

A CONVERSATION WITH JACK MCINTOSH

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John S. (“Jack”) McIntosh has been a leading student of sauropod dinosaurs for well over half a century. During the course of his long career, Jack has been influenced by legendary paleontologists such as Barnum Brown, Richard Lull, Friedrich von Huene, and Alfred Romer, and he continues to influence young dinosaur paleontologists.

Jack’s two main interests, sauropod dinosaurs and the history of North American paleontology, intersect in the badlands of the western United States during the last quarter of the nineteenth century, when O.C. Marsh and E.D. Cope discovered and described *Camarasaurus*, *Diplodocus*, *Allosaurus*, *Stegosaurus*, and many other dinosaurs. During long hours at museums studying bones and examining field notes, maps, and journals, Jack has reconstructed the events of many field seasons over decades of dinosaur collecting. His sleuthing has recovered lost details about the provenance and associations of many dinosaur skeletons and led to reconsideration of many of our old impressions of sauropods. The most famous recovered “detail” is Jack’s revision of the skull of *Apatosaurus*. For the better part of a century, the famous Yale mount of an *Apatosaurus* skeleton bore a *Camarasaurus*-like skull because of a dotted-in sketch made in 1883 by Marsh. Through examination of the original quarry maps and shipping manifests, Jack discovered a “accounting error” and eventually recapitulated *Apatosaurus* with the correct, *Diplodocus*-like skull.

In addition to his historical pursuits, Jack remains one of the foremost experts on sauropod dinosaurs. Jack was the first to summarize and synthesize skeletal, stratigraphic, taphonomic, and taxonomic data on

the entirety of sauropod dinosaurs, a monumental effort that serves as a standard reference for any investigation into sauropods and also provides raw information for phylogenetic analyses of sauropod relationships. Incredibly, Jack managed this body of work while winning his bread as a theoretical physicist at Yale, Princeton, and Wesleyan. The conversation below recounts Jack’s formative years and early encounters as a precocious student, his service in the Second World War, and paleontology in the badlands of the western United States. We trace Jack’s interest in sauropods and delve into the some of the life experiences that solidified his position as one of our most celebrated colleagues.

The conversation was recorded and transcribed from discussions with Jack McIntosh on 3 April 2004 (Middletown, Connecticut) and 8 November 2004 (Denver, Colorado). Material from the two interviews has been woven together for continuity, and technical terms and colloquial phrasings have been edited to render them accessible to a broader readership. The recording was transcribed by Carole Goodyear and Amanda Kealey.

KCR: *I love to hear the stories about how people get into paleontology. What sparked your interest in sauropods?*

Mcintosh: Well, I think it was the same way as most people. I think I was about six. My father took me to the Carnegie Museum. I saw the *Diplodocus*, flipped. From there on, it continued to be part of my life.

JAW: *So Jack, you wrote a famous letter at age thirteen or fourteen to [Richard] Lull. It seems you had already*

developed a very academic interest in dinosaurs. How did that emerge?

McIntosh: When I was a kid, I was sick most of the time. In the sixth grade I missed about one third of the year. When I was sick my uncle, who had gone to Yale and had taken a course under Lull, had the book *Organic Evolution*. He gave me that book to read, and that of course was very exciting.

JAW: Your letter to Lull is pretty advanced for a 13 or 14 year old. You asked whether *Cardiodon* and *Cetiosaurus* should be the same thing, and "What about *Apatosaurus*?"

KCR: Had you already met Lull when you wrote to him, or did you write the letter without knowing him in advance?

McIntosh: When you're that age, you're brash, you think you can do anything—you're crazy!

KCR: Did Lull write back to you?

McIntosh: Well, he wrote me back and said, "I really don't know that much about saurischians. Write to Gilmore."

JAW: Do you still have the copy of Lull's letter?

McIntosh: Oh of course, sure. And of course I have another one, which I cherish, that I got many, many years later from [Werner] Janensch. Well, it's in German of course.

KCR: Did you get to meet these paleontologists as a young kid?

McIntosh: I would go in every Saturday when I was in high school to Pittsburgh, to the Carnegie Library and Carnegie Museum, so I got to know all the people there of course. But I'd never even visited New York City until my father took me on to college.

After I graduated from high school in 1941, I started at Yale. I had never been to Connecticut before. So when my Father drove me to Yale, he took me up there and dumped me and went back home. They thought I was going to be terribly homesick and all that sort of thing. Well, I immediately went to the Sterling Library and was overwhelmed. I looked up von Huene because I had been looking for copies of the 1932 *Die fossile Reptil-Ordnung Saurischia*, and they didn't have it at the Carnegie Library. In fact I had written to the "Seven Book Hunters," who were advertised in *The New York Times*, and I made an absolutely silly statement. I said, "Can you possibly get me a copy of *Die fossile Reptil-Ordnung Saurischia*? I'll pay any price for it." Well, that was a mistake because I got back a letter a month or so later saying,

"We have found a copy and you can have it for \$100." Well, of course back in the Depression days, I think I had seen a \$20 bill, but the idea of \$100 was totally out of the question. So I had to write them back sorrowfully saying I couldn't buy it. But when I got to the Yale Library and looked up von Huene, there was a copy of *Die fossile Reptil-Ordnung Saurischia*, so I immediately got it down. At the Carnegie Library they would put me in a room, where they would bring a book in. You could sit there and work on it but you could barely touch it. But here [Yale Library], I said, "Can I look at this?" and they said "Oh, you can take it out." Not only could you take it out, but you could take it out and renew it over and over again. So I took this thing out, brought it back to my room, and began copying large parts of it. I wasn't the least bit homesick. This was just absolutely wonderful.

So the second day I was there, I went up to the Peabody Museum. I went upstairs into the "secret" tower where Ed Lewis, who was the paleontologist there at the time, had his domain. I went in and talked to him, and told him that I wanted to work on dinosaurs, so he set me to work in the laboratory with the big "*Atlantosaurus*" (*Apatosaurus*) cervical vertebrae that were all broken. [Othneil C.] Marsh mounted two of these cervicals that were very good ones, but they had been mishandled, so Lewis put me to work getting those things back together. They were not too badly damaged; there were a number of pieces but you could put them back together. So the first thing I did was to get those big cervicals of "*Atlantosaurus*" (*Apatosaurus*) back together.

Freshman year I was working in one of the dining halls for a job, but from the second year I had a regular job putting dinosaur bones back together. What happened was I was working with a little *Coelurus*, which was very interesting. I had this femur and tibia and so forth, was studying them, and I felt somebody's breath on the back of my neck. It was Barnum Brown. He got all excited. "I have an animal," he said. "It has a nice tibia and fibula and the tibia looks just like yours except it's one and a half times as long but we don't have the femur." He said, "What I would like to ask you to do is to come down to the American Museum and take some measurements of our animal, then we will take a cast of your femur and we'll expand it." Well, up to then, I had not cut a single class. I was good about going to classes. But I'll tell you, the next Monday I was on the train for New York.

At the American Museum I rode on the elevator to the fifth floor, and I go in to see Rachel Nichols, who is running the place. She was the secretary; she knew everything. She sat me down and called Barnum Brown. He brought in a couple of trays,

great big trays, and one of them had an animal that he called "*Daptosaurus*," but he never did describe it. John Ostrom described another specimen of this animal as *Deinonychus* many years later. The other tray contained another very small theropod, which Brown called "*Macrodonotosaurus*." Years later, Ostrom described this specimen under the name *Microvenator* since he determined that the big teeth found with the specimen belonged to a different animal. So Barnum Brown took me and he put me in a room with a great big long table. He put this box down and said, "Now why don't you study these things and you can measure them and draw them, and when you go back to Yale, we can decide what to do about this." When he brought these things in to show me, Rachel Nichols whispered, "He doesn't show those to anybody." So I had the afternoon to study *Deinonychus*—brand new from the Cloverly. I mean this was just absolutely out of this world. And with Barnum Brown of all people being the one that set me onto this thing. So that was great.

JAW: A brush with greatness. Did anything come of it?

McIntosh: I never went up to see Barnum Brown again. He retired right about that time anyway.

So then after two years at Yale I was in the Army Air Corps and I was sent to various colleges to learn meteorology and radar. I went to Brown and MIT and Harvard, and I went into the MCZ [Museum of Comparative Zoology, Harvard] to see what was in there. Here I was, this little insignificant shave-tail. I went up to the great door, knocked, and introduced myself to [Alfred S.] Romer. He was just absolutely delightful. He invited me in, and he began talking with me and pulled out these papers by [Chinese paleontologist] C. C. Young that had just come over from Chungking [as it was then spelled]. Chungking, of course, was the temporary capital of China at that time. The Japanese had taken over much of China, and Chungking was way back in Sichuan Province. Young had gone there, and he published some of these early papers on the *Lufengosaurus*, etc. The paper on which they were printed was of very poor quality. Somehow Young had gotten copies over to Romer, and Romer had papers on all of these different prosauropods. He brought them out and showed them to me and said, "Oh, why don't you borrow them over the weekend?" That was Romer. He probably had the only copies of those things in the United States, and he let me borrow them.

JAW: Were you in the war?

McIntosh: Oh, yes, sure. I had just started my junior year. What happened was I volunteered for this business [Army Air Corps], but they didn't take you

immediately. I mean you were on call. So I was a month into my junior year when I finally got called.

I finally was sent over to Guam as a flight weather officer on a B-29. We flew 21 or 22 missions over Japan. We were in weather planes, so we would fly at high altitudes—32,000 feet, very high altitudes in those days—and we would fly over the different targets and then radio back to our group as to where the weather was the best and then they would pick them out. These missions would sometimes take 20 hours there and back, very long missions. Our group would fly a couple of hours behind us. We would pick out a target, and then they would go and bomb that target.

We were flying way up. The Japanese would shoot at us, and the stuff would rattle on the plane, but we were never badly hit. We had engines go out a couple of times, and we had to land on Iwo [Jima] on the way back or we would have gone into the ocean. Iwo [Jima] by that time looked like a huge aircraft carrier that had been completely macadamized over. It didn't look the way it did when the Marines were in there. But it was interesting seeing it, and it was very nice to have it there, because as I say, we would have been in the ocean. We lost two engines on the same side. I've forgotten whether this was due to ack-ack or to engine failure. But anyway, we did lose two engines. If you lose one on each side, that's all right, you can get back. But if you lose two on the same side, that's not good. And so Iwo [Jima] was there and we were able to get back to Guam.

About a week after they dropped the atom bombs, a Twentieth Air Force Colonel decided that he wanted to see what was going on and he came up and commandeered our plane. So we flew over both Hiroshima and Nagasaki in the same day, and that was a bit worrisome, too, because you're a single plane. But I don't think they even fired on us.

We flew another mission over Japan where we went out to supply materials for prisoners of war. We were assigned a particular camp to drop our stuff and we flew over in all directions. We couldn't find it, and we were very sad because this was great, you know, to be able to provision these guys that had been POWs for years. We turned around, and as we flew back home we saw one. I don't know if it was the one we were supposed to supply or not, but all these people were down there yelling and everything. We flew in at very low altitude and dropped all of this stuff, and they were just going mad. I mean that was exciting, to say the least.

The last mission over Japan was on V-J Day, when MacArthur had everybody flying over. However, we wanted to see what was going on. We were supposed to fly formation, but our particular group went in over the U.S.S. *Missouri* at low altitude and really saw what was going on down there.

JAW: This is when they were signing the surrender?

McIntosh: Yes. MacArthur was furious. He had us flying training missions for a week after that! There were a whole bunch of us that did this kind of thing.

After the war, I was at Tinker Field near Oklahoma City for a while. They were letting people out and they couldn't let everybody out at once. And so I was just there with absolutely nothing to do for about a month or so. I got a pass and went down to Norman to see Stovall and met Wann Langston. Wann showed me all around and we had an absolutely great time. Of course, there were lots of sauropod bones there, which Wann was responsible for putting together. Wann had been looking for *Die fossile Reptil-Ordnung Saurischia* too. I told him that I had access to it, and he was very envious. So when I got back to New Haven, I immediately copied all kinds of stuff and sent it to him. A few years ago he told me he still has it.

I got back about three years and one day after I went into the Air Corps—I didn't even go home. I went directly from where I was discharged at Indiantown Gap, Pennsylvania, out to New Haven, because the next term was starting on about the first of March. And I signed up for these courses, essentially the same ones that I had been taking when I left: same teachers, in the same rooms, and most of the same students with whom I had been in these courses three years earlier. The same thing had happened to them. They had started, and they had been called and so forth. It was incredible. It was as if three years had vanished. I can't even describe it. It was amazing, but anyway, then I got back into working in the laboratory.

I was majoring in physics, but I wasn't going into paleontology because you weren't allowed to "do dinosaurs" in those days. You did mammal teeth, and I was not interested in mammal teeth at all. But I could work on these dinosaurs in the laboratory, and that was my job. I worked on these things and I finished, got my degree, and then went on to get my Ph.D. in physics and go on to teach in various places: Princeton, Yale, and finally ended up at Wesleyan.

JAW: The years following the war were some lean years for vertebrate paleontology. You must have been very lonely for a while there—the only other person you could talk to about sauropods was José Bonaparte. Did you ever think for a minute about abandoning sauropods and working on a different group?

McIntosh: No. Oh, no. I continued, obviously, to have my interest in sauropods. Joe Gregory made me a research associate at Yale, so I would go down and work there any time I wanted to. And I did, as

an avocation, in my spare time. Sometimes I had spare time; sometimes I didn't. But I could do it, particularly during the seven years that I taught at Yale. There are now things coming out all the time. I mean—How many new genera have been described in the last ten years?

KCR: Have you ever found a good intersection between your interest in dinosaurs and your interest in physics?

McIntosh: No, the things that interest me in paleontology don't overlap with my interests in physics.

JAW: You had another brush with greatness in your physics career too—hearing Einstein speak at Princeton. Did he have a real presence when he showed up?

McIntosh: Oh wow, when he walked into the room, you could have heard a pin drop anywhere. He shuffled into the room with the crazy old sweater that he always wore, and they pulled up a chair at the front of the room, and he sat down to lecture. He talked in a little voice that people in the back row could easily have heard. I was up near the front row. The room was so quiet that everybody heard every word he said. Another time, I was sitting in the theater to hear Linus Pauling, the famous chemist who won the Nobel Prize. He was going to give a lecture, and everybody was buzzing; it was a huge noise in the room. And all of a sudden every sound stopped. I mean it was just as if somebody had turned off a booming television or something. And I turned around and looked and Einstein was walking down the aisle.

Can you imagine? Every time you went anywhere to have the whole world stop. It must have been the most embarrassing thing for him. Of course, he didn't come out that often. That was the only other time that I saw him.

KCR: It really is hard to imagine that kind of awe. I wonder if there's anybody like that in paleontology. [All laugh.] What prompted your interest in sauropods? What about them was so exciting?

McIntosh: Oh, the Carnegie Museum! The *Diplodocus* and the *Camarasaurus* at the Carnegie Museum were the things that started it off. I'm five years old, and I'm taken into the Carnegie Museum by my father. It just never left. It's just that I wanted to find out as much about sauropods as I possibly could. Most people get over it in a couple of years, but I didn't. See, I'm not really that interested in this bird business. The whole thing has been proved to me. I know birds are dinosaurs, and they're going to find lots of them, and they're going to have feathers, and they're going to be wonderful. John Ostrom tells me that this [Yixian] formation is a mile high,

with layer after layer, where they go in and find one after another, fossil birds. It's overwhelming. And it's all little stuff, and you can't really look at those vertebrae because [the animal] is so small and has little feathers coming out. I just don't have much interest in them. But if you collect a sauropod, and you can look at each vertebra, and see each lamina, and so on.

I got to the Carnegie Museum as a teenager and got to know "Pop" Kay [J. Leroy Kay], who was the curator at the time there. He was very nice and showed me all sorts of things. Much later, around 1960 or so, when I was getting older and when I was teaching, I wanted to check something. So I went down and met Craig Black, and he arranged for me to come in and do anything I wanted, which was extremely nice. And that's when I started going through the entire sauropod collection. I eventually went through all of the dinosaur collections. But with the sauropod collection I tried to identify everything.

JAW: And that's what led to that [1981] Bulletin of the Carnegie Museum?

McIntosh: Eventually. It didn't come out until the 1980s. When I started doing all that cataloging, I didn't really envision the catalog that came out later. But when I got through with it, I mean when I was well along with it, it seemed to be the obvious thing to do.

JAW: What initially got you interested in working with the discoveries of Cope and Marsh? Why did you start investigating the quarries and maps and all that?

McIntosh: Of course Marsh and Cope described many of the original sauropods of North America and their types are very important to separate out. The Cope bones of *Camarasaurus* in the American Museum—as you probably know—have mysterious numbers and letters on them. Osborn and Mook [who described the Cope collection] had no idea what these meant, and they don't even mention this in their monograph. The trouble was, Cope just didn't keep records, and he threw all his stuff away. Almost all the letters from his collectors have been lost, or somebody threw them away after he died, before the stuff was taken to the American Museum. But [Cope's collector] Lucas wrote all this stuff out in great detail—where these things were found and how. He drew pictures of a large number of these bones and lettered them, and a few of the drawings have survived—but only a few of them.

Cope described *Camarasaurus* and he had this drawing made of the animal, which is rather weird but good for a starter. He thought it all was one individual. It actually is more than one individual, at least two. Lucas found the second animal, which he

thought was a single animal, and he called it *Camarasaurus* II. A few of his letters have survived, and it turned out to be two animals, too. The first one of those animals wasn't exactly articulated, but it was partially articulated and it was all together. What those mysterious numbers referred to are box numbers. But they [Osborn and Mook] didn't publish the box numbers at all because they didn't realize they were important. I was able to decode these things from the few surviving letters, which listed each lettered bone and the box it was shipped in.

When [the American Museum's W. D.] Matthew went to Philadelphia [to retrieve Cope's *Camarasaurus* bones], he put new numbers on all of these boxes for shipping purposes. So when the people in the American Museum prepared these bones, they put Matthew's box number on them, but they also put Lucas's box number and the letter assigned to each bone on them. These things were numbered in a certain order in the shipping manifest, and what I have figured out is that the order of the boxes corresponds to the way they were shipped. I now know what was in each box and the order in which those boxes came. There were 11 shipments in all, and there might be one or two more of a tooth or something like that, but there are essentially 11 shipments that were sent in by O. W. Lucas. Then there are about six or eight more that were sent in by Ira Lucas. So in the first set of boxes, shipment number 11 was sent in by O. W. Lucas and then the next one, number 12, is the one that's the key to everything—it tells me how to connect the Matthew numbers with the Lucas numbers. So I now know the order. So it turns out that shipment numbers 11, 12, and 13 are all one individual. They started collecting from the tail and they go forward as you get up to the cervicals and there is no overlap at all until you get to the very end. At the very end, you begin to get a second individual. I have pictures of the quarries that were taken at that time, and I'm trying to identify exactly which bone is which. I mean there's no duplication, and you get the right numbers of vertebrae and the right numbers of everything. When you go forward in the first individual of *Camarasaurus supremus*, there's a second individual that lies beyond that; and unfortunately it's the front end of that thing that's beginning to come in here, and so I can't quite separate them all exactly. I'm pretty sure how it goes.

JAW: So you're able to identify individuals?

McIntosh: Exactly. I hope they never do it, but if they actually wanted to mount a skeleton of *Camarasaurus supremus*, they can, because I can tell them exactly which individual each bone belongs to. This is the kind of thing that you can do if you have records.

One of the Carnegie Museum quarries where the quarry maps may be missing is the one on the Red Forks of Powder River, and there are two quarries there. We're not even sure if a map was ever made! The lower quarry, down by the river by the Red Fork, is the *Diplodocus hayi* that's out in Houston, and then there's another quarry that's up a bit higher where there are huge numbers of sauropod bones, interesting bones, too. Fortunately *Diplodocus hayi* is a unique individual; there's no mixture there. We know exactly which bones belong to that, and it came from a single quarry and then this other stuff. But this other stuff has all of these bones, and there is no indication at all as to what's what. I mean there are numbers on the bones, but there's no quarry map to tell you what those numbers correspond to, and so that is completely lost. Unless that quarry map should turn up, and I'm quite sure it won't now because Betty Hill [the former secretary at Carnegie Museum] and I have gone through absolutely everything. The trouble is, here you have this huge number of bones at the Carnegie Museum that are very interesting, and yet they're all mixed up. It may have been that even if you had the quarry map, you wouldn't be able to do much with it. But it may have been that at least you would know perhaps clusters of bones, you'd know something about it. But that quarry map is missing and so it's absolutely too bad that we don't know anything about that.

I have made a collection of quarry maps that I'm keeping—not to work on myself necessarily, but for the future. I mean because these things do get lost, and I want copies available, and I don't want what happened at the Carnegie Museum to happen again. Gilmore made huge quarry maps at Quarry C at the Sheep Creek, and those things have vanished too.

JAW: Have you spent a lot of time out west ground-truthing some of these localities?

McIntosh: Well, up until two or three years ago, I would make a trip out west every summer and I would go to various museums and so forth. In '73 and '74, I was in the field all summer with Bob Bakker, Peter Dodson, and Kay Behrensmeyer. That was absolutely marvelous—we went to most of the Jurassic dinosaur quarries, particularly the classic ones, that had ever been found, and I learned an awful lot there.

At that time, I had only known Jim Jensen for a couple of years. I stopped at Dinosaur National Monument every year, and one year I picked up a couple of hitchhikers on the way. They said that they had just heard on the radio on their last ride that an extraordinary dinosaur quarry had been found down in western Colorado, and I knew imme-

diate this was Jim's site. So I got to Dinosaur National Monument, and instead of going up to the quarry area to look at things, I went to the telephone booth and called Delta, but I couldn't get a hold of the Joneses [Eddie & Vivian; friends of Jim's]. But the telephone operator said, "Oh, yes, I know all about this," and she told me about the Dry Mesa quarry and she told me exactly how to get there, and getting there was no simple problem. There were no numbers on those roads. She told me to go so many miles here and turn on this road and so forth. I hurried right down to Dry Mesa and I got up to this road that Jim had made to the quarry about a mile or two down. I was in my regular car—it wasn't four-wheel drive or anything. I decided, I don't want to try to go down this thing. So I put my pack on my back and walked down. When I got down there, there were cars and even trailers from some 24 states that had piled up. I mean the word had gotten out. Jim came rushing out and handed me a trowel and said, "Dig out that interesting *Diplodocus caudal*," and so that is the kind of thing that happened. Jim was just absolutely wonderful. It was just a beehive of activity, with everybody around there. It was extremely exciting, and they had already uncovered the big scapula.

A couple of years later I went down to see Jim and he decided that I needed to know more about the geology of Utah. So he got his truck out and he got Brooks Britt, who was about 16 at the time, and we got into the car and he drove us from one end of the San Rafael Swell to the other, showing us every single quarry. We even went to Gilmore's quarry where he found the *Alamosaurus*, and Jim showed me everything. I learned more Utah geology that day than I've ever learned [about anything] in that short a period of time in my life.

KCR: I think one of the big questions that kids have about dinosaurs is why "Brontosaurus" has a different name, and why the skulls were changed and what the whole situation is with that. Your work on debunking some of those old dinosaur legends is one of the most familiar examples of how our science works, for people all over the world. Can you tell us a little about how you got started on that, and how you dissected all these problems of sauropod heads and names?

McIntosh: Oh yes, at that time nobody knew what the skull of an *Apatosaurus* was. I was working through all of [Earl] Douglass's records and so forth. I have notebooks full of hundreds of letters like this. I don't have the letters themselves and I don't even have photocopies of them. But I copied out by hand everything that had to do with dinosaurs in those letters. One of the reasons I did that is because so many things have vanished over the years and I

decided that everything that ought to be preserved should be preserved. And I have an enormous collection that people have allowed me to make copies of their records, so they're now preserved. A number of quarry maps have been lost or destroyed, and without maps, collections lose an enormous amount of their value, with no chance of determining in a multigenera or multi-individual quarry which thing might go with which.

KCR: You've been in the field of sauropod research for a long time, and you've seen a lot of students like us entering and gaining real interest in sauropods, and contributing to our changing view of the group. What do you think the future holds for sauropods? What questions are you most excited about finding answers to?

McIntosh: The main thing that I would like to have happen, which may never happen now, is to have them reopen the Marsh Quarry. There definitely is other *Diplodocus* material in that quarry [Felch Quarry, Garden Park, Colorado]. That quarry is not finished by any manner or means, and it's got all kinds of good stuff in it. I probably told you that I had Jensen ready to open it. The trouble is that the hill goes up, so you have to dig further and further into it. When Hatcher and Utterback collected *Haplocanthosaurus*, they had to dig back in to get those beautiful skeletons, some of the best stuff they took out of there aside from the *Ceratosaurus*. Jensen had already made arrangements to rent a bulldozer to get back in there, but on his way from Canyon City back to his home in Provo, he drove through Delta, Colorado, where friends of his, the Joneses, Vivian and Eddie, lived. They had found a huge claw

[of *Torvosaurus*], and when they knew Jim was coming Vivian put this claw on the front table in the living room, and didn't say anything. Jim came in and sat down on the couch. They talked for about 15 minutes. All of a sudden Jim's eye landed on that claw....

"What is that?" Vivian was just waiting, of course, for him to see it. She took him up to the Dry Mesa Quarry, and then all bets were off as far as opening the Garden Park quarry. He canceled everything back in Canyon City, and that was that. But somebody should open that again. There's still lots more there.

JAW: So what about places.... Where would you like to see more sauropods come from?

McIntosh: Well, of course I want the American Museum to collect that stuff from Mongolia. I'd also like to see all that stuff down in South America prepared and figured properly. You know, some of those skeletons hiding around there, and they even have some of the skulls!

JAW: What are you planning next?

McIntosh: Well, I'm 81 years old. I want to get all of my collections of pictures sorted out, and all the identifications written on them. I know what all the identifications are but some of those notes are very rough: I can read them but nobody else could.

JAW: Can you hire someone to help you with that?

McIntosh: Ah, I don't want anyone to help me with it. I want to do it myself. It keeps me busy. Lately I seem to be finding myself falling behind because I learn an awful lot of things at each SVP! There is just so much to learn about sauropods.

