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Edited by Gene Baade

## Hypoglossal Canal

An exploration originally written for  
Bobbie Short, July 2, 2015

by John Morley

*Aside: This article discusses a possible reason why sasquatch vocalizations are deemed to be beyond the capabilities of modern humans. CLM*

The late sasquatch researcher Bobbie Short had suggested that information regarding the hypoglossal canal [tiny canal in the skull that carries nerves] in sasquatch may be worthy of review and discussion as a part of my ongoing research on sasquatch sounds.

Another researcher had previously made reference to the hypoglossal canal. In response, I thought I'd share with them and a few others my present thoughts on this, as well as on a couple of other factors that affect the vocalizations sasquatch are known to make.

The first material I wrote was based on a hypothesis by Richard Kay of Duke University Medical Center. He postulated that the size of the hypoglossal canal in modern humans and Neanderthals is larger than that in non-human primates. Furthermore, because the canal carries the nerves which supply the tongue, the size of the canal could be considered an indicator of language ability.

I further hypothesized that if the canal in sasquatch was even larger than in modern humans, they could have an even greater innervated tongue than humans, which could likely result in greater tongue control.

I found a later study which tested Kay's hypothesis, proving it to be untrue. This study found that the size of the hypoglossal canal between human and non-human primates was not an indicator of language ability. Of course the latter study did not take into consideration the primates we know as sasquatch. This

study did, however, find that the bundles of nerves enclosed by the canal could vary between members of the same species even though the canal size may be the same.

I believe, even in light of the more recent study (and because we are considering creatures the size of sasquatch), it is still possible that the hypoglossal canal in sasquatch may be larger than in any other known primates, including humans, given the significantly larger body size and bone structure of sasquatch.

A study by DeGusta, Gilbert, and Turner notes that the hypoglossal canals of some study cadavers contained more nerves than others, although the reason for this was not explained. In view of this finding, it seems reasonable to anticipate that the more nerves and axons carried by the hypoglossal canal, the more innervated the tongue is likely to be. Therefore, the more innervated the tongue, the more the tongue is able to influence the modulation of sounds produced by the vocal folds.

For example, we know that some people have great singing voices and others do not. We might ask whether people with great singing voices possess more nerves and axons within the hypoglossal canal. While all sounds begin with the vocal folds, the way the tongue, teeth, and mouth modulate and change those utterances determines what we actually hear.

Still, even a greater innervated tongue is only a part of what makes sasquatch vocalizations so special. Studies by Jorge C. Lucero and Laura L. Koenig, 2005, have shown that the vocal folds of the human male are larger than those of the female. Further noted was that the larger folds of the male are more easily oscillated (vibrated) than those of the human female. Thus, if both the male and female sasquatch possess even larger vocal folds than the human male, we can hypothesize (with good reason) that it is easier for them to produce oscillations of the vocal folds than it is for modern humans. Anticipating a significantly

greater lung capacity in both genders of sasquatch, we can begin to understand their greater capacity for sound production.

Two other factors should also be mentioned as relates to sasquatch use of a spoken language. One is bipedality. Bipedality is essential for articulated speech; it frees the lungs for unrestricted and controlled breathing, especially while walking and running. In apes, breathing is limited to intake and outflow in synchrony with their quadrupedal locomotion.

The second is possession of a distinctly human chin which differs from simian species which basically have no chin. Apes have what is called a simian shelf in the lower mandible which thickens the mandible. There is no chin as in humans. This thickening adds strength to the mandible but reduces tongue movement and limits muscle to the tongue. The human chin, lacking a simian shelf, is positioned forward, thus permitting an increase in tongue muscles and tongue movement.

All of these factors may contribute to the amazing vocal repertoire sasquatches are known to have. It is reasonable and likely that their use of speech and their greater prosody of speech (both discovered and identified by Scott Nelson) will find its explanation in these combinations of factors.

John Morley  
Biologist  
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**Note:** For references and further information on this subject please email John Morley <joro1120@earthlink.net>

John Morley has been researching sasquatch since 2005. He founded the Texas Hominid Research group.





Here is a good comparison image of sasquatch, human, and yeti heads. The chins of the sasquatch and human would be about even. With the yeti, you have to use your imagination.

The human would be an adult male about 27 to 30 years old, about 5 feet, 9 inches tall. The sasquatch would be about 7.5 feet tall (standing height), and the yeti, I will say about 7 feet tall (standing height).

The skull of a sasquatch would be very large—even larger than that of a yeti. I am reminded of the story about two young Native boys in BC who found a cave and within it two skulls that they said were so large they could fit them over their heads. If you imagine that my human head shown was a skull of a boy about 9 years old, this might not be too far-fetched. The boys told their father of their finding and were told never to go back to the cave. Certainly, just a story, but the math is in the ballpark. Keep in mind that the average height of a sasquatch is said to be 8 feet; and that's just the walking height.

Dr. Jeff Meldrum created a sasquatch skeleton using mathematics based on the P/G film and other sources. He is seen on the right with his creation. Although Dr. Meldrum has a different opinion of what a sasquatch would look like, the head size would be comparable.

Whatever the case, the fact remains that a primate of some sort that is

Model skull display at the Lacey Museum: 2 modern human, relict hominoid, gorilla, Gigantopithecus, and sasquatch.



exceedingly tall and massive by human standards is continually sighted in our forests and even close to rural communities. Bears in British Columbia and Alaska can actually be taller and more massive than the average sasquatch. However, they seldom walk on two legs; let alone run, leap and jump on their stubby back legs. We can note, however, that bears have no trouble finding food (mainly fish), so sasquatch would not have a problem either. That fact has been confirmed by professional wildlife people.

I agree that we should have found a sasquatch skull by this time, but I am not sure we haven't (hidden somewhere in a museum).

The late Dr. John Bindernagel was what we call a "field researcher" (not an armchair researcher like me). I knew him and can vouch that he was a very honest and "uncomplicated" scientist. He went on record with a book declaring the reality of sasquatch, so bones must be out there somewhere.



Dr. Jeff Meldrum with the sasquatch skeleton he created. The skeleton resides with the company that funded the project and is not available for display in a museum exhibit.

## DNA DILEMMA

My article on DNA in the previous issue of *Bits & Pieces* resulted in a reply by Dr. Haskell Hart.

Chris,

Thanks for the opportunity to reply. You are an open-minded guy. I had only one specific disagreement with the DNA article:

*"As DNA does not identify characteristics within the same species, then DNA that results in "modern human" cannot be differentiated if the sasquatch is in fact a modern human—just happens to be 10 feet tall and covered in hair."*

Actually, DNA determines ALL the physical characteristics of an individual and IS used to differentiate individuals of the same species, e.g., those with a particular type of cancer from those without, or those who are dwarfs from normal sized individuals. The challenge to geneticists is to find the specific genes which control these differences in among the over 3 billion base pairs. Based on the many observations of sasquatch, there are significant physical differences from modern humans and probably even more "invisible" differences related to intelligence, speech, metabolism, digestion, and others. After all, the DNA of Neanderthal, Denisovan, and Heidelberg Man are all significantly different from the DNA of modern human, even in the limited mtDNA genome. The nuclear genome of Neanderthal has shown even more differences. And I wouldn't expect that sasquatch is closer to human than these three relict hominoids, though it is possible. Only DNA obtained from a sasquatch specimen in hand (dead or alive) will ultimately answer these questions; that from unidentified sources will always be questionable, even if it indicates "unknown primate." Science is hard to convince, as it should be.

Best wishes to you,

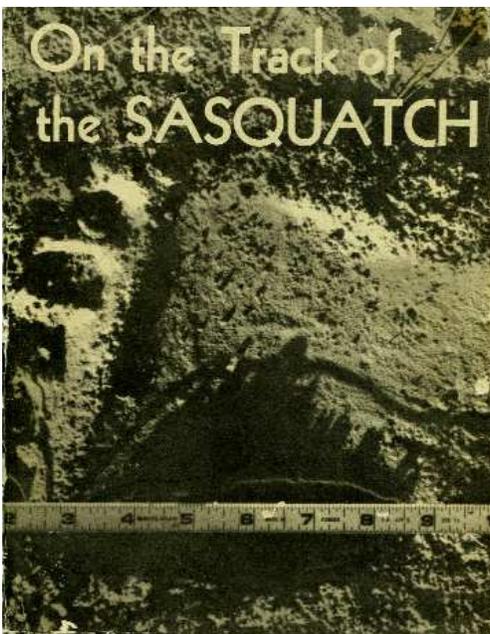
Haskell

**COMMENT:** For certain, DNA is the

"blueprint" for an organism's body, so every minute feature would have to be included. I envision the day when DNA will be plugged into PowerPoint and we see an image of whatever the DNA is from, plus its entire "specifications." Nevertheless, it appears we are marginally there in finding differences in DNA within the same species.

The dilemma I have is whether or not it is worthwhile spending thousands of dollars analyzing trace evidence like alleged sasquatch hair. Personally, I believe that without scientific assistance in research, it will take a dead sasquatch placed on the doorstep of the Smithsonian Institution to get attention.

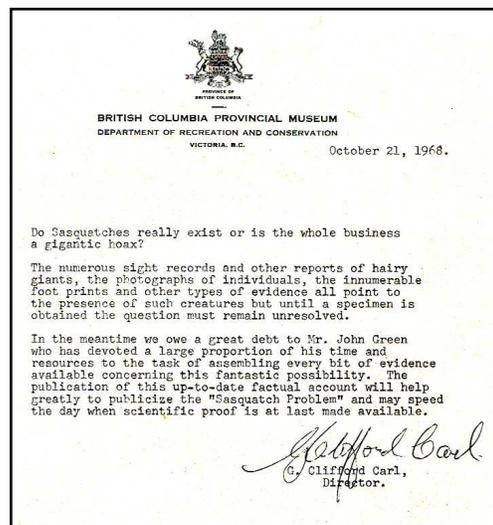
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This is the cover of the first book John Green wrote and self published in 1968. The cover folds out so that the large footprint is life-size (15 inches), the idea being that one could compare his or her own foot to the image.

Printed on the inside of the front cover there is a letter from Dr. Clifford Carl, then director of the Provincial Museum in Victoria, BC (now called the Royal Museum). The letter is shown below. Keep in mind that it was written 51 years ago. You might be amused with the last sentence saying that the book "... might speed the day when scientific proof is at last made available."

In October of the previous year (1967) the University of BC was given a screening of the Patterson and Gimlin film. Patterson and Gimlin were there



along with a host of other sasquatch researchers. A room-full of scientists and professionals were gathered for the event, which had a total of 35 attendees.

I will guess that the event was so well-attended because Don Abbott of the Provincial Museum had been to California in August 1967 and had seen numerous footprints on the Blue Creek Mountain road. Green had invited him down to have a look. Abbott came back totally astounded and when informed of the film by Green asked that it be shown at the university. Abbott had not seen the film, but Green had, so Abbott would have trusted Green's word. Thereupon, we can conclude that Abbott promoted attendance at the film screening.

The event was likely the biggest catastrophe in sasquatch research history. The general consensus was that the film was a hoax and Abbott abandoned the sasquatch subject. It is astounding to me that not one of the scientists in the group asked Patterson for a copy of the film so that he could do a little personal analysis. The year 1968 was not exactly the dark ages; the US was on the Moon the following year.

Subsequent analysis of the film by scientists in Europe (1971) was highly revealing, essentially concluding that the film was not a hoax.

Of course, this is all "water under the bridge," but I think it is both entertaining and intriguing to read exactly what John Green said about the Patterson and Gimlin film in the book I have featured. The following are the applicable pages.

*Continued*

## Roger Patterson's Movie

For years I have been told that if there were such a thing as a Sasquatch someone would have taken a picture of it. Last year someone did, but it has not brought the matter much closer to a conclusion. As a matter of fact I know of four occasions on which a Sasquatch has been photographed. Twice, some years apart, the photographs were taken from planes, both near Sonora, California. At least once they came upon the thing by following tracks that could be seen from the air. I have not seen either of these pictures but in each case have spoken to people who have and hope to see them eventually. Apparently neither is very clear. The more recent of these was taken in January this year.

Another set of pictures came to light as a result of a series of newspaper articles in the San Francisco Chronicle in 1965. Dick Russell, assistant manager of Brooks Cameras, told the Chronicle the pictures were brought in more than five years previously by a grizzled woodsman who gave his name as Zack Hamilton and told of being stalked by a hairy monster in the Three Sisters Wilderness area of central Oregon. He never came back for his films.

Apparently most of the pictures have since been mislaid, but the paper published one of them. It is focussed in the foreground and the "hairy monster" is just a black blob which appears to have arms, legs and a head. It is so much out of focus that the monster could even be a freak shadow effect. If the other pictures could be found, however, it might be useful to compare the shape of the blob and its position relative to other objects. If it shows motion it would almost certainly be the real thing, and indeed there is no particular reason to doubt it. The intriguing question, to me, is what became of Zack Hamilton.

Finally, and by far the most important, there is the movie taken by Roger Patterson in the Bluff Creek area of Northern California in October, 1967.

Roger Patterson is one of a half dozen men in North America who are at present actively engaged in investigating the Bigfoot-Sasquatch phenomenon. Many people seem to think that makes his picture highly suspect--which makes about as much sense as saying that a burglar has

been framed because the man who caught him was a policeman on duty.

Patterson got into the Sasquatch game well after the start, when the big fuss in northern California had died down and the "expeditions" had all departed. He didn't let it lie dormant long.

In his 30's, married, with three children, Patterson is a former rodeo rider and still spends as much of his time as he can on horseback. His home is in ranch and orchard country west of Yakima, Washington, and he makes a precarious living as an inventor and promoter.

His interest in "Bigfoot" started with an article by Ivan Sanderson in True Magazine in December 1959, but he did not do very much about it until 1964 when he went to Willow Creek, and talked to a number of people there who were interested in the big tracks. Although it is about fifty miles away from the area where most of the tracks have been seen, Willow Creek is the nearest town of any size and has seen a lot of Bigfoot hunters come and go. It is also home for many loggers and road construction workers who have seen tracks on occasion, and Patterson had no trouble hearing first-hand stories.

From there he went to Bluff Creek itself, and had the good fortune to meet Pat Graves, a road builder at that time employed by the Forest Service in a job that took him over many of the dirt roads in the area and also out beyond the present roads into the bush.

Graves not only told him of numerous tracks he had seen over the years, some many miles from any road, he also was able to direct him to a set of tracks made just a few days before.

That Patterson saw tracks on a casual visit to the Bluff Creek area is by no means as coincidental as it might seem. There have been tracks to be seen on three of my trips to California when I had no advance information about them, and I have only been there twice when there were no tracks. A man named "Skip" Clark, then an Annapolis cadet, is reported to have been able to get almost perfect casts of fresh tracks, without pre-arrangement, on two consecutive visits.

While Patterson was at Willow Creek he was able to see a collection of clippings kept by Betty Allen, and to talk to Al

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Hodgson, another local Bigfoot investigator. They gave him the names of numerous people to see up and down the country and got him thoroughly launched on his investigation.

The next thing he did was to bring out a book, mainly a collection of material already published in newspapers and magazines. Ivan Sanderson had written "Abominable Snowman, Legend Come to Life" several years earlier, in which he reported most of the information available at that time from all over the world, but Patterson had a good deal that was new. This included reports uncovered by another investigator, Lee Trippett of Eugene, Oregon, and published in the San Francisco Chronicle, and newspaper articles about a famous incident in 1924 when the "Giant Hairy Apes" of Mount St. Helen's staged a night raid on a cabin occupied by a group of miners in what is now called Ape Canyon. He also drew pictures from eye-witness descriptions to illustrate the book.

Patterson had hoped that his book, a paperback entitled "Do Abominable Snowmen of America Really Exist?" would be the means of financing full time research, but it was not that successful. However it did earn him widespread publi-



The Zack Hamilton photo, taken in the Three Sisters Wilderness in Oregon.

city and put him in contact with a whole new set of informants with reports of sightings and tracks. His next move was to start making a documentary film on the subject.

I first met Patterson when he was working on the book, in 1965. He came to see me to get up-to-date information on the Sasquatch in British Columbia and we spent a long evening together. Early in 1967 I met him again, at his home near Yakima, when Rene Dahinden and I made a trip through Washington, Oregon and California to call on other people active in the investigation and to make new contacts in northern California, where almost all our old friends had moved away.

We called again on the return trip, and in all spent about two full days with him.

While in California we learned that the Bluff Creek area had experienced very severe rains in 1964, causing many land slides and serious flooding. Since then, we were told, the big tracks had not been seen. Persistent enquiry, however, finally turned up a total of three reports for the years 1965 and 1966. When I went back to California with the tracking dog last August, I notified several other "Sasquatch hunters" that there were tracks there, and Patterson was among the people I tried to contact, but I could not reach him and he never saw those tracks. However he came to Bluff Creek a month or so later, prepared to stay a while, hoping to get pictures of new tracks for his movie. He and Bob Gimlin, also from Yakima, set up camp near the end of the road in the bottom of the Bluff Creek valley and began making daily patrols on horseback to inspect the sandbars along the creek.

It was on one of these patrols that Patterson got his movie, not just of tracks, but of the track-maker.

Most readers will probably have seen a picture or two taken from the movie, if not the movie itself. I do not have the right to use pictures from it in this book, although Rene Dahinden and I have had Canadian lecture rights to it. It shows a female creature just such as so many people have described, walking erect on two legs, extremely heavy of build, and completely hair-covered. The movie is not sharp enough to show facial detail, but it is plain that most of the face is hair-



Bob Gimlin (left) and Roger Patterson comparing Bob's foot with a large cast from Roger's collection (on the floor) and casts made on the Bluff Creek sand bar where Roger took his movie of a Sasquatch.



One frame from Roger Patterson's movie, as released to the newspapers. It is the best single frame of all, showing the creature facing the camera and with its upper body swung to face the photographer and its arms fully spread, but it has little of the impact of the movie.

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covered, and that the head has heavy brow ridges and a peak at the back, like an ape, but does not have an ape's projecting jaw. The thing has no neck at all, a point emphasized by many people who have told of seeing one of these creatures. The ears do not show. Arms and legs, although extremely wide and thick, do not show any bulging muscles, but there are heavy buttocks--something no ape has. The foot comes down on the ground heel-first, not flat or up on the toes.

Persons seeing the film, even "trained observers" with qualifications in zoology, almost always get the impression that the creature walks just like a man and has a build that would not be abnormal for a man. Frame by frame study of the movie and measurements of the proportions of the figure contradict both these impressions. The stride is actually much smoother than a normal man's, because the knee is bent as the weight comes on it. A walking man bobs up and down as his body goes over the top of his straightened leg. The Sasquatch in the film moves in a flowing fashion, with her leg being bent at all times. It is much straighter when she is reaching out in full stride than when it is bearing her full weight.

No precise measurements are possible, but taking as a standard the length of the foot, which is known from the track to be about 14 1/2 inches, the creature measures about seven feet in height and not much less than three feet in width across the shoulders. This is half again as wide as a heavily-built man, and other dimensions are proportionately heavy. Her thigh is as big as a normal man's chest, her ankle as big as his thigh. Her arms are long enough to span close to nine feet; two feet more than her height, but her body is also very long, so that her arms do not appear to hang very low. Her legs are shorter than those of a normal man. These dimensions cannot be taken as typical for all Sasquatch, since both apes and man show extreme variations in body shape, but they do add to the problems for those who would like to dismiss the film as a hoax.

To begin with, the film itself has not been tampered with. Hollywood, as everyone knows, can produce virtually anything in a film, even the same person



Jim McClarin, studying casts belonging to the author and Roger Patterson, while at Al deAtley's home to see the first showing of Patterson's movie.

playing two parts or imaginary monsters throwing around real people. These "special effects" however, are done in the film laboratories, and the technical people at Canawest Films Ltd., who worked on Patterson's film for us, state categorically that it is an original, not tampered with in any way. In other words, what the film shows is something that actually walked in front of the camera.

Such a thing could be a machine, but estimates of the cost of making one run in the hundreds of thousands of dollars. If it is not an animal or a machine, it would have to be a man in a suit. So far no scientist has been able to point out anything that would indicate this to be the case--even though most of them have been under the mistaken impression that it is about the same shape as a man. Several have said that they can see what looks like muscle movement--that the moving limbs behave like living flesh, not like padding. A particular problem with the "fur suit" explanation is the fact that the shoulder joints are about a foot farther apart than those of any man who

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could be found to wear the suit, yet the thing is able to swing its arms widely and with complete freedom, without any padding being obvious. Anyone who has ever taken a close look at a football player wearing shoulder pads, or who can remember when men's suits were built to give the illusion of great shoulder width, will realize that it is quite obvious when the padding is any amount wider than the shoulder.

I do not contend that no such contrivance could be built, but I do suggest that the thing could not be "just a man in a fur suit." The "suit" would have to contain an elaborate mechanism which would probably not be much simpler or cheaper than a machine without a man inside. Confidence men have done some remarkable things on occasion, and sometimes at great expense, so I will not say that such a thing is impossible, but knowing Patterson I cannot imagine him doing such a thing, if indeed it could be done, nor do I think that he could have raised the money to do it.

I have noticed that scientists who talk to Patterson are not prepared to accuse him of perpetrating the hoax, but since they are equally unable to accept that the thing he photographed was real they seize on the only other alternative, that someone was out there in a fur suit hoaxing him. Oddly, they are thus choosing the one alternative that is literally impossible. Patterson has photographs not only of the creature but also of its tracks, and these shots show the men's own tracks all around the Sasquatch tracks. It is obvious from their depth that the big tracks are made by something several times heavier than the people. Now if there was a man swinging along inside a suit when Patterson took his movie it was most certainly not a man carrying a heavy load--not walking over four miles an hour with three and a half foot strides and deeply bent knees. A man carrying the weight to make the tracks Patterson and Gimlin say this thing made as they watched would have to be a mighty individual to manage even a slow shuffle. It follows that if the thing on the film is a hoax, the tracks and the film could not possibly have been made at the same time, as Patterson and

Gimlin state. If there is a hoax they have to be involved.

So sure are the scientists that the thing in the movie can not be real, that besides failing to make any careful study of the film itself they have done absolutely nothing to investigate the man who made it or the circumstances under which it was made. Private individuals don't have access to the considerable body of information that is available about just about anyone from various official sources, but a university probably would have. A man can't just pop out of nowhere with a mechanical hairy monster or even a monster suit of a quality so good that trained observers can't find anything wrong with it. Places where such a thing could be made would obviously be few. A check of Patterson's recent activities would have shown whether he had either the resources or the opportunity to obtain such a thing.

Also greatly to the point is what Patterson did after he got the movie. He came out to Willow Creek the same afternoon and through Al Hodgson immediately got word to Don Abbott at the British Columbia Museum. Patterson knew that I had taken a tracking dog with me the last two times I was in California, and after mailing the film to his brother-in-law, Al deAtley, in Yakima, for private processing, he and Bob Gimlin went back to Bluff Creek to await the arrival of the scientists and the dogs.

I did my best to get some scientist to go down there, but none would make the trip. The general reaction was that they would know all about it when they saw the film, if it showed anything. I spent so much time and money trying to round up scientists, that I hadn't enough left of either to go to California myself, let alone hire a tracking dog. Meanwhile the weather broke in northern California and a deluge drove Patterson and Gimlin out of Bluff Creek--not because they minded getting wet, but because they knew they were in danger of being trapped behind slides. When they got out Rene Dahinden had just arrived--he had been in San Francisco when he got the news--and Patterson immediately asked him, "Where's Green with those scientists and dogs?"

Patterson had no way of knowing that

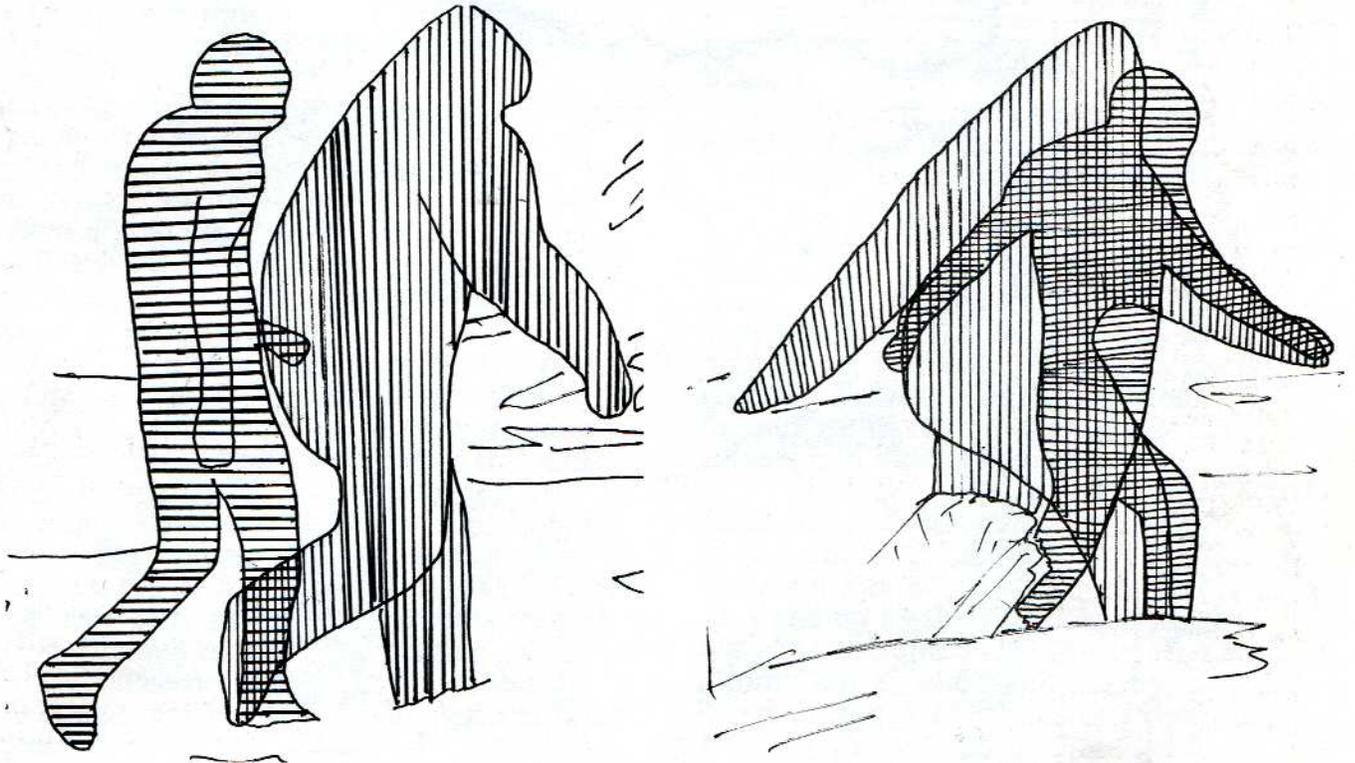
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I would not be able to get there, or that there was going to be a cloudburst. If he were involved in a hoax he might have laid plans to fool a few scientists, but it's hard to see how he could have been sure the dog wouldn't spoil things. With a track so fresh and undisturbed (Patterson and Gimlin had not dared follow the thing into the bush) a dog could hardly fail to get the scent, and if it wasn't able to lead the handler to further tracks or some other evidence that it was following a creature like that on the film the whole business would very quickly start to smell more of fish than Sasquatch.

Bob Titmus came down from Kiti-mat to see Roger's movie when it was shown at the University of British Columbia, and then went on down to Bluff Creek to see what he could learn there. He found the location where the movie was made and followed the tracks across the creek

and up on the opposite hillside, where it appeared the creature had sat for a while watching what was going on down on the sandbar. Bob wrote to me that the tracks confirmed exactly what Roger and Bob Gimlin had said. He brought back 10 casts of consecutive tracks.

Last June I went back to Bluff Creek myself, meeting Jim McClarin there, and we were again able to locate the scene of the film--traces of some of the tracks were still visible. Using slides made from the movie we were able to locate the exact spot where Patterson's camera was when his movie was taken--finding to our surprise that he took most of the footage kneeling or crouching. With Jim, who stands almost 6 feet 6 inches in his boots, acting the part of the Sasquatch, we re-enacted the movie. Comparison of slides of the two films has established beyond doubt that the Sasquatch was not much under seven feet in height and extremely heavy.



These two drawings comparing Jim McClarin (6' 5 1/2" in his boots, 180 pounds) with the Patterson Sasquatch are not artist's impressions, they are a true comparison made by tracing frames in two movies taken with identical lenses from exactly the same location, so that all objects in both background and foreground of each picture line up exactly. In the frame where the Sasquatch has its arms spread there is a possibility of one figure being a few inches closer to the camera than the other, since their feet can not be seen, but where they step at the same place even this slight variation is eliminated.

**COMMENT:** John determined that the sasquatch was about 3 inches taller than McClarin and added this to McClarin's height of 77.5 inches, arriving at 80.5 inches, or 6 feet 8.5 inches. What he failed to notice was that McClarin would be a maximum of 74.5 inches walking height. This means that the sasquatch according to John was at most 77.5 inches (6 feet, 6 inches). At this height, the sasquatch was about 134 feet from the camera using the formula for objects and distances in a photograph. It was subsequently determined that the sasquatch was 87.5 inches tall (7 feet, 3 inches) and was about 151 feet from the camera.