

Chapter 1 : Koobi Fora - Wikipedia

It was the shocking discovery of the morphologically modern skull , located well below the KBS Tuff, that precipitated the year controversy. In the year controversy over the dating of one of the most important human fossils ever discovered, the pigs won.

Updates to previously existing files are regular links. The human appendix is functional, not vestigial. What use is half an eye? The Cambrian explosion shows all kinds of life appearing suddenly. Transitional fossils are lacking. Problems with evolution are evidence for creation. The flagellum has 30 or so unique non-homologous proteins. No new species have been observed. Finger development disproves birds descended from dinosaurs. Transitional fossils do not show direct ancestry. Darwinists had Dembski removed from his position at Baylor. Genesis must be literal; it is straightforward narrative. Soft tissues from a Tyrannosaurus bone indicate recent burial. Functional genetic sequences are too rare to evolve from one to another. Evolution predicts a continuum of organisms, not discrete kinds. Naturalistic science will miss a supernatural explanation. Human population growth indicates a young earth. Federal law Santorum Amendment supports teaching alternatives. There are gaps between land mammals and whales. Gravitational time dilation made distant clocks run faster. The U-Th-Pb method, properly corrected for neutron capture, gives recent dates. Prophecies prove the accuracy of the Bible. The big bang theory is wrong. World War II airplanes are now beneath thousands of "annual" ice layers. The second law of thermodynamics, and the trend to disorder, is universal. Systems left to themselves invariably tend toward disorder. Intelligent design has been published in peer-reviewed journals. First cells could not come together by chance. Intelligent design is not creationism. SETI researchers expect that they can detect design. Many famous scientists were creationists. Babbage was a creationist. The Grand Canyon was carved by retreating Flood waters. What use is half a wing? Karl Popper said Darwinism is not testable. Evolution does not make predictions. Instructions are necessary to produce order. Intelligent design theory is not religious. The methodology of science rules out even considering design. Agriculture is too recent. Written history is too short. Humans have stopped evolving. Human and chimp genomes differ by more than one percent. Out-of-order strata occur at the Lewis Overthrust. There are too few Stone-Age remains for a long history of humanity. A pterodactyl was found alive in Jurassic limestone. The eye is too complex to have evolved. Blood clotting is irreducibly complex. Design arguments converted atheist Anthony Flew to theism. Evolution encourages promiscuity and lust. The cosmos is fine-tuned to permit human life. Linnaeus was a creationist. Over scientists express skepticism of Darwinism. Evolutionary algorithms smuggle in design in the fitness function. No two-celled life exists intermediate between one- and multicelled. If part of the Bible is wrong, none of it can be trusted. Hitler based his views on Darwinism. KBS Tuff shows the flaws of radiometric dating. Bilateral symmetry is improbable under evolution. The immune system is irreducibly complex. The Chinese Hihking flood myth is very like the story of Noah. The Miao flood myth is very like the story of Noah. Haeckel falsified his embryo pictures. The evolution of specialized diets would not be adaptive. Homologous structures are not produced by homologous genes. There are flood myths from all over the world. Jurassic shells from mud springs are remarkably preserved.

Chapter 2 : CD KBS Tuff dating

The KBS Tuff Controversy: Genesis The KBS Tuff Controversy: Denouement Lucy: The Naming Lucy: The Response Man's Place in Nature Afterword Notes Index.

Message 5 of 13 No, and it essentially never is. In any solid, the atoms have a certain probability of moving from place to place. That probability is strongly dependent on the temperature, getting higher with higher temperature. When the temperature gets high enough for each atom to have a high probability of moving during the time that the material is exposed to that temperature, then most of the atoms will move at some time or another, and many will move multiple times. If we are looking at "simple accumulation" dating, like potassium-argon beloved of creationists because it can come out wrong, and the argon atoms that are produced by decay of potassium escape from the material, then the clock is reset to zero. What happens more often but not very often is "homogenization". For example, in isochron dating we look at how isotopes of elements are distributed within the material. In rubidium-strontium isochron dating, the material starts out just after solidification with the ratio of ^{87}Sr to ^{86}Sr the same throughout the material, although the amounts of the materials vary from place to place. As time goes on, the amount of ^{87}Rb decreases due to radioactive decay to ^{87}Sr , and of course the amount of ^{87}Sr increases, but the amount of ^{86}Sr stays the same; so the ratio of ^{87}Sr to ^{86}Sr increases by different amounts in different parts of the material because the produced ^{87}Sr atoms are trapped in place, and we can use this to obtain an age and an indication of the reliability of that age. But, if the material is hot enough, the produced ^{87}Sr atoms can move around so the concentration of Sr is the same everywhere, and that zeros out the clock. And would the properties of the atmosphere matter? Do they notice xenoliths before testing the sample? Almost always yes, although they can be tricky to spot. But they are often difficult to separate out even if you can see them. Another creationist favorite dating episode is the KBS Tuff. A tuff is a particular product of a volcanic eruption, and the KBS tuff is named for the initials of the woman who first studied it. Initially it was dated at 2. If the KBS tuff were really 2. The tuff itself is 1. The differing age results were a result of samples that contained differing amounts of difficult-to-see xenoliths. This message is a reply to: Message 4 by Human Shield, posted Message 7 by Minnemooseus, posted 2:

Chapter 3 : KBS Tuff - Wikipedia

The KBS Tuff (Kay Behrensmeier Tuff) is an ash layer in East African Rift Valley sediments, derived from a volcanic eruption that occurred approximately million years ago (Ma).

See Billions of People in Thousands of Years? Tightly Folded Rock Strata. People who believe in billions of years often claim that light from the most distant galaxies could not possibly reach earth in only 6, years. However, the light-travelâ€™time argument cannot be used to reject the Bible in favour of the big bang, with its billions of years. This is because the big bang model also has a light-travelâ€™time problem. Man, fossils, and time Evolution: The author documents the fact that pagan thinkers long ago supposed the earth came about many great ages ago. Modern evolutionary thought simply perpetuates the myths of the ancients. This off-site article was linked on WordExplain November 19, While studying ancient history at University, I came across the pagan beliefs about origins. It was this study that caused me first to question evolution and the vast ages given for the Universe. It was later, after many years of scientific investigation, that I finally broke free from a liberal understanding that sought to harmonise naturalism with biblical Christian faith. This page includes a brief video by Andrew Snelling, Ph. He discusses the evidences for a world-wide flood, the Flood of Noah Gen. This link added to WordExplain on July 8, The six evidences he cites are as follows: Radioisotopic Dating of Rocks in the Grand Canyon. By Andrew Snelling, Ph. This link was added to WordExplain on July 8, The "Cambrian Explosion" is an utter embarrassment to evolutionists. Its astounding presence is a silent yet vocal testimony to the logical and scientific bankruptcy of the religious myth we call evolution. This article originally was taken from the appendix of Bones of Contention , written by the same author Grand Rapids, , 1st ed. This entry indicates the incredibly subjective and unscientific nature of radiometric dating as it is practiced by scientists and paleontologists. The methods appear so impressive that many Christians accept them as evidence that the earth is very old. The pigs won over the elephants. The pigs won over K-Ar dating. The pigs won over $^{40}\text{Ar}/\text{Ar}$ dating. The pigs won over fission-track dating. They won over paleomagnetism. The pigs took it all. It was evolution that won. In the dating game, evolution always wins. Few lay people will have the patience to wade through the semi-technical data cited by Lubenow. For those who might wish a much quicker explanation of some of the same data discussed above, namely, the Potassium-Argon K-Ar dating fiasco, see the following video by Chris Johnson, entitled, Radiometric Dating Flaws Potassium-Argon. Johnson has a point and he cites evidence. Radiometric dating is extremely subjective. The opening two paragraphs read as follows: Perhaps the most challenging aspect of the theory of evolution is the apparent consistency of its corollary, the long-age geological system. Evolutionists and other long-agers challenge critics with such statements as: But, a deeper look gives a different picture when we ask, how is this uniformity achieved? Crudely put, consistent dates are obtained by fudging data that have a high degree of variability or error. I believe most of this adjustment is internal and worked out before publication, but enough has been published to indicate that this practice is pervasive. The Myth of Evolution. Exploring a few of the fallacies of Evolution. Non-technical article by James T.

Chapter 4 : What's New in An Index to Creationist Claims

Spaces will separate tags. Use quotes for multi-word tags.

You can now purchase my books in paperback and Kindle ebook versions, see here for my money saving offer. Alan Walker remembers an occasion when he, Michael Day, and Richard Leakey were studying the two sections of the skull. It was very interesting watching what people did with it. If you held it one way, it looked like one thing; if you held it another, it looked like something else. But there was never any doubt that it was different. The question was, was it sufficiently different from everything else to warrant being called something new? Not because there is no evidence for human evolution, but because no science works that way. And yes, personalities are important in the flow of all sciences, but, again, in the science of man emphatically so. Le Gros has an answer: It is a fact which it were well to recognize that it is extraordinarily difficult to view with complete objectivity the evidence for our own evolutionary origin, no doubt because the problem is such a very personal one. Apparently misidentifying some minor anatomical landmarks on the interior of the cranium, he assembled a skull that not only was erroneously small just over 1, cubic centimeters but also appeared to have certain primitive anatomical features. This reconstruction deeply impressed Elliot Smith. Sir Arthur Keith, however, challenged the accuracy of the reconstruction and did one of his own, eschewing the errors Smith Woodward had committed. Keith, who viewed the skull as essentially modern in form, saw it as a confirmation of the antiquity of modern types of man. At the same time, Elliot Smith claimed the cranium to be distinctly primitive in form. Everyone who had a fossil come into their hands for description wanted it to be something new-perhaps consciously, perhaps unconsciously-for the purposes of self-aggrandizement. And all based on a few fragments of upper and lower jaw and teeth This sort of controversy, often accompanied by dogmatic pronouncements, must be deplored. Each party had very good reasons for acting the way it did. In addition, Leakey clearly had a vested interest in the older date, if for nothing else that because the claim for the oldest Homo, oldest stone tools, and so on was good for fund-raising. Inevitably that meant agreement with him on all important factors associated with the expedition Most of us backed down a few times and then eventually left Despite this, my own preference would be to work for an expedition run by Richard. There is a tremendous bias towards finders. And with this goes an unwarranted weight on their opinions I can easily be accused of sour grapes," 27 which he states because he is not a finder. And on the other, you overlook the differences and exaggerate the similarities, thus setting your fossil on the threshold of the noble Homo sapiens. So dispassionate it may be, but totally objective it can never be. But it remains inescapably true that applying the correct label is astonishingly difficult, not least because such labels are in a sense arbitrary abstractions, and especially so when the material on which the analysis is being done is fragmentary and eroded. I have to pay for server usage and have made all content on this website free and always will. I support my family on one income and do research, writing, videos, etc. Due to robo-spaming, I had to close the comment sections. Smithsonian Report for , pp. Lewin, Bones of Contention, pp. Lewin, Bones of Contention, p. Epilogue in Adam and Ape, edited by L.

Chapter 5 : Table of contents for Library of Congress control number

Bones of Contention is a behind-the-scenes look at the search for human origins. Analyzing how the biases and preconceptions of paleoanthropologists shaped their work, Roger Lewin's detective stories about the discovery of Neanderthal Man, the Taung Child, Lucy, and other major fossils provide insight into this most subjective of scientific endeavors.

KBS Tuff shows the flaws of radiometric dating Talk. Origins From CreationWiki, the encyclopedia of creation science Jump to: Origins is a response to a rebuttal of a creationist claim published by Talk. Origins Archive under the title Index to Creationist Claims. It is significant because hominid fossils and artifacts were found in and under it, so its age gives a minimum age of the fossils. Various attempts to date it have yielded a wide range of different results, from 0. The dating of the KBS Tuff exposes the fallacies of radiometric dating. And in practice, it is impossible to be sure one has selected uncontaminated samples. The pigs took it all. Creation 17 3 June: Origins quotes in blue 1. The KBS Tuff controversy illustrates many of the problems with radiometric dating, but it equally illustrates that the problems are not insurmountable. The KBS Tuff for "Kay Behrensmeyer Site," after the geologist who first described it is a layer of redeposited volcanic ash, so it contains a mixture of older sediments, too. It is still possible to date the layer, but care must be taken to choose only the youngest rocks, else one would be dating the age of older sediments washed into the layer, not the age of the layer itself. This is what happened with the first ages reported from the tuff. In a study to test the feasibility of dating samples from the tuff, the samples were contaminated with non-juvenile components which could not be separated out, giving ages over million years. It was recommended that new samples be collected from which suitable individual crystals could be separated Fitch and Miller These new samples were dated at 2. Discrepancies with this date soon turned up, though. Work with animal fossils, particularly of pigs, showed that the strata in question matched younger strata in the nearby Omo Valley. In its early stages, this fossil work was imprecise enough that the 2. However, the fossils continued to point to a younger date as the quality of the work on them improved White and Harris And in , another lab, using K-Ar dating, reported dates of 1. Fitch and Miller turned to an independent method to resolve the discrepancy, fission-track dating. Initial results gave an age of 2. This fit well with the age of 2. They attributed the spread to reheating of the crystals after deposition. Paleomagnetic studies gave ambiguous results Brock and Isaac ; Hillhouse et al. The weight of evidence soon began to converge on an age near 1. A study of trace elements in the minerals showed that the KBS Tuff correlates with the H2 tuff in the Shungura Formation, uncontroversially dated about 1. A later fission-track study which took pains to eliminate possible errors gave an age of 1. Because the controversy had become quite heated, another expert, Ian McDougall, was called in to do independent dating. He came up with an age of 1. Geological evidence and the consistency of dates derived from various sources indicates that reheating after deposition is unlikely. This is nothing less than a complete vindication of what creationists have been saying about radiometric dating. It is also an excellent example of just how good evolutionists are at rationalizing away problems. The funny thing is that Talk Origins is clearly totally blind to how well this illustrates the truth of what creationists say about the process of radiometric dating. Here they have dates all over the place, not only by different methods, but by the same methods. Given this, it was the fossils that led the way. In the end they came up with three dates that agreed with each other and the fossils, all of which had also given erroneous results. Simply put, what happened here is that evolutionists kept making measurements until they found results that they liked. The lessons to be learned from the KBS Tuff dating controversy are not that radiometric dating does not work, but that it works with some caveats. It is those caveats that make radiometric dating totally dependent on uniformitarian geology and the geologic column. They also show how problematic dates can be rationalized away. Some formations are easier to date than others. The KBS Tuff was particularly difficult to date because it included volcanic sediments of several different ages. Furthermore, it looked the same as other tuffs, so care was needed to make sure the same layer was being referred to in different areas. All of this requires careful work from knowledgeable geologists. Were it not for its importance to determining the ages of important hominid fossils, geologists probably would not

have bothered with dating it at all. But it still provides an excellent example of the process. The fact that these hominid fossils were so important and the KBS Tuff is particularly difficult, simply made the process more visible. Some dating techniques are simply inappropriate in some circumstances. As noted above, paleomagnetic study is not particularly useful at this site. And those dating techniques that disagree with the fossils of a given location are considered inappropriate for the circumstances. Discrepant dates are not dismissed out of hand. In addition to trying to resolve the issue with further dating, the discrepancies caused people to look for the sources of error. Discrepant dates are not dismissed out of hand without first looking for the sources of error, but failing this there is evidence that even the best of dates will be dismissed out of hand if they disagree with the fossils. The above statement also implies that if the dates are not discrepant, no one bothers to look for possible sources of error. The original erroneous date by Fitch and Miller could be an accurate date of a roughly 2. Apparently, some pumice from that volcanic event had been incorporated into the KBS Tuff. Samples sent to an independent lab for "blind" dating confirmed its older age Fitch et al. Alternatively, this and other discrepant ages may be due to contamination with older material. Such contamination caused ages in the 2. A high atmospheric argon contamination in their samples and analytical errors may have contributed, too McDougall et al. This just serves as another example of how things like contamination and analytical errors can be used to rationalize away any date that disagrees with theory. With the exception of the first one, no objective reason is given for accepting the sources of contamination other than the fact that these dates are older than the fossils say they should be. The fission-track study which gave the 2. The reanalysis by Gleadow noted problems with the standard methods and contributed new methodology for dealing with zircons with low track densities. But since Gleadow got an age that evolutionists like, it is unlikely that his work will ever be similarly checked for possible sources of error. In the KBS Tuff controversy, personality conflicts may have contributed to delay in the resolution and certainly contributed to the drama. But in the end, the objective evidence is a constraint that every scientist must meet. Replication, free access to information, and awareness of conflicts of interest help assure that personal foibles do not determine outcomes. Because such mechanisms were in place, all of the scientists who initially supported the older 2. The only sets of objective evidence shown by Talk Origins are the types of fossil found in the tuff and the fact that the 2. It is probably these that influenced all concerned to accept the 1. The different ages which were seriously debated for the KBS Tuff, from 1.

Chapter 6 : Library Resource Finder: More Details for: KBS TUFF CONTROVERSY: GENESIS

Table of contents for Bones of contention: controversies in the search for human origins / Roger Lewin.

Wishing to establish the age of the primitive tools found by Kay Behrensmeyer, Leakey sends samples of the tuff to Jack Miller, a geophysicist at Cambridge University. Jack Miller along with his partner Frank Fitch duly dates the tuff and determines that it is somewhere between and million years old. Obviously they said, the ash had been deposited when rivers or streams had washed it down from highlands into a floodplain picking up minerals from older deposits in the process. Never mind that there was no evidence that the deposit had been deposited by rivers or streams, and never mind that they could not identify any exposed Triassic outcrops from which those older minerals could have come from. It was enough to know that the results were not in line with evolutionary expectations. When the second set of samples came in for testing, samples from the same supposedly contaminated volcanic tuff that had previously dated to to million years, Fitch and Miller again tested the samples and this time came up with a date of just 2. It was twice as expensive but yielded more accurate results. This new technique they told Leakey would result in an absolutely incontrovertible date being assigned to the volcanic tuff. Hmmm- I wonder what ever happened to those so called contaminating minerals? Using this new technique Fitch and Miller gave Leakey and incontrovertible date of 2. And once this incontrovertible date was arrived at all kinds of dating methods from faunal correlation, to paleomagnetism to fission-tract dating all impressively and concertedly supported this date. This date could not possibly have been any more incontrovertible. If ever there was a date set in stone this was it. Known as skull KNM-ER it had a very small cranial capacity at least as it was reconstructed by Leakey but in general morphology it resembled a modern human skull much more closely than did the Australopithecines. Now the anthropologist had a problem. Here was an essentially modern human skull found below a layer of volcanic tuff that had been incontrovertibly dated at 2. But Australopithecines had only been dated to be about 1. So what to do? Had humans devolved from an essentially modern morphology to a more ape like morphology and then back to modern morphology? Well, anthropologist were not about to toss out their beloved theory, and so Garniss Curtis of the University of California at Berkley was called upon to re-date the already incontrovertibly dated KBS Tuff. Any date would work, just so long as it was younger than the 1. In keeping with the desires of the anthropological community Curtis re-dated the KBS Tuff as being somewhere between 1. And here is where things start getting interesting. Not content with providing a new anthropologically acceptable date for the KBS Tuff, Curtis had to taunt Fitch and Miller on their failure to come up with this new incontrovertible date in the first place. Obviously their methodology and laboratory techniques were inferior to his. Well, the gauntlet had been thrown down and this meant war. Taking up the challenge flung out by Curtis, Fitch and Miller made new and supposedly more accurate tests on the KBS Tuff and found it to be 2. But not content with that they also published the fact that Curtis had actually gotten a scatter of results ranging from 1. How had Curtis settled on a date of 1. Was it simply because 1. And just to rub it in a little deeper, Fitch and Miller reported that their results had only ranged from 0. He also revealed that while it was true that Fitch and Miller had scatter of 0. Garniss Curtis replied that Fitch and Miller probably came up with their date of 2. These however, being unacceptable to the anthropological community were tossed out. But they just knew it had to be there. Because those older dated did not meet anthropological expectations. Finally, when the dust settled, a date around 1. But this date was not really based on radiometric dating. Radiometric dating had given dates ranging everywhere from a half million years to million years old for the KBS Tuff. The date was settled upon on the basis of pig fossils, although there are some who contend that the pig fossils actually support the dates set by Fitch and Miller. But ultimately it was neither radiometric dating or pig fossils that decided the matter. Ultimately it was the mess that skull was making of their precious theory of human evolution and the overwhelming desire to protect that theory at all costs that decided the accepted date for the KBS Tuff.

Chapter 7 : First Light: The Great KBS Tuff Dating War

The KBS Tuff controversy illustrates many of the problems with radiometric dating, but it equally illustrates that the problems are not insurmountable. The KBS Tuff (for "Kay Behrensmeier Site," after the geologist who first described it) is a layer of redeposited volcanic ash, so it contains a mixture of older sediments, too.

You can now purchase my books in paperback and Kindle ebook versions, see here for my money saving offer. It is also a story that demonstrates how very unscientific the process of scientific inquiry sometimes can be. This issue, for most of the geochronologists at any rate, was to be at the core of the KBS Tuff controversy. Our science-paleoanthropology-is interpretive, so we have to look for other explanations of the apparent discrepancy between the faunas. I was therefore amenable to the faunal-barrier idea. I can now see that we were seeking ways of justifying the date rather than objectively trying to clarify the evidence. I should have known this, because I had never really developed the respect that I suppose I should have done for science. Michael Hammond suspects that, given the evolutionary model that was prevailing at the turn of the century, a simple, objective description of the robusticity of Neanderthal anatomy might have been inadequate to persuade many anthropologists that the species should be excluded from human ancestry altogether. For instance, the first discoveries announced included parts of the obviously humanlike cranium and the equality obviously apelike jaw. But there was no canine tooth, which was a subject of some considerable interest because of the unusual wear pattern it might bear. Sir Arthur Smith Woodward predicted publicly what he thought such a tooth would look like, and within a few months one was found. His prediction was vindicated to the finest detail. We were convincing ourselves that we were right. They younger date turned out to be right, but by the time this was proved Curtis and Leakey had parted company because of their disagreement, and Curtis vowed never again to set foot on the African continent while Louis Leakey was alive. I have to pay for server usage and have made all content on this website free and always will. I support my family on one income and do research, writing, videos, etc. Due to robo-spaming, I had to close the comment sections. Interview with the author, Los Angeles, 18 Nov. Interview with the author, Los Angeles, 19 Dec. Mentor, , p. Charles Mann, "Lynn Margulis: Stuart Kauffman, At Home in the Universe: Penguin, , p.

Chapter 8 : Scientific Cenobites, part 9 of 9 | True Freethinker

Although the dating of the KBS Tuff appeared to be settled in and by the conformity of different dating methods, the controversy was actually settled in by the pigs. Donald Johanson tells of attending the Bishop Conference on anthropology and geology in London.

It is significant because hominid fossils and artifacts were found in and under it, so its age gives a minimum age of the fossils. Various attempts to date it have yielded a wide range of different results, from 0. The dating of the KBS Tuff exposes the fallacies of radiometric dating. And in practice, it is impossible to be sure one has selected uncontaminated samples. The pigs took it all. Creation 17 3 June: The KBS Tuff controversy illustrates many of the problems with radiometric dating, but it equally illustrates that the problems are not insurmountable. The KBS Tuff for "Kay Behrensmeyer Site," after the geologist who first described it is a layer of redeposited volcanic ash, so it contains a mixture of older sediments, too. It is still possible to date the layer, but care must be taken to choose only the youngest rocks, else one would be dating the age of older sediments washed into the layer, not the age of the layer itself. This is what happened with the first ages reported from the tuff. In a study to test the feasibility of dating samples from the tuff, the samples were contaminated with non-juvenile components which could not be separated out, giving ages over million years. It was recommended that new samples be collected from which suitable individual crystals could be separated Fitch and Miller These new samples were dated at 2. Discrepancies with this date soon turned up, though. Work with animal fossils, particularly of pigs, showed that the strata in question matched younger strata in the nearby Omo Valley. In its early stages, this fossil work was imprecise enough that the 2. However, the fossils continued to point to a younger date as the quality of the work on them improved White and Harris And in , another lab, using K-Ar dating, reported dates of 1. Fitch and Miller turned to an independent method to resolve the discrepancy, fission-track dating. Initial results gave an age of 2. This fit well with the age of 2. They attributed the spread to reheating of the crystals after deposition. Paleomagnetic studies gave ambiguous results Brock and Isaac ; Hillhouse et al. The weight of evidence soon began to converge on an age near 1. A study of trace elements in the minerals showed that the KBS Tuff correlates with the H2 tuff in the Shungura Formation, uncontroversially dated about 1. A later fission-track study which took pains to eliminate possible errors gave an age of 1. Because the controversy had become quite heated, another expert, Ian McDougall, was called in to do independent dating. He came up with an age of 1. Geological evidence and the consistency of dates derived from various sources indicates that reheating after deposition is unlikely. The lessons to be learned from the KBS Tuff dating controversy are not that radiometric dating does not work, but that it works with some caveats. Some formations are easier to date than others. The KBS Tuff was particularly difficult to date because it included volcanic sediments of several different ages. Furthermore, it looked the same as other tuffs, so care was needed to make sure the same layer was being referred to in different areas. All of this requires careful work from knowledgeable geologists. Were it not for its importance to determining the ages of important hominid fossils, geologists probably would not have bothered with dating it at all. Some dating techniques are simply inappropriate in some circumstances. As noted above, paleomagnetic study is not particularly useful at this site. Discrepant dates are not dismissed out of hand. In addition to trying to resolve the issue with further dating, the discrepancies caused people to look for the sources of error. The original erroneous date by Fitch and Miller could be an accurate date of a roughly 2. Apparently, some pumice from that volcanic event had been incorporated into the KBS Tuff. Samples sent to an independent lab for "blind" dating confirmed its older age Fitch et al. Alternatively, this and other discrepant ages may be due to contamination with older material. Such contamination caused ages in the 2. A high atmospheric argon contamination in their samples and analytical errors may have contributed, too McDougall et al. The fission-track study which gave the 2. The reanalysis by Gleadow noted problems with the standard methods and contributed new methodology for dealing with zircons with low track densities. In the KBS Tuff controversy, personality conflicts may have contributed to delay in the resolution and certainly contributed to the drama. But in the end, the objective evidence is a constraint that every scientist must meet. Replication,

free access to information, and awareness of conflicts of interest help assure that personal foibles do not determine outcomes. Because such mechanisms were in place, all of the scientists who initially supported the older 2. Note that different methods give the same results when known sources of error are removed. These results were correlated with strata of the same age at other locations on the basis of fossil and trace element analysis. The different ages which were seriously debated for the KBS Tuff, from 1. Radiometric dating and the geological time scale: Circular reasoning or reliable tools? Paleomagnetic stratigraphy and chronology of hominid-bearing sediments east of Lake Rudolf, Kenya. Radioisotopic age determinations of Lake Rudolf artefact site. Journal of Human Evolution Vertebrate faunas and chronology of hominid-bearing sediments east of Lake Rudolf, Kenya. Geological Society of America Bulletin Suid evolution and correlations of African hominid localities. The KBS tuff controversy may be ended. Johanson, Donald and James Shreeve. Simon and Schuster, chaps.

Chapter 9 : EvC Forum: Questions about Xenoliths and dating

The KBS Tuff controversy "is one of those stories in which in retrospect the 'right answer' seems perfectly obvious but at the time was obscured by a cloud of uncertainty and vested interest in a particular point of view. It is also a story that demonstrates how very unscientific the process of scientific inquiry sometimes can be."