Australopithecus ramidus and the Fossil Record

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ABSTRACT

The recent discovery and identification of Australopithecus ramidus *has provided evolutionists with a 'stratomorphic intermediate' between Paleogene primates and man. However, six universal features that it shares with other fossil species suggest that* A. ramidus *may ultimately be better explained by the creationist model of the fossil record. Crucial to that model are the geologic processes of the Flood and the nature of the biota at that one point in time, plus the processes of biological change, geologic processes and the nature of the biological world in general in the post-Flood era.*

COMFORT FOR EVOLUTIONISTS

A new australopithecine species, *A. ramidus*, has been reported from the Ethiopian portion of the East African Rift.[1,2,3] Preliminary biochronologic, palaeomagnetic and radiometric studies have suggested a conventional age of approximately 4.4 million years before present for the material.[4] This makes it the oldest australopithecine material known — in fact older than any material now suggested to be part of *Hominidae, s.I.*.[5] Since it is still younger than the oldest primate material,[6] *A. ramidus* is viewed as a stratigraphic intermediate between paleogene primates and humans (or *Hominidae, s.I.*). Comparative morphometric studies show that *A. ramidus* possesses some characters in common with only chimpanzees and other characters only in common with other australopithecine species and/or humans.[7] This makes *A. ramidus* a 'stratomorphic intermediate'[8] — intermediate in both stratigraphy and morphology. As is the case with any stratomorphic intermediate (for example, the most celebrated *Archaeopteryx*),[9] *A. ramidus* is regarded as powerful evidence for macroevolutionary theory — something which did not miss the attention of Wood.[10] As even more powerful evidence of macroevolutionary theory, *A. ramidus* is seen as the newest member of an ever-lengthening 'stratomorphic series' which is laying stratomorphic tracks between primates and man (for example — as featured in Wood's article[11] — *A. ramidus, A. afarensis,* possibly *Homo rudolfensis, H. ergaster,* and *H. erectus*.)[12]

A. ramidus is an extremely interesting and valuable fossil species. Its status as a possible ancestor of man and powerful evidence of evolution makes the species valuable to the evolutionist in its uncommonness. However, I would suggest that the species has value to a creationist in its commonness. Major features of the fossil record must be the characteristics which palaeontological theories have the greatest priority in explaining. It is thus the features that *A. ramidus* shares with other fossil species, rather than those where it differs, which should be considered as most important in determining the predictive success of a particular model.

DISCOMFORT FOR EVOLUTIONISTS

A number of universal or near-universal features can be recognised among species in the fossil record. Here, we will consider six of these universals as they apply to *A. ramidus*:–

(1) lack of inter-specific transitional forms,
(2) species stasis,
(3) high homoplasy,
(4) rarity of stratomorphic intermediates,
(5) rarity of stratomorphic series, and
(6) the commonness of high species diversity with stratomorphic series.

First, the comparative morphometric studies on *A.*

ramidus[13] show no evidence of any change in the morphology of the species as one ascends the geologic section. It could validly be argued that there has been too little sampling (as few as four stratigraphic levels)[14] and there is still too small a sample size (something on the order of 23 measured teeth, five cranial fragments and four post-cranial bones)[15] to reinforce this claim with any high level of certainty. However, the commonness of species stasis[16] is likely to be eventually verified in *A. ramidus.*

Second, the same morphometric studies on *A. ramidus*[17] indicate that the specimens available to us plot into distinct regions of morphological space from all other fossil and recent material considered. There are, therefore, no known transitional forms connecting A *ramidus* to any other species. Once again, it could validly be argued that there has been too little sampling of the fossil record above and below *A. ramidus* to establish the non-existence of inter-specific transitional forms on either side of it. It is nonetheless interesting that available evidence for *A. ramidus* is consistent with the observation that inter-specific transitional forms are virtually non-existent in the fossil record.[18]

Third, cladograms which simultaneously consider *Hominidae, s.l.,* chimpanzees, and *A. ramidus* show unavoidable homoplasy,[19] belying a mosaic form of morphological intermediacy.[20] Not only do all claimed intermediates show a mosaic form of intermediacy,[21] but a rather large number of organisms not generally considered intermediate, also show mosaic intermediacy.[22]

Fourth and fifth, some of the popularity which *A. ramidus* is enjoying is for more than being a claimed human ancestor. It is also because stratomorphic intermediates, of which *A. ramidus* is an example, are very rare in the fossil record,[23] and stratomorphic series, of which *A. ramidus* is also a part, are even rarer.[24]

Sixth, although *A. ramidus* is currently alone among *Hominidae, s.l.,* in its portion of the stratigraphic record, higher stratigraphic levels have been consistently yielding an ever-growing (often confusing) diversity of australopithecine species. This multiplicity of similar species in given stratigraphic levels seems to be characteristic of fossil series in the stratigraphic column as a whole.[25] When such species groups are arranged in phylogenetic trees, it produces what Stephen Jay Gould calls 'bushiness'.

Although the commonness of species stasis, homoplasy, and high species diversity in fossil series, as well as the rarity of stratomorphic intermediates, stratomorphic series, and inter-specific transitional forms seem to be some of the 'rules of thumb' in the fossil record, none of these claims are intuitive predictions of any simple theory of macroevolution (for example, Darwin's). First, since artificially-induced changes in organisms were observed by Darwin and others before and after him to occur more or less continually over time, it was naturally assumed that species are probably naturally induced to change more or less continually over time. This intuitive extrapolation from observational evidence is, however, contrary to the observation of species stasis, and has led to the development of the controversial punctuated equilibria theory of Eldredge and Gould.[26]

Second, since mutations are observed to be so very rare and even more rarely advantageous, change of any sort is considered improbable. This only naturally makes the prospect of iterative evolution — the evolution of the same or similar feature more than once — too improbable to be considered a significant factor in the history of life. Yet, again, this intuitive extrapolation from observational evidence is contrary to the observation of abundant homoplasy, which in an evolutionary context is interpreted to be convergent evolution (a form of iterative evolution).

Third, since

(a) all major groups in evolutionary theory must begin with a single species,

(b) since speciation is a relatively rare process, and

(c) since many living groups with a decent fossil record have only one or a few very similar surviving species (for example, man, horses),

it was naturally assumed that the major changes needed to produce them were species-poor. This would produce a more-or-less unambiguous single lineage of ancestor-descendent pairs. Once again, however, this intuitive deduction from observational and theoretical data runs contrary to the evidence of the fossil record — that fossil series are often very species-rich and relationships are thus confusing.

Fourth and fifth, since major groups would require many species transitions to be produced and species have large ranges and long taxonomic durations, stratomorphic intermediates and stratomorphic series would naturally be expected to be common in the fossil record. Once again, however, the intuitive predictions of macroevolution run counter to the evidence of the rarity of stratomorphic intermediates and stratomorphic series.

Lastly, since observed changes within populations are generally small, it was only natural to assume that speciation events were long-lived, and thus as prone to preservation as species themselves. Once again, however, the intuitive prediction of evolution is not borne out — this time by the lack of inter-specific transitional forms.

CREATIONIST PALAEONTOLOGY

Palaeontology depends almost entirely upon two other fields of study: biology and geology. A good theory of palaeontology is not possible without good synthetic theories in **both** biology and geology. In creationist geology a synthesis may be beginning,[27] but there is still substantial disagreement among creationists about the Flood/post-Flood boundary[28] and about the role of plate tectonics in earth history.[29] Because both of these concepts are crucial to the synthesis mentioned above, until clarification of these issues is achieved, consensus and thus co-operative development of the synthesis will not be possible. In creationist biology, there is substantial disagreement about biosystematics.[30] Until consensus is achieved on something so basic as classification, no co-operative development of creationist biology is possible either. With this in mind, the synthesis of creationist palaeontology must await the developments in these other two fields. I would suggest, however, that sufficient clues are available to us to begin to sketch out a few descriptors of how such a palaeontological model might appear in time.

As I have argued elsewhere,[31] a Flood model which samples from a biota discontinuously occupying morphological space (as in the case of the modern biota) will produce a fossil record dominated by a lack of inter-specific transitional forms and by species stasis. It would also follow that stratomorphic intermediates would be rare and stratomorphic series would be even rarer. The actual rarity of inter-specific transitional forms, stratomorphic intermediates, and stratomorphic series in the fossil record will be directly related to such things as:–

(a) The frequency of morphological intermediates in the biota at the initiation of the Flood;
(b) the extent to which the morphological intermediates were also intermediate in geography and/or settling rates and/or mobility;
(c) the extent to which the Flood's biotic depositional processes were dominated by pre-Flood geography and/or biotic settling rates and/or biotic mobility;
(d) the duration of the Flood compared with the lifespan of the species involved; and
(e) the amount of the fossil record produced in the Flood.

Although each of these issues has yet to be quantified (the challenge of creationist palaeontology of the future), my suspicions are as follows:

(a) inter-specific transitional forms were extremely rare before the Flood (as they are today) and morphological intermediate species were very common (as they are today);
(b) morphological intermediates, almost by definition, would also be intermediate in rate of settling in water and in biotic mobility, and would also be intermediate in geographical position depending upon the degree of overall similarity of the organisms (especially in those characters which affect climatic toleration and food requirements);
(c) biotic deposition in the Flood was dominantly random, with a strong overprint due to macrobiogeography (especially ocean-to-land),[32] and relatively little due to differential mobility and settling rate;
(d) seeing as the Flood was a water catastrophe of a duration of only about a year, the Flood was virtually instantaneous with respect to the ability of most species to adapt to it (exceptions being some marine, short-generation-time, protoctistans[33]); and
(e) the Flood accounts for roughly the Palaeozoic and Mesozoic sediments, and not the Cenozoic or the Precambrian.

This means, among other things, that in the Palaeozoic and Mesozoic we would expect:–

(a) species stasis to dominate (with the possible exception of short-lived marine protoctistans);
(b) inter-specific transitional forms to be virtually non-existent (with the possible exception, again, of short-lived marine protoctistans);
(c) stratomorphic intermediates would be relatively rare (with the possible exception of those organisms where the morphological intermediacy would encourage a Flood-sensitive biogeographic cline which also reflects the morphological cline); and
(d) extremely rare fossil series (again, with the possible exception of those organisms where the morphological intermediacy would encourage a Flood-sensitive biogeographic cline which also reflects the morphological cline).

In the case of the *A. ramidus* fossil sites, however, we are in Neogene sediments, which would be considered by an increasing number of creationists (myself included) as post-Flood. The palaeontological predictions of post-Flood creation theory should be constructed along very different lines of argument from Flood theory. Whereas the palaeontology of the Flood is dominated by a consideration of the geologic processes of the Flood and by the nature of the biota at one point in time, the palaeontology of the post-Flood era will probably be dominated by a consideration first of processes of biological change, and then by geologic processes and the nature of the biological world in general. The reasoning would be as follows.

Preliminary studies in creationist biosystematics[34] suggest that land mammal baramins commonly contain scores of species, and insect baramins may average over a thousand species. According to Scripture, however, only a single pair (or at most seven specimens) of each land animal baramin was (were) taken onto the Ark. Therefore, creationist biologists would conclude that in the years since the Flood there has been substantial intrabaraminic diversification. At the same time, ancient artists' depictions of animals indicate that many of the present intrabaraminic morphotypes have maintained quite a constant morphology since a time just a few centuries after the Flood. This means that there would of necessity have been an explosive amount of biological change in the few centuries after the Flood. Since this is too rapid a change to have been produced by any traditional microevolutionary mechanisms (for example, mutations acted on by natural selection),[35] it seems that this change must have come from within the genome of the organisms themselves. This in turn would suggest that there was an enormous amount of latent genetic information (perhaps even pre-programmed species morphotypes) in each organism represented on the Ark (and possibly even in organisms today).[36] This would also suggest that species transitions were probably extremely rapid, and may have involved few, if any, inter-specific transitional forms. It is also possible that once the species production process was initiated, each morphology produced was more or less fixed, and collectively the morphologies generated at a given moment in time would appear rather random in direction (non-directed) and largely non-adaptive[37] — rather like mutations are now.

The choice of what species survived and which ones did not would be up to natural (species) selection. At the same time as species were undergoing explosive intrabaraminic diversification, the earth was reeling from the recent global catastrophe through several centuries of residual catastrophism.[38] Episodic, local, geologic catastrophes would be fossilizing snapshots of this biologic change as it was occurring, providing for us, in the Cenozoic, a motion picture of several hundred years of post-Flood biologic change. The result of this earth history scenario is that the Cenozoic sediments are likely to show:–

(a) a lack of inter-specific transitional forms;
(b) species stasis;
(c) rather common species series with morphological trends which may be parallel among unrelated groups (because of similar selection pressures);
(d) high species diversity in fossil series; and
(e) relative rarity of non-stratomorphic-series stratomorphic intermediates.

One last issue is the one of large amounts of homoplasy in the fossil and living world. Whereas it has been common to claim (even by myself) that the living world is arranged in a nested hierarchy of similarity,[39,40,41] I will be arguing in a future paper that that may not be a very good description of the similarities among organisms. I would argue that homoplasies, arguments about higher classification, biblical bioclassification, Divine order, and human manufacture (as an analogue) are all the result of what I will call 'mosaic network of similarity'. From such a network of similarity a nested hierarchy of similarity can be validly extracted, but it is neither a unique nor an entirely satisfactory explanation of the similarities among organisms. I would suggest that it is God's nature to create in a mosaic network of similarity. I would also suggest that although macroevolutionary theory as it is now formulated, may be able to explain a biota with a nested hierarchy of similarity, it is not able to easily explain a biota with a mosaic network of similarity. Under such a view of life, it would be argued that the australopithecines represent a distinct combination of characters which suited them for a rather particular role in the biosphere. This is reminiscent of the studies by Charles Oxnard[42] which place australopithecines in a unique morphological position to fill a unique ecological niche.

DISCUSSION AND CONCLUSION

A. ramidus is both a stratomorphic intermediate and a member of a stratomorphic series. Although this may be an encouragement to macroevolutionary theorists, I would suggest that a more inclusive view of the fossil record would suggest *A. ramidus* may ultimately be better explained by creation theory than evolution theory:–

(1) almost all the stratomorphic series in the fossil record (including the one containing *A. ramidus)* are found in the Cenozoic (as the above creationist model would suggest);
(2) almost all the Cenozoic stratomorphic series in the fossil record (including the one containing *A. ramidus)* belie an overall morphology change reflective of a drying of continental climate, such as one might expect after a global Flood (for example, the change from browsing to grazing and increased hypsodonty in herbivorous mammals, and the move from wooded to open land by primates, like *A. ramidus* to descendant australopithecines, reflecting a change from wet forest to dry grassland);
(3) almost all the stratomorphic series (including the one containing *A. ramidus)* are species-rich, making actual relationships extremely difficult to determine (as the above creationist model might suggest);
(4) *A. ramidus,* like most species in the fossil record, lacks any inter-specific connections with other species (probably indicating a rapid origin and demise of the species as the above creationist model might suggest);
(5) *A. ramidus,* like most species in the fossil record, lacks any evidence of morphological change during its stratigraphic duration (belying the general stability of species);
(6) like most stratomorphic intermediates, *A. ramidus* is found in the Cenozoic and is part of a stratomorphic series as predicted by the above creationist model;
(7) *A. ramidus,* as a stratomorphic intermediate, is a rare form in the fossil record as predicted by the above creationist model; and
(8) *A. ramidus,* like many organisms in the living world and fossil record, is a complex mosaic of characters belying a non-evolutionary mosaic network of similarity.

I add one more comment on order. According to Scripture, man did not disperse immediately after leaving the Ark, but resided near Babel and became occupied in the building of a city and a tower. In the meantime organisms spread across the earth. By the time man dispersed (after Babel) organisms were not only well-entrenched, but virtually all the intrabaraminic diversification had already been completed. Furthermore, although man likely caused considerable extinction once he arrived, the fact is that many of the intrabaraminic morphotypes had already been decimated by natural selection long before he arrived. In Ethiopia that is the likely reason for the ape fossils (for example, *A. ramidus)* being found stratigraphically below the oldest human fossils.

As for relationships, my preliminary suggestion is that

A. ramidus is an ancestor of the group of apes called Australopithecines, and is in no way related to humans. I would suggest with Lubenow[43] that *Homo erectus* morphology is human and ancestral to modern humans and unrelated to any primate (including Australopithecines).

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1. White, T. D., Suwa, G. and Asfaw, B., 1994. *Australopithecus ramidus*, a new species of early hominid from Aramis, Ethiopia. **Nature, 371**:306–312.
2. WoldeGabriel, G., White, T. D., Suwa, G., Renne, P., Heinzelin, J. de, Hart, W. K. and Helken, G., 1994. Ecological and temporal placement of early Pliocene hominids at Aramis, Ethiopia. **Nature, 371**:330–333.
3. Wood, B., 1994. The oldest hominid yet. **Nature, 371**:280–281.
4. WoldeGabriel *et al.*, Ref. 2.
5. '*Hominidae, sensu lato'* refers to the broad, non-creationist, morphological definition of Hominidae, which includes modern *Homo sapiens*, along with fossil species of the genera *Homo*, *Australopithecus*, and *Paranthropus* (for the biosystematic 'splitters'). In a 'natural' creationist classification system, of course, humans would not be properly classified with any other organism.
6. Carroll, R. L., 1988. **Vertebrate Palaeontology and Evolution**, Freeman, New York, NY, 698 p.
7. White, Suwa and Asfaw, Ref. 1. It must be noted, however, that Fix's (Fix, W. R., 1984. **The Bone Peddlers: Selling Evolution**, MacMillan, New York, NY, 337 p.) concern that the polarity of morphological change has been incorrectly assigned by not considering the Miocene fossil primate material is a very serious one indeed, and may call for a complete re-evaluation of the morphological intermediacy of the australopithecines (for example, along the lines of Oxnard — see Ref. 42).
8. Simpson, C. E. and Wise, K. P., 1992. Stratomorphic intermediates: evidence of macroevolution? [abstract]. *In*: **Proceedings of the 1992 Twin-Cities Creation Conference**, Twin Cities Creation Science Association, Minneapolis, Minnesota, p. 211.
9. Despite considerable discussion by various creationists and even the 'curious mosaic' comment of Stephen Jay Gould (Gould, S. J. and Eldredge, N., 1977. Punctuated equilibria: the tempo and mode of evolution reconsidered. **Paleobiology, 3**(2):115–151),*Archaeopteryx* has characters of birds and characters of reptiles, and is younger than the oldest fossil reptile. Therefore *Archaeopteryx* is a stratomorphic intermediate.
10. Wood, Ref. 3.
11. Wood, Ref. 3, Figure 1, p. 280.
12. Although Wood's scheme contains species names which may be challenged (he himself admits that his scheme is 'speciose'), no effort will be taken here to reconsider the validity of those species. It is only here as a convenient, recent example of a fossil series between monkeys and man.
13. White, Suwa and Asfaw, Ref. 1.
14. WoldeGabriel *et al.,* Ref. 2, Figure 1.
15. White, Suwa and Asfaw, Ref. 1, Table 1.
16. Gould, S. J. and Eldredge, N., 1977. Punctuated equilibria:the tempo and mode of evolution reconsidered. **Paleobiology, 3**(2):115–151
17. White, Suwa and Asfaw, Ref. 1.
18. Gould and Eldredge, Ref. 15.
19. Wood, Ref. 3.
20. For example, the arm is described as a mosaic of characters by the original describers (White, Suwa and Asfaw, Ref. 1).
21. This is the meaning of the parenthetical statement about *Archaeopteryx* and its context as found on p. 147 in Gould and Eldredge, Ref. 14: '*. . . there is certainly no evidence for [smooth intermediates between Baupläne] in the fossil record (curious mosaics like* Archaeopteryx *do not count).*'
22. A few (of many possible) examples are found in Brown, C., 1987. The law of symmetric variation and the gene-theme model. **Creation Research Society Quarterly, 24**(3):75–80.
23. A complete list of stratomorphic intermediates between major groups is not yet available, but a list like *Baragwanathia, Pikaia, Archaeopteryx, Eusthenopteron, Purgatious,* and *Pakicetus* probably comes pretty close to being a complete one from among the hundreds of hypothesized major group transitions.
24. Again, all stratomorphic series have not been characterized, but a list which includes the ammonite suture series, the mammal-like reptile series, the early bird series, the early whale series, the *Cantius* and *Plesiadapus* series, the hominid series, and the Upper Cenozoic large land mammal herbivore series (for example, horses, pigs, elephants, camels, titanotheres) is probably very close to a complete list (using, I might add, an extremely liberal definition of a stratomorphic series).
25. Gould, S. J., 1987. Life's little joke. **Natural History, 96**(4):16–25.
26. Eldredge, N. and Gould, S. J., 1972. Punctuated equilibria: an alternative to phyletic gradualism. *In*: **Models in Paleobiology**, T. J. M. Schopf (ed.), Freeman, San Francisco, CA, pp. 82–115.
27. Austin, S. A., Baumgardner, J. R., Humphreys, D. R., Snelling, A. A., Vardiman, L. and Wise, K. P., 1994. Catastrophic plate tectonics: a global flood model of earth history. **Proceedings of the Third International Conference on Creationism**, Creation Science Fellowship, Pittsburgh, Pennsylvania, in press.
28. European geologists tend to local the Flood/post-Flood boundary near the Palaeozoic/Mesozoic boundary, a substantial contingent of US creationists place it well up in the Neogene of the Cenozoic, and a few of us place it near the Mesozoic/Cenozoic boundary.
29. Whereas Austin *et al.* (Ref. 26) include plate tectonics in their model of the Flood, most other Flood models do not accept the role of plate tectonics. The author is intending a defence of plate tectonics in creationist geology for **CEN Tech. J.**
30. The creationist biosystematicists of Europe are currently rejecting the proposed biosystematic systems suggested by Wise (Wise, K. P., 1990. Baraminology: a young-earth creation biosystematic method. *In*: **Proceedings of the Second International Conference on Creationism**, R. E. Walsh and C. L. Brooks (eds), Creation Science Fellowship, Pittsburgh, Pennsylvania, Vol. 2, pp. 345–360) and ReMine (ReMine, W. J., 1990. Discontinuity systematics: a new methodology of biosystematics relevant to the creation model. *In*: **Proceedings of the Second International Conference on Creationism**, R. E. Walsh and C. L. Brooks (eds), Creation Science Fellowship, Pittsburgh, Pennsylvania, Vol. 2, pp. 207–216). It is important to note that this is due to a fundamentally different view of the nature of life (for example, nested hierarchy of the Europeans and ReMine versus network mosaic of similarity of myself), and the role of creationists in the scientific community (for example, publishing within traditional taxonomic hierarchies by ReMine and the Europeans versus erecting a distinct science by Wise), and not just due to a disagreement over nomenclature.
31. Wise, K. P., 1989. Punc eq creation style. **Origins, 16**(1):11–24.
32. Wise, K. P., in preparation. First appearances of higher taxa: a preliminary study of order in the fossil record. **CEN Tech. J.**
33. Wise, Ref. 31.
34. Several on-going projects with students, following principles in Wise, K. P., 1991. Practical baraminology. **CEN Tech. J., 6**(2):122–137.
35. It must be remembered that in well-understood examples of large morphological diversification (for example, artificial breeding production of dog, pigeon and pheasant morphs, etc.) the finally assumed morphological diversity was always extant (sometimes largely in latent form) and merely **expressed** — not generated by such a process as mutation.
36. What mechanism caused such a proliferation of form and then shut it down is perhaps the most exciting unsolved mystery of creationist biology. It is, in fact, quite analogous to what punctuated equilibria proponents are searching for in species which usually keeps them in a mode of stasis hut occasionally allows them to change very rapidly.
37. As suggested by Scott A. Mahathey, personal correspondence.
38. Austin *et al.,* Ref. 26.
39. ReMine, W. J., 1993. **The Biotic Message: Evolution versus Message Theory**, St Paul Science, St Paul, Minnesota, 538 p.
40. Wise, K. P., 1992. Creation polycladism: a young-earth creation theory of biogenesis. *In*: **Proceedings of the 1992 Twin-Cities Creation Conference**, Twin Cities Creation Science Association, Minneapolis, Minnesota, pp. 204–210.
41. Wise, K. P., 1994. The origin of life's major groups. *In*: **The Creation**

Hypothesis, J. P. Moreland (ed.), InterVarsity Press, Downers Grove, Illinois, Chapter 6, pp. 211–234.
42. Oxnard, C., 1986. **Fossils, Teeth and Sex: New Perspectives on Human Evolution**, University of Washington, Seattle, Washington, 310 p.
43. Lubenow, M. L., 1992. **Bones of Contention: A Creationist Assessment of Human Fossils**, Baker Book House, Grand Rapids, Michigan.

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