# WAS THERE A TUNGUSKA-TYPE IMPACTS OVER THE PACIFIC BASIN AROUND THE YEAR 1178 A.D. ?

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1. Introduction

As related by astronomers Clube and Napier in their monograph The Cosmic Winter, see [1], in the year 1178 A.D. four wise men of Canterbury were sitting outside on a clear and calm June 18th night, a half Moon standing placidly in the starry sky. Suddenly they noticed a flame jutting out of a horn of the Moon. Then they saw the Moon tremble and its colour change slowly from light brilliant to a darker reddish tone. Such a colour remained for all the time the Moon was visible during that phase. This story is found in a manuscript version of Canterbury annals, attributed to the cleric Gervase, that was shown to Clube by a medieval English history specialist.

When the hidden face of the Moon was first photographed by a lunar mission, a large and apparently very recently produced crater was visible near the lunar north polar region. It was named the *Giordano Bruno* crater. Its recent origin is shown by the absence of secondary superimposed craters. The crater is considered to have been produced by a cometary or meteoritic impact with a body of 2-3 kilometers size, implying an energy in the range of hundred of million of megatons. The year of the impact might well be 1178 A.D., thereby explaining the observations recorded in the Canterbury annals, as first proposed to our knowledge by Hartung [2].

Now it is known that cometary or meteoritic impacts do not happen on a purely stochastic way and that almost contemporary multiple impacts are a rather common event. This follows from the fact that the impacting bodies are often part of a stream of objects (comets, Apollos,...) produced by the disintegration of an initially larger body, by causes like internal instability or disrupting tidal forces by planets near which the object has passed. While the stream tends with time to expand and dissolve, its existence is nonetheless the reason for a likely multiplicity of impacts (notice for instance that the Vienna University geologist and paleontologist Alexander and Edith Tollmann in [3] have given geological arguments for a seven-fold multiple cometary impact over Earth oceans at circa 6500 B.C.; see the appendix below for an argument unknown to the Tollmanns that the precise date should bee circa 6900 BC) and for an enhanced probability of impacts at the time the Earth is crossing the stream region.

By the above arguments, the following question naturally arises: was planet Earth, whose cross section is much larger than the Moon's (by a factor about 15), also subject to impacts around the year 1178? Preliminary to this question: was the Earth crossing a stream around 1178? Then, if the Earth was hit, where was the event or the events and which were the consequences?

In the following ten sections we give arguments for likely multiple impacts over the Pacific basin, with dramatic consequences for people living in that area and some, albeit delayed, dramatic consequences also for the Mediterranean region.

2. Evidence of the crossing of a cometary stream in the year 1178 A.D.

There are at least two pieces of information that indicate that the Earth crossed a cometary stream during the late 11th and the 12th century, with a peak around the half of the 12th century.

The first information comes from European history. Frequent and scaring appearances of large comets were indeed a main factor that contributed to the special psychological climate that led to the Crusades, which were often seen, at least at the popular level, as a means for atonement of sins, the divine wrath expressing itself through the menacing comets. A great comet appeared during a meeting of bishops, where a decision had to be taken if the first Crusade should be started, and was a final argument in favour of the Crusade.

The second piece comes from Chinese astronomers, who were routinely recording comets and fireballs. Such recordings have been the object of a study by Clube [4]. The recordings show a very clear peak of sightings around the middle of the 12th century, the peak being over ten times higher than the average background. It is interesting to notice that a similar peak is also present at about half the 6th century, a time when, according to several Byzantine historians quoted by Gibbon [5], e. g. Malala, Procopius and Theophanes, many scaring comets appeared in the sky. That was also the time of the great Justinian plague, which decimated the population of the Mediterranean region, killing up to 90% of the population according to some estimates (this depopulation was certainly a major factor which facilitated the Arabs' expansion some three generations later). In China that was a period o9f great food shortage, leading to cannibalism and the suicide of the emperor. Further indication of a severe climatic crisis around the year 540 A.D., due possibly to cometary effects, is found also in the dendrochronological Irish record, see Baillie [25].

3. Arguments from New Zealand Maori legends

From New Zealand two arguments come. First we have the Maori legends stating that, several centuries ago, fire came from the sky, burned most of the forests and killed the Moa birds (the Maori adamantly reject the western scholars opinion that overhunting was the reason for the Moa disappearance). Secondly there is the recent finding of a number of shallow and definitely very recent impact craters, named the Tapanui craters, in the South Island. Additionally, layers of soot, datable at the cratering time, have been detected in several places. The Tapanui craters and the presence of soot can be taken as a confirmation that "fire" came from the sky, burned the forests and killed the Moas, as the Maori legends state.

The time of the event has been estimated at circa 800 years ago, therefore falling at our proposed date. For more information on the event see Steel and Snow [6] and Pajak [7,8].

4. Arguments from Polynesia

It is known, see Heyerdahl [9] and Fornander [10], that at the end of the 12th century there have been severe disruptions throughout the archipelagos in Polynesia, leading to discontinuities in the local dynasties and to generalized migrations, mainly in the direction from North America to the Hawaii and to the other islands. Heyerdahl writes (see quoted monograph, pp. 169,170):

*A. Fornander, a notable early Polynesian genealogist, after a life-long study of Polynesian tribe history claimed that about 30 generations reckoned from the end of the last century bring us back to a period when the aristocracy in almost all groups took, so to say, a new departure. From then on, during a period of a few generations, all royal lines were interrupted and substituted by new ones. A migratory wave swept the island world of the Pacific, embracing in its vortex all the principal groups, and probably all the smaller. Its traces were deep and indelible. It modified the ancient customs, creed and polity. It even affected the speech of the people.... new tutelar gods succeeded the earlier deities, new place names replaced old ones... the*

*construction of the pyramidal stone platforms also seemed to have ceased during this period...traditional narratives show that an early people were found in Hawaii, Cook Islands and New Zealand by the later Polynesians. The later immigrants conquered their predecessors, who were not exterminated but absorbed.*

The date of the events can be set between the years 1100 and 1200, see also the work of another Polynesian genealogist, Percy Smith [11], an interval which brackets our proposed date 1178.

To this time it is also possible to relate the migration that, according again to Heyerdahl [12,13], brought a community of Melanesian people to Easter Island, which at that time was inhabited by a completely different type of people (high stature, reddish hair, European features) and a more advanced culture, one especially devoted to the construction of the famous giants. For several centuries the Melanesian people lived as slaves and worked in the quarries to build the statues. Then, probably in the year 1670, they rebelled and killed most of their masters (apparently only one adult male was left alive).

Additional indications of a crisis around the considered time come from the Hawaii. There a temple complex known as the Waha'ula was built around 1200 by a priest named Pa'ou, who had come from Tahiti. The temple was associated with human sacrifices, that in many ancient civilizations characterized periods of stress. The title it Hinakai Mouliawa, meaning it "*discolouring the Moon with a dark mist*", and intriguingly reflecting the change of colour of the Moon testified in the Canterbury annals, was also adopted by Hawaii chiefs.

## 5. Arguments from South America

In South America we first observe, at the time under discussion, the rather sudden demise of the great coastal civilizations (Mochicas, Chimu,...), that, inter alia, had build huge pyramids (the largest of the Tucume pyramids, near the northern Peru town of Lambayeque, had a square basis with a side of about 800 meters; while only about 70 meters high, its total volume was about one third greater than that of the great Cheops pyramid) and a complex system of canals for irrigation. The demise was sudden and without recovery. It was also associated to substantial ruin of the pyramids, by evident erosion by heavy rain (the pyramids were not build in stone but with compacted soil), rather unexpected in a region among the driest in the world, and of the irrigation system.

Secondly, we observe, immediately following the demise of the coastal civilization, the rise, in the high Andes range, of the new Incas civilization. The Incas, in the course of three centuries, till they collapsed under the Spanish aggression, probably benefiting to a large extent of the construction techniques previously developed by the coastal people, founded a great empire extending from Ecuador to Chile, well connected by an efficient road system. The Inca royal family claimed a very ancient origin and distinguished itself from the general people by the use of a special form of language (the royal Quechua, according to Blas Valera, see below, related to aymara, considered the most perfect and rational language in the world). According to a recently found manuscript dated to the year 1611 and containing information attributed to Blas Valera, (see Laurencich Minelli et al. [14]), a Jesuit son of a Spaniard and of a woman belonging to the royal Inca family, the Inca royal family traced its origin to about the 6th century (quite intriguingly, the quoted time of great cometary activity and of the Justinian plague), when two groups of migrating people were claimed to have reached South America, one from the West (Tartaria), reaching Peru about 650 AD, and one who had arrived about 550 AD from the East, beyond the Atlantic. These last people had a chief called Viracocha, had white skin and reddish hair. A fighting followed their encounter and most of the white people were killed, except the women. The royal Inca family descended from intermarriages between the people from the West and the white women. People of the royal family married within the family (brother and sister) and had kept a rather white colour till the time the Spaniards arrived.

The development at this time, after the collapse of the coastal civilization, of a civilization of essentially high mountains can be intriguingly explained if the coastal civilization was destroyed by a natural catastrophic event, like a great tsunami, due to the impact of extraterrestrial material over the Pacific waters,

which scared enormously the survivors and the neighbouring people. The coastal area was then abandoned and the civilization restarted on higher, presumibly safer, land. Effects of weather changes, e.g. drier conditions along the coast, may also have contributed to this geographical displacement.

Thirdly, analysis of past El Niño behaviour indicates unusual conditions at the time under consideration. Information on past intensity of El Niño can be obtained by analysis of the oceanic sediments, particularly by the relative abundances of certain shellfish which develop only when the water temperature rises above a certain level (the current along the Peruvian coast is normally cold, but the water warms up in correspondence with the El Niño phenomenon, hence a strong El Niño wipes out most of this shellfish). Recent analysis, see Heyerdahl [11], has shown that El Niño activity has dramatically peaked around the middle of the 12th century. An unusually strong El Niño not only would result in a disruption of the normal local Pacific fauna, but would provoke very strong torrential rains over the usually dry Peruvian coastal region. This may have been the main cause of the observed strong erosion of the Tucume pyramids and a factor for disruption of the local irrigation system. We however suspect that the demise of the coastal civilization has also to be related to a very dramatic and killing tsunamic wave.

## 6. Arguments from Central America

The fifth argument comes from Central America, relating to the origin of the Aztec civilization and to some extent explaining the Aztec obsession with human sacrifice.

When Cortes reached central Mexico, he met there the stronghold of the Aztects, who were living in a rather small region west of the great Popocatepl--Ixtacihuatl volcanic range, in a bowl shaped region of circa 2.000 square km, completely surrounded by mountains, the local rivers sending their waters not to the ocean but to a marshy lake at the center of the region, lake Texcoco (now almost completely dried up). In the middle of the lake, on a number of small islets, the Aztec capital Tenochtitlan was build, counting at Cortes time possibly over one million people (in one of his letters to Charles 5th, the Spanish emperor, Cortes, see [16], claimed that over 400.000 persons in the city had died of the epidemics, smallpox, brought by the Spaniards; due to the ferocity of the fighting possibly more people died of wounds and several thousands survived the destruction).

It appears from geography that the Aztects had chosen to live and in particular to build their capital in a region whose main feature, from the point of view of the presently discussed scenario, was to be well protected, thanks to its elevation and to the surrounding mountain ranges, by a possible rise of the ocean, or a possible tsunamic wave.

Now it is known from several sources, particularly from one of the few surviving codices, namely the so called codex Ramirez, see [17], that the Aztecs were not native of central Mexico, but had reached that region only a few centuries before Cortes' arrival. Their original place, named Aztlan, was located on the Pacific coast, probably near the present city of Mazatlan, some 300 km. north-west of Guadalajara. According to studies by Vaillant [18] and Brundage [19], their migration started around the middle of the $12^{th}$ century, Brundage actually proposing the date 1168, which is amazingly close to the date we are considering and since this date is an
estimate, one cannot exclude that the correct year was indeed 1178).

Why did the Aztecs move from a coastal region to a high land? We conjecture that, similarly to what happened to the coastal region of Peru, also the Pacific coastal region of Mexico was affected by a huge tsunami. The surviving people were immensely scared and took refuge up to the Mexican plateau in the marshes of Lake Texcoco. Probably they interpreted the catastrophe in religious terms as a punishment by their gods for not being sufficiently pious. Thus they adopted a policy of strong piety, which in their religion

meant a policy of human sacrifices, which scandalized the Spaniards, but whose roots can probably be traced in the reenactment of past catastrophic events in the solar system...

Finally, it is worth recalling that the Toltec civilization, which was in control of central Mexico till the 12th century, had also gone through a crisis, intriguingly characterized by the suicide of its last king, as a result of signs and wonders in the sky, which the king may have interpreted as presaging the end of his dynasty, see Clapham [26].

## 7. Arguments from Japan

Around 1178 there is an important political discontinuity in the Japanese history, given by the passage of the political power, after a period of intense fighting, from the southern Taira dynasty (with capital Miako, now Kyoto), to the northern Minamoto dynasty (with capital Kamakura, near Edo, now Tokyo). Termination of the fighting is around the year 1182. This political event may certainly be a chance occurrence in our context, save for a possible hint to unusual meteorological conditions. A major event of the war was the unexpected destruction of the southern fleet by a very violent typhoon. This too could be a chance event, but the similar fate meeting not many years later the Chinese-Mongolian fleet sent by Khubilai Khan to attempt the conquest of Japan, as related by Marco Polo, may be taken as suggestive of unusually irregular and strong typhoons in the north-west quadrant of the Pacific basin, thereby parallelizing the unusual behaviour of El Niño at that time around the coasts of Peru.

## 8. Arguments from northern China

The 12th century is a critical time in northern China. From a political point of view the corrupt and decaying regime of the late Song dynasty leads to social unrest and widely spread rebellions, so graphically described in the great Chinese classic novel it *The Water Margins* (probably written later, but there is no consensus on either the author or the time of writing). Northern China was occupied by the Juchen tribes from Manchuria in the second half of that century. Additionally natural disasters at unprecedented level affected the region, among which a major one was the flooding of the Huang He (the Yellow River). So catastrophic was this flood that the previous northern Song capital, the great city of Kaifeng, was almost completely destroyed and, moreover, the river changed its exit into the sea, moving it in 1194 from a location north of the Shandong peninsula to one south of it, hundreds of km away (the river returned to its previous exit in 1852 after another severe flood). Whether the natural disasters at this time are a chance event or are correlated with the other observed events, in particular with a possible modification of the typhoon regime and the strong increase of El Niño, is a question that deserves further study.

## 9. Arguments from Mongolia

In the annals of Khubilai Khan, the Yuan dynasty emperor of the second generation after Gengis Khan, well known as the host of Marco Polo, it is written that "*my great ancestor Gengis Khan saw a sign of change in the sky ...and arose in the North*", as in the annals translation made by the Eastern Cultures curator of the Royal Ontario Museum in Toronto and available in the library of that museum. Now Gengish Khan, born as Temujin, is believed to have been born in 1165, hence in 1178 he would have been 13 years old. He might have observed one of the great fireballs or a falling comet or asteroid, which were recorded with unusual high frequency at that time by Chinese astronomers.
The conquest of the greater part of Asia and even of part of Europe by the Mongolian horsemen in the space of a generation is one of the great events of history. The extraordinary personality of Gengis Khan, a man

with enormous intelligence, will, long range planning and shamanistic powers, was certainly a main factor behind the Mongolian expansion. In the *Secret History of the Mongols*, see [20], the Mongolian drive tends to be explained in terms of avenging wrongs, including the destruction of the family of Gengis Khan (he survived by hiding himself in the waters of a river) and the wrongs that his tribe suffered by the nearby (Nestorian Christian) Tayichud and Kereit tribes. The attack of the Mongols against Persia, then a huge empire, under Selgiuchid sultans control, stretching from Anatolia to Central Asia and including Afghanistan and part of India, which led to some of the worst massacres in history and to such a devastation of Central Asia that these countries have not yet recovered, is similarly explained in terms of a vengeance against the sultan Jalal-ad-Din, who had ordered the murder of peaceful Mongolian merchants, see Ata Malik Al Juvaini [21]. However behind these personal and very classical motivations there are probably other more objective reasons that made it almost necessary for the Mongols to leave their original land (a high plateau with continental climate and very cold winters, particularly in the region where Gengis Khan was born, the Altai in north-western Mongolia, partly now belonging to Siberia) to other lands with a better climate. Here we suggest that the main reason was indeed an unexpected and dramatic change of climate, with winters much colder and snowier than usual, the snow cover probably not melting during the summer, thereby making the normal pastoral life almost impossible. An indication that such was the case, and that the deteriorated weather conditions lasted for about two generations, can be found in the quoted work of Ata Malik al Juvaini. This Persian author, born in a Khorasan family, became governor of Persia after the conquest by the Mongols. He wrote a rather monumental history of the Mongolian conquest, around 1260, after the Alamut fortress, the stronghold of the Ismaelits (the Assassins), was taken, in 1256 (the fortress had one of the greatest libraries of medieval times; most books were burnt, but Al Juvaini personally selected a number to be saved. Which ones.....? Maybe here is the origin of maps like the Piri Reis map, and of exoteric books upon which Blavatsky claimed her ideas). Al Juvaini states that at about the time of the fall of Alamut it had again become possible to grow apple trees in Mongolia, a fact, he explicitly notes, which had not been possible for two generations. This is a definitive indication of a very severe wheather deterioration in the Mongolian plateau starting from about our date 1178. Apple trees are indeed resistant to very cold temperatures, at least in many varieties cultivated for ages throughout Europe and Asia (Asia may be the original place of cultivated apples, some of the best being grown in the very fertile Ferghana valley, Ferghana meaning fertile garden, where the city Alma Ata is located, meaning Mother of apples). In 1979 a cold wave swept throughout Russia, temperatures dropping to -50° in Moscow (water pipes inside the building of the Computing Center of the Academy of Sciences froze and exploded; thus no water was available for sanitation.... fortunately I arrived at the beginning of May, when temperature in one week passed from freezing to over 40°...). In Kirov, some 600 km. north-east of Moscow, temperature dropped to -55 centigrades. Apple trees survived in the Moscow region, but were killed in the Kirov region.

If a severe weather problem was behind the Mongolian expansion, a similar reason may have been behind other great migrations and wars involving the pastoral people, e.g. the Huns and the Scythians. In particular there are arguments that this may have been the case concerning the great Scythian invasion of Middle East and Egypt, referred to by Diodorus. Elsewhere [27] I have given arguments that the Hyksos who invaded Egypt at the time of Dudimose (Tutimaios in Manetho), just after the Hebrew escaped under Moses leadership in 1447 B.C., as Velikovsky claimed, see [22], and Rohl [23] confirmed, were Scythians, as wild and destructive as the Mongols at the time of Gengis Khan, and that Hyksos means exactly *the clan of the horsemen*. Hyksos was however the name given to them by the invaded people; their original name was Amu, and it can be argued that they came from Turan, the region of the Amu Darya river.

## 10. Arguments from Europe

Apparently there are no particular discontinuities in Europe in the second half of the 12th century, a period of continuation of the intensive economic and demographic growth that characterized the European Middle Ages from the 10th century. This fact therefore indicates that, if a catastrophe hit the Pacific basin, it did not affect directly the opposite hemisphere. However there are some indications that the negative demographic and economic phenomena characterizing the following centuries may have their roots in the suggested catastrophic event at the end of the 12th century.

First, indications of climatic deterioration appear in the Irish dendrochronological record. Indeed Baillie [28] has found a series of low growth tree rings corresponding to the period 1163--1189, representing a series of cold summers. That food production in this period dropped and this fact led to social unrest may have been an additional reason why many people wanted to enroll in the Crusades. It may have been an important cofactor behind the Robin Hood semilegendary events, see Clapham [26] for in depth discussion of this topic. And finally, exactly in the year 1178, the Irish annals record the drying up of the (estuary of) the river Galway in Ireland, a phenomenon which might be related to the collapse of a volcanic caldera in the not too far away volcanic Iceland. An eruption in Iceland may well have been triggered by the shock waves reaching the region from the Pacific.

Second, at the beginning of the 14$^{th}$ century Europe is affected by the great Black Death epidemics, usually attributed to the bacterium of plague (it bacillus pestis), which, albeit certainly not as destructive as the Justinian plague, still killed an estimated 30% of the total population (this percentage varying from place to place, Bohemia quite intriguingly escaping almost completely). The plague almost certainly started in Mongolia, and was a main factor for the fall of the Yuan dynasty. It reached Europe via the Mediterranean ports, involved in trade with the East, and the caravan roads leading to central Asia. The plague spreading time was rather long, as Iceland got it only in 1402, see [29]. While Hoyle and Wickramasinghe [24] have suggested that the agent of the plague in Europe was bacterial material dropping from the sky and brought by comets (and that was a time of intense cometary activity....) the general consensus is that it came from Mongolia, where *bacillus pestis* is a common host in a variety of rats. In our proposed scenario of a severe weather disruption in the Mongolian region, it may be surmised that the bacteria
became more virulent and/or had easier access to a population immunologically weakened by famine and other difficulties. Or, and here we take the Hoyle et al. suggestion, the bodies impacting in the Pacific region, including the northern China and Mongolian region, may have brought a fresh resupply of bacterial material, possibly characterized by mutations. Such bacteria may have again found their usual host, the rats, and attacked more easily a population weakened by climate changes, famine and war, and not yet immunized against the new mutation.

## 11. Arguments from the Middle East

In Middle East we observe, for the period under consideration, a general resurgence of religiosity and acts of atonement. We quote two episodes:

- in Alamut, the stronghold of the Ismailites, Jelal-ad-Din comes to the power in 1177 after poisoning his father. He then reverses the traditional policy of the Ismailites, making peace agreements with the Baghdad califf and sending his whole harem in pelerinage to Meccah. He is given the title of New Muslim. See [30].

- the Kurdish emir Salah-ad-Din, better known as the Saladin, appointed vizier of Egypt in 1170, comes to believe that he has a special calling and the mission to liberate Jerusalem from the Christians, which he will be able to accomplish. Quoting from [26], "*as a result of his enlightment he lived frugally and his general life became very religious...he had witnessed a heavenly sign that he interpreted on a personal direction*".

It is intriguing to note that both the Saladin and the Ismailite movement had their roots in Kurdistan, a region of the Persian empire where the Magian religion, with its special emphasis on celestial events, had a stronghold (and where elements of it may have survived among the Yezidis). The Saladin family may have kept secret knowledge of the ancient Magian wisdom (secrecy still characterizes several religious sects in Kurdistan and also in the Lebanese Bekah valley, stronghold of the Druse religion, which had close relations with the Ismailite movement). The founder of the Ismailites movement, Abdallah, was a Persian Kurd and was originally educated in the Magian religion, see [30].

## 12. Final conclusions

In the previous sections we have given a number of intriguing arguments supporting the hypothesis that around the year 1178 the Pacific basin was subject to catastrophic events, of a probable extraterrestrial origin:

- political discontinuities (in Peru, Mexico, north-east Asia,Polynesia, Easter Island)

- abundance of unusually strong "*signs in the sky* ", in the Maori legends, the Chinese astronomers records, the Mongolian annals

- unusual wheather conditions, very strong El Niño, probable irregular beheviour of the typhoons near Japan, catastrophic flooding in Northern China and unusually severe cold in Mongolia.

The above evidence has not been collected via a systematic study of the people of the Pacific region at that time. It has come via rather casual readings, hence a systematic survey of the possible sources most probably should provide further confirmation. For instance, the rather sudden and puzzling disappearance of many of the pueblo people in the southwest of northern America, which can be traced back to that time, might be associated with the catastrophe that apparently affected the Pacific region.

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Addendum: a note of profs Tollmann dating of seven cometary impacts

The evidence provided in the book by the Tollmanns for a sevenfold impact circa 6500 BC in different points of Earth is very interesting, but in our opinion it cannot relate chronologically to the Biblical Flood. Such Flood, to be certainly identified with the second of the three great catastrophes quoted by Plato following the information received by Solon in Egypt, must have taken place in the first half of the 32nd century BC on the basis of several arguments, including:

- dating from Bible and Atrahasis
- evidence of dendrochronological crisis
- statement by Arab medieval historians that the event took place about 300 years after pyramid construction, that can be set at circa 3440 BC on the basis of other arguments
- statement by Manetho that the first dynasty started after a period of some 300 years of turmoil.

The precise date of the Flood can actually be determined, with an error of at most a few years, at 3161 BC, on arguments that we cannot give here. So Tollmanns' date is inappropriate.

However scholars like Immanuel Velikovsky (*Worlds in collision,* 1950) and John Ackerman (*Firmament, Chaos,* on internet) have claimed that Venus is a planet born a few millennia ago from Jupiter, Velikovsky not providing a mechanism, Ackerman proposing the consequence of a huge impact by some large body on Jupiter in the point where the Red Spot is now found. A recent birth of Venus has also been a claim by the Toltecs and Mayas, as an event happening 1.366.560 *days* before their initial reference year, the beginning of the long computations, usually estimated at 3114 BC. From the given large number of days we can derive – but there is a problem on the number of days to use per year – about 3796 years. Summing up the two estimates we get for Venus birth about 6900 BC. Such a value must be considered approximate, with an error of a few dozen years, and is certainly very close to the date given by the Tollmanns. Hence we may conclude that the evidence collected by these great Austrian scholars refers most probably to the impact over Earth of seven blocks of material ejected by Jupiter.

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