been if 747 had been taken as the beginning of the era. There is, however, some uncertainty as to the precise year in which the reformation took place. As the year 30 B.C. began on the 31st August, the reformation must have been made eight years earlier than above stated. The correspondence of the Egyptian with the Christian era is ascertained by subtracting 746 years 125 days. The reformed year was at first used only by the Alexandrians; the old year continued in use more than a century after Christ.

THE JULIAN PERIOD.—This cycle is the product of the lunar cycle 19, the solar cycle 28, and the Roman indiction 15. It consists, consequently, of 7980 years, and had its beginning 4713 years before our era. This cycle was introduced as a convenient mode of computing time, as it avoided the perplexing ambiguity which attended the reckoning of any period before Christ. The Christian year is found by subtracting 4713 from the Julian period. If any year B.C. is required, subtract the Julian period from 4714.

THE ERA OF DIOCLETIAN.—The epoch of this era is the day on which Diocletian was proclaimed emperor, at Chalcedon, 29th August, 284. It was extensively employed by Christian writers previous to the introduction of the Christian era. At present it is employed only by the Abyssinians and Copts. The era is also known as the Era of Martyrs, on account of the persecution of the Christians in the reign of Diocletian. The year is one of 365 days, with a day added every fourth year. It contains twelve months of thirty days; in common years five days are added, and in leap-years six days. The year is bissextile when, dividing the date by 4, the remainder is 3. The additional days are called by the modern Copts Nisi in common years, and Kebus in leap-years.

The following are the Coptic months, with the corresponding date in the Julian calendar for the first day of each :—

Coptic.	Arabic.		Coptic.	Arabic.	
Thoth	Tot	August 29th.	Phamenoth	Buramat	February 25th.
Paophi	Babe	September 28th.	Pharmouti	Barmude	March 27th.
Athyr	Hatur	October 28th.	Pachons	Bashans	April 26th.
Cohiac	Kyak	November 27th.	Payni	Baune	May 26th.
Tybi	Tobe	December 27th.	Epiphi	Abib	June 25th.
Mesir	Mashir Amshir	January 26th.	Mesori	Meshri	July 25th.

The Diocletian year which follows leap-year begins one day later than usual, and consequently a day must be added to the Christian year from the 29th August to the end of the following February. The years of this era are made to correspond with those of the Christian by adding 283 years 240 days.

The Grecian Era.—This era dates from the reign of Seleucus Nicator, 311 years and 4 months before Christ, and is hence called the era of the Seleucides. It was long used in Syria previously to the fifteenth century; it was often employed by the Jews, and some Arabians still use it. The Greeks in Syria began their year about the first of September, the Syrians in October, and the Jews about the autumnal equinox. Chronologists differ very much as to the date of the beginning of this era. It is used in the book of the Maccabees, and appears to have begun with Nisan.

The year was solar, and contained 365 days, with a day added every fourth year.

Supposing it to have begun 1st September, 312 B.C., it is reduced to our era by subtracting 311 years and 4 months.

All the rules for ascertaining the dates of the Grecian era are laid down in the following works of celebrated Oriental astronomers:—Zeeja Mahamuny, Zeeja Hackamy, Zeeja Ebna Allum, Hakim Abdool Sufi's astronomical work, a work by Aba Rahim Baruny, Zeeja Shahi, an astronomical work by Kaja Nusseer, and Zeeja Adwar by Shaikh Mohideen Magrabee. Celebrated Arabian astronomers reckoned that the Yezdézerd era commenced 16th June, 632 A.C., 344,324 days after the Grecian era began.

The Grecian era given in Table I. has been calculated according to the computation above given.

The following are the months used by the Greeks and Syrians, with the corresponding Roman months :—

Syrian.	Macedonian.	English.	Syrian.	Macedonian.	English.
Tishrin I.	Hyperberetæus	October.	Nisan	Xanticus	April.
Tishrin II.	Dius	November.	Ayar	Artemisius	May.
Canun I.	Apellæus	December.	Haziran	Dæsius	June.
Canun II.	Andynæus	January.	Tamus	Panæmus	July.
Shubat	Peritius	February.	Ab	Lous	August.
Adar	Dystrus	March.	Elul	Gorpiæus	September.

The Era of Tyre.—The epoch of this era is the 19th October, 125 B.C., in the month Hyperberetæus. The year is like the Julian, and the months the same as those used in the Grecian era. The era is made to correspond with the Christian by subtracting 124, and with the years B.C. by deducting from 125 any year less than that.

The Era of Abraham.—Its epoch is the 1st October, 2016 B.C. It is the era employed by Eusebius. It is made to correspond with the Christian by subtracting 2015 years 3 months, which will leave the year and month in the Christian era.

The Era of the Cæsars, or Spanish Era.—Its epoch is 1st January, 38 years B.C., which was the year that followed the conquest of Spain by Augustus. It was employed in Spain and the neighbouring districts of France and of Africa. It was not till 1180 A.C. that it was abolished in the churches connected with Barcelona; not till 1350 that it was abolished in Aragon by Pedro IV.; not till 1382 that it was abolished in Castile by John I. In Portugal its use continued till 1455. The year of this era, in months and days, is the same as that of the Julian calendar; and it is made to correspond with the Christian, therefore, by subtracting 38 from it. Thus the Spanish year 800 corresponds with the Julian year 762. Any year B.C. is found by subtracting this era from 39.

The Era of the Armenians.—The epoch of this era is Tuesday, 9th July, 552 A.C. The year is one of 365 days only; and thus, in every four years, it anticipates the Julian year by one day. The day of the week on which the Armenian year begins may be ascertained by dividing the year by 7: if there be no remainder, Monday is the first day of the year; if there be a remainder, the first day will be as follows:—

0.	1.	2.	3.	4.	5.	6.
M.	Tu.	W.	Th.	F.	Sa.	Su.

The Armenian year is made to correspond with the Julian by dividing the given date by 4 and subtracting the quotient from 191, adding 365 to 191, if necessary; the remainder will be the days from the beginning of the Julian year, and the Armenian date (diminished by 1, if 365 has been added to 191), added to 551, will give the Christian year.

The Armenians have an ecclesiastical year which begins on the 11th August, and has a day added at the end of every fourth year. This year is the same in its division with the Julian year. It is made to correspond with the Christian by adding 551 years and 222 days: in leap-years, subtract one day from 1st March to 10th August.

Era of Yezdézerd.—Amongst the ancient Persians a king's accession to the throne was the epoch of a new era, which took the new king's name. In political and commercial affairs, and in all computations of dates, the new era was designated by the name of the king, whose reign measured its duration. Many learned Persian authors have treated of this subject. The celebrated Oriental chronologist Moolah Moozfer thus speaks of it:—"The beginning of this era [of Yezdézerd] dates from the first year of the accession of Yezdézerd bin Shariar bin Kasra. It is well known that this mode of reckoning dates originated in the time of King Jamshed. It was customary from that time to date the era from the day of a king's accession to the throne, and to give it his name. It was also customary to abandon the era thus named at the conclusion of his reign, and to begin a new one in the name of his successor. Thus, when the Persian sceptre descended through successive monarchs at last to Yezdézerd, the previous date was given up and a new one established in its stead. The epoch of this era was the 22nd day of Rabin-uwal, in the 11th year of the Hegira era. In the time of Osman bin Afman the Arab forces defeated the Persian army finally at the village of Náhávand, to the south of Hamadan, about fifty miles from the ancient city of Ecbatana. King Yezdézerd fled, and hid himself in the city of Merv; and history states that he was some years after treacherously slain by a miller. After his death no Persian king ascended the throne of Persia, and consequently there was no change of era after Yezdézerd. Hence this era has continued to be used by the whole Zoroastrian population of Persia. It is calculated at present without any allowance; that is, the year is made to consist of exactly 365 days. At first they did not calculate it in this way; but, after the practice was adopted, it was continued uninterruptedly; and consequently the years subsequent to the adoption of this mode of computation are incomplete solar years. The five days of *gathas* are added at the end of each year."

The year is divided into twelve months of thirty days each, and five days, or *gathas*, as they are called, are added at the end to make up the deficiency.

Mention is made of the ominous day of the last Sassanian king Yezdézerd bin Shariar's accession to the throne in many learned Oriental astronomical works, especially in a work entitled "Zeeja Kotebee," in Moolah Abdoolally Burzundee's work, entitled "Zeeja-Zadeed," in Mirza Shuyeed's Commentaries, and in a work entitled "Zeeja Nasharee,"—in all of which it is stated that King Yezdézerd ascended the throne on the 1st day Hormazd of the first month Furvurdeen, corresponding with Tuesday, the 16th June, 632 A.C. His reign was not without interruption.

The Persians reckon 365 days in a year. There are twelve months, each of thirty days, and five days, called *gathas*, are added at the end of the last month; thus the Yezdézerd year is considered complete. The Persians, from very remote antiquity, employed the incomplete solar year in the observance of their religious ceremonies. For the purpose of revenue settlement they used to add one intercalary month after every 120 years, and they considered this embolismic year quite distinct from other years. Their proper religious year consisted of 365 days only. Every religious ceremony with them began and ended in 365 days. From the time of Yezdézerd the practice of adding an intercalary month for revenue settlement calculations ceased among the Persians, but they have continued to reckon their religious year of 365 days as before. This latter mode of reckoning the year prevails at present among the Zoroastrians both of Persia and of India. The existence of two sects, the Kudmis and Shensoys, among the Parsees of India is owing to the fact of the Kudmis, like their brethren in Persia, reckoning their year one month in advance of that of the Shensoys. With this exception, the two sects are virtually one. They do not differ on any point of faith, as the Protestants and Romanists of Christendom; nor does the distinction between them at all resemble that which divides the Hindoos into different castes, or the Mahomedans into Sheeas and Soonees. Their form of worship and religious ceremonies are the same in every respect. They freely mingle in society and in every relation of life. Their division is exclusively confined to a difference as to the correct chronological date for the computation of the era of Yezdézerd, the last king of the ancient Persian monarchy. The difference has never been productive of any further inconvenience than arises from the variation of a month in the celebration of their festivals.

In the year 1090 of Yezdézerd, 1720 of the Christian era, Jamasp, a learned Zoroastrian from Persia, arrived at Surat to undertake the instruction of the Mobeds, or priests. He is said to have been the first to discover that his co-religionists in India differed from their brethren in Persia in their chronology; but no importance was then attached to the fact. In the year of Yezdézerd 1114, corresponding with the Christian year 1744, Jemshed, an Iranee, attaching to himself a few dustoors, mobeds (priests), and behedeens (laymen), inhabitants of Surat, adopted the view imported by Jamasp, and formed the Kudmi sect. The bulk of the people, however, continued to hold the former view. Jamasp corrected the calendar by striking out one month of the year 1745, reckoning the day Maharesphand of the month Aban as the same day of the month Adur, in the 1114th year of Yezdézerd, corresponding with 6th June, 1745 of the Christian era.

The names of the Persian days and months are as follows:—

DAYS.

1. Hormazd. 2. Bahman. 3. Ardibehest. 4. Sherever. 5. Aspundad.	6. Khordad. 7. Amerdad. 8. Depadur. 9. Adur. 10. Aban.	11. Khurshed. 12. Mhor. 13. Tir. 14. Gosh. 15. Depmehel.	16. Meher. 17. Serosh. 18. Rashne. 19. Furvurdeen. 20. Behram.	21. Ram. 22. Guvad. 23. Depdin. 24. Din. 25. Ashasang.	26. Ashtad. 27. Asman. 28. Zamiad. 29. Maharesphand. 30. Aniram.

MONTHS.

1. Furvurdeen. 2. Ardibehest.	3. Khordad. 4. Tir.	5. Amerdad. 6. Sherever.	7. Meher. 8. Aban.	9. Adur. 10. Deh.	11. Bahman. 12. Aspendadmad.

The names of the five additional days were:—1, Ahnuvud; 2, Ushtuvad; 3, Spentamud; 4, Vohi-Kshusthra; 5, Vahishtusht.

The day of twenty-four hours, or sixty *ghades*, is divided by the Persians into five *gâhs*:—Hâvanim, from 6 to 12 A.M.; Rapithwan, from 12 to 3 P.M.; Uzayeirin, from 3 to 6 P.M. (sunset); Aiwicruthreme, from 6 to 12 P.M.; Ushahin, from 12 to 6 A.M. The day is reckoned from daylight to daylight. The new year is reckoned from the first day (Hormazd) of the first month (Furvurdeen). This day is called Dureeayee Nowroz, or sea-reckoning, as it is employed in all nautical calculations of Asiatic mariners.

It has been asserted that Yezdézerd abolished the ancient era and invented a new one, and gave different names to the thirty days and twelve months; and on this is founded the supposition that the sun enters *Aries* in the month Furvurdeen. The assertion is altogether groundless. The names of the days and months were altered in the reign of Jeláledin Toghlak Shah, Ibn-i Alp Arsulan Saljuki. This king wished that the solar year should bear his name, and that it should regulate the revenue settlement and political affairs generally. With this view he established a new era by reforming the calendar, and gave new names to the twelve months of the year and to the thirty days of the month, as also to the five *gathas*. These names, however, did not exclusively prevail: people confounded the old with the new. To avoid this confusion, the ancient Persian months were distinguished popularly by the name Kudmi, and the Jeláledin months by the name Jeláli. The astronomers ultimately adopted the same distinction, and called the Persian month Kadeem and Jeláli; as Furvurdeen month Kudmi and Furvurdeen month Jeláli. As the word Kudmi came into use from this king's time, the dustoors, priests, and laymen who adopted the Kudmi date were also called Kudmis.

The following is an account of the era of Jeláledin Malek Shah, as given in the work of a celebrated Oriental astronomer, Zeeja (astronomical tables) Alkhanee. The fifth chapter of the work treats of the Jeláli era, and is divided into nine sections. The first section treats of the epoch of this era and of the year and month. "Sooltan Jeláledin Malik Shah bin Alkh Ashlan Suljookee. God's mercy be upon him. The reason for using his name in dates was, that the sages of his time were ordered by him to prepare a code of observations; whereupon they consulted among themselves, considered the task a very difficult one, and doubted whether they would ever be able to perform it at all. They then went to the prince and told him with one voice that at least thirty years would be required to complete the code of observations, and that they knew not whether they would live so long. Moreover, as so many days would elapse before the completion of their work, there would be a change in the motions of the heavenly bodies, which would make it necessary to prepare new astronomical tables, or a new calendar, and abandon the old one. Therefore they would undertake to do, in the name of the king, what might be finished soon. They said that there was then no correct date corresponding with the motion of the sun. The year began with the Nowroz, or the day the sun entered the zodiacal sign *Aries*, to enable astronomers to use it for astronomical tables. Hitherto they had been using the Persian date, which did not correspond with the solar year. Now, if the Sooltan ordered, they would prepare a solar calendar in his name, corresponding with the solar year, to facilitate the calculation of astronomical tables; and they would incorporate in it the names of the Persian months which had prevailed so long, and would call the Persian months Kudmi, in order to distinguish them from the new months, which would be called Jeláli. Thus the time of the new months coming into use would be made known. Prince Jeláledin accepted their proposal, and ordered them to proceed forthwith with the work. Thereupon the astronomers prepared the astronomical almanac or calendar. The first day of that calendar is Friday. The years are solar years, and their first day corresponds with the sun's entrance into the zodiacal sign *Aries*. The new year's day is the first day of the first month Furvurdeen Jeláli. The beginning of this Jeláli date is 22nd March, 1079, Old Style, Friday."

Although this prince caused the names of the thirty days of the month and of the twelve months of the year, as well as of the five *gathas*, to be altered, the new names did not long prevail. —*Vide* Fusli years.

Era of Zoroaster.—The Parsees believe that their Zoroaster lived in the time of Hystaspes, father of Darius, whom they identify with Kava Vistaspa of the Zend Avesta, or Kai Gustasp of the Shâhnâmah, and that he flourished 389 B.C. Zoroaster, however, is the theme of the Parsee scriptures, or Zend Avesta. The following extract from the 29th Hâ, or section of the Izeshna, which forms a part of the Zend Avesta, proves that Zoroaster promulgated his new faith during the reign of Gustasp, who embraced it. Zoroaster, addressing Hormuzd, says: "Do thou grant that Gustasp may read your scriptures, and propagate the faith, and embrace your exalted religion." The 30th Hâ, or section, of the same work declares that Zoroaster was born at the city of Rai, in Persia. The Zend Avesta itself contains intrinsic evidence of its being composed more than 2200 years ago—viz., in the reign of Gustasp. Celebrated and elaborate Pehlvi works — Shayest Nashayest, Meenokhered, Jamaspy, Bundesr, and Ardai Viraf Nameh—compiled in the reign of Ardeshir Bubekhan, in the second century of the Christian era, all speak of the existence of the Zend Avesta. The time in which Zoroaster lived I believe to be the fourth century before Christ. This belief is supported by the testimony of Eastern and Western writers, who entirely coincide with each other. In the Dabistan it is said, on the authority of the Zarthosht-Nama: "Zaradusht, on issuing forth into the abode of existence, laughed aloud at the moment of his birth." Pliny, in his Natural History, says: "We find it stated that Zoroaster was the only human being who ever laughed on the same day on which he was born. We hear, too, that his brain pulsated so strongly that it repelled the hand when laid upon it—a presage of his future wisdom." The Zaradusht and Zoroaster here referred to can be no other than the prophet of the Perso-Medo Bactrian nations. On Eastern authorities, confirmed by the testimony of Greek writers, Moolla Feroze and Dustoor Aspendiarjee Kumdinjee make Zoroaster to have flourished in the fourth century. I shall quote some of these authorities. In a note to the Dabistan it is stated:—"The most ancient mention of the name of Zoroaster in Greek books is to be found in the works of Plato, and dates, therefore, from the fourth century before our era." Sir W. Ouseley, in his "Travels in the East," quotes Agathias:—"The prophet, however, or legislator, whose name we find written in Persian books Zardehusht, or Zaratusht, is manifestly that Zoroaster whom the Greek historian Agathias calls Zoroados, or Zarades, and justly assigns to the age of King Hystaspes, preceding Christ by about 500 years." In Shea's translation of Mirkhond's "History of the Early Kings of Persia," we read:—"Diogenes, cited by Porphyry, says that Pythagoras (about five centuries B.C.), when in Babylon, was instructed by Zabratus" (Zoroaster). Conder refers to the same authority when he says, in his "Popular Description of Persia and China," "The Greeks held the name of Zoroaster in high esteem. Pythagoras is said to have been his scholar." Troyer, in his English translation of the Dabistan, states:—"In the fourth century B.C. Plato, Aristotle, and Theopompus show a knowledge of Zoroaster's works." He also adduces the testimony of Clement of Alexandria and Jamblicus in the following passage of his translation:—"In the Desatir (English translation, p. 120) the Greek philosopher is called Tútíanush. We are at a loss even to guess at the Greek to whom these names may be applied. We may, however, remember that St. Clement of Alexandria places Pythagoras about the sixty-second Olympiad, or about 528 years B.C., and says that he was a zealous follower of Zoroaster, and had consulted the Magi." Jamblicus, in his life of Pythagoras (cap. 4), states that this philosopher was taken prisoner by Cambyses and carried to Babylon, where, in his intercourse with the Magi, he was instructed in their modes of worship, perhaps by Zoroaster himself, if Zabratus and Nazaratus, mentioned as his instructors by Diogenes and Alexander, can be identified with the Persian prophet." These testimonies justify the belief that Zoroaster flourished in the fourth century B.C.

Mulla Abdulla Ali Birjundy, author of "Zeeja Sareh," a Persian astronomical work, states:— "Bomanear Bin Marazban, a Zoroastrian, a learned philosopher and astronomer of Persia, who was a pupil of Shaikh Abu Ali Hussain, son of Abdulla Sina" (this Abu Ali Hussain, or Ibn Sina, is the celebrated Avicenna, honoured with the title of Sheikh-al-rais, or prince of physicians), "and died in the 458th year of the Hegira, 1066 of the Christian era, says that Zoroaster, establisher of the Persian religion, was born on the Monday, 372,660 days before the commencement of the Yezdézerd era," 16th June, 632 of the Christian era."

Now 372,660 days make 1020 common solar years, with 360 days remaining. These remaining days (*gatha* 5, eleven months of 30 days, 330, and 25 of first month) bring the date to the 6th of the first month Furvurdeen, as the birthday of Zoroaster.

What is the corresponding Christian date?

	DAYS.
From 1st January of first year of Christ to 31st December, 631	230,315
Leap-year days of 631 years	157
From 1st January to 16th June, 632	168
From 389 B.C. to 31st December of 1st B.C.	141,985
Leap-year days of 389 years	97
Total days	372,722
Deduct	372,660
Remainder	62

The 62nd day of the year falls on March 3rd. The 6th day (Khordad) of first month (Furvurdeen) of first year of Zoroaster, Monday, corresponds with the 3rd of March, 389 B.C. By the Dominical letter, Table XXIV., the 3rd of March, 389 B.C., will be found to have fallen on Monday. The first computation is thus found correct.

A very ancient Pehlvi work, "Durkard," believed to have been originally compiled by the disciples of Zoroaster, makes mention of the Zend Avesta promulgated by Zoroaster. In the 7th section it is said: "The anniversary of the birth of Zoroaster, which took place on the 6th day (Khordad) of the first month (Furvurdeen)." A work entitled "Roztal Munjamin," says: "1020 years formed the interval from the birth of Zoroaster to the new era of Yezdézerd."

About ninety-two years ago—that is, in the year 1142 of Yezdézerd, or 1772 of the Christian era—the president of the Parsee Punchayet of Surat, Muneherjir Cursetjie, received a Mahajur, signed by thirty-seven learned dustoors, mobeds, and behedeens, inhabitants of Yezd in Persia, certifying that "the anniversary of the birthday of Zoroaster was Khordad, the 6th day of Furvurdeen, the 1st month, on Monday; 2715 years (according to Persian computation) from the Deluge having been completed, and the 6th day of 2716 reached, when Zoroaster was born."

Now the Persian and Arabian astronomers and chronologists agree that the Deluge occurred on the 14th day (Gosh) of 2nd month (Ardibehest), on Friday. If the 14th day of the 2nd month was Friday, the 1st day of the 1st month was Thursday. The following Table shows the 1st day of each century, from 1—2700, and of each year from 2700—2716:—

Centuries.		Centuries.		Centuries.		Centuries.		Centuries.	
1.	Thursday.	900.	Sunday.	1800.	Thursday.	2700.	Monday.	2709.	Wednesday.
100.	Friday.	1000.	Tuesday.	1900.	Saturday.	2701.	Tuesday.	2710.	Thursday.
200.	Sunday.	1100.	Thursday.	2000.	Monday.	2702.	Wednesday.	2711.	Friday.
300.	Tuesday.	1200.	Saturday.	2100.	Wednesday.	2703.	Thursday.	2712.	Saturday.
400.	Thursday.	1300.	Monday.	2200.	Friday.	2704.	Friday.	2713.	Sunday.
500.	Saturday.	1400.	Wednesday.	2300.	Sunday.	2705.	Saturday.	2714.	Monday.
600.	Monday.	1500.	Friday.	2400.	Tuesday.	2706.	Sunday.	2715.	Tuesday.
700.	Wednesday.	1600.	Sunday.	2500.	Thursday.	2707.	Monday.	2716.	Wednesday.
800.	Friday.	1700.	Tuesday.	2600.	Saturday.	2708.	Tuesday.		

From this Table it will be seen that the 2715th year from the Deluge (Persian computation) was completed on Tuesday, and the 2716th year began on Wednesday; which brings us to Monday for the 6th day. Zoroaster's birthday was, therefore, on the 6th day (Khordad) of the 1st month (Furvurdeen), on Monday.

The Era of the Republic; or, The French Revolutionary Calendar.—The French nation adopted in 1792 a new calendar, based on philosophical principles. The plan of their new calendar is not essentially different from the one previously in use; they changed the name, some of the minor details, and the time for the beginning of the year. The epoch of the era of the Republic is the 22nd September, 1792, N.S., the autumnal equinox. The year consisted of twelve months of thirty days each; the five additional days at the end were celebrated as festivals. The fourth, or leap-year, was called an Olympic year. The names of the months, with the corresponding date in the Christian year for the first day of each, and the names and dates of the additional festivals, are as follows:—

Vendémiaire	began	22 September.	Germinal	began	21 March.
Brumaire	„	22 October.	Floréal	„	20 April.
Frimaire	„	21 November.	Prairial	„	20 May.
Nivôse	„	21 December.	Messidor	„	19 June.
Pluviôse	„	20 January.	Thermidor	„	19 July.
Ventôse	„	19 February.	Fructidor	„	18 August.

Festival of Virtue	17 September.	Festival of Opinion	20 September.
„ „ Genius	18 „	„ „ Rewards	21 „
„ „ Labour	19 „		

In Olympic (or leap-) years, from the 11th Ventôse (which was on the 29th February) to the end of the year, the calculation was one day earlier than in common years; thus, Messidor began on the 18th June, Fructidor on the 17th August. Instead of weeks of seven days, the months were divided into three decades. The names of the days of the decade were as follows:—

Primidi.	Tridi.	Quintidi.	Septidi.	Novidi.
Duodi.	Quartidi.	Sextidi.	Octodi.	Decadi.

This new calendar lasted only fourteen years, which corresponded as follows with the Christian year:—

1.—1792-3.	4.—1795-6.	7.—1798-9.	10.—1801-2.	13.—1804-5.
2.—1793-4.	5.—1796-7.	8.—1799-1800.	11.—1802-3.	14.—1805-6.
3.—1794-5.	6.—1797-8.	9.—1800-1801.	12.—1803-4.	

Era of the Hegira.—The Hegira is the era universally used in all Mahomedan countries. Hegira signifies "The Flight"—*i.e.*, of Mahomed from Mecca to Medina. Authorities have differed as to the day on which this took place. Some chronologers, and the Arabian astronomers in general, refer it to the 15th July, A.C. 622. Others refer it to the 16th July, A.C. 622; and Cantemir has proved by examples that, in most ancient times, this was regarded as the first day of the era. This difference may be accounted for by the fact that the civil day of the Mahomedans begins at sunset; while the astronomers probably began the day at noon. Though the flight of Mahomed probably began on the evening of Thursday, the 15th July, it is certain, from the comparison of modern dates, that the present practice of the Mahomedans, in dating their civil transactions, is to count from Friday, the 16th July, 622.

The Mahomedan year is strictly lunar, and the civil months are adjusted to the course of the moon by means of a cycle of thirty years, containing nineteen common years of 354 days, and eleven intercalary years of 355 days; the cycle, therefore, contains 10,631 days, which amounts to twenty-nine Julian years and thirty-nine days. Each year is divided into twelve months, containing alternately thirty and twenty-nine days, excepting that the last month of the intercalary year contains also thirty days. The intercalary years are the 2nd, 5th, 7th, 10th, 13th, 16th, 18th, 21st, 24th, 26th, and 29th of the cycle. The average length of a year is taken at $354\frac{11}{30}$ days, the twelfth of which is $29\frac{191}{360}$, differing from the true lunation very little more than three seconds, which will not amount to a day in less than 2260 years—a degree of exactness which could not have been attained without long-continued observations.

The names of the Turkish months, with the number of days in each, are as follows:—

	Days.		Days.		Days.		Days.
Moharem	30	Rabin II.	29	Regeb	30	Shawall	29
Saphar	29	Jomadhi I.	30	Shaban	29	Dhu'l kadah	30
Rabin I.	30	Jomadhi II.	29	Ramadan	30	Dhu'l hajjah	29
						In intercalary years	30

The months of the Hegira are composed of weeks of seven days. The Mahomedan dates may be reduced to the Christian era by the chronological elements above given. As the era of the Hegira is used over so large a portion of the world, it is a matter of importance to be able to ascertain accurately the correspondence between the two eras. The following method establishes it without the slightest risk of ambiguity or mistake :—

Having given a Mahomedan date, to find the corresponding date in the Christian era.

(See Mahomedan Calendar, p. 60.)

THE CHINESE ERA.—From the time of Yao, more than 2000 years B.C., the Chinese had two different years—a civil year and an astronomical year. The civil year consisted of twelve lunar months, to which a thirteenth was added when required, to preserve its correspondence with the solar year. The astronomical year was solar, and even at this early period it consisted of 365¼ days, like the Julian year; it was, moreover, arranged in the same manner, a day being intercalated every fourth year.

The Chinese divided the day into 100 *ke*, each *ke* into 100 minutes, and each minute into 100 seconds. This practice prevailed till the 17th century, when, at the instance of the Jesuit Adam Schaall, President of the Tribunal of Mathematics, who was director of their calendar until 1664, they adopted the European method of dividing the day. The civil day commences at midnight, and ends at the midnight following.

Since the accession of the emperors of the Han dynasty, 205 B.C., the civil year of the Chinese has begun on the new moon nearest to the fifteenth degree of *Aquarius*. From the same period they have employed, in the adjustment of their solar and lunar years, a period of nineteen years, twelve of which are common, containing twelve lunations each, and the remaining seven intercalary, containing thirteen lunations.

The Chinese divide the time of a complete revolution of the sun, with regard to the solstitial points, into twelve equal portions, each corresponding to thirty days, ten hours, thirty minutes. Each of these periods, which is denominated a *tze*, is subdivided into two equal portions, called *tchong-ki* and *tsie-ki*; the *tchong-ki* denoting the first half of the *tze*, and the *tsie-ki* the latter half. The civil year is corrected according to the solar by the use of these twenty-four half-monthly terms, each of which covers the period of the sun's passage through the half of one of our zodiacal signs. The names of these twenty-four terms, like those of the French revolutionary months, have reference to the season of the year. It is remarkable that the *tze*, which are strictly portions of solar time, give their name to the lunar months, each month or lunation having the name of the *tchong-ki* or sign at which the sun arrives during that month. As the *tze* is longer than a synodic revolution of the moon, the sun cannot arrive twice at a *tchong-ki* during the same lunation; and, as there are only twelve *tze*, the year can contain only twelve months having different names. It must happen sometimes that, in the course of a lunation, the sun enters into no new sign; in this case the month is intercalary, and called by the same name as the preceding month.

The Chinese, for chronological purposes, like all the nations of the north-east of Asia, employ cycles of sixty years, by means of which they reckon their days, moons, and years. The days are distributed in the calendar into cycles of sixty, in the same manner as ours are distributed into weeks, or cycles of seven. Each day of the cycle has a particular name; and, as it is a usual practice, in mentioning dates, to give the name of the day along with that of the moon and the year, this arrangement affords great facilities in verifying the epochs of Chinese chronology. The order of the days in the cycle is never interrupted by any intercalations that may be necessary for adjusting the months or years. The moons of the civil year are also distinguished by their place in the cycle of sixty; and, as the intercalary moons are not reckoned, because during one of these lunations the sun enters into no new sign, there are only twelve regular moons in a year; so that the cycle is renewed every five years. Thus, the first moon of the year 1862 being the first of a new cycle, the first moon of every sixth year, reckoned backwards or forwards from that date, will also begin a new lunar cycle of sixty moons. In regard to the years, the arrangement is exactly the same. Each has a distinct number or name which marks its place in the cycle, and, as this is generally given in referring to dates, along with the other chronological characters of the year, the ambiguity which arises from following a fluctuating or uncertain epoch is entirely obviated. The present cycle began in the year 1804 of the Christian era: the year 1863 is consequently the sixtieth or last of the cycle. The cycle is the 75th, according to the Rev. C. Gutzlatt, the cycles having begun 2637 B.C. with the 61st of Hwangti.

The cycle of sixty is formed of two subordinate cycles or series of characters, one of ten and the other of twelve, which are joined together so as to afford sixty different combinations. The names of the characters in the cycle of ten, which are called *celestial signs*, are:—1, Kea; 2, Yih; 3, Ping; 4, Ting; 5, Woo; 6, Ke; 7, Kang; 8, Sin; 9, Jin; 10, Kwey.

And in the series of twelve, denominated *terrestrial signs*:—1, Tse; 2, Tchow; 3, Yin; 4, Maou; 5, Shin; 6, Sze; 7, Woo; 8, We; 9, Shin; 10, Yew; 11, Seo; 12, Hae.

The name of the first year, or of the first day, in the sexagenary cycle is formed by combining the first words in each of the above series; the second is formed by combining the second of each series; and so on to the tenth. For the next year the first word of the first series is combined with the eleventh of the second; then the second of the first series with the twelfth of the second; after this the third of the first series with the first of the second; and so on till the sixtieth combination, when the last of the first series concurs with the last of the second.

Since the year 163 B.C. the Chinese writers have generally dated the year from the accession of the reigning emperor. The year corresponding to a Chinese date can only be found when we have before us a catalogue of the Nien-hao, or periods of the reigns of the different emperors, with their relation to the years of the Christian era.

I shall here append a brief notice of the mode of reckoning time in use amongst the aboriginal Americans, before that continent was known to Europeans. Some of the aboriginal tribes seem to have cultivated astronomical science more extensively than is generally supposed. The Mexicans, in their computations, were really more accurate than contemporaneous Europeans, and their state of civilization renders it impossible for us to suppose that they were not indebted for this to some people more advanced than themselves. The fact, however, of their marvellous accuracy is well established by Spanish writers of the fifteenth century, and by almanacs, of undoubted antiquity, still extant. Other tribes, such as the Peruvians and Muyscas, had very accurate lunar years; but these they could easily frame from the visible and oft-returning phases of the moon.

I shall notice particularly only the year of the Mexicans. It consisted of 365 days, and of eighteen months of twenty days; to which five days, called *nemontemi* (void), were added. At the termination of a cycle of fifty-two years they added thirteen days; at the termination of another cycle they added twelve days: thus an addition of twenty-five days was made in 104 years. The mean year was, in this way, made to consist of 365 days, 5 hours, 46 minutes, $9\frac{3}{13}$ seconds; being only 2 minutes $39\frac{10}{13}$ seconds shorter than the true time. The first cycle of the Mexicans began in the month of January 1090 A.C. The system has been lost, and the monuments and records of the country destroyed—the latter the direct work of the barbarous conquerors, and the former through their extermination of the most advanced class of the Mexican people.

JAPANESE ERA.—The Japanese, like the Chinese, reckon their time by cycles of 60 years. The cycle, moreover, like that of the Chinese, is formed of two subordinate cycles or series of words, one of ten and the other of twelve, which are joined together so as to form sixty different combinations. The words in the cycle of ten are the names of the elements, which, according to the Japanese, are five in number. By taking these names in both the masculine and feminine terminations, *je* and *to*, the requisite number of ten words is obtained, which are as follows:—

1. Kino-je 2. Kino-to	wood.	3. Fino-je 4. Fino-to	fire.	5. Tsutsno-je 6. Tsutsno-to	earth.	7. Kanno-je 8. Kanno-to	metal.	9. Midsno-je 10. Midsno-to	water.

The words in the cycle of twelve are the names of the twelve signs of the zodiac, which are as follows:—

1. Ne . .	rat.	4. Ov . .	hare.	7. Ooma .	horse.	10. Torri .	hen.
2. Oos . .	ox.	5. Tats . .	dragon.	8. Tsituse .	sheep.	11. In . .	dog.
3. Torra .	tiger.	6. Mi . .	serpent.	9. Sar . .	ape.	12. Y . .	hog.

The name of the first year, or of the first day, in the sexagenary cycle, is formed by combining the first words in each of the above series; the first year is thus called Kino-je Ne. The combination proceeds like that of the Chinese; thus the 35th year is called Tsutsno-je In; and so on. The cycles coincide with those of the Chinese. They are distinguished by different names, and not by numbers. The Japanese year is luni-solar, of 12 and 13 months, with the intercalation as in the Chinese; it begins in February. The present cycle of the Japanese coincides with that of the Chinese; it is not certainly ascertained, however, when the first cycle began.

INDIAN ERAS.

THE chronological systems of India are peculiar in many respects. They vary greatly, but admit of a classification based on the principle on which the year was subdivided. A classification thus made will be fourfold. The first will embrace those eras that are founded on the sidereal divisions of the months; the second, those that are founded on the peculiar luni-solar computations; the third, those that are reckoned by cycles in which the years are distinguished by names; and the fourth, those that are founded on the Mahomedan era, which have since adopted the ordinary reckoning of the country.

THE SOLAR YEAR.—The Hindu solar year is a misnomer; for the year is strictly sidereal. It is measured by the time during which the sun makes his apparent revolution through the zodiac from any given star back again to the same star. In the most ancient astronomy of the Hindus, before the adoption of the solar zodiac, the beginning of the year was placed at the entrance of the sun into Aswini, the first of the Nakshatras—the name by which they designated the (so-called) mansions of the fixed lunar zodiac. About the year 1181 B.C. the solar zodiac was adopted, founded on the lunar zodiac. The names of the months were the same as those of the lunar mansions, in which the moon was full in the year that the solar zodiac was introduced. According to Bentley, a luni-solar cycle was formed at this time, founded on the discovery of there having been 3056 lunations in 247 years and one month, and of the initial month of the year thus changing its name every 247 years. The first was Aświna, the second became Kártika, &c. Should an ancient author, therefore, happen to mention the name of the first month of the year, the date of his writing might be approximately ascertained. These luni-solar cycles continued till 538 A.C. The following is a table of them :—

Periods.	Began.	Months.	Lunar Asterism concluding.
1	1 September, 1192 B.C.	1 Aświna.	Chaitra.
2	1 October, 945 B.C.	1 Kártika.	Vaisákha.
3	29 October, 698 B.C.	1 Agraháyana.	Jyeshtha.
4	27 November, 451 B.C.	1 Pausha.	P. Áshádha.
5	25 December, 204 B.C.	1 Mágha.	Srávana.
6	23 January, 44 A.C.	1 Phálguna.	Satabhisha.
7	21 February, 291 A.C.	1 Chaitra.	Bhádrapadá.
8	22 March, 538 A.C.	1 Vaisákha.	Aswini.

In the last the fixed sidereal zodiac of twelve signs was adopted, and thus Vaisákha has been the first month of the solar year up to the present time. Vaisákha corresponds with the sign *Mesha* or *Aries* of the fixed solar Hindu ecliptic. According to Hindu astronomers, the year in which the solar and sidereal zodiacs agreed, and there was no precession, was 969 A.C. The Hindu solar year is divided into six seasons (Ritu), of two sidereal months each, the succession of which is always the same; while the vicissitudes of climate in them depend on the position of the equinoctial colure.

TABLE I.

The Order and Names in the Sanskrit, Hindí, and Tamil Languages of the Signs, Months, and Lunar Mansions.

Rootoo, or Season.	Signs.	Names of Months.				Nakshatras, or Lunar Mansions, as they corresponded in 1192 B.C.
		Sanskrit, as used by the Mahratta in the Deccan.	Sanskrit, as used by the Bengali.	Urdú.	Tamil.	Sanskrit.
1. Vasanta.	12 ♓ Mina.	Chytr.	Chaitra.	Chait.	Punguní.	14, Chitrá. 15, Swáti.
	1 ♈ Mesha.	Vyshák.	Vaisákha.	Baisákh.	Chaitram.	16, Visákhá. 17, Anurádhá.
2. Grishma.	2 ♉ Vrisha.	Jyest.	Jyestha.	Jeth.	Vyassie.	18, Jyeshthá. 19, Múla.
	3 ♊ Mithuna.	Ashádh.	Ashádh.	Asárh.	Auni.	20, Púrvá-shádhá. 21, Uttárá-shádhá. (Abhijit, afterwards struck out.)
3. Varsha.	4 ♋ Karkata.	Shráwun.	Srávana.	Sáwan.	Audi.	22, Srávana. 23, Dhanishthá. 24, Sátataraka.
	5 ♌ Sinha.	Bhádurpud.	Bhádra.	Bhádon.	Auvani.	25, Púrvá-bhádrapadá. 26, Uttárá-bhádrapadá. 27, Revati.
4. Saruda.	6 ♍ Kanyá.	Ashwin.	Aświna.	Aśan.	Paratasi.	1, Aświni. 2, Bharani.
	7 ♎ Tulá.	Kartick.	Kartiku.	Kartik.	Arpesi.	3, Krittika. 4, Rohini.
5. Hemanta.	8 ♏ Vrishiga.	Margashirs.	Margasirsha, or Agrahayana.	Aghan.	Kartiga.	5, Mriga. 6, Ardrá. 7, Punarvasu.
	9 ♐ Dhanus.	Poúsh.	Poúsha.	Pús.	Margali.	8, Pushya. 9, Asléshà.
6. Sisira.	10 ♑ Makara.	Maugh.	Magha.	Mágh.	Tye.	10, Maghá. 11, Púrvá-phalguni.
	11 ♒ Kumbha.	Phalgoon.	Phálgoona.	Phágun.	Maussi.	12, Uttárá-phalguni. 13, Hasta.

There are several modes employed by the Hindus for noting the duration of the day.

The *Sávan* is the time between two consecutive sun-risings. This is the natural day. It is, consequently, of variable length. It is subdivided into 60 *Dhatas*, of 60 Vinadikas, of 60 Vipalas.

The *Saura* is the time which the sun takes in describing one degree of the ecliptic. This is the solar day. It is, consequently, of variable length, according as the sun is near the apogee or perigee. It is subdivided into 60 *Dandas* (or Kalas) of 60 *Vikalas*.

The *Nakshatra* is the time between two consecutive risings of the same point of the ecliptic. This is the true sidereal day. These days, consequently, are equal through the whole year, and are used in all computations. They are subdivided into *gharís* and *palas* (called in the southern part of the peninsula *vighadías*), which also follow the same sexagesimal division. The *pala* is divided into six *pránas,* or respirations. The "Súrya Siddhánta," and all astronomical works, carry the sexagesimal subdivision throughout, as follows :—

60 kshanas = 1 lava.
60 lavas = 1 nimesha.
60 nimeshas = 1 kástha.
60 kásthas = 1 atipala.
60 atipalas = 1 vipala = 0·4 second, English.
60 vipalas = 1 pala = 24 " "
60 palas = 1 danda = 24 minutes "
60 dandas = 1 dina, or 1 day and night.
60 dinas = 1 ritu, or season.

The *Tithi* is the thirtieth part of a lunation. This is the lunar day. It is employed in astrological calculations.

The division into weeks is also employed, the names of the days being derived from those of the planets, in the same order as in Europe.

TABLE II.

Names of the Days of the Week in English, with their Synonyms in Hindí, Indian, Persian, Ancient Arabic, Modern Arabic, Turkish, Singhalee, Tibetan, and Burmese.

English.	Hindí.	Indian.	Persian.	Ancient Arabic.	Modern Arabic.	Turkish.	Singhalee.	Tibetan.	Burmese.
☉ Sunday.	Ravi-vár.	Etwar.	Yekshambe.	Bawal.	Yom a had.	Pazar gun.	Eri-dá.	Gyah-nyi-ma.	Tanang-ganvé.
☽ Monday.	Som-vár.	Peer,orSomwar.	Doshambe.	Bahun.	Yom thena.	Pazar ertesi.	Sa-du-dá.	Gyah-zla-va.	Tanang-lá.
♂ Tuesday.	Mangal-vár.	Mungul.	Sishambe.	Jebar.	Yom tulta.	Salé.	Ang-ga ha-nuvá-dá.	Gyah-miǵ-amar.	Ang-gár.
☿ Wednesday.	Budh-vár.	Boodh.	Charshambe.	Dabar.	Yom arba.	Charśhambe.	Bá-dá-dá.	Gyah-thag-pa.	Buddha-hú.
♃ Thursday.	Vrihaspat-vár, or Guru-vár.	Jumerat.	Punjshambe.	Phemunes.	Yom hamsa.	Pershambe.	Bra-has-pa-ting-dá.	Gyah-phur-bu.	Kyása-padé.
♀ Friday.	Sukra-vár.	Juma.	Juma, or Adina.	Aruba.	Juma.	Juma.	Si-ku-rà-dá.	Gyah-pa-sangs.	Sok-kyá.
♄ Saturday.	Sanichar, or Sani-vár.	Sunneecher.	Shambe, or Hafta.	Shiyar.	Sabt.	Juma-ertesi.	Sina-su-rá-dá.	Gyah-spén-pa.	Cha-né.

The number of days and parts of a day in each month is determined by the length of time the sun continues in each sign. The civil reckoning differs from the astronomical only by rejecting fractions of a day. The civil year and month are reckoned as beginning at sunrise, and not at the precise time at which the sun enters the respective signs, according to the exact astronomical computation. When the fraction of a day is more than 30 *gharís* (half a Hindu day), the civil year or month is reckoned as beginning one day later than the astronomical.

The duration of each month depends, moreover, on the difference of time which the sun takes in passing through the northern and southern signs of the ecliptic. The time for the northern passage is 186 days, 21 hours, 38 minutes, 24 seconds, and for the southern 178 days, 8 hours, 34 minutes, 6 seconds; of these the odd hours and minutes are applied to the beginnings of the year and months. The effect of this difference on the civil reckoning is to produce differences of one or even two days more, or one day less, in the relative lengths of the months, and to make a bissextile year of 366 days as nearly as possible once in four years.

The variations in the lengths of the civil months make it impossible to find the precise day corresponding to any other era, except by a calculation of the day of the week on which the Hindu civil month in question began, which is very easily done with the aid of Warren's Tables from the Bráhmanical formulæ. As the order of the days has remained unaltered since they were first named, if any number of years be multiplied by the mean length of the year, and the result in days be divided by seven, the remainder will necessarily show the day of the week, counting from the initial day—that is, Friday—in the "Súrya Siddhánta," on which the period terminates. This calculation may be facilitated by tables of roots, or moments at which particular epochs begin, such as centuries, and it makes the Hindu year more simple of exposition than those of the West, which are liable to secular variations. A table of roots may also be prepared for the lengths of the months singly and collectively; so that, by simple addition, rejecting sevens, the initial of the required Hindu civil month may be accurately found. The Dominical letter affords the same means of finding the day for any European date; and any two approximate dates may be thus made to correspond exactly by the intervention of the weekly *feriæ*.

Eras dependent on the Solar Year.—The Hindu solar year is that which is used in India south of the Nurbadda river, in Bengal, Tirhút, Nipál, and Bombay. The eras that are principally used are, 1, the Kali-Yug, which is dated from the equinox of March, 3102 B.C.; 2, the Sáka, which dates from the birth of Sáliváhana, a mythological prince of the Deccan, who opposed Vikramáditya, the rajah of Ujjáyiné: it begins on the 1st Baisákh, 3179 K.Y., which fell on Monday, 14th March, 78 A.C., Julian Style. Other styles are connected with it in origin.

The Sáka of Bengal, as above	= 78 A.C.	= 3179 K.Y.
The Burmese Epoch, used at Prome	= 79 A.C.	= 3180 K.Y.
The Aji Sáka, used in Java	= 74 A.C.	= 3175 K.Y.
The Bali Year	= 81 A.C.	= 3182 K.Y.

The Bengali San and the Viláyaté year of Orissa are mentioned below.

The Luni-Solar Year of the Hindus.—There has not been, in ancient or modern times, any other mode of dividing and recording time similar to that of the Hindu luni-solar year. Notwithstanding a single point of resemblance to the Chaldæan system, in the secular omission of a month, and an accidental point of resemblance to the lunar cycle of Meton, in the concurrence of its common intercalations with those of that cycle at a particular period, Warren's careful analysis of the Hindu Chandra-Mána proved that it had no resemblance to other systems, save in its common dependence on the moon's motions.

The ordinary year was called Samvat-sara, or Mána, and consisted of twelve lunar months.

About every three years an intercalary month was supplied, called *adhika*. The beginning of the year is at the true instant of conjunction of the sun and moon; this being at the new moon immediately preceding the beginning of the solar year. It falls, therefore, somewhere within the 30 or 31 days of the solar month *Chaitra*. The last day of the expired month is the day of conjunction, called *amávasyá*; the first day of the new month is the day after conjunction.

There are two modes of reckoning the months. They begin, in the south of India, contemporaneously with the year, on the *amávasyá*, and run through the 30 days in two divisions of about 15 days, called *sucha*, or *sukla-paksha*, and *krishna-* or *bahula-paksha*, the light and the dark half, or wax and wane, of the moon.

Throughout Hindústan and Telingana the Vrihaspati-Mána, derived from the "Súrya Siddhánta," is followed. This makes the months begin with the full moon, called *púrnamá*, preceding the last conjunction. New Year's Day thus always falls in the middle of the lunar month *Chait*, and the year begins with the last *paksha*, or light-half of that month.

The lunar months are named from the solar month in which the conjunction happens; and the year is intercalary, or contains thirteen months, when two new moons fall within one solar month, as on the 1st and 30th days; the name of the corresponding lunar month is then repeated. The two months of the same name are distinguished by the terms *adhika*, "added," and *nija*, "ordinary." The intercalated month, by the "Súrya Siddhánta" system, takes its place in the middle of the natural month, or four *pakshas*:—1, *badi*; 1, *sudi*; 2, *badi*; 2, *sudi*;—the first *badi* and second *sudi* belong to the natural month, and the first *sudi* and second *badi* to the intercalated month. According to the Tamil computation, the first of the two months is the intercalated one.

In each term of 160 years it occurs once that, in some one of the last six lunar months, there is no new moon; the sun being in perigee, these contain only 30 and 29 days each. When this occurs, the month of that name is retrenched; it always happens, however, that two other months in the same year are repeated in such years, from an opposite cause. The common intercalary year is called *adhika-samvat-sara*; the double intercalary, with its retrenched month, is called *kshaya-samvat-sara*.

There are 30 *tithis*, or lunar days, in every lunar month; and these are subject to similar rules regarding intercalation and omission. When two *tithis* end on the same solar day, the intermediate one is retrenched from the calendar, and called a *kshaya-tithi*; when no *tithi* begins or ends on a solar day, the *tithi* is repeated on two successive solar days, and the first is called *adhika*. The *tithi* that begins before or at sunrise belongs to the solar day about to begin—that which begins after sunrise is coupled with the next solar day, when it does not end in the same day; in this case it is retrenched from the column of *tithis*.

The *tithis* are registered in civil time, although computed according to apparent time; and this singular mode of computation is thus rendered more perplexing.

By the common civil reckoning beginning after the completion of each diurnal period, the days in the semi-lunar periods are made account of—*e.g.*, the day on which the moon is full is the *sudi*, 14th or 15th, and the day following is the 1st, *badi.* This is similar to the European mode of reckoning the sun's place in the zodiac ($0^s + 10^\circ$, &c.; $1^s + 10^\circ$, &c.); it is, however, much better adapted for computations than where the figure expresses the current day or year.

The retrenchment of a *tithi* occurs, on an average, once in sixty-four days, and thus recurs five or six times in a year. A *tithi* repeated twice is called *tridina*. A *tithi* = 0·984 of a day, or 64 *tithis* = (nearly) 63 days.

For the complete solution of the problem of the construction of the luni-solar year, in all cases in which perfect accuracy is required, we refer the reader to Warren's book. I shall give rules sufficient to bring out the result to within a day or two of the corresponding Hindu solar year, and to still closer accordance with the Christian year, the days of which are not liable to the same variations *inter se*. Supposing the sun and moon to maintain a mean rate of motion in their course, but few elements are required for working it out thus far; and these may be determined from the Tables. They are: first, the sun's mean place in the Hindu ecliptic, and the skeleton of the solar months formed from it, to show how the civil and sidereal days are disposed; secondly, the moon's mean place in the ecliptic, found from the *Ahargana*, or sum of days elapsed from the beginning of the *Kali-Yug* to that of the proposed lunar year. The epochs of the mean conjunctions, during the year in question, are obtained by it.

For the true computation of the lunar days, the place of the sun and moon's apogee, the equinoctial precession, and the obliquity of the ecliptic are required.

With an English ephemeris, the construction of the Hindu lunar month may be effected easily for any given lunation from the times of new and full moon, corrected for the longitude of the place. The first day of every Hindu luni-solar month falls on the days after the new moon: it precedes by two days the initial *feria* of the Mahomedan lunar month. This is, however, without reference to the names of the months, as the months of the Hegira are ever gaining on the others.

Era of Vikramáditya.—This era is called Samvat; and, of those eras dependent on the luni-solar year, it is the principal one to which that system is exclusively adapted. Its name is derived from that of a prince of the Tuár dynasty, who is supposed to have reigned at Ujjain 135 years before Sáliváhana, who was the rival founder of the Sáka era, south of the Nurbadda river. The beginning of the Samvat era is fixed at the expiration of 3044 years of the Kali-Yug, 57 years B.C.; and thus, to find the last expired year of Samvat, subtract 3044 from the proposed year of the Kali-Yug, and the result is the year sought. The Christian years may be found from the Samvat by subtracting 57, except when they are less than 58, when the amount must be deducted from 58, which will give the date B.C.

This era is the one in use in Telingana and Hindústan proper. It is known, but not much used, in Bengal, Tirhút, and Nipál. It is scarcely known in the peninsula. As the festivals and religious observances, generally, of the Hindus and Buddhists depend on the lunar reckoning, the *Chandra-mána*, the luni-solar division of the year is adapted to other eras, conjointly with the solar division. No eras, therefore, are exclusively solar, while the Samvat is exclusively luni-solar.

The Era of Parasuráma.—This era is used in the southern part of the peninsula of India—that part called Malayála by the natives. It extends from Mangalore to Cape Comorin, including the provinces of Malabar, Cotiole, and Travancore. A prince named Parasuráma is supposed to have reigned over this portion of the Indian peninsula about 1176 B.C., and from him and his time the era takes its name and epoch. The era is measured by cycles of 1000 years. Each cycle begins its year numbering with one, and ends it with 1000; that is, the first year of the second cycle is not 1001, but 1; and so for the following cycles. The first cycle ended with the year 176 B.C.; the second with the year 825 A.C.; the third ended with the year 1825 A.C. The year 177 of the second cycle began A.C. 1, August 14th. The year, like that in all Indian chronological systems, advances one day in 60 years. It is sidereal, and begins when the sun enters the sign *Kanyá*, or *Virgo*, which answers to the solar month Aswina. The 14th September of A.C. 1800 concurs with the beginning of the 977th year of the third cycle.

The Balabhi Era.—This era is given in an inscription found at Somnáth, and must have been of the same construction as the Samvat. It assumed, however, a new epoch, which corresponds with A.C. 318, and Vikramáditya 375. The destruction of Balabhi occurred in Samvat 802, and it is presumed that the era was from that time discontinued.

The Siva-Sinha Samvat Era.—This era was established by the Gohils in the island of Deo. Its epoch corresponds with A.C. 1112, and with Vikramáditya Samvat 1169.

The Grahaparivritti Cycle.—There is a cycle of ninety years used by the people of the southern part of the Indian peninsula. The native astronomers of the district consider it to be constructed of the sum of the products in days of fifteen revolutions of Mars, twenty-two of Mercury, eleven of Jupiter, five of Venus, twenty-nine of Saturn, and one of the sun. The cycle was analyzed by Beschi, a Portuguese missionary, who resided for forty years in Madura. Its epoch occurs in 24 B.C., and with the termination of the year 3078 of the Kali-Yug. The year is sidereal. The cycle and year corresponding with any Christian year may be found by adding 24 and dividing by 90. Thus:—A.C. 1830 = $\frac{1830+24}{90}$ = 20 cycles, 54 years.

The Vrihaspati-chakra.—This is the cycle of Jupiter, and is regarded as one of the most ancient chronological systems in all Asia. In China and in India it has separate names for each year of the cycle: in the Chinese system, as I have shown, these names are compounded of two series of twelve and five names, while in India the series of single appellations is carried throughout the sixty years. The origin of the cycle of Jupiter is not known. The "Súrya Siddhánta" and other works make mention of it. Its application in reference to the revolutions of the planet Jupiter has been long disused in the south of India, as well as in China and Tibet.

The years of the cycle of Jupiter may be computed on three systems:—first, that of the "Súrya Siddhánta;" second, that of the Jyotistava; and, third, that of the Telingas.

By the "Súrya Siddhánta" Jupiter's revolutions are 364,220,000 in a Mahá-yug, and his motion, in one solar year, will thus nearly coincide with one sign of the zodiac ($1^s\ 00^\circ\ 21'\ 4''$). One zodiacal sign is called a year of Jupiter, and the actual time of the planet's passing through it is as $30^\circ\ 21'\ 04''$: 365d. 15g. 31p. : : 30° : 361d. 2g. 5p.: this is the true duration of the Chakra year. It falls short of the solar year by four days and thirteen *gharís*, which in eighty-six years amount to a whole year. To keep the cycle, therefore, in accordance with the planet's heliocentric motion, one year in every eighty-six must be retrenched.

The current year of the cycle for any year of the Kali-Yug may be found as follows:—As 432,000 solar years : 36,422 rev. of Jup. : : 4870 : 410 rev. $7^s\ 2\frac{1}{2}^\circ$. The odd signs and degrees give his longitude, which requires a small correction—viz., multiplying 410 by twelve, and dividing by 60, gives 82 cyc. 7 years; the latter must be counted always from the 27th of the cycle, *vijaya*, giving the 33rd year, *vikari*.

By the Jyotistava system we have the last-expired year of the cycle, setting out from the Sáka epoch, and reckoning from *Prabhava* as the first of the cycle. The method is:—Write the Sáka year in two places; and, as the period when the year by this system must be retrenched is 85·227, multiply one of the Sáka years by 22, add 4291 to the product, and divide by 1875. Add the integers of the quotient to the second Sáka year, and divide by 60. The remainder will be the last year expired from *Prabhava*. The fraction left by the divisor, 1875, may be reduced to months and days of the current year.

Example.—4870 Kali-Yug = 1691; Sáka $\frac{1691 \times 22 + 4291}{1875} = 22\ \frac{873}{1875}$ and $\frac{1691+22}{60} = 28^c\ 33^y$: the fraction $\frac{873}{1875} =$ 5 months $17\frac{1}{2}$ days of the 33rd current year, *vikari*.

By the Telinga system no notice is taken of the beginning of the Vrihaspati year, which it identifies in duration with the Chandra-Mána. The method is:—

Divide the expired years of the Kali-Yug by 60, the quotient will give the number of cycles expired; and the remainder will give the odd years, to be reckoned from *Pramathi*, the 13th of the Chakra.

Example.—The year 4870 Kali-Yug, $4870 \div 60 = 84$ cycles, 10 years, or *Sarvadhari*, the 22nd expired. *Virodhi*, the 23rd, will be the current year sought. This method, followed in the peninsula, coincides with the practice in Tibet.

TIBET.

The Vrihaspati-Chakra is employed in Tibet. In this country, however, there are two series of denominations for the Chakra years, one of which is an exact translation of the Chinese names, and the other a translation of those of the Indian cycle. The Tibetan calendar is throughout a copy of the Indian. It gives the solar and lunar days, the *nakshatras*, *yogas*, and *haranas*, and the usual lucky and unlucky days. The division of the months is into *kar-choks* and *nák-choks*, or bright and dark halves,

&c. The vernal equinox, on the first Baisákh, is the beginning of the astronomical year. The civil year has a different beginning in different parts of Tibet, varying from December to February. The Hors, or Turks, keep their new year some days after the winter solstice, in January; and the people U',tsang, at Lassa, begin theirs with the new moon of February. The months are usually denominated numerically—first, second, &c.; while they also have names expressive of the seasons, asterisms, business undertaken in them, &c. The year is luni-solar, with intercalations.

The birth or death of Sákya is the only fixed epoch in Tibet. The almanacs note the years elapsed since this event. The year is also noted from the death of the two great Lamas of Lassa and Teshi-lunpo, or the re-incarnations of these within the last two centuries.

The true cycle of Jupiter being twelve years, the Tibetans, in calculating their age, count by this cycle. In the ordinary affairs of life they employ the cycle of 60 years, each of which has its distinct name. They designate the cycles, not by numbers, but by some coincident event or remarkable person of the period. This mode is of little use for remote dates.

The order of the years is the same as the Tamil, having no retrenched year. The Tibetans, however, do not count from the same fixed epoch. Their writers on the Kala-chakra system maintain that the mode of computation by cycles of 60 years was adopted in Tibet from India, about 1025-6 of the Christian era, and that it had been introduced into India about sixty years before that, about 965 of the Christian era. Their epoch, therefore, occurs in 1025 of the Christian era.

The 69th cycle of the "Súrya Siddhánta," and the 15th cycle of the Jyotistava, and the 68th cycle of the Telinga astronomers, were all completed in 965-6 of the Christian era, which is not much prior to Bentley's epoch of Varaha Mihira, the supposed author of the "Súrya Siddhánta."

The two rules given for expounding the dates of the Kali-Yug and Sáka prove that the cycles did not begin with either of those epochs. The odd years, according to these rules, are to be computed from Vijaya (the 27th) and *Pramathi* (the 13th) respectively, and not from *Prabhava* (the 1st), as would naturally be expected.

The conclusion is, therefore, that the theory of the cycle of Jupiter was introduced in India, as the Tibetan writers maintain, in the middle of the tenth century. This seems a confirmation of the date assigned by Bentley to the "Súrya Siddhánta," which upholds and expounds that cycle.

Before the adoption of the cycle of Jupiter in Tibet, a period called *mé-kha-gya-tsho*, a symbolical name for the number 403, was frequently mentioned in their books, and dates were expressed in it as the 60th, 200th, &c., year of the *mé-kha-gya-tsho*. If 403 be deducted from 1025, the remainder, 622, coincides with the epoch of the Hegira, which leaves the impression that the latter era had been once established in Tibet. The Tibetan writers, indeed, describe the destruction of the Buddhist religion in the north to the Mahomedans.

I give a catalogue of the Sanskrit, Tibetan, and Chinese names of the sixty Chakra years, and an English translation of the last two. The meaning of the Sanskrit names is precisely rendered in Tibetan. The first year of the Indian series corresponds with the fourth of the Chinese. Had the discrepancy been owing to the different modes of reckoning, the divergence would, of course, have been at the other end of the scale. The discrepancy, then, is a proof that the two cycles are not connected. To have brought the divergence at the commencement of the scale, it must have run through fifty-six years, and this would have occupied nearly fifty centuries.

TABLE III.

Names and Numbers of the Vrihaspati-Chakra, or Sixty Years Cycle of Jupiter, in Sanskrit, Tibetan, and Chinese.

	Sanskrit Names.	Tibetan Translation of Sanskrit Names.	Tibetan Translation of Chinese Names.	Chinese Names.	Meaning of Chinese Names.	Ch. No.
1	Prabhava.	Rab-byung.	Mé-yos.	Ting-mao.	Fire-hare.	4
2	Vibhava.	r Nam-Hbyung.	Sa-Hbrug.	Von-chin.	Earth-dragon.	5
3	Sukla.	Dkar-po.	Sa-Sbrul.	Kise.	Earth-serpent.	6
4	Pramodha.	Rab-myos.	Chags-r Ta.	Keng-ou.	Iron-horse.	7
5	Prajàpati.	Skyés-bdag.	l Chags-lag.	Sin-ouei.	Iron-sheep.	8
6	Angira.	Angira.	Ch'hu-spre.	Gin-chin.	Water-ape.	9
7	Srimukha.	Dpal-Qdong.	Ch'hu-bya.	Kuei-yeou.	Water-bird.	10
8	Bhává.	Dnos-po.	Shing-K'hyi.	Kia-su.	Wood-dog.	11
9	Yuvá.	Na-tshod-ldan.	Shing-Phag.	Yhai.	Wood-hog.	12
10	Dhátá.	Hdsin-byéd.	Mé-byi.	Ping-tse.	Fire-mouse.	13
11	Iswara.	Dvang-p'hyug.	Mé-g Lang.	Ting-tcheou.	Fire-ox.	14
12	Bahudanya.	Hbru-mang-po.	Sa-Stag.	Von-yn.	Earth-tiger.	15
13	Pramáthi.	Myos-ldan.	Sa-yos.	Ki-mao.	Earth-hare.	16
14	Vikrama.	r Nam-Quon.	l Chags-Hbrug.	King-chin.	Iron-dragon.	17
15	Brisya.	K'hyu-dlch'hog.	l Chags-Sbrul.	Sin-se.	Iron-serpent.	18
16	Chitrabhánu.	Sna-ts'hogs.	Ch'hu-r Ta.	Gin-ou.	Water-horse.	19
17	Súbhanú.	Nyi-ma.	Ch'hu-lug.	Kuei-ouei.	Water-sheep.	20
18	Tárana.	Nyi-Sgrol-byéd.	Shing-spré.	Kia-chin.	Wood-ape.	21
19	Párthiva.	Sa-skyong.	Shing-bya.	Y-yeou.	Wood-bird.	22
20	Vyaya.	Mi-zad.	Mé-K'hyi.	Ping-su.	Fire-dog.	23
21	Sarvajit.	Thams-chad-Hdul.	Mé-Phag.	Ting-hai.	Fire-hog.	24
22	Sarvadhári.	Kun-Hdsin.	Sa-byi.	Von-tse.	Earth-mouse.	25
23	Virôdhi.	Hgal-va.	Sa-g Lang.	Ki-tcheou.	Earth-ox.	26
24	Vikrita.	r Nam-rgyal.	l Chags-Stag.	King-yu.	Iron-tiger.	27
25	Khara.	Pong-bu.	l Chags-yos.	Sin-mao.	Iron-ape.	28
26	Nandana.	Dgah-va.	Ch'hu-Hbrug.	Gin-chin.	Water-dragon.	29
27	Vijya.	r Nam-Hgyur.	Ch'hu-Sbrul.	Kuei-se.	Water-serpent.	30
28	Iya.	r Gyal-va.	Shing-r Ta.	Kia-ou.	Water-horse.	31
29	Manmutka.	Myos-byéd.	Shing-lug.	Y-ouei.	Wood-sheep.	32
30	Durmukha.	Qdong-nan.	Mé-spré.	Ping-chin.	Fire-ape.	33
31	Hémalamva.	Qjér-Hp'hyang.	Mé-bya.	Ting-yeou.	Fire-bird.	34
32	Vilamva.	r Nam-Hp'hyang.	Sa-Khyi.	Von-su.	Earth-dog.	35
33	Vikári.	Sgyur-byèd.	Sa-P'hag.	Ki-hai.	Earth-hog.	36
34	Sarvari.	Kun-ldan.	l Chags-byi.	Keng-tse.	Iron-mouse.	37
35	Plava.	Hp'har-va.	l Chags-g Lang.	Sing-tcheou.	Iron-ox.	38
36	Subhakrit.	Dgé-byéd.	Ch'hu-Stag.	Gin-yn.	Water-tiger.	39
37	Sobhana.	Mdsés-byéd.	Ch'hu-yos.	Kuei-mao.	Water-hare.	40
38	Krodhi.	K'hro-mo.	Shing-Hbrug.	Kia-chin.	Wood-dragon.	41
39	Viswávâsu.	Snats'hogs-Dvyig.	Shing-Sbrul.	Y-se.	Wood-serpent.	42
40	Parábhava.	Zil-Quon.	Mé-r Ta.	Ping-ou.	Fire-horse.	43
41	Plavanga.	Spréhu.	Me-Lug.	Ting-ouei.	Fire-sheep.	44
42	Kilaka.	P'hur-bu.	Sa-spré.	Von-chin.	Earth-ape.	45
43	Saumya.	Zhi-va.	Sa-bya.	Ki-yeou.	Earth-bird.	46
44	Sádharána.	T'hun-mong.	l Chags-Khyi.	Keng-su.	Iron-dog.	47
45	Virodhakrit.	Hgal-byéd.	l Chags-P'hag.	Sin-hai.	Iron-hog.	48
46	Paridhávi.	Yongs-Hdsin.	Ch'hu-byi.	Gin-tse.	Water-mouse.	49
47	Pramádhi.	Bag-med.	Ch'hu-g Lang.	Knis-tcheou.	Water-ox.	50
48	Ananda.	Kun-Dgah.	Shing-Stag.	Kia-yn.	Wood-tiger.	51
49	Rákshasa.	Srin-bu.	Shing-yos.	Y-mao.	Wood-hare.	52
50	Anala.	Mé.	Mé-Hbrug.	Ping-chin.	Fire-dragon.	53
51	Pingala.	Dmar-Ser-chan.	Mé-Sbrul.	Ting-se.	Fire-serpent.	54
52	Kálayakta.	Dus-kyá-pho-nyi.	Sa-rta.	Kow-ou.	Earth-horse.	55
53	Sidharti.	Don-grub.	Sa-lug.	Ki-ouei.	Earth-sheep.	56
54	Randra.	Drag-po.	l Chags-spré.	Keng-chin.	Iron-ape.	57
55	Durmati.	b Lo-nan.	l Chags-bya.	Sin-yeou.	Iron-bird.	58
56	Dundubhi.	Rna-ch'hén.	Ch'hu-khyi.	Gin-su.	Water-dog.	59
57	Rudirdógári.	K'hrag-Skyug.	Ch'hu-P'hag.	Kuei-hai.	Water-hog.	60
58	Raktáksha.	Mig-Dmar.	Shing-byi.	Kia-tse.	Wood-mouse.	1
59	Krodhana.	Khro-vo.	Shing-g Lang.	Y-tcheou.	Wood-ox.	2
60	Kshaya.	Zad-pa.	Mé-Stag.	Ping-in.	Fire-tiger.	3

Buddhist Era.—Little is definitely known of the epoch of Buddha. The two latest of the epochs attributed to a Buddha are founded on actual events. Professor Wilson furnishes the following data for the epoch of this elder Buddha:—

	B.C.
Padmakarpo, a Lama of Bhootan who wrote in the sixteenth century, makes it	1058
Kalhana Pundit, who wrote the history of Kashmir, makes it	1332
Abú'l-Fazl makes it	1366
A couplet from Chinese historians makes it	1036
De Guigne's Researches make it	1027
Giorgi (period of Buddha's death) makes it	959
Bailly makes it	1031
Sir William Jones makes it	1027
Bentley makes it	1004
Jaehrig, from a Mongol Chronology, makes it	991
Japanese Encyclopædia makes the birth	1027
" " " the death	963
Matonan-lin, a Chinese historian of the twelfth century, makes it	1027
M. Klaproth, with Sir W. Jones, makes it	1027
M. Rémusat dates the death	970
The era adopted at Lassa makes it	835

The period of a Buddha is thus fixed, by the majority of these quotations, about 1000 years before the Christian era. No chronological era has been founded on this period.

A second Buddha seems to have existed in the sixth century before Christ. The following are the more important testimonies to this period:—

	B.C.
The Burmese epoch of Gotama's death	544
The Singhalese epoch of Buddha's death, and beginning of their era, on the landing of Vijaya	543
The Siamese epoch	544
The *Nirvana* of Sákya occurred 196 years before Chandragupta, the cotemporary of Alexander, which may agree thus: 348 + 196 =	544

Professor Wilson quotes other three dates in conjunction with these:—

	B.C.
The Singhalee	619
The Peguan	638
The Chinese, according to Klaproth	638

The Buddha of 1027 B.C. is identically the same as the one who died 544 B.C. As far as real chronology is concerned, the recent date is alone in use.

Jain Eras.—The Jains in some parts of India follow the era of Mahávíra, their last Jain, whom they regard as the preceptor of Gotama, placing him in the year 569 B.C., and thus a few years prior to Gotama. He was the twenty-fourth teacher of the Jain religion. No Jain inscriptions show traces of an exclusive chronology. They bear invariably the Samvat date of Vikramáditya.

Burmese Eras.—While the sacred era is kept up in the Burmese country in ecclesiastical documents, other eras are more generally employed for the business of life. The Prome epoch was established by King Samandri, and its first year corresponds with 623 of the sacred epoch, or 79 A.C. It seems to be the same as the Shaka era of Sáliváhana. The vulgar epoch used throughout Ava was established by Puppa-chan-ra-han, the first year of which agrees with 639 A.C. The division of months accords with the luni-solar system of the Hindus, and the year begins with the new moon of the solar month Chaitra. To reduce the Burmese vulgar year to the Christian, add 638. For the Prome era, add 78. The Burmese have also a sacred era called the Grand Epoch, said to have been established by An-ja-na, the grandfather of Gotama; the first year corresponds with 691 B.C.

NEWÁR ERA.—Previous to the introduction of the Sáka and Samvat eras into Nipál by the Gorkha dynasty, there existed an era called the Newár, from the name of the aboriginal tribe of the valley, which is still much in use. Its origin seems not to be known. The Newár year begins in October, and the year 983 terminates in the present year 1863 of the Christian era. Its epoch will thus concur with the month of October 880 A.C.; and, by retrenching this number from a Newár date, we have the corresponding Christian year.

The following extract from Albirúní gives some further interesting details in reference to Indian cycles:—

"Toutes ces ères présentent des nombres considérables, remontent à une antiquité reculée, et leurs années dépassent les nombres cent mille et au-delà. Ces nombres ont embarrassé les astronomes dans leurs calculs, et, à plus forte raison, le commun des hommes. Nous allons donner une idée exacte de ces ères, et nous rapporterons nos calculs à l'année des Indiens, dont la plus grande partie correspond à l'an 400 de l'ère de Yizderdjed. Cette époque s'exprime par un nombre rond et n'est embarrassée ni de dizaines ni d'unités. Cet avantage lui est particulier et la distingue de toutes les autres années.

"De plus, elle a été rendue à jamais célèbre par la chute du plus fort boulevard de l'Islamisme et la mort de l'illustre sulthan Mahmoud, lion du monde et le phénomène du temps: Dieu lui fasse miséricorde! En effet, Mahmoud expira moins d'un an avant cette époque.

"Le *sandhi* des Indiens précède le nourouz (premier jour de l'année) des Perses de douze jours, et il fut postérieur de dix mois Persans complets à la nouvelle de la mort du sulthan. . . .

"Toutes ces ères présentent des nombres considérables et remontent à une époque reculée; voilà pourquoi on a renoncé à en faire usage. On emploie ordinairement les ères de Sri-Harscha, de Vikramaditya, de Saca, de Ballaba et des Gouptas.

"Les Indiens croient que Sri-Harscha faisait fouiller la terre et cherchait ce qui pouvait se trouver dans le sol, en fait d'anciens trésors et de richesses enfouies; il faisait enlever ces richesses et pouvait, par ce moyen, s'abstenir de fouler ses sujets. Son ère est mise en usage à Mahourah et dans la province de Canoge. J'ai entendu dire à un homme du pays que, de cette ère à celle de Vikramaditya, on comptait quatre cents ans; mais j'ai vu, dans l'almanach de Cachemire, cette ère reculée après celle de Vikramaditya de 664 ans. Il m'est donc venu des doutes que je n'ai pas trouvé moyen de résoudre.

"L'ère de Vikramaditya est employée dans les provinces méridionales et occidentales de l'Inde. On pose 342, qu'on multiplie par 3, ce qui fait 1026; on ajoute au produit ce qui s'est écoulé du schadabda, mot par lequel on désigne le samvatsara sexagésimal. Voilà ce qu'on entend par l'ère de Vikramaditya. J'ai vu le mot shadabda cité dans le livre du *Soroudou*, composé par Mahadeva

Djandaryna. Le procédé qu'on emploie d'abord est incommode. Si on commençait par poser le nombre 1026 au lieu de marquer sans aucun motif 342, l'opération serait plus simple: car admettons le résultat, maintenant qu'on en est au premier samvatsara, comment fera-t-on lorsque les samvatsara se multiplieront ?*

"L'ère de Saca, nommée par les Indiens Sacakâla, est postérieure à celle de Vikramaditya de 135 ans. Saca est le nom d'un prince qui a régné sur les contrées situées entre l'Indus et la mer. Sa résidence était placée au centre de l'empire, dans la contrée nommée Aryavartha. Les Indiens le font naître dans une classe autre que celle des Sakya; quelques-uns prétendent qu'il était Soudra et originaire de la ville de Mansoura. Il y en a même qui disent qu'il n'était pas de la race indienne, et qu'il tirait son origine de régions occidentales. Les peuples eurent beaucoup à souffrir de son despotisme, jusqu'à ce qu'il leur vînt du secours de l'Orient. Vikramaditya marcha contre lui, mit son armée en déroute et le tua sur le territoire de Korour, situé entre Moultan et le château de Louny. Cette époque devint célèbre, à cause de la joie que les peuples ressentirent de la mort de Saca, et on la choisit pour ère, principalement chez les astronomes. D'un autre côté, Vikramaditya reçut le titre de *Sri*, à cause de l'honneur qu'il s'était acquis. Du reste, l'intervalle qui s'est écoulé entre l'ère de Vikramaditya et la mort de Saca prouve que le vainqueur n'était pas le célèbre Vikramaditya, mais un autre prince du même nom." [Here follows the passage quoted in original Arabic, and in the French and English versions, pp. 269, 271, vol. i.; and the consecutive extract is complete at p. 269, with the exception of the following sentence, which comes in after "241 de l'ère de Saca."] "L'ère des astronomes commence l'an 587 de l'ère de Saca. C'est à cette ère qu'ont été rapportées les tables Kanda Khâtaca, de Brahmagupta. Cet ouvrage porte chez nous le titre de *Arcand*." [To this succeeds the sentence "D'après cela," etc.; and Albirúní, after stating his further difficulties in the reconcilement of discrepancies, and the local divergencies of the commencement of the year, concludes with the passage given *in extenso* at the foot of p. 269.]

Eras derived from the Hegira.—There are several eras derived from the Mahomedan year which follow the solar and luni-solar systems: 1, the Bengáli San; 2, the Viláyati, or Umly year of Orissa; 3, the Fasli year of the Upper Provinces; and, 4, the Fasli year of the peninsula. In the Bengal Presidency it is the custom to insert the concurrent dates of all these eras at the head of every regulation enacted by Government.

I have introduced in the following pages scales for reducing the dates of native documents. Tables for the same operation may be found in the translations of the Persian almanac of the late Sudr Dewánee Adawlut of Bengal, from the year 1764.

The best explanation of the Fasli or "harvest" years has been given by Harington, in his Analysis of the Land Revenue Regulations. Their origin is traced to the year of Akbar's accession

"*Il me semble résulter de l'ensemble du passage, que le cycle sexagésimal non seulement était propre à une certaine partie de l'Inde, mais qu'il était d'une institution récente. Le calcul présenté par Albyronny me fait croire qu'il commença seulement l'an 959 de notre ère.—*Reinaud*."