

Marsh asked Felch if he will begin to work for him.

Yale College Museum
New Haven, Conn.

Feb 27th, 1883

Dear Mr. Felch,

I want to start a party digging out fossils in your region before this spring and write to ask what the chances are. Can you yourself take charge and can you get Mr. McGee (or some other experienced man) to work with you. I think two will do to begin with.

I should like to start things by April 1st if possible. Please let me know about these points, and what you and McGee want a month for your services if you take hold.

Also inform me what Lucas has done with the fossils he had, and whether there is not a good chance still on the hill where he worked He has certainly no right to more ground than he is working on , at any time.

Yours truly

Felch to Marsh setting conditions for which he will work for the season, along with possible news of Lucas's plans.

Garden Park,
March 8th, 1883

Prof Marsh
Dear Sir

Yours of the 27th Feb. rec'd last night. If you will pay me 75 dollars pr. Month and furnish me what tools I need I will work through the season for that price and board myself.

It is as cheap as I can work and less than Lucas gets – and I think that I can do as much of that work – and as well as he can. Mc Guin is in Iowa and could hardly be induced to come back. I think I a good man could be had who would work in all right for somewhere about \$2.²⁵ to \$2.⁵⁰ per day and board himself. A good man cannot be had for less. Lucas worked last summer about two miles below my place in the hills on the east side of the creek. The fossils – he told me – differed in some respects from those in the old diggings – though in what manner I did not understand. They were forwarded to Cope some three months since. There will be no trouble going on to any of the ground they claim – at least I am ready to take the chance if necessary – which however may not be – as there are several places that I think are just as good. If you decide to set me to work – let me know soon – that I can fix my own work – and arrange about getting my farm carried on – for the season will soon be along when farm operations must commence.

I think that Lucas will not work here this season – told me last fall he might go over toward Utah and the Green River County prospecting for fossils – I think myself from what I have heard of that section it would be a good field to explore.

Very truly yours
M. P. Felch

O. C. Marsh
New Haven
Conn.

Marsh gives Felch instructions for getting started.

Yale College Museum
New Haven, Conn.

March 17th, 1883

M.P. Felch Esq
Dear Sir,

Yours of the 8th inst. was duly recd—

You may make preparations for beginning work April 1st at the price you name, \$75. per month.

As soon as you find out what your tools, packing materials, etc. will cost, on an average, I should prefer to put all together at so much per month and add this to your pay. This will make the accounts much simpler, as vouchers have to be given for all government payments. So also any expense of carting specimens to the station to ship etc.

Please let me know what you will work for if you yourself furnish a man to help you. I mean how much per month. I should like to make one item of it all.

Later I may send someone who knows about fossils to join your party, but this will depend on circumstances. I wish to get some large fine specimens of limb bones and vertebrae, but the small rare things are equally valuable.

I think it will be well to ship specimens at the end of three months, but they should be boxed where they cannot be handled or examined before shipment.

I may come out myself during the season.

I enclose some directions for collecting fossils in another formation, but you get hints from them.

Yours truly
O.C. Marsh

Felch to Marsh tells of hiring a field hand and makes monetary arrangements with Marsh.

Garden Park,
March 23rd, 1883

Prof. O. C. Marsh
Dear Sir

Yours of the 17th just rec'd to day. I have engaged a first rate – careful and extra good hand – who will work for \$65. dollars pr. month and board himself – or if it will suit you better you can pay me \$140" pr. month and I will pay and furnish him.

As to tools – packing – cartage etc. – I will keep an itemized account of all and average it over the monthly wages as you desire.

I think I can find what you want in the way of large limb bones and vertebrae on the hills west of us – and perhaps some small ones – I know of two or three places where I think there is good ground that has not been worked.

In regard to payments. How often – or at what times could you send remittances? I should have to incur some expense in starting – can usually get about 30 days' time and should probably have to pay my help monthly.

We hope and shall expect to see you here before the season is over.

Very truly yours
M. P. Felch

Marsh tells Felch he is sending Brown to work with him.

Yale College Museum
New Haven, Conn.

March 25th, 1883

M.P. Felch. Esq
Dear Sir,

Since I wrote you I have heard that one of my old collectors Fred. Brown, is in New Mexico (Watrous, Mora Co.), and as he wanted work, I have written to him to report to you. I think he will be with you soon, perhaps by April 1st. I think he will prove a useful man, as he has had a good deal of experience in digging out similar bones to those you will find.

You, of course, will have charge of the work, and if he does not suit you in any way you may let him go.

I meant to have him work in addition to the man you spoke of securing. So my request for you to name a price per month for yourself and outfit etc., would be quite independent of what I pay Brown if he comes.

I want to push on the work and hence thought three men none too much.

Yours truly
O.C. Marsh

Felch writes to let Marsh know what areas he is working and plans to work. He began in an area worked by Mudge. Brown is working also.

Canon City, Colo.
April 5th, 1883

Prof Marsh
Dear Sir

Yours of the 26th recd. Brown came before your letter was recd. He seems to know the business very well – & I think we will get along all right.

I commenced on the old ground worked by Prof. Mudge – I thought it best to work that enough to hold it – and also to try and find the companion to the large - limb which we found there when Mudge was here. We have uncovered several bones but no vertebrae or limbs.

I shall next week prospect a place where there are some croppings of bone in chocolate shale – similar to where Lucas done the most of his work – I think the bones are usually better preserved there than in the sand rock.

I have got a good “team” and will push things along as fast as the nature of the work will allow.

Very Respectfully
M.P. Felch

Marsh tells Felch to try elsewhere if he can't get good bones.

Department of the Interior, United States Geological Survey
~~Washington~~-New Haven,

April 13th, 1883

M.P. Felch,
Dear Sir.

Yours of the 5th duly recd.

If the old quarry does not turn out good limb or toe bones or vertebrae you better try the chocolate beds.

There must be good bones near where Lucas worked on the hill.

Yours truly
O.C. Marsh

P.S. A skull is worth more than anything else.

Marsh tells Felch to write every week.

Yale College Museum
New Haven, Conn.

May 14th, 1883

M.P. Felch
Dear Sir.

I have heard nothing from you or party for about three weeks, and am anxious to know how the work goes on.

It is important for you to write me fully about the work at least once a week. At the end of each month, I wish you to send in your account in the form of a bill, stating your items so that I will understand them. You can put on the bill Brown's wages.

Yours very truly
O.C. Marsh

Felch writes Marsh that he has received no payment from him. He outlines his expenses in detail, and states that perhaps Marsh is waiting for this information. Felch explains that he has incurred startup costs. He hopes to receive money by June 1st.

Canon City, Colo.
May 17th, 1883

Prof. O.C. Marsh
Dear Sir

I looked for a remittance from you for Aprils work by the 10th of this month – and on that expectation engaged to meet some demands for help – and expenses incurred in getting started.

Not hearing from you – I presumed you might be waiting to know what our average expenses would be – before sending.

Our expenses to date for tools – boxes – lumber packing etc amount to some over fifty dollars. In this is included a small blacksmith outfit in that we are able to make and sharpen our own tools – a saving during the season of more than the original outlay – also saving the time and trouble of sending to town to have such work done. Our expenses as near as we can figure will not be less than 15 dollars pr. month supposing we worked 7 or 8 months without including cartage to town for which I shall make no charge as long as I can do it with my own team. That is – an average of 15 dollars pr month from Apr 1" to the time the season is over for myself – one man and Brown.

This = if satisfactory – will make my bills amt to \$155. (one hundred & fifty five) dollars pr. month – 75 for myself – 65 for the man I hire – and 15 for the average expenses.

Hoping you will be satisfied with this and can send me some money by the 1st of June I will be greatly obliged

Respectfully Yours
M.P. Felch

Marsh sends first payment.

Yale College Museum New Haven, Conn.

May 23rd, 1883

M.P. Felch

Dear Sir.

Yours of the 17th inst is at hand and I enclose my check for \$155. as you request. Please send receipt.

Write fully about work once a week at least.

Yours truly

OC Marsh

Felch to Marsh, in addition to monetary arrangements, is basically telling him of the bones they are finding. He mentions Williston, Brown, and Lucas. He complains of the sand rock being very hard.

Canon City, Colo.
May 25th, 1883

Prof. O. C. Marsh
Dear Sir

Yours of the 16th ult I received today. I must apologize for not writing oftener – but as you did not mention about monthly reports – did not think it would be required – unless in regard to something of special interest. In the matter also of accounts – it will be far more satisfactory to me to render a monthly itemized account of all expenses incurred than to guess at a general average. So far I have most of the items – and as soon as paid will send receipted bills for my vouchers. I enclose a bill of expenses for tools etc – and shall not have to buy anything more for a week or two to come. We have had only fair success so far with our work – still I think we have a good variety – and some that I hope will prove of interest and value

Most of our work has been done in the old quarry – we have stripped off some 50 yds in length = from 10 to 20 feet in width and in places 10 to 12 feet in depth to get to the pay streak. The rock as we get in gets very hard in places – almost like mill-stone grit – and where the bones come in that – it is a slow and tedious job to work them out – as all the rock around has to be chipped away with small chisels a fragment at a time.

If it were not that there were so many good bones – of many different kinds I would abandon the quarry for some other place – but in all our prospecting do far the fossils seem to come in about the same kind of rock as here – We took a good look over the hill around Lucas' claim to see if it was any better – but find in his old pit he had worked in to a hard conglomerate as hard to save bones in as the sand rock – and in several more places on the hill – we found where Lucas had tried to make new openings without success. There is one more locality where there are plenty of croppings – that I shall take all hands for a day or two to develop soon. Many good bones in the old quarry – that were partly uncovered by former workings – and have been picked over by curiosity hunters and other vandals since – have become in part or wholly worthless. This is the case with a string of cervical vertebrae – that lay in regular succession 16'1/2 feet in length – I have half the cup of the last = one that came about half way up = and the two last – that came up near the head. From nearly two feet in length - they run down to only about 8 or 10 inches in length. The three if they arrive in as good shape as we now have them packed can tell their own story. We have also one dorsal in fair condition – I think of a different individual – There are some more dorsal vertebrae in sight – but in such hard rock I dread to undertake their removal – as it will take a week of hard work at least to remove one – with all the risk of getting it shattered. If you think best however I will try on them and do the best I can – Brown has been at work on what he calls a scapula – for a few days and I think it will be easily restored. It is all of five feet



long and is shaped something like If a scapula it differs from the one Mr. Williston and I removed only about 10 feet distant from it. I also got out a good scapula this week of a smaller animal – the bone measuring only about 30 inches in length – It is quite thick and heavy for its size. I am now at work on a fine lumbar vertebrae – which if I have no bad luck can be easily restored. The small end of the series of cervical vertebrae – came within about two feet of where Mr. Williston took out the only foot bones found at that time and we worked over the ground all around an inch at a time to find some part belonging to the head – but only found some six feet away a section of jaw with a few teeth belonging to a herbivorous animal. The piece of jaw is safely packed. Some of the teeth that lay away from the jaw I will send by mail next week with other varieties that we have found We have several other pieces of jaws and two whole ones – one about an inch long filled with mammal teeth – another a foot or more in length – teeth and sockets in a deep groove = a fine specimen in almost perfect shape = taken up in the rock. We have also a good variety of small bones – feet – claws small to middling large limb bones etc etc A good work on "Comparative Anatomy" would help me. One not too costly = 10 dollars or so = if you could send one and deduct price from my bill I would be greatly obliged

Respectfully –
M.P. Felch

Felch writes a receipt for Marsh's check.

Canon City, Colo.
May 31st, 1883

\$155.⁰⁰

Rec'd of Prof. O. C. Marsh - check no. 8 on Tradesman's Bank New Haven Conn - for
the sum of one hundred, and fifty five dollars - for work on fossils for April 1883

M. P. Felch

Expense list from Felch to Marsh:

Canon City, Colo.
May 31st, 1883

Prof. O. C. Marsh
To M.P. Felch Dr.

To wages for self from Apr. 1 to May 31 inclusive..	\$150.00
" " for J. A. Smith Apr. 1 to May 31 inclusive..	130.00
" " " Fred Brown " " " " " "	140.00
Bellows - Anvil - tongs and hammer	15.00
Wheel-barrow ^{4.25} - 2 shovels ^{2.50}	6.75
3 Picks with handles ^{4.88} - 1 extra pick handle ^{.40}	5.28
3 Small brooms ^{.60} - 2 mallets ^{.90}	1.50
Twine ^{1.10} sacks ^{1.60} hammer ^{.100}	3.70
Coal ^{1.00} sacking needles ^{.10} boxes ^{2.00}	3.10
Steel for chisels ^{1.00} Battin ^{1.60} Glue ^{.40}	3.00
Bale hay ^{1.25} wrapping paper ^{3.00} hoop iron ^{1.00}	5.25
Iron bar ^{2.00} nails ^{1.05} hand saw ^{1.75}	4.80
Turpentine lamp black and brush	.50
Lumber	<u>4.56</u>
	\$473.44

Felch writes to thank Marsh for the check and asks him to clarify when remittances will be sent. He also tells of the bones he is finding.

Canon City, Colo.
June 3rd, 1883

Prof. O. C. Marsh
Dear Sir

I received on May 31st your check No 8 on Tradesman's Bank for one hundred and fifty five dollars. Please accept my thanks for the same. Enclosed you will find a receipt for same. I mailed to you the same day a small box containing a few teeth - a small jaw – and some other small bones. Of teeth No's 1 & 2 we have a portion of the jaw – also 3 & 4. Work during the past week has progressed fair. Brown has finished up his scapula and one of the ribs. I have taken up a large lumbar vertebrae – the body of one dorsal and several small vertebrae and have partly exposed another larger flat bone one end of which got badly crushed in removing the rock above. The other end is good – and I can get a good diagram from the impression of the remainder. It is different from anything before found in the quarry will get as good a sketch of it as I can. On "East End" = one of the divisions of the quarry = Smith made the best find – some small limb bones and vertebrae - and the tibia and fibula of a fair sized animal. The bones in remarkably good state of preservation – lying in natural position. We took them both up without losing a fragment in five sections. As I expected on working carefully we found the femur in line with the others – which we have now uncovered in front and top – and which I think will take out in nearly as good condition as the lower bones. Back of the femur the workings have partly exposed two more leg bones which seem to connect with the proximal end of the femur – running off from this end at about an angle of 20 degrees. The first one or one nearest the femur – is lighter than the back one – and if I am right the two are the post pubis and ischium. This last makes four if not five of the larger animals in the quarry besides the remains of numerous small ones. We hope to find more of this one last described – the bones are in so good condition I keep a record of locality of most bones found – by sub-dividing the quarry – so as to be able in the future to extend the workings in that any special direction if necessary.

I sent a bill before receiving your remittance including the wages of all with expenses to date. Please write how you would like to do in the future so as have a little better understanding in regard to payment

Very Respectfully
M. P. Felch

Felch writes to Marsh telling him of cervical vertebrae and adds a note the next day that he is mailing one. A detailed drawing is included. He includes a note the next day for June 7th giving more information about fossil.

Canon City, Colo.
June 6th, 1883

Prof O. C. Marsh
Dear Sir

I send a little sketch of some bones found under the large femur that Smith has been at work on and which he took out yesterday. The vertebrae 1 & 2 + the bones 3 & 4 lay about midway of the shaft.

As the vertebrae appear to us to be cervical --and the whole connected we conclude it may be a portion of the head. The sketch is natural size – though 3 & 4 not fully defined most of it being in rock. We separate at 5 + 5 – will send 3 & 4 by Reg. Mail – and keep the vertebrae (fine specimens) subject to your order. The femur came out splendid – in four nearly equal sections.

Respectfully Yours
M. P. Felch
over

Thursday June 7th

After writing the foregoing last night – I worked a long while to get the rock away – to shipping weight and was somewhat undecided from its appearance – whether it would be of any value – but conclude to send it for the cost is but a trifle – and I think it better to be on the safe side – and send some even worthless specimens – than to throw aside one good one.

Respectfully
M. P. Felch

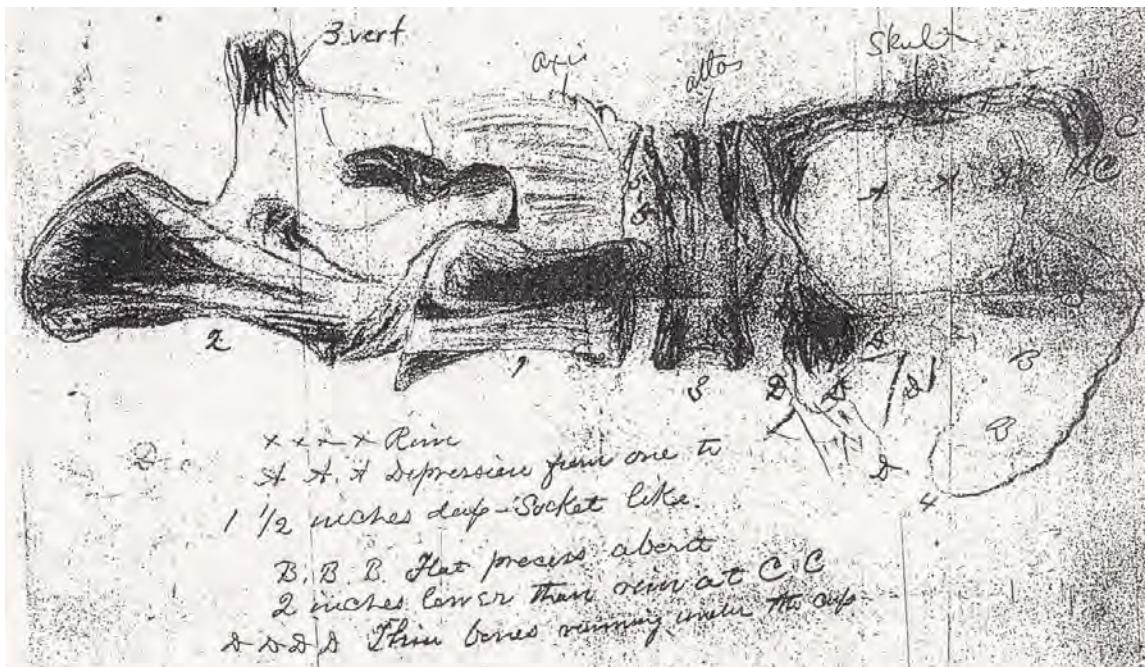
Skull No 1

Diagram of bones found under femur – Bone N “East End” by J. A. Smith

June 5th, 1883

(Old Quarry Garden park)

Canon City Col.



xxxx Rim

AAA Depression from one to
1 1/2 inches deep – socket like

BBB flat process about
2 inches lower than rim at CC

DDDD Thin bones running under the cup

Felch writes to Marsh to tell of finds, which include limb bones, foot bones and some vertebrae. Two pages of drawings are included, one of which is a tooth.

Canon City, Colo.
June 13th, 1883

Prof O. C. Marsh
Dear Sir

Since my last of the 7th when I mailed the box containing the specimen we have had unusual heavy rains for the season – which has delayed the work on bones somewhat and we put in the time as well as we could in packing up – clearing away and stripping off. I send a sketch of the bones mentioned in my last letter – found by Smith in "East End" Div. We have them all out now and packed up – and are quite sure that all shown – with the exception of the limb bone at X which was uncovered to-day, belong to one animal. This new limb bone – is quite different from any found in the quarry and though part of one end is gone there will be enough left to define it pretty well – while the other end which is peculiar – will I think come out nearly perfect. Brown commenced last week on an extension of E. End and is finding some bones – has 2 – 3 vertebrae – and some small bones among which is a claw differing from others found here – in having nice and well defined articulation – being more strongly curved inward – and sharper pointed and in having a smooth groove running the whole length – from about 3/16 to 1/8 in. wide and 1/8 in. deep. Enclosed is a drawing of it which he made also took off another one of those small jaws which he found today. The specimen is not quite as perfect as the last small one but 10 or 12 teeth, in the space of 3/4 of an inch show very plainly.

In regard to my sketching – all I can or attempt to do is to show the positions of bones in vertebrae to each other – locality etc.

I have also found in another locality not far from our present working where there appears to be some bones and I partly uncovered a limb bone and a few foot-bones – the latter not very well preserved – By going in farther they may prove to be better. Think we shall try them next.

Respectfully Yours
M. P. Felch



Foot bones

Bone N – about 4 ft long – wide and rather thin in shaft
Bone M. Lay as represented – in relation to N

Bone PP. Connected with N at A

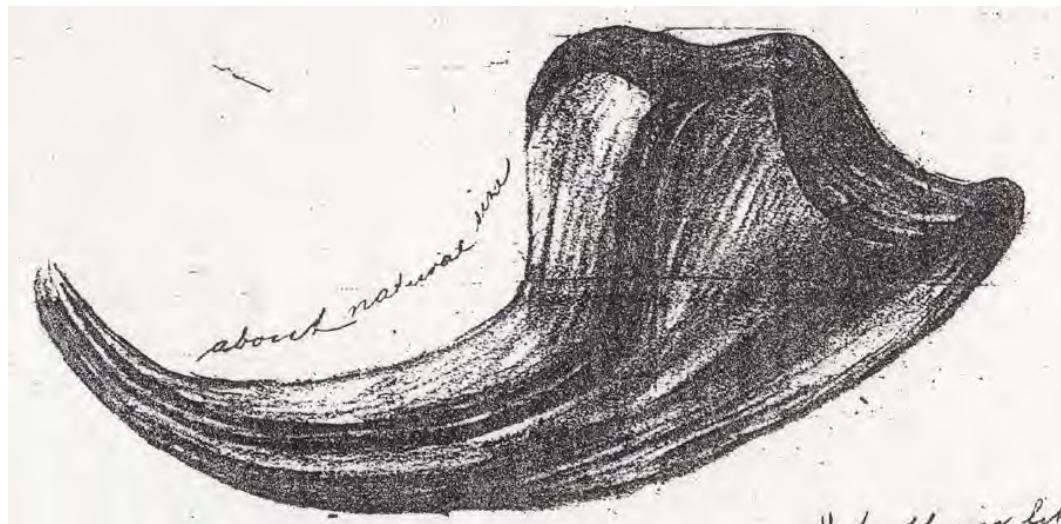
“ OO About 10 inches above PP at A

Bone at X = large limb bone running into wall obliquely

The bones at OO & PP appear to unite at B forming one bone

Of the foot bones – there are 3 of the long ones – 2 claws – and several of the short ones

From the center of “East End” Div.



|| Tooth in little jaw
shows 12 part of Jaw gone
Think back; part is com-
plete

Tooth in little jaw shows 12 part of Jaw gone

Think part is complete

Marsh sends another payment and instructions on how to pack and send specimens.

Yale College Museum
New Haven, Conn.

June 14th, 1883

M.P. Felch.

Enclosed find check for \$160, which with what I sent before (\$150.) will make the average you named (\$155) for two months, or to June 1st. Please send a receipt for same.

In making up the quarter ending June 30th, you may correct these figures if necessary. It will save much trouble with vouchers if all the small expenses are brought together in the general average for yourself, team etc.

I will send vouchers for first quarter as soon as you inform me what the average for 6 or 8 months will be, if it differs from your first estimate of \$155 per month.

I will send Brown a separate check by the mail this time and after this through you.

The cigar box of fossils came duly. The little jaw was very interesting as it was a mammal. Say nothing about your discoveries, but try to get some more remains of the same nature.

Send by registered mail, any small things of interest, but label them carefully so that we can put them with the rest of the animal when other bones come in.

Send at the end of each month a statement of accounts, expenses etc.

Yours truly
O.C. Marsh

(P.S. over)

P.S. Pack the large specimens carefully in strong boxes numbered 1,2,3, etc. and keep list of contents to send by mail. I don't care to have heavy boxes sent on at present by freight.

If you have a skull or good jaws, you may number item and send by Express or mail.

Later in the season you can send a number of boxes together as freight, but not till I advise you about route etc.

M.

Marsh sends pay through the government.

Department of the Interior, United States Geological Survey
~~Washington~~ New Haven

June 18th, 1883

M.P. Felch Esq.
Dear Sir

I enclose vouchers for the present quarter, for you and Brown to sign, as I can get no pay for you from the government till the duplicate vouchers are in Washington.

Please sign at bottom of page and return to me here as soon as possible all four papers. I have made your pay \$160 per month for this quarter. If this does not cover the expenses I will increase it enough to do so after July 1st so that the season will make the average all right.

Yours truly
O.C. Marsh

Felch writes to Marsh thanking him for pay but also states that he needs the expense money to settle bills. He then goes on to tell Marsh about recent fossil finds and gives information on bones being shipped.

Canon City, Colo.
June 20th, 1883

Prof O. C. Marsh
Dear Sir

Yours of the 14th with check rec'd today. Please accept our thanks and find receipt enclosed – Your first check No. 8 was for \$155. instead of \$150. – so you have now sent me in all \$315.⁰⁰ toward work for myself – Smith and expenses.

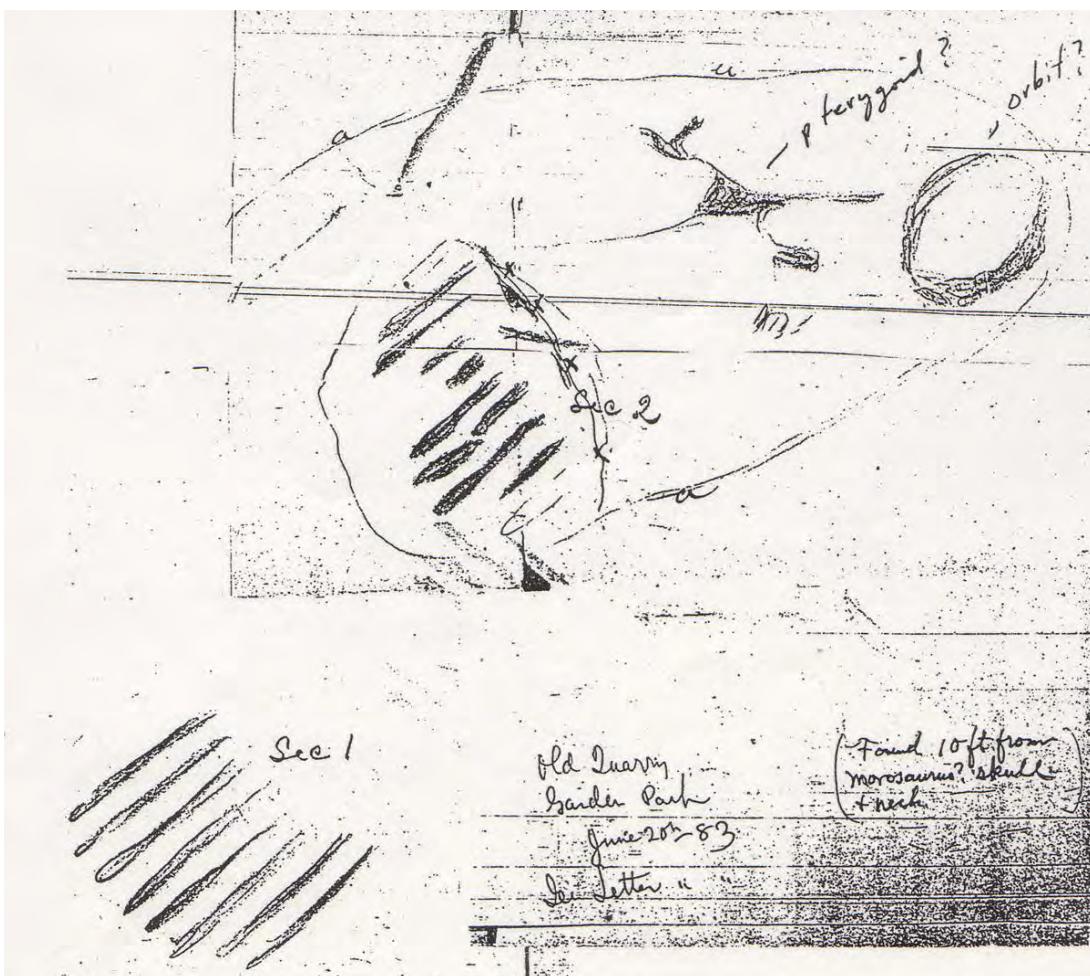
I expected after your request for an itemized act. And I returned the statement for Apr & May that if you found it satisfactory – you would send what was due – so that I could square up my bills to June 1 – but a portion I had to let run over and all my grocery and some other bills. However, this installment will nearly straighten out matters and as long as you would like to have an average I will make it for the quarter ending June 30 – 20 dollars pr month – as that will hardly make the cash for the first three months. Here after if less I will reduce it. All I want is what I have to pay out - and carry on the work as cheap as possible. I will send by registered mail another little jaw which I hope will prove as valuable as the last – also some teeth in rock that I took out since writing last. I found them under ground that had been worked over – among a lot of pieces of rotten and broken fragments of bone. In the diagram enclosed sec. 1 was alone – Sec 2 a piece of rock in-side line a-a-a- dark places showing the bone and teeth. I chiseled off at x x x sending the piece with seven teeth and two impressions – and will keep the rest to send in a box. The underside of the rock – sec 2 shows all the bone quite plainly – sec 1 is pretty badly broken but enough left to get some idea of the shape of the teeth – I worked two days around this to find more – or some head bones but without success In the East End Smith is finding more good bones every day – has got two pair more of limb bones of the ~~lower~~ forward legs I think – one set 19 inches in length the other 30 – all nearly perfect I will send a duplicate of my diagram of these two on the outside of the box of fossils that I send by mail. There are now two more bones in sight that appear to be limb bones – one flat bone – 3 strings of vertebrae from 3 to 15 in a string many of which will come out in good shape. We think we may be able to get enough bones to make up more of one animal than we have found before – and perhaps a new species. One caudal or lumbar vertebrae that Smith took out to-day some 8 inches in length of body and 5 or 6 across – is only slightly concave behind and nearly a plane forward

Brown worked hard on his extension but without much success – as most of the bones found there are fragments so we concluded to work in another direction for a while.

In regard to boxing etc. – I have most all the bones packed – nailed up and marked – A. B. C. etc. and in general – contents noted. Under the cover of each are what diagrams will be wanted in restoring – also a list of most all the bones in the box – locality etc.

I wish I could get these off – so as to commence another lot in a more systematic manner
– but will await your order

Respectfully Yours
M. P. Felch



-pterygoid and –orbit notes by Kenneth Carpenter, DMNS.

Canon City, Colo.
June 20th, 1883

\$ 160.⁰⁰

Rec'd of Prof O. C. Marsh check No. 20 – on National Tradesman's Bank – New Haven Conn. For the sum of one hundred & sixty dollars – for expenses and work on fossils for May 1883

M. P. Felch

**Felch has found a few small vertebrae and sent the specimen by registered mail.
Marsh responds with instructions to deal with more of the specimen.**

Yale College Museum
New Haven Conn.

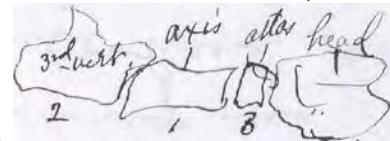
June 21st, 1883

M.P. Felch Esq
Dear sir.

Your letter of the 6th inst with diagram of the vertebrae etc. (found under femur by JA Smith June 5th) came duly, and shortly after the box sent by registered mail.

This specimen is of much interest as it is the back of the head attached to the neck vertebrae. E.g.

The skull is broken off just back of the eyes. The short vertebra is no 1 or atlas, the next



is no 2 or axis, and the long one is the 3rd vertebra. E.g.

Now it is important to get more of the head if possible, especially the teeth. Were any teeth found near this head or within several feet of it? If so send them on by mail.

It is also very important to keep the vertebrae by themselves in the order (if possible) in which they were found. If you mark the next vertebra behind the last sent no 2, the following one 3, etc. you will have them all right. Probably they will be displaced further back, but you ought to get the whole set. The vertebrae should have a round ball in front and a cup on the hind end.

Send on by mail the vertebra just behind the last sent. Also send that other small jaw, by mail.

Yours truly
OC Marsh

P.S. How long was femur found over this head?

(over)

P.S. You better keep copies of your diagrams so that I can refer to them. Don't let any outsiders see them however, and caution the men not to say what is found.

**Writing again on the 21st to give more for marking specimens to aid reassembly at
New Haven.**

Yale College Museum
New Haven Conn.

June 21st, 1883

M.P.Felch
Dear Sir,

Since writing you this morning it has occurred to me that the best way to mark the localities of the bones found would be to make a map of the quarry showing 1st the old workings.

2nd the extensions you make

3rd the positions of all important bones found

Then when you send a box, you can mark a line around the bones then sent,



ep. In this way we can keep the thing straight. Otherwise there is great danger of confusion, and half the value of specimens consists in knowing where they lay with reference to others.

If now you name each skeleton, A, B, C etc you will help us greatly. Suppose for instance you call this piece of head sent Skeleton A and all the rest of the same animal, Skel A this will keep it all by itself.

If you have already started on other distinct skeletons, you might call them B, C, etc, as you chose. The main thing is to keep each separate, and have them so labeled that we can make them out here. You might label the vertebrae etc of each skeleton Vert 1A, Vert 2 A, Bone 1 A, etc.

I will send you some red crayons to mark broken bones so that we will know how they



Yours truly
OCM.

Vouchers received.

Canon City Colo.
June 25th, 1883

Prof. O. C. Marsh
Dear Sir

I received yours of the 18th inst. last evening with vouchers. Brown and myself will sign and send to mail this morning, so you may receive it by the 30th. The work goes along well – though the extreme heat of the past few days makes it severe at times to work without shelter from the sun.

I will write more fully and render an account for the quarter.

Respectfully
M. P. Felch

Marsh tells Felch what the two jaws he sent are and, again, how to mark breaks in bones to make them easy to reassemble.

Department of the Interior, United States Geological Survey
Washington New Haven

June 27th, 1883

M.P. Felch Esq.
Dear Sir,

Your small box sent June 21st came today. The small jaw (broken) is a Mammal similar to the first sent. This shows that Mammals are abundant in the old Quarry, and a careful look out for them should always be kept, as they are most important of all.

The large jaw also in pieces is a Dinosaur, and it is very important to know just what vertebrae go with it. Did you find any bones near this jaw that might go with it? Can the small base of a skull (with Atlas attached) sent in last small box go with this Jaw? How far apart were the two specimens?

Next to the Mammals, the important point now is to know what skull and vertebrae and limb bones go with these slender cylindrical teeth.

Please send by mail not merely the axis (2nd vertebra) connected with that skull, but also the 3rd and 4th vertebrae. This will help us out. You can, I think, send one at a time, and keep within the four pounds limit. If not, send a small box by express containing several of this series of vertebrae.

A few small pieces were broken off of that skull before packing. Can you find them? Every fragment of a skull is important. Write soon about this.

Yours truly
O.C. Marsh

(over)

P.S. I send you some red crayons to mark broken bones with so that we can easily fit



them together here. [for example] This will save us much work, especially for the small fractures. Also I send some cards to go in the boxes.

M.

Felch writes to Marsh telling him of items being sent. He explains how he has marked the bones to facilitate eventual reconstruction and tells of two new areas. He and Brown do some more work in Quarry 2. He mentions that he needs to work #2 and another place one "enough to hold as I understand that Lucas will soon go to work for his old employer."

Canon City, Colo.
June 30th, 1883

Prof Marsh
Dear Sir

I rec'd yours of the 23rd yesterday and sent Reg. Mail pkg. No 4 to day containing the vertebrae belonging to the specimen sent in pkg. No 2. The two sections were all that have been found though the work has been carried in some four feet back into the wall – and 8 to 10 ft. on either side of where they were taken up. It may be that farther in more will be found for all bones in the vicinity are carefully looked after. There have been no teeth found nearer = some 10 feet away = than those sent June 21st in pkg. No. 3

Smith found however near this place another of those small jaws – an inch or so in length and some rock with teeth and perhaps fragments of a jaw – the teeth we think having the appearance of these in the mammal jaw. Will send all the pieces in the next box when I send this to mail. I will enclose a little diagram of the position of strata where we are at work and in fact the whole length of the quarry. Most all of the small bones like foot bones and all the jaws come down very near the marl bed in 3. I will make a map showing the position of different bones as well as I can before sending on the boxes. The femur under which the head and vertebrae was found is about four feet long very wide and thin for its length and several other limb bones – tibia and fibula – humerus – radius and ulna – some vertebrae and a scapula seem to correspond in their general shape to the femur. All of these last named together with other small limb bones – three distinct series of tail vertebrae of which we have taken out now over 30 (18 in one series) more limb bones flat bones and vertebrae in sight are included in a space less than 6? feet wide and 15 long. The three series of vertebrae run nearly parallel with each other and in places so close as to overlie and rest on one another – In such a mass and confusion of bones it will be difficult to map them out very accurately – still I think that I may be able to give you a nearly correct idea of how they appear as found. Where we have to take up a limb bone or other large bone in sections – I make as correct a diagram – full size – as possible – letter the bone – mark each section with the brush – also on the diagram to correspond – protect the broken ends with cotton and paper and then sew gunny sacking tightly around the inner covering – and on this outer covering I mark the letter – no of section locality etc with the marking brush and pack with hay in strong boxes – enclosing diagrams and list of contents – locality etc under the cover of each. With these precautions the bones ought to go safely and arranged without much confusion.

We have begun a new opening in quarry no. 2 some 150 yds. distant from the old quarry – and across a deep gulch. In this Brown has found two short limb bones - a part of a jaw

and a scapula and coracoid – the scapula about 4 feet long. He also found the humerus lying nearby but it was too badly rotted to take up. We shall work in and hope if we find bones they will be better preserved I have also another place near that I wish to do work enough to hold as I understand that Lucas will soon go to work for his old employer.

Respectfully Yours
M. P. Felch

Reg. Pkg No 5 contains a small jaw marked no 2

1 & 3 are pieces of rock with teeth

Also small limb from lower strata

All from East End

M. P. Felch

July 2nd, 1883

Felch writes about specific specimens sent and refers to diagrams in answer to questioning by Marsh. He also gives information that strata containing mammal

fossils are no longer thrown over the dump but worked over first. He tells of boxes he will soon be sending and mentions that Brown is leaving and needs his pay.

July 5th, 1883

Prof. O. C. Marsh

Dear Sir

Yours of June 27th I rec'd yesterday. Enclosed diagram or sketch of East Div with a portion of the Central – show most of the bones found, and their relation to each other – and a little explanation may answer your inquiries in regard to specimens sent. The old workings were carried up from the edge of the bluff at A & C to the vertical section where at O it was some two feet thick – a narrow bench back of that toward the wall 3 or 4 feet wide barren of bones. I do not remember all the bones taken out in 1877 but can accurately place those represented. At 11111/O where we began work this season – in the face of the section were exposed what I thought were a lot of long foot bones standing upright. In working around them they proved to be vertebrae with ribs – those in front having been removed but 5 in the back side coming one after another in regular succession. From the body they ran out some 15 inches to an elbow and then turned and

ran out to the small end the whole length of the longest being some 5 feet  But one of these was saved and only the body of that – the mass was so rotten with those that came in order – but several that lay outside – one or two in a place have been saved – and put up marked E. End. that may belong to this series – The distal end of these as of 1 – 2 and 3 point to the right. The next bones found were tibia and fibula M. The next was femur N under which the vertebrae and skull was found by Smith June 5th. The head here lay to the right and up the hill as shown at a. Every fragment of these that we could find has been sent. From the position of these, I still hope more may be found farther in up the hill – and we have only gone back of that pit into the wall between four and five feet. O.O and P.P were in position as represented in relation to the two femurs N. & Q. R. & S. were two small limb bones – a full size diagram of which I sent you. Q is a large femur – at X lay over N. The other limb bones are explained in diagram. The Dinosaur jaw sent June 21 were found in Cen. Div. and I think belongs to either series 2 or 4. Series are 2 = red lined = are long – thin and slender – We have some 18 saved out of 24 – the smallest but a little more than an inch long. They seem to correspond in their make up – to the femur and fibula & tibia N. & M. Series 4 was the long string of cervical found early in the season – top at f- and the head and skull of which we searched so long without success – unless these of the slender teeth are the ones. Though I cannot give any very good reason – I incline to the belief that these last belong to series no 2.

Series 1 are short - and stout = have several saved and more of them as of 3 in sight in the wall. The neural spines (if I am right) of series 1 are entirely separate and distinct from

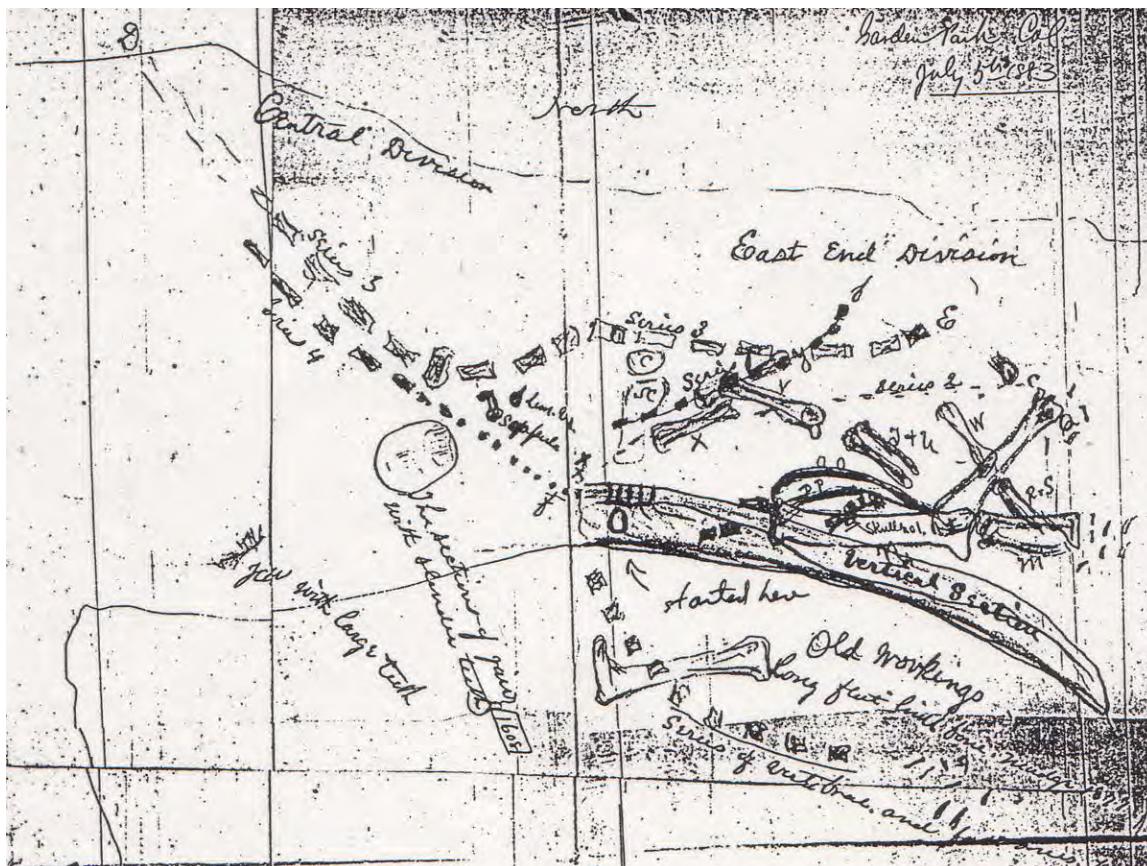
the body – and some of them are shaped like the “wish bone” of a chicken  I have several of them almost perfect already packed. Series 3 is another long string – have got out 7 in order from E. and one dorsal - red-lined. The head of this skeleton is somewhere way up the hill to the left buried under from 6 to 10 feet of cap rock if it is

there at all. I think the femur Q belongs to this skeleton. The red lined ~~is~~ X is the one I took out in 1877 of which I made a wooden model

Besides these shown – there are many more – and just over the line from the east into the Cen. Div. where all these seemed to center – it was the most confused mass one could imagine – and hard to trace anything satisfactory. Of the bones belonging to the Dinosaur jaw – I have one fine piece in rock that belongs to it and a lot more that may – but as I have said before there was such a mass of rotten ribs – crushed vertebrae etc, I could not tell one from the other. I will send the one piece that I am sure of - and the others (a small box full perhaps) if you wish.

Of the little mammals – we are on the lookout all the time as the work on the larger bones goes on. All of the strata that contains these things – we pile up by itself to work over at leisure instead of throwing over the dump as formerly. Brown has found a lot of stuff today that looks singular – not far from where he found the last jaw – and as there were some large teeth in the vicinity we thought it might be portions of a head. I will send what I can get into one box by mail – (so as to be on the safe side) and if it proves valuable can make up a box with this - and mine and some other things to make a hundred pounds = everything is 100 # or more with the Ex. Co = and forward to you and in the meantime keep all the pieces separate and safe. Brown says he is going to leave as soon as he can get his pay – and go back to Wyoming. If you can – you might send so as to pay him by the 15th of this month up to that time – either to him or to me and I will settle up with him. We have had no trouble and I like him well enough in the main – but he is getting discontented and perhaps had better go. I will send the box soon

Respectfully
M. P. Felch



Notes on the map are, in part, those of Dr. Kenneth Carpenter, Denver Museum of Nature and Science.

Bones M. Fibula & tibia first of this lot uncovered

" N. Femur that covered the skull and vertebrae - at G

OO & P.P. connecting upper end of femur and down to end of bone *Q*

R.S. small ends under M.

T.U. Limb bones. V. Limb bone - *UX* Limb. Y Limb

S^c. Scapula & coracoid, pieces of coracoid saved.

Bone Q Large femur – end at X lay about one foot over N.

Ver. Series 1 Distal end running in to wall at f. This series lay over all the others

" " 2 marked in red. Last one of 24 an inch or little more in length at c

" Series 3 D to E. Saved only one dorsal - red lined

" 4 Cervical found early in season – last two near head saved in good condition at f

Red lined bone xx found in 1877. Model in wood made for Mudge.

11111 vertebrae.

O where the old workings left off and the new commenced in this Div. This series as also the series 1 and 2 and the old series all come together in the Central Div. In so confused as mass they could not be traced separately.

Marsh sends more instructions for shipping. East end of quarry looking good.

Yale College Museum
New Haven Conn.

July 8th, 1883

M.P. Felch Esq
Dear Sir.

The box containing the two vertebrae came by mail, and was very acceptable. It looks now as if the skull and the 3 vert. are new, but I am not yet sure.

Keep everything found nearby itself so that we can know what goes with the skull. You can send by mail up to 4lbs. so it is not worthwhile to try to clear off the rock of delicate specimens. We can do that better here as a rule.

For franks for mail packages you better use the slips I sent rather than the envelopes, and paste them on. Otherwise, if the strip breaks the direction may be lost. The East end of your Old Quarry is evidently a good locality, so please keep a careful record of everything that turns up there. Three or four bones that we know go together (like that Skull and vertebrae) are worth a bushel of bones taken out at random.

The sharp claw found by Brown is that of a Carnivorous Dinosaur, probably Dryptosaurus.

The vouchers came all right, and have been sent to Washington.

Yours very truly
O.C. Marsh

Felch writes to Marsh about flooding delaying work in the main quarry and talked about two other places worked instead, one of which is called "White Hills" and one 1/5 of a mile east of his place. He mentions that he thinks a new quarry will be as good for small fossils as the old quarry. He tells of a fossil he recognizes from Dana's Geology and gives plate number.

July 13th, 1883

Prof. O. C. Marsh
Dear Sir

I have but little of interest to report since my last of the 5th as we were cut off from our work in the old quarry for a few days owing to high water and floods = taking away our crossing and which we could not replace safely till two days ago. During the time – we opened two places in a quarry about 1/3 of a mile east of my place – and though we found plenty of fossils – the rock was so difficult to work in without using powder to strip off with that I concluded not to do more there at present as we had done enough to hold the claim. We also prospected one day in what we call the "White Hills" – a locality of about 3 miles directly east of my place – hoping to find a deposit near where I took out the end of a large femur that was sent you by Prof. Mudge when he was here. We failed to find any more in the immediate vicinity but found some 3 or 4 hundred yds. distant – plenty of croppings of some large bones that lay in marl on top of the rock. It was late in the day when we found this and we did not try to develop any to find condition the fossils are in – will reserve that for another time. On Friday we began again in the old quarry – to strip off another section – the length of East End and 5 or 6 feet in width to reach more of the skeleton we have found – shown in the diagram of that section of the quarry which I sent you. The cap rock strata gets deeper as we go in and we use powder to loosen up the rock down to the fossil strata – as one good blast will do more work towards removing it than two could do with picks in a days' time. Before we commenced stripping – we took out another of the lower limb bones = marking Y = that corresponds with the femur Q. both probably belonging to the longest series of vertebrae shown in diagram – expect now to find more of them as we go in.

Where Brown has been at work in quarry No. 2 he has taken up another limb bone. I think this quarry on good development - will prove to be good - and as the work is carried in from the edge of cliff – the bones will be well preserved – and that it will prove as good in small fossils as the old quarry. I have never written anything in regard to fossils from any other [ed. a line is chopped off the top of page] are at work – but during the last five years I have found other groups well represented by fossils between Canon City and my place – On the Park near Canon I have found a good many shells belonging to the oyster family - some large and perfect with the enamel on them as good almost as new. These correspond to some shown by Dana to belong to the Eocene. Farther this way in a lower horizon are more but of a coarser and larger make – also fishes or baculi. The next well defined group is a limestone – full of small and large shells = the next and just as we enter the Cañon City are of impressions, some of which are almost exactly represented in the Edition of Dana's Geology that you sent me – Fig 828 Page 459. This strata I have

traced out and find to come on top – or just above the high - “cottage rock” west of my place around where Lucas worked – the top of the strata mentioned being somewhere from 70 to 90 feet above the saurian beds. Still farther on north of me other formations crop out of which I have some fossils to represent them. If any of these would be of any interest to you I can make up a small box to send with the others this fall.

Brown will be ready to go to Wyoming as soon as he receives his pay. Would you like to put on another man when he leaves – or let Smith and myself continue on alone?

Respectfully Yours
M. P. Felch

Thanking Felch for the first quarry diagram.

Yale College Museum
New Haven Conn.

July 15th, 1883

M.P. Felch Esq,
Dear Sir

Your letter of the 5th inst with diagram of the Quarry was most acceptable as it cleared up many points of doubt. By keeping everything mapped in this way there can be little confusion if we also know what bones come in each box.

Package no 5 came duly. The small jaw was a lizard (with conical pointed single rooted teeth) not a mammal as I hoped. The limb bone was a toe bone (Metatarsal) of a Laosaurus.

You did not send statement July 1st, so I sent Brown his check separate to enable him to start for Wyoming. I now enclose check for \$160, which please acknowledge.

I have been away considerably of late and shall be still more during August.

Would it not be a good idea to get a "tent fly" or other piece of canvas to use as an awning over the quarry to make the heat less oppressive?

I have not heard yet whether Brown will go to Como or not. I asked him to telegraph.

Yours truly,
OC Marsh

Felch writes about accounts. They are back in the old quarry and he gives information on recent finds. Brown has now left.

July 22nd, 1883

Prof O. C. Marsh

Dear Sir

Yours of the 15th just with check enclosed – came to hand last evening. I did not send a statement of accounts for the reason I did not have all the bills – many articles were got from time to time as we needed them and charged up with my personal account and I have not had the time to straighten them out. If you can send me pay for July by Aug 15th I will then be able to pay up everything and send receipted bills for all expenses if you want them. We have got underway again in the old quarry – and are finding more of the skeletons already obtained as you will see by the sketch enclosed. Bone Q is shown in the map of quarry I sent the 5th – and comes in about the right position I think perhaps I have mislaid my duplicate and did not have it to refer to in showing these. The scapula is smaller than the one found further to the left – and I think that – the limb Z = the two small lower limb and the coracoid were all in one animal. I shall box and mark them so you will have no trouble in finding them on map. Another limb – not lettered yet shows back on the left that I think will prove to belong with the Q set. There is a point here that interests us – we are finding some small ribs – and reason that there must be some dorsal vertebrae back and hope to find them as part of the skeleton where the skull came from. You will see by the diagram we are not far from that find yet. You did not mention anything about the contents of No 6 – some pieces of what we thought might be portions of a head = have a lot more saved if it should be of any value. Brown left last Tuesday – I think he was undecided about what he would do – he is a good man when he will apply himself but he has rambled so long that steady work for any length of time don't agree with him. I believe from what I saw of him here – that he is thoroughly square and honest. I think for the present – while the weather is so warm that Smith and I can do about as much as to put in more help unless it be an experienced hand.

I might put in a hand a few days at a time to help strip off – to advantage sometimes – but we can do that for a while ourselves.

Very Respectfully Yours

M. P. Felch

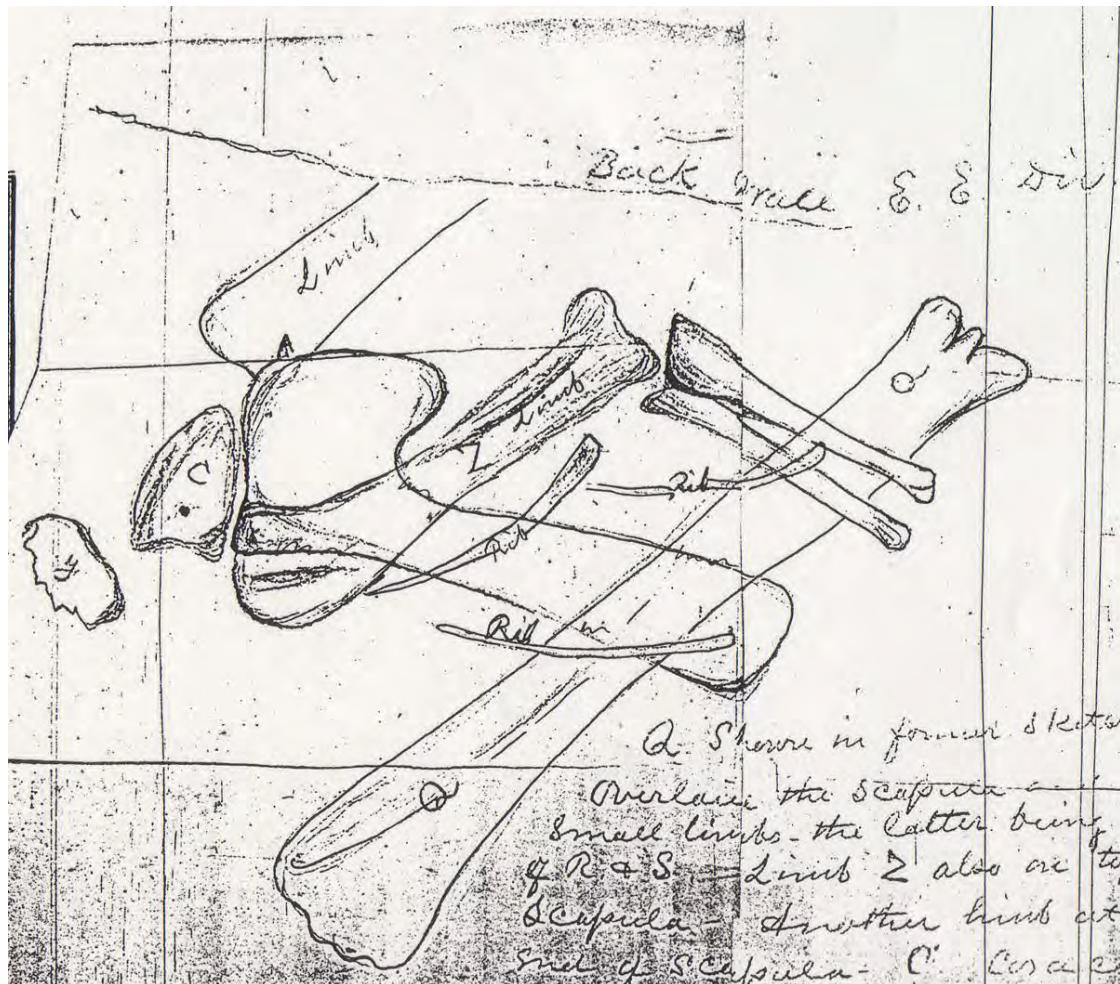
P.S. I also have rec'd the figure of the saurian restored - these are interesting to me – and if you have any more of these described – like those you sent Brown – that you could spare I would like to get them. M.P.F.

Canon City, Colo.
July 21st, 1883

\$160

Received of O.C. Marsh check No. 26 – National Tradesmans Bank New Haven Conn.
For the sum of one hundred and sixty dollars – for work for self and team for the month
of June 1883.

M. P. Felch



Q. Shown in forward of sketch – overlain the scapula and the two small limbs – the latter being exact duplicate of R. & S. = Limb Z also on top and across scapula – Another limb at end of Scapula - C coracoid - F. a fragment thin flat bone.

Marsh says he may visit in the fall and make better arrangements for freight. Tells Felch he can hire a man to help. Admonishes him to send a lot of bones for an upcoming publication and that he can work at least two more years if the bones hold out.

Yale College Museum
New Haven Conn.

July 24th, 1883

M.P. Felch
Dear Sir,

I have not heard from you since the 15th, but as I am going away for a month I enclose a check for August 1st. which please acknowledge.

I would like to have you write regularly, and my Secretary will forward letters.

I may run out this fall and look over the work myself. If so I then will make arrangements about shipped freight. If sent to New Haven now, I shall have to pay myself, but later I can arrange for free freight.

If you can get a good man, (who will say nothing about the work outside,) and can use him to good advantage, you may let him begin August 1. I suppose \$50 per month would be enough, but I leave this to your good judgement.

I sent you a paper on Dinosaurs, (Restoration of Brontosaurus) which will show you what the large animals are like. Do your best this season, as I need all the bones I can get for my volume now in preparation. If the bones hold out, I want you to continue for a year or two at least.

Yours truly
OC Marsh

Felch writes that he has received the check (receipt at the end of letter), and he will add another man. They are finding limbs at the east end of the quarry. He talks of Lucas who is working again for Cope. Felch feels his quarry is safe, as they do not leave the bones there after excavation.

Canon City, Colo.
July 31st, 1883

Prof O. C. Marsh
Dear Sir

Yours of the 24th with check for pay to date – I rec'd last night. I try and write every Sunday, an account of the week's work = oftener if anything special turns up. Sometimes I do not mail for two or three days – for it would be an expense of a day's work for myself and horse or the sending of a person to do so – but except in the very busy season – as is the case now – there is hardly a day in the week but what some one of our neighbors pass – and carry and bring the mail.

I will put on another man – have had several applications and will try him for a while at \$50. pr month though as a rule I have found that cheap help proves dear in the end

We are still finding more limb bones in the East End also in the Central portion adjoining. I found a pair in position of lower limbs quite large and clumsy – and five larger foot bones near also nearly in position – something thus-  -the one at the right nearly a foot in length and well in proportion the 4th & 5th lay partly under and outside – one on each side – of the three shown. My diagram of these as of the limb bones now is at the quarry – will send a full size sketch of all in my next. In the East End also we have some more good foot bones in position – nearly the whole foot I think of the ~~whole~~ ~~foot~~ bones (limb) marked R. & S. and A+.

I think we have a good lot of limbs – 25 now – most of which are in fair shape – and a good and large collection of foot bones – with a fair prospect of getting more not far away. On the whole I know that with the exceptions of what Lucas took out the first two seasons we have already taken out more good bones this year than all that has been taken out in this region altogether. Since their first seasons they have found but three limbs never a fragment of skull – only a piece of one jaw – most of their find being vertebrae and some flat bones as Lucas told me himself. He is at work now for Cope, in the Canon below me. You need have no fear of him or his party – for as fast as we take out bones – I bring them home – pack and store away. I will write again the last of the week and send a little sketch of the work – till then I am

Very respectfully yours
M. P. Felch

Canon City, Colo.
July 31st, 1883

\$160.⁰⁰

Rec'd of Prof O. C. Marsh check No. on National Tradesmans Bank New Haven Conn
for the sum of one hundred and sixty dollars for work on fossils – for self and team July
1883

M. P. Felch

Felch writes to Marsh about recent finds and flooding. An early mammal jaw found by Brown is mentioned.

Canon City, Colo.
Aug 6th, 1883

Prof. O. C. Marsh
Dear Sir

I sent a box this morning by mail – with some more of those slim teeth like those sent in No. 3. We have found quite a number besides these scattered around in different places one or two in a place – showing I think that there was more than one animal of that kind here.

When I sent those two sections in No 3 – I wrote at the time – that I had a piece of rock with bone in it that belonged to one of the pieces – (the firmest of the two) also a lot more that I was not certain about that came near = and ask to know whether I should send the one piece by mail or all in a box by Ex. and as you did not refer to it I thought you might have overlooked it. As I think the piece will be of some interest I will send by mail and keep the rest safe for you to examine if you come out. Our progress has been slow this week – owing to heavy and continuous rains - flooding and covering the quarry two feet deep in places with mud and wash, from the hillside above, We have worked what we could however in stripping off and work of that kind -

The East End being in the worst condition – we commenced stripping back on the West End adjoining the central portion and have uncovered the ends of two large bones – but not enough yet to tell what they are – and just before quitting to-night in removing a large block of rock – broke away with it a portion of jaw – with two large sockets exposed. Shall try and get it out – so as to send by mail if possible. I was near this point that Brown found his first mammal jaw – and we look over the rock thorough to find something more to correspond.

Respectfully Yours
M. P. Felch

Aug 7th

Not having an opportunity to-day to send in – I will write a few lines more. I took out the rest of the jaw to-day – but two sections of it are in rock that will weigh several lbs. each shall have to box it up. I did not dare to try and work it down as it is very brittle – and shows as it is, in fair shape. It is about a foot in length – and very strong – different from any others found yet

M.P.F.

Felch writes to Marsh about recent finds, specifically mentioning a very large limb bone which he states is the largest ever found in this area. He feels this may be related to the very large limb bone, scapula, and cervical vertebrae which he and Williston took out ten or twelve feet away in 1877.

Canon City, Colo.
Aug 12th, 1883

Prof O. C. Marsh
Dear Sir

In my last I wrote that we had begun work again in the West End. The point is where Brown left off in that Div. about the last of May and where he took out what he called a scapula – a bone most five feet in length – very thick and strong – having more the appearance to me of a pubis than scapula. I referred to it at the time in writing to you.

In taking the bone out he had to work into two more, that closely over lay it, on the back side = one of which he thought was a coracoid – and the other a rib = and still higher up at the top of the bone strata – and farther in toward the back wall was what appeared to be a large concretion of sand stone and iron. On working in on the first two they prove to be some large flat bones - one running under the other and both under the concretion – so we commenced working out the latter to get those underneath. This proves to be one of the most enormous and massive limb bones ever found in this region and I have worked on it four days (till Friday Eve) and then covered it up – so as to work down another section of wall to reach the back end. In the four days I only cleared some five feet in length on one side and part of the top – and think there must be another foot more. The rock around it is very hard almost like granite – the bone very brittle and it is only by the most utmost care that I can get the rock away from it – having to drill small holes and split away with gads a small portion at a time. So far I have had pretty good success only breaking away in a few places a portion of a ridge that runs lengthwise on one side of the top. The great difficulty will be however in taking it up – so as to be restored again for any section taken out would fall to pieces of its own weight – but I think I can devise a method to get it out in fair condition. In 1877 Mr Williston and I took out a very large limb bone and scapula only some 10 or 12 feet from where the present bones lay – that I think belong with these – to one and the same individual – and also from the position of the long series of cervical vertebrae that I have written more or less about I think they too were part of the same animal.

I wish you we here soon to look over the work and see yourself the relative position of different bones – and also see about extending the work farther back into the hill – which work can only be done at a good deal more expense than I feel justified in taking without advice. That there are plenty more of bones there – I have no doubt – I will take a measurement of the central and this portion – and make as good a map of what we have taken out and those we take out – as soon as I get out the limb. We have also taken out a small limb near here – whole – a fine bone – and two more in the East End since my last.

Respectfully Yours M. P. Felch

Felch writes to Marsh and refers to the bone he and Williston removed in 1877. He states that it is still larger than any Lucas has ever taken out on the hill. He has a plan to take out the large limb but will only tell Marsh what the plan is if he is successful!

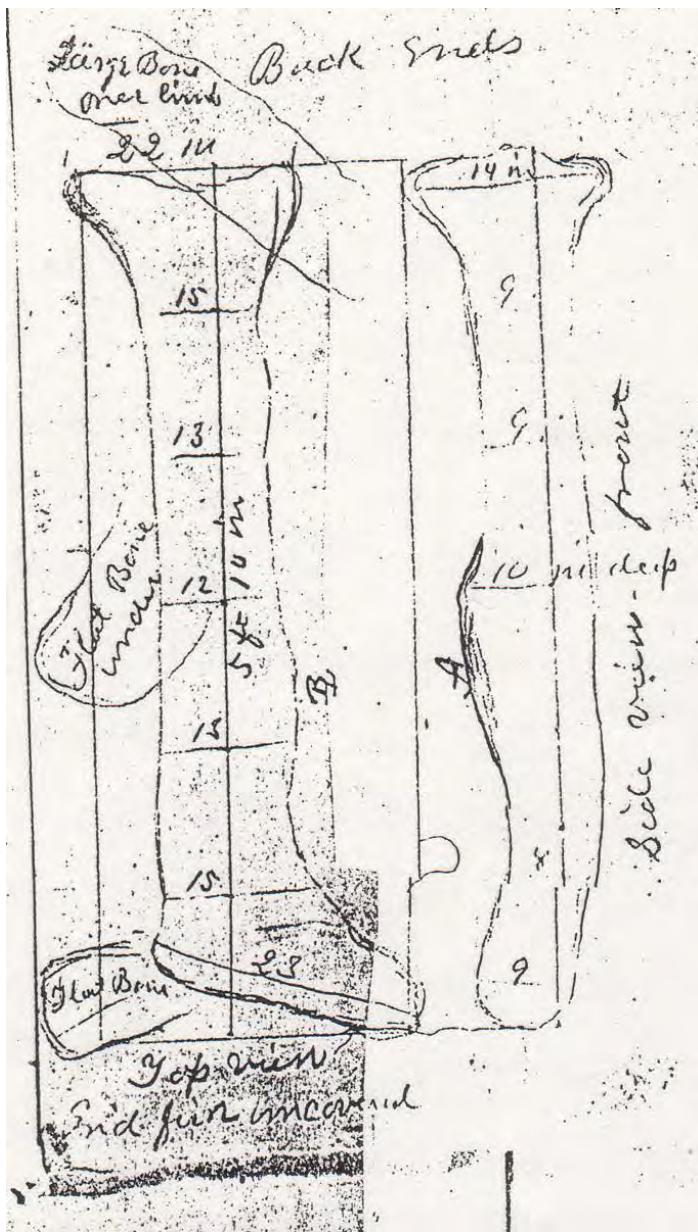
Canon City, Colo.
Aug 19th, 1883

Prof O.C. March
Dear Sir

Work for the week past has been continued as follows Smith has cleaned up his work in the East End, taking out what bones were in sight = a small limb bone – some very small foot bones = and more vertebrae belonging to the old series = and with the assistance of our new man has been stripping down more ground in the central & East End Divn. and has also assisted me some in getting away the wall from the back side of my large limb. I have now got the bone wholly uncovered on top – front side – both ends and part of the back side.

On the back side the work is difficult there being but little room to work in – and a flat bone under the end that I spoke of last week – and also another new large flat bone running under – about the middle of the shaft on the backside I will enclose a diagram showing the measure as well as I can make it and the position of some other bones around it. At the point A. = side view – is a ridge – quite sharp at the top – and curving inward and downward some 4 inches in to the body of the shaft below – while at B = top view – there is a corresponding outward bulge of the shaft. The bone is not quite as large as I expected – not so long as the femur taken out in 1877 – but much more strong and bulky – and larger than any Lucas has ever taken out on the hill. The worst part of the work is to come – taking up and packing – shall try and get it up in about 4 sections – and if I am successful in a plan that I shall carry out will write how I done it – and if I make a failure would rather not attempt to explain. I will send another box soon containing a rock that belongs with the teeth sent in No 3.

Respectfully Yours
M. P. Felch



Aug 20th

I will send the Reg. box to day. The section of those long slender teeth was taken off from the rock where it is marked with ink. Of the two pieces it was the firmest one - sent in No 3

Felch writes to Marsh that the large limb is out. He encloses two diagrams of bones that Smith has been working on. One bone seems new to them.

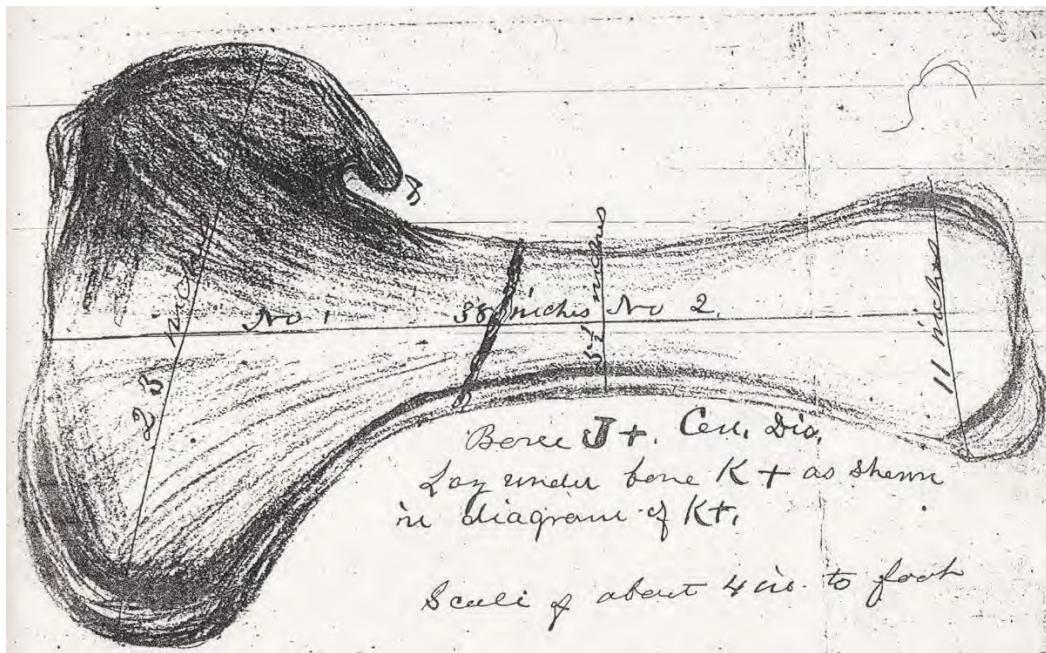
Canon City, Colo.
Aug. 26th, 1883

Prof. O. C. Marsh
Dear Sir

I have got the large limb bone taken up – packed and housed - - and feel fairly well satisfied with the job. I took it up in five sections – natural breaks where the rocks seamed crosswise. The fractures are mostly clean and smooth and can if good care is used in removing the wrappings be joined together without much difficulty for I took all the pains I could in fixing the broken ends so as not to crumble down. On one side and underneath in some places some pieces dropped away before I could manage to keep them in place – but not enough anywhere to deform it of any account.

I enclose two diagrams of bones that Smith has been at work on this week and which we removed yesterday with good success. Bone *K* + is new to us and my sketch and description of it will not I fear give a very good idea of how it looks. We are not certain whether we have got the whole or not as it was originally – for all the ends show some deficiency and at *I* where it runs into one of the large vertebrae – (one of series coming through from the East End into the central division) it looks as though it might be continued farther in that direction – we shall continue work here awhile and try again to see what we can do towards getting out one of these vertebrae and any other bones we can find. Bone *D* + is I suppose a scapula pubis though still different from any others found – at *A*. has a perfect chain hook and the shaft - is smaller and stronger in proportion to its width than what we have seen here. This bone we took out in two pieces – and is one of best jobs done. We hope to find more bones with the large limb soon.

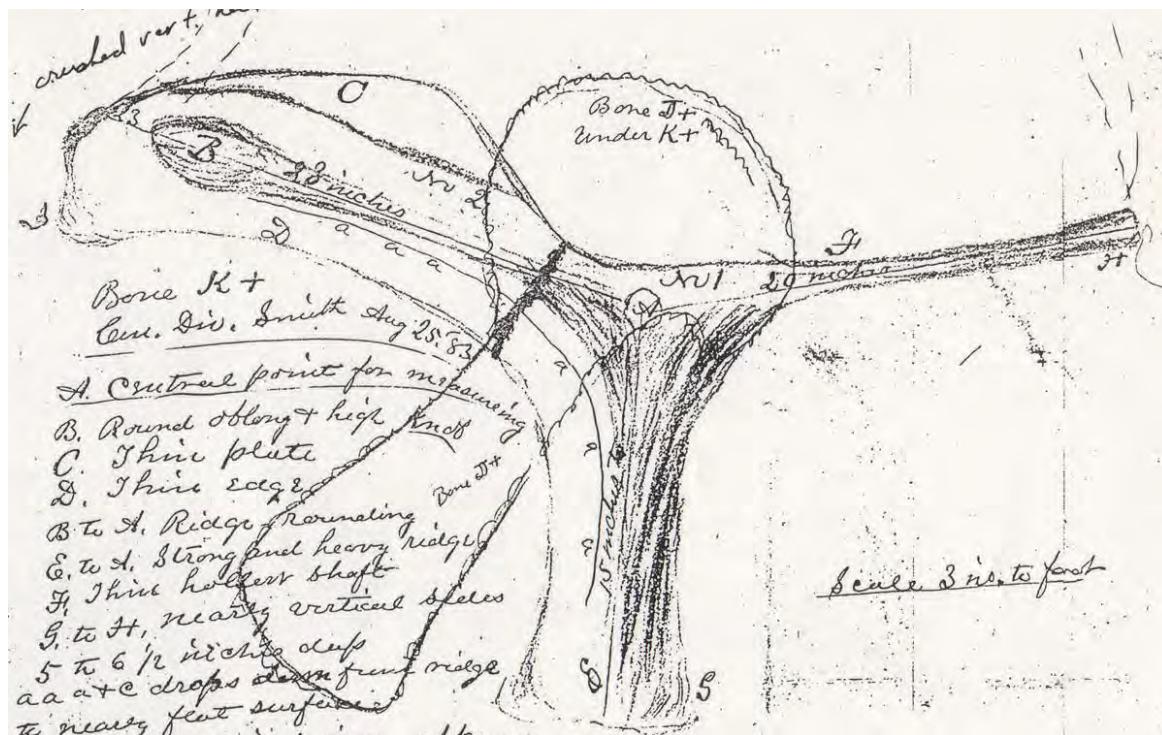
Respectfully Yours
M. P. Felch



Bone J + Cen. Div.

Lay under bone K + as shown in diagram of K +

Scale of about 4 in to foot



Bone K +

Cen. Div. Smith Aug. 25th, 1883

- A. Central point for measuring
- B. Round oblong & high knob
- C. Thin plate
- D. Thin edge
- B. to A. Ridge rounding Bone J+
- E. to A. strong and heavy ridge
- F. thin hollow shaft
- G. to H + nearly vertical sides 5 to 6 1/2 inches deep
- aaa & c drops down from ridge to nearly flat surface
- End at E. G. indistinct – appears some as though hollow like shaft F.
- I. Appears here as though there might have been more sometime – a point running into a large crushed vertebrae

Taken up in two sections no. 1 & 2 and through plate C

Scale 3 ins. to foot

Felch writes to Marsh that a statement for August is enclosed. He has let a part time man go (see receipt for wages) and will soon take on another. He talks of some unique finds, one in poor condition due to the powder charge used in stripping off. He mentions pasting strips of cloth around it.

Canon City, Colo.
Aug 31st, 1883

Prof O. C. Marsh
Dear Sir

Enclosed find statement for this month – my extra man I discharged and paid to-night. The 15 days he worked were not continuous but worked at such times as to be of the best advantage. I will put another man on Monday the 3rd Sep.

The work so far this week has been continued in the Central division. Smith has found the mate to the scapula described last week – came out in as good condition as the first He has been at work since on the vertebrae – with rather poor success however – I will write more fully of this in my next.

I took out one of the flat bones under the large limb, don't know what it is. The next was a coracoid but so much had been cut away in removing the scapula taken out here – that it was worthless. The next one – spoken of in my last as one of the flat bones under or a little outside of the limb – proves to be I think another limb belonging to this animal. It was in bad condition having been badly shattered from too near a charge of powder – used in stripping off – but I have got it so as to hold together I think to ride - by cleaning off a little at a time and pasting strips of cloth around it. I should not have gone to the trouble – but has some singular features – and may be something new. In working around this I had also to work on another and most singular bone – which will probably turn out to be a vertebrae. Of this week's work I will try and describe some of the bones more fully in my next

Respectfully Yours
M. P. Felch

Canon City, Colo.
Aug 31st, 1883

Prof. O. C. Marsh
To M. P. Felch Dr.

To Aug. work for self	\$ 75.00
" " " " "Smith	65.00
" 15 days extra work at \$50. ⁰⁰ per month	28.80
" monthly expenses	<u>20.00</u>
Total due	188.80

Canon City, Colo.
Aug 31st, 1883

\$28.80

Received of M. P. Felch, Twenty eight and 80/100 dollars for work - in Bone Quarry -
fifteen days at \$1.92 pr. day.

Columbus Besheir

Marsh headed back home from his trip, sends funds.

Yale College Museum
New Haven Conn.

Sept 7th, 1883

M.P. Felch Esq
Dear Sir,

Your letters have been forwarded to me and I am glad to know the work is going on so well. Before this reaches you I shall be back in new Haven but as you will want some funds I enclose a check for \$200.

Yours very truly
O.C. Marsh

Felch writes to Marsh about taking out the largest vertebrae found. He tells of four vertebrae ruined by Smith, stating they were very intricate and impossible to work. Smith got a block out with four but it is too heavy to send. However, he feels Marsh would find them of great interest. He tells of a probable skull and explains his enclosed diagram. But he adds a postscript with some doubts. Felch tells Marsh that Smith will be leaving at the end of the month and will be missed. At the end of the letter, he adds information that Smith may stay for more money and offers to board him for \$5, if Marsh will find the other \$5.

Canon City
Sept 8th, 1883

Prof. O. C. Marsh

Since my last – we have been at work mostly on vertebrae I enclose a sketch and description = both very imperfect however = of the one that I have been at work on for a week and have not got it out yet. It lays in the lower strata of rock – next to the marl bed – directly under where the big femur lay. The vertebrae is very large – 39 inches long as far as exposed – is very brittle and thin in places and difficult to work out. Its general features correspond to a long series of cervical vertebrae – found in the central division early in the season – the cup being deep with thin sharp edges. It is by far the largest vertebrae ever taken out here. Smith has been at work on some of the dorsal or cervical belonging to the series no 3 – running back into the East End. We have all tried on these at different times and made a failure of it every time.

After Smith got out his last scapula he started in at that point on them the vertebrae and destroyed four. it was impossible to get them out they were so intricate in their make - and so locked together. He then took a section and commenced cutting down around and trimming up – and in this way has got three all in one lump – and all loosened from their bed ready to take up. What to do with them is just now what puzzles us – for they are most too heavy to go in one mass – and if we undertake to take them apart to pack we think it will be the last of them. I wish you could see them as they are now – for I believe in some respects they are of more interest than any vertebrae we have struck. In working around these Smith uncovered what I think is a large pubis – the uncovered end being the one that joins on the illium. It cannot be taken up till the vertebrae are removed. I enclose another sketch of what we think must be a skull. In splitting away some rock yesterday near my vertebrae for convenience in getting nearer to it – I put the gads into a seam – b-b-b- (other seams shown by light cross lines) to split through down to the marl bed it opened back to a point a little farther in than at CC – and in getting the block – (some 2 feet deep and a foot thick) away found a bone – or part of one in – the wall – and the remainder in the block taken away. This block was also split horizontally as shown at a-a in diagram – and at the back end where it broke-off was a large jaw = the one at the left - in diagram. On examination we found another at the right – and the large piece in the middle which we think is a skull. This diagram was made by holding up the paper on the face of the wall – where the bone is broken crosswise – and is as exact as I

could outline it. The ball shown at A. was only the impression – the ball itself being in the removed block

I have got all the pieces saved – and the blocks taken care of – and will let it all remain till I hear from you – and if you think you can make out from my description that it is a skull. Any directions in regard to it will be gladly received.

Smith has given me notice that he will have to quit the last of this month. I shall be sorry to have him go for he is almost indispensable to me and by far the best man that I ever saw work at this work.

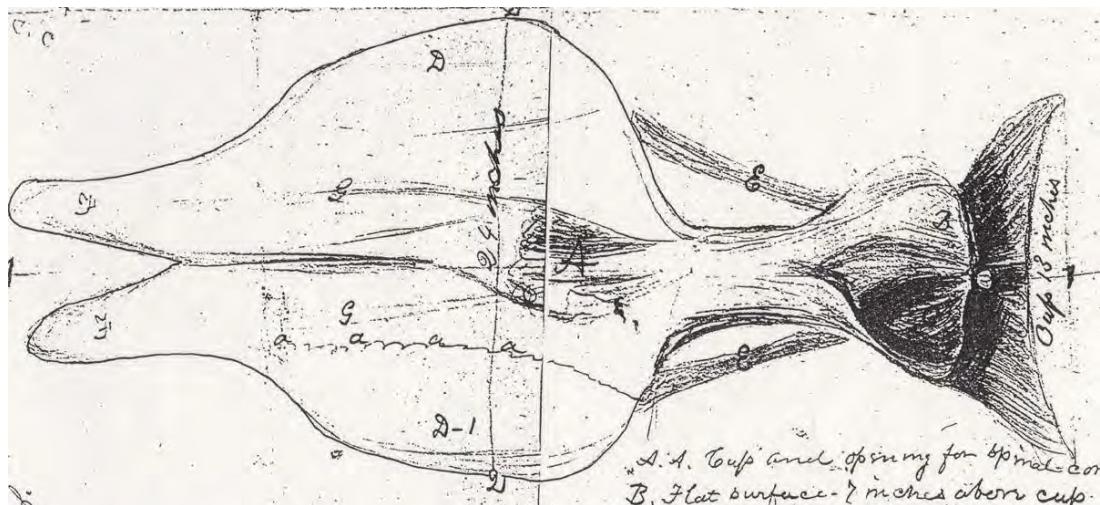
Hoping to hear from you soon -

I am

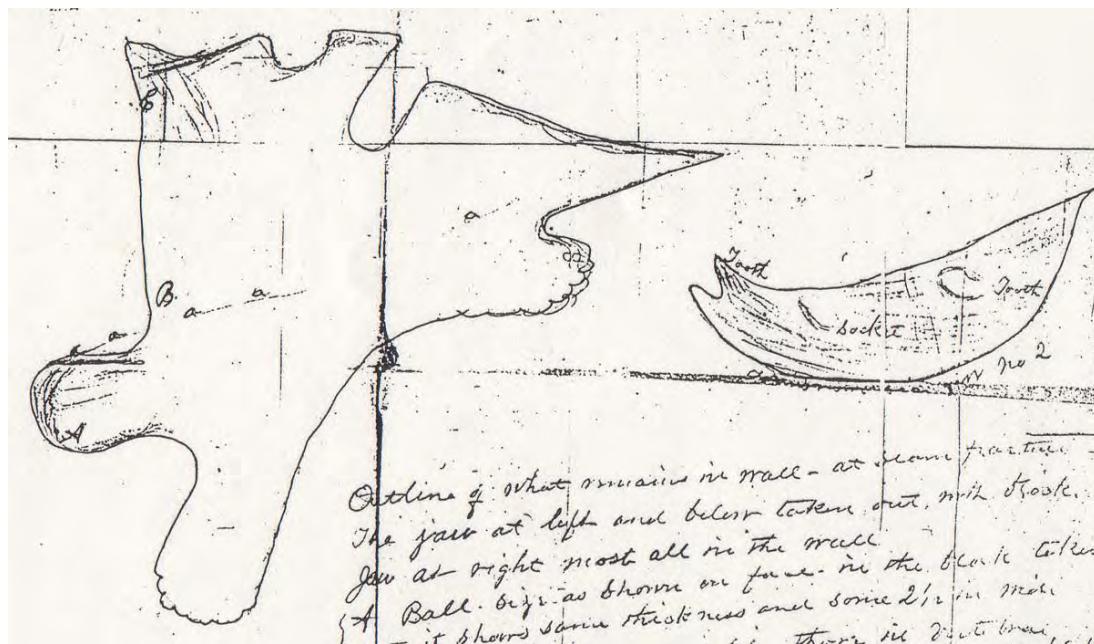
Respectfully Yours

M. P. Felch

One point that made me somewhat doubtful of its being a skull was that all the parts in sight are strong and nearly solid = Excepting at B = whereas I looked for something of lighter structure in a skull. M. P. F



- A.A. Cup and opening for spinal - cord
- B. Flat surface – 7 inches above cup
- C. Depression
- D. Thin plate – D-1- *some* turned down nearly vertical from aaa
- E.E. Thin proc.'s connecting under side D.D. with side of cup
- F.F. Rather clumsy and rounded ends
- G.G. Thin high ridges
- Depression – From 1 to 7 = 39 inches



Outline of what remains in wall - at seam fracture

The jaws at left and below taken out with rock

Jaw at right most all in the wall

A Ball . size as shown on face – in the block taken out it shows same thickness and some 2 ½ in wide

Over the ball at B. hole like those in vertebrae for spinal cord – about 1 ¼ in. diameter – shown in block taken out above the hole and around it quite strong – rising up to C where it is hollowed out near the top

In the block taken out it was split open along

The line a-a-a- - C showing the top of the ball and what it was _____? _____ that bone the remainder below still in the *other* block

I think I wrote in my last that Smith would have to leave Oct. 1st

If I work longer than this month myself I want to keep him – and as long as it is a question of money with him I think ten dollars more pr month will induce him to stay. Of this amount (ten dollars) I will stand five of it by boarding him that amount less for a month – if you will raise the other five. If there is any one that works at the business worth it – he is

Please let me know in season what you will do –

M. P. Felch

Felch writes to Marsh that he has been ill. He mentions a 'supposed head' on which he has done nothing further. He tells of new finds including a jaw with teeth. He will also mail a claw.

Canon City, Colo.
Sept. 17th, 1883

Prof. Marsh
Dear Sir

I have been quite ill for a few days – and am a day or two late in writing up the weeks work. I have done nothing more on the supposed head – preferring to wait until you wrote – but on the long vertebrae I have got it in fair condition to send – by leaving some rock with it. When this is out of the way - what remains of the head and jaws can be easier to get at. Smith has taken out several more vertebrae among which are three lumbar = different somewhat from the rest found in this quarry. The new man who commenced work two weeks since has been at work on vertebrae – and found a portion of a jaw – teeth in position – which I will mail to-morrow – and also enclose a claw that Smith found, similar to one Brown got out here. Smith also found to day what I think is another mammal jaw. Will try and get all in one box and send – on the two jaws anyway.

Respectfully Yours
M.P. Felch

Felch writes to Marsh that he has sent box No. 9. He describes a skull and gives Marsh information on a diagram. In a second letter, he describes the skull more fully.

Canon City, Colo.
Sept 18th, 1883

[Partly under Geological Survey Official Business sticker which includes the note "Box 9 Sent, No. 3 Skull (Diplodocus)" then in receivers writing, "/1631/ Diagrams"]

Prof. Marsh
Dear Sir

I sent box No. 9 this morning – think we may be mistaken about the small jaw – for we found another today much like it, which proved to be nothing more than serrated edge of a tooth.

Enclosed find diagrams of a skull No 3 – we have got it this time sure – one that Smith struck some ten feet only from where we found the one two weeks since. It came in the same hard rock – lower strata as the other – in large blocks – and the diagrams are taken only at points where seams opened, or fractures were made. No. 1 shows where first uncovered – lays at right angles to the top of the skull. One edge of the top of the skull is marked rim on No. 1. – No 2 represents the opposite of No. 1 where another fracture passes through about midway through the head – the points A. being nearly opposite each other - B. is the end on terminus of a foramen. No 3 is a horizontal split and shows the circle of broken ends of teeth – probably of upper jaw D of No 3 is where a bone is broken passes under and forward of the teeth – as it looks now, but does not connect with them.

We will try and see what we can do towards working this out of the rock so as to ship it. The diagram is as exact as to size and appearance as I could get it.

Respectfully Yours
M. P. Felch

Wednesday Eve 19th Sept

I did not have a chance to send to mail today and will write more of the skull. We have tried to cut down the blocks but as the exposed parts jar away easily we conclude to let it remain and ship rock and all. I send another diagram No 4 – of the bone shown at D. No 3 – it is the lower jaw. In reducing the block a large piece cleaved off here – exposing those broken upper teeth of No 3 – and showing plainly in position those of the lower one. The whole skull with both jaws I think are all here complete. The whole length of the head from the base of the skull to the teeth in front is quite two feet – and though I cannot tell very near – think the head is not more than 7 or 8 inches wide in the widest part. The teeth are those long, slender, cylindrical ones such as I have sent twice. This

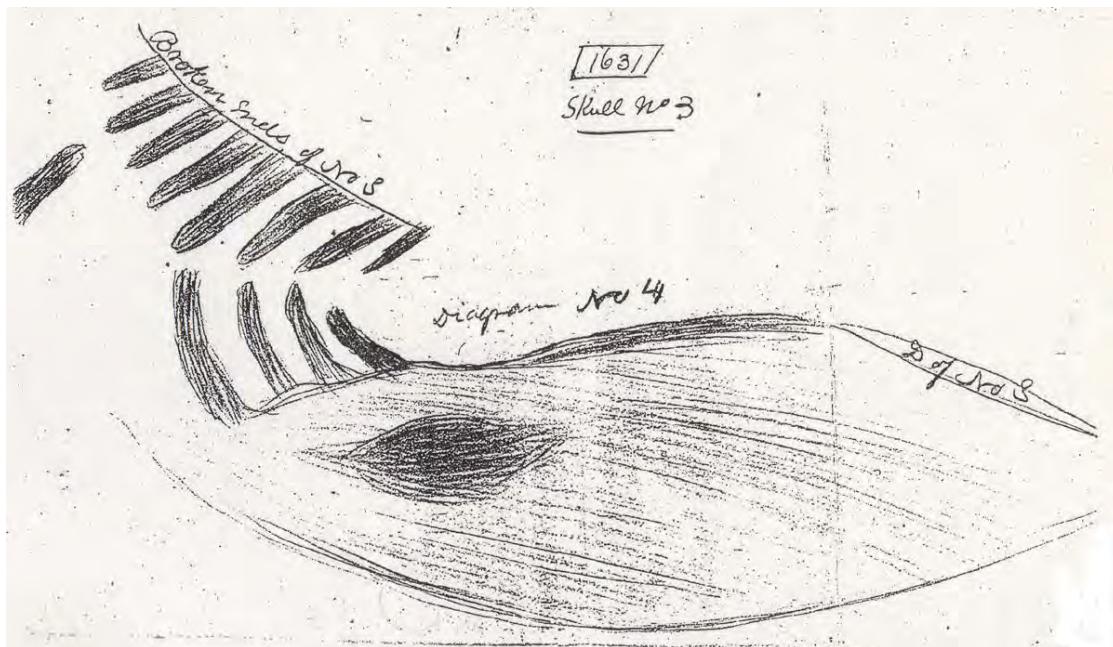
species must have been abundant here for we have found very many straggling teeth of this kind

We think we have some limb bones caudal vertebrae – feet and other bones to match these teeth but may be mistaken.

I will try and post this tomorrow if possible

Respectfully Yours
M. P. Felch





Cañon City, Colo.
Sept. 23rd, 1883

\$200.⁰⁰

Rec'd of O.C. Marsh two hundred dollars – on act. for work on fossils – for self and team
– from and including Aug 1st, 1883

M. P. Felch

Felch thanks Marsh for \$200. He says he encloses another sketch of skull and describes limb and foot bones found near skull No. 3. [This diagram is not with the letter!] He tells Marsh that his September bill will be a bit higher due to the extra man. There is a receipt included.

Canon City, Colo.
Sept 25th, 1883

Prof. Marsh
Dear Sir

I received yours of the 13th with check for \$200. The money came in good time and was very acceptable – for we had all been out of funds some little time.

Enclosed you will find another sketch from the last skull – taken from the block containing the upper jaw – and part of the top of the head – just the opposite of one of those sent – No 3 I think. In working down the rock it looks to us that the animal had a singular mouth – the smallest teeth being the back ones – the largest being those directly in front. The temptation is great to go through the whole of this and see how all the parts *work* – but as there is a good deal of danger in fracturing – I thought it best to box up and pack separately each block by itself. The whole will weigh with the rock - some 3 or 4 hundred pounds I think – too heavy to express. There is such a mixed lot of bones where this was taken out that it is hard to tell if any belong with it – though some limb bones that Smith was working on when he struck this may = as also a lot of foot bones found nearby. These limb bones were probably the radius and ulna – very long and slim – more slender for their length than any found in the quarry. The foot bones were in bad condition – being badly broken and splintered in taking out the blocks with the head. I thought at first I would not try and save them – but again thinking they might be of value if of some new species. I went to work yesterday afternoon – got three together in pretty fair shape – and the ends of three more – and I think I may be able to get one or two more *yet* from the fragments, enough to get a general idea of them. These restored are more slender than any found before – with the exception of the Laosaur – a specimen of which I sent you. They are quite hollow also. Of these – what I can get out – I will put in one package and mark – as found near Skull No 3. (We call that of June 5 with small vertebrae No 1 – the one of two weeks ago No 2 – and this last No 3). No 2 remains as first found but now that we have no doubt as to what is – we shall commence soon – and trim down as far as possible – without injuring the bone on exposed parts – and box and pack up. I suppose you have looked over my statement for Aug. For Sept. it will overrun that amount (\$188.80) as my third man will put in nearly the whole of the monthly \$50.

Respectfully Yours
M. P. Felch

Felch has found two skulls and Marsh wants them well packed and sent express.

Yale College Museum
New Haven Conn.

Sept 28th, 1883

Dear Mr. Felch,

I am home again, and shall now write more promptly.

I am glad you have found there two skulls, (Nos 2 and 3), and think you better send them on at once by Express. The charges will be great but we need the specimens now, more than ever. You better pack each one quite by itself, and wrap them up very carefully so that they will come without injury. Use cotton and sacks as well as paper where necessary. Plaster will often work admirably when put around fragile specimens.

You may send by Express in one lot all the skull matter you have up to 500 lbs. if necessary but don't risk injury by removing too much rock.

Mark boxes carefully.

Yale College Museum
With Care New Haven
 Ct

Also number boxes plainly No1, 2, 3, etc and send me receipt by mail. Send also by mail diagrams showing where skulls 1, 2 and 3 lay in quarry if you have not already done so. Please write with ink, and leave an inch margin blank, as I wish to bind your letters together. You better put business matters on separate sheets, will send you some letter paper soon. I like to keep the scientific history of each quarry by itself, as it helps us in working out the specimens very much.

I hope you will be able to keep Mr. Smith. Even if you have to raise his pay don't let him go. I can give him a good chance later if he will hold on.

Yours truly
OC Marsh

Felch writes to Marsh in hopes that Marsh will write as he needs more specific directions for further work. He has excavated a skull and also talks about finding parts of a new animal (allosaurus). He gives the amount of his September bill. A diagram of a triangular skull is enclosed.

Canon City, Colo.
Sept 30th, 1883

Prof Marsh
Dear Sir

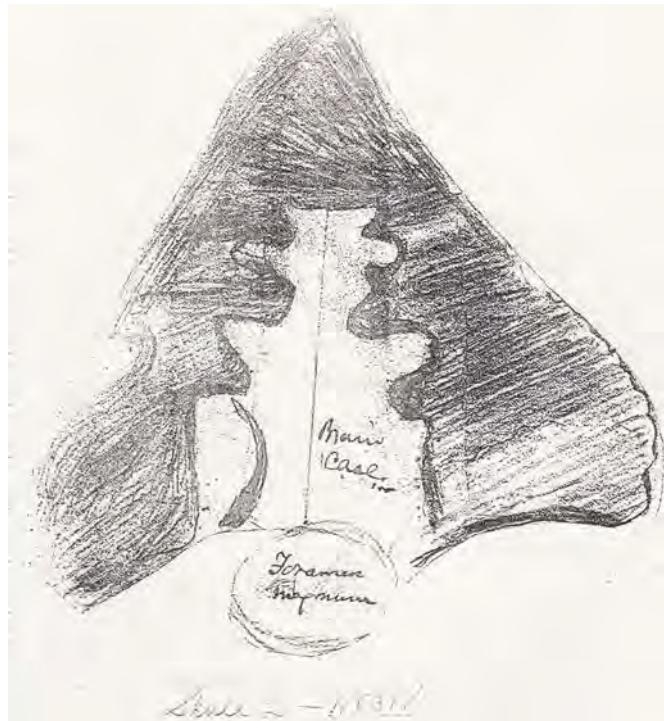
I was in hopes to have heard from you before this, in regard to some matters that I had written about. Whether to continue the work farther in this direction – keep Smith any longer as I wrote or not = as it will make some difference about my work this fall. Since my last I have got skull No 2 – ready to box up – it is not in as good condition as I would have wished but I done the very best I could with a difficult job.

We have also found and partly uncovered the feet and limbs of another new animal [note added prob at Yale, "allosaurus"] - the most singular and interesting of any found yet – we think. So soon as we get it developed enough to sketch – will send diagrams and description of it.

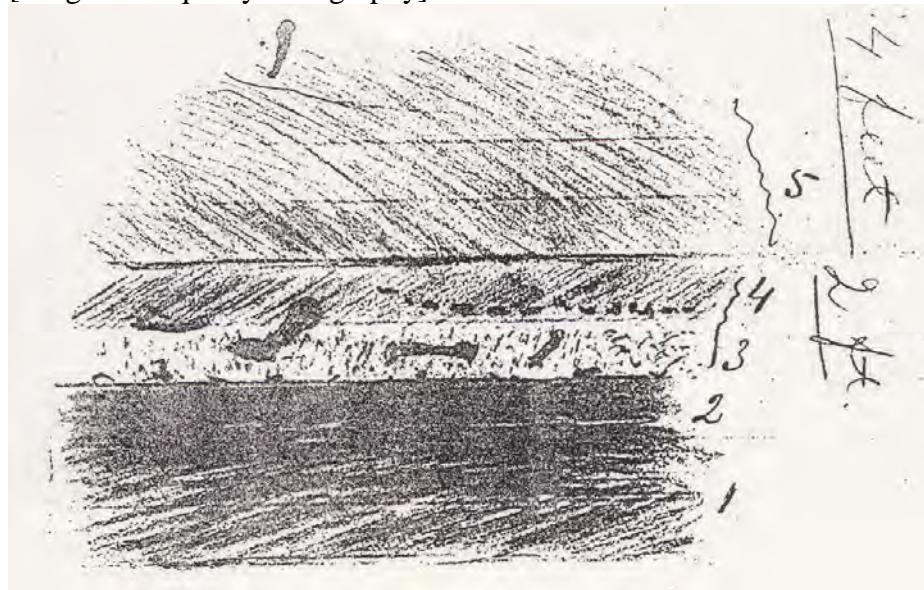
My act. for this month September will be \$200.00 – twenty days' work at \$2.⁰⁰ pr day for the extra hand – bringing it up to that amount. If you can send this by the 15" I would like it as Smith will want his – and I have some promised at that time – or I would not be in any hurry about it.

Respectfully Yours
M. P. Felch

I enclose a little sketch - from a triangular of a skull (No 2) which I thought perhaps might be the part containing the brain cavity (right)
M.P.F



[Diagram of quarry stratigraphy]



1 Bed Rock

2 Marl - *Green Sand*

3 & 4 Bone Bed

5 Cap Rock - barren

No 3 while containing many of the larger bones - is full of water worn fragments - small bones - turtle bones - solitary teeth - and is the strata from which all of the small - and most of the larger jaws have been taken.

Marsh sends monthly payment and request for another quarry diagram and sketches with measurements. Admonishes Felch to use less powder.

Yale College Museum
New Haven Conn.

October 6th, 1883

M.P. Felch

Dear Sir,

Yours of the 30th Sept. is at hand, and I enclose check for \$200. as you request.

I send voucher for last quarter, and have made pay at rate of \$175. per month to cover the extras you mention. Please send statement of full account ahead of each quarter so I can see just what entire amount is.

I wish you to keep Smith without fail. I will do what you ask as to increase of pay etc. If he does well, I will give him a good chance for years.

Yours truly

O.C. Marsh

P.S. when you have time, during bad weather, I wish you would make out a chart of whole quarry, and with a condensed history of all you discover in it. This will save looking over all your letters. The paper I sent will be the thing for this.

P.S. I am afraid you use powder too freely. Never risk specimens. Make sketches with measurements of all bones of importance before taking up.

Felch writes to Marsh that he has shipped the skulls which weigh 754 lbs. He gives details about the material shipped including the condition of bones and where found in the quarry. He refers to a find by Williston in 1877 and also explains the + sign as a notation for limbs and other large bones on the map and drawings being sent in a roll separately. He needs to take the quarry wall down 10 to 12 more feet.

Canon City, Colo. [partly under Geological Survey sticker]
Oct 7th, 1883

Prof Marsh
Dear Sir

I shipped the skulls by express on Friday last. The total weight was = as you will see by enclosed receipt – 754 # - some more than we thought it would be when we were packing. It could not have been reduced much less safely. We could not pack separately and economize space – but it seems to me there will be no difficulty in placing all the large portions where they belong – and the smaller parcels are so marked = and with one diagram & explanation of No 2 which is enclosed in one of the boxes I think you will be able to locate them in the right subdivisions.

The most difficulty will be with No 2 – (Brontosaurus) [note added at Yale] which as I have explained before got shattered somewhat before there were any signs of a skull visible. The jaws are badly broken and not connected as in No 3 – the end of one running into some foot bones as shown in diagrams – another which we mark “jaw No 2” being about a foot away – and quite a large piece of another with several teeth still farther off.

All the teeth shown appear like those represented in Morosaurus Skull no 3 (Diplodocus) [note added at Yale] is in better condition has very few fragments – only 3 or 4 small parcels and will be easily known from the other by its different color and structure or grain of bone

I copy a portion of the quarry from our map = showing where the last skulls were found. No 1 (Morosaurus) [note added at Yale] was found exactly on “South base line” in “East End,” under femur N. on the map of that Div. which I sent you. This map shows the large limb recently taken out (II +) touching another large bone part of which is still in the rock – a small heart shaped bone – supposed by us to be either a sternal bone or clavical plate – a large vertebrae crossing II + the large scapula and some ribs that Brown worked on – a small limb F + - near which Brown took out the most perfect jaw found this season – two long slim limbs at X recently taken out by Smith, a large scapula and limb taken out by Williston and myself in 1877 Skulls Nos 2 and 3 – and the new discovery of limbs and feet that I referred to in my last.

Of these new fossils – I will give a more detailed account – which with full sized sketches of those of which have been uncovered or taken out will give you a fair idea of their location etc. I splitting out the block which continued on from skull No 3 it broke crosswise through the foot “A”. At this point also – were some very large foot bones – that probably belong to the large limb II + as also some small vertebrae. The foot bones

A – were very badly broken – but I managed to get enough pieces together to show pretty well their size and shape. How many there were I cannot say. Smith thinks five certain.

In working farther up – I found a bone = b on map = and something at C which I took for the small end of a rib and chiseled out a portion before learning that it (C) was the distal end of a radius. (The pieces chiseled out of the radius I restored again so as to be nearly perfect. again)

The upper end of ulna & radius were closely connected with the humerus – which at its end was overlaid and somewhat crushed down by the femur – which lay at nearly right angles across it. Following down in nearly a line with the femur and very closely connected with it were found the tibia and fibula and about 9 inches from the distal ends of these last – the foot bones B. These foot bones B were found however before developing the tibia & fibula – while getting out the remaining portion of Skull No 2. Of these foot bones there are only three – I am positive – the proximals of which I got out nearly perfect – as also some of the 2 & 3^d rows and 2 claws = in fact more than is shown on the diagram. Under the femur also – were two more bones both belonging to this skeleton – which we cannot place – both shown on diagram in the position found about a foot back from the femur and close under the bottom of the wall are two more of the same skeleton – only a portion of which are developed – but so far as we can see they are just alike the proximal ends some 6 or 8 inches apart and the distal ends united. One exactly overlies the other. I send also a diagram of all that is exposed of the upper one. Scattered all around among these bones – from 1 and 2 to 6 in a place are no less than 16 caudal vertebrae – three of which full size – found near the end of the femur I send a sketch of also.

The femur and humerus are strongly curved – taking them in one position a line drawn from the center of end to end would bring nearly the whole of the middle of the shaft – on one side the line – have large round globe like articulations – and very prominent points – which I suppose are for the muscular attachments. The ulna is quite curved but the radius nearly straight – wide and thin at its upper end – running down very small at its lower end. The limb bones and feet are hollow – the vertebrae solid. The humerus is longer than the femur and the foot bones larger - - not longer = than the radius.

The structure of the bones – is much finer – and more smooth than any found yet and the whole organization more perfect and symmetrical than usual – so we think. Possibly our anatomy is at fault – and we may have wrongly named the bones – but it is easier and more interesting to us to call them something and I do not suppose it will make but little difference with you if we are off in that respect.

Before going further on this skeleton we have got to take down another section of wall 10 or 12 feet deep to get at it – something we had not intended to do this season – but we want if possible to get more of the pelvis bones if we can do so.

Now to which of the skeletons found the skulls belong to – it is hard to tell. Teeth like those in No. 3 are abundant through the central and part of East End divisions. Some

limbs bearing a resemblance to M+ were found in East End. A lot of small limb bones were found in 1877 near the larger one shown on map. Mr. Williston would I presume remember them but my impression is they were so rotten when sent nothing could be made of them. I incline to the belief that the limb M+ at X comes nearer the mark than any of them.

Skull No 2 (Brontosaurus) [note added at Yale] evidently belongs to a very large animal. The femur II+ lay some 2 or more feet above the last skeleton described – the large vertebrae between – F+ on the marl bed.

The sign plus after letters we use for a separator for limb – and some other large bones

I send the diagrams in a roll by themselves

Respectfully Yours
M. P. Felch

**Felch writes to Marsh that he left out the shipping receipt for the boxes just sent.
They find the long – hooked claws to likely be Allosaurus and belong to the skeleton
they are working on now. He is nearly out of “Official” envelopes.**

Canon City, Colo.
Oct. 10th, 1883

Prof. Marsh
Dear Sir

When I made up my mail on Sunday last I omitted the receipt for the boxes sent and did not discover the mistake 'till to day.

Nothing of special interest has turned up so far this week – only we find the skeleton we are at work on nearly described in its general features, in the species Allosaurus and that those long – hooked grooved claws belong to it.

I have but very few of the “Official Envelopes left

Respectfully Yours
M. P. Felch

Felch writes to Marsh that his voucher is \$35 short of the actual amount and that he will sign these, but will also sign corrected ones if needed. He accounts for the extra help salary (Columbus Beshier and Robert Tyler) and explains how he is utilizing them. He explains that each bone is measured and placed on a map before taking it up and that Marsh will eventually receive these or a duplicate. A receipt is enclosed at the end.

Canon City, Colo.
Oct 11th, 1883

Prof Marsh
Dear Sir

Yours of the 6th, I recd today with check and vouchers. The vouchers for \$525.⁰⁰ at \$175.⁰⁰ pr. month do not cover the amount you have sent me for the last quarter into \$35.⁰⁰ your check for July was for 160. For Aug 200. And for Sept 200. total \$560.⁰⁰. I will sign and send these as they are – but if you wish to correct the difference by sending others in place of these, I will sign them.

In regard to the extra expenses incurred during the past two months – I wrote that it was for extra help which you wrote me to put on – in your last letter to me in July. In August I hired Columbus Beshier 15 days at \$50.⁰⁰ pr month – paid and took his receipt for \$28.80 which I sent you. At the end of August I discharged him and hired Robert Tyler who is at work now. Tyler worked in the quarry 20 days in Sept. at \$2.⁰⁰ pr day making the total for the month \$200.⁰⁰

In working this extra help – I have tried to economize – only putting them at such work – and at such times as to work to the best advantage. Beshier – I did not put on to work on the bones at all but kept him at stripping off – and such work as he could do as well as Smith or myself – Tyler I have been working in gradually so that now he can do fair work.

It takes time for a man to learn work in getting out fossils where they come in rock as they do here – and in any one – skill and the utmost patience is required – and when Smith and I have had working ground enough ahead – and were at work on a particular or difficult job – we did not feel like dividing our time and attention with overlooking a green hand – which is the reason their work was not continuous. Smith will work the remainder of this month – which will be as long I think as any of us can work to advantage.

Between this and the first of Nov. I want to get in all the time possible and then pack and ship – as soon as possible for the bones and boxes are stored in building that we need the use of much.

We have a map or chart and before taking up a bone measure and place it on the map as we go along. When we get through this map or a duplicate will be sent and a review of the work made as well as I can do it.

Respectfully Yours
M. P. Felch

Canon City, Colo.
Oct. 11th, 1883

\$200.⁰⁰

Received of Prof. O. C. Marsh two hundred dollars (\$200.⁰⁰) for work on fossils for self
& team for September 1883

M. P. Felch

Discusses skulls Felch sent and what else to look for to go with them.

Yale College Museum
New Haven Conn.

Oct 15th, 1883

M.P. Felch Esq
Dear Sir,

The 3 boxes with Skulls 2 and 3 came duly in fair order. The specimens are both of much interest, especially No3.

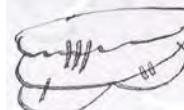
No2, I have today put together except the small pieces. It is the skull apparently of Brontosaurus, with the lower jaws and snout (premaxillaries) lost. Have you found any



lower jaws or premaxillaries (with front teeth) anywhere this skeleton or rather skull? I don't think they can be very far away.

No3 appears to be complete with lower jaws and snout in place. This is the most important specimen from this quarry, and I am very desirous of knowing what vertebrae and limb bones go with it. Part of the Atlas (or 1st vertebra) is attached to the base of the Skull, and the other neck vertebrae should be near. I think this skull may prove to be Apatosaurus, but cannot tell without more specimens from the skeleton.

Your marks made it easy to get both skulls together, but No2 would have gone easier if



you had marked the joints of the rock with your red pencils. The red marks hold on well. The diagrams you sent by mail pleased me very much. You are right about the hollow limbs being Allosaurus. Your diagrams show both hind legs. The odd bone



cut natural size is a pubis, and the pair about the same length are the Ischia. (See my pamphlet on Juras Dinosaurs Part II, plate VIII.) These diagrams were just what I wanted. If you can make the exact length (in feet and inches) on each bone, we can restore the specimens with certainty even if badly broken. I want to make restorations of the fore and hind legs of Allosaurus as I have of the other groups. So look out sharp for the fore legs. They will not be more than half as long as the hind legs, and the claws will be flat not round. There will be 4 or 5 fingers in the hand. In all Carnivorous dinosaurs the bones are smooth, fine grained and more or less hollow.

Look out for the sternum in all cases. It will be near the Coracoids, and be one or two flat bones, smaller probably than the Coracoids. Make careful sketches of the Scapular and pelvic arches when possible. At all events sketch the bones as they lie before removing

them. In case of sternal bones it is important to mark the surface that lies uppermost. Besides the sternal bones there may possibly be Clavicals found near the Coracoids, probably in front.

I want much to know what bones go with each of the three Skulls. Also what teeth go with Skull No.1? Can you send me some from each that are sure?

I may want the Carnivore sent on soon so keep it together.

Yours try O.C.M.

P.S. Can you work to advantage all winter, if you have a tent etc?

Marsh tells Felch how to harden the brittle bone.

Yale College Museum
New Haven, Conn.

October 16th, 1883

M.P. Felch
Dear Sir,

In working out the two skulls, we find the bones very brittle and we have tried various means of rendering them more solid. I think you can profit by our experience, and save many bones that you could not otherwise remove from the rock. We now think Soluble Silica or Soluble Glass as it is often called the best thing, especially if diluted with water so that it will soak quickly into the bones.

You better send to Denver and get a gallon or two of it. A common paintbrush will do to apply it with and several coats should be used on very soft bones. In hot weather very thin glue will be excellent. Gum Arabic when thin is also very good.

All of these substances if they permeate the bones, and get hard will save many very fragile bones of value, especially skulls and feet bones.

Rags help much, and plaster of Paris more on such specimens.

Yours truly
OC Marsh

Marsh suggests to Felch again that he better mark specimens as to which skeleton they belong to. He also suggests he diagram the quarry as a way to keep things straight.

Yale College Museum
New Haven, Conn.

October 16th, 1883

M.P. Felch
Dear Sir,

Since writing yesterday I have looked over Skull No 2, and find that one upper jaw, both lower jaws, and both premaxillaries are missing. From some pieces with the skull I infer that some other missing parts must have been near, and may be with the bones you did not send. You better make up another box (and send by Express.) putting in the remaining skull material (jaws teeth etc.) now on hand. It is important however to label each specimen so that it can be put with its skeleton later.

You might mark on a diagram of the quarry where each was found, naming the distance from skull No1, 2 & 3. put in also any vertebrae or other small bones that you know go with each skull.

I send today some more envelopes. Also Cards to put under the cover of each box. It is always important to label a box inside.

Your bone J+ is a pubis k+ may be an illium partly weathered out of shape. The vertebra 39 inches long is peculiar if your diagram is correct. I hope you have each of the last two by themselves.

How many boxes have you ready to ship? How much in weight? If you send all together what is the rate of freight to New York

Yours truly
O.C. Marsh
(over)

I wish you and Smith to keep at work all winter. Williston tells me that the weather in your part is mild.

Felch tells Marsh they have accomplished much with the new skeleton, having removed the sacrum, illium, vertebrae and foot parts. He describes the condition and mapping. They are finding jaw and other fragments scattered across the bones which they feel may belong to skull # 2, but hope not as they feel the value of a fragmented skull would be lessened. They find another skull at the end of a string of vertebrae and are gluing it with strips of cloth to hold it together.

Canon City, Colo.
Oct. 19th, 1883

Prof Marsh
Dear Sir

Since my last – though the weather has been bad we have managed to accomplish considerable work. Of the new skeleton we have taken out the sacrum and illium and some other vertebrae and all the bones of the hind foot including calcaneum and claws – a larger part of the foot bones being whole and quite perfect. I sent a sketch of illium with measurement as accurate as possible. It did not come up in as good condition as the rest – for a string of vertebrae – with the sacrum lay across – and a portion came up with it when taken up – but all the more important parts of this are in so good condition there will be little difficulty in getting a correct idea of its shape. It seems quite different from any descriptions we have got – in having the long shaft-like process extending so far back ward. In taking out the sacrum = which seems to consist of three bodies united – and four of the wide neural spines = We took up six in all – in one bunch – with every part just as we found it. This makes the section some over 2 ½ feet long – some 16 inches wide and the whole weighing but little over 100 pounds. This we carefully mapped and I think will go in much better shape than if we had tried to have separated them – besides saving the illium which we could not have done by taking out one vertebrae at a time. In working these out we have found many fragments of the jaws of what we think must belong to skull No. 2. These with other pieces scattered over the space covered by the skeleton - we fear might belong to that skull and lessen its value. The work here has been carried close up to the wall which at this point is some 13 or 14 feet high – and though the prospect seems good to find the head, by following up the vertebrae which continue on into the wall from the sacrum – it is most too late to undertake it this season – and we have some ground yet farther east stripped off ready to work. This brings us to a new and quite interesting discovery made by Tyler who found on Monday last a small scapula – which in being removed exposed a series of small vertebrae – with short slender ribs.

Thinking it would be well enough to follow the string up toward where the head should be. I set him at work doing so. The vertebrae were followed up – and run into a mass of bones – which on cleaning off will, I think prove to be another head (skull 4) the singular part of it is that all these vertebrae clear up to where they enter the head have these same little slender ribs. The last vertebrae only some 3 inches long – and the head part about 2 ½ feet in length.

One of the lower jaws now fully in view is 27 inches in length. I am sure = though alone in my view = that vertebrae and head go together – and from the long flat –sharp sickle edged teeth that it is ~~of the crocodile~~ Allosaurus order the upper jaw meets the under ones – and back of the front teeth on top near where his nose should be, at a rough guess – is a hole some two inches in diameter with a strait rim and above and back of this a sharp thin triangular bone sticks up some three inches high

I enclose a little sketch that will give some idea of it. The location of this bone over 20 feet east of skull No 2 and 12 feet north from south base line. A portion of the rock around it is shaley and rotten and the rest very hard – making it difficult to get out as the bone is somewhat shaky – but by cleaning off a little at a time and using strips of cloth pasted on to hold together I hope to get it out in fair condition. I have taken up two slabs with vertebrae – one section just behind the head – another some four feet distant which will show thin make

Of this I will write more in a few days -

Respectfully Yours
M. P. Felch



Skull No 4 (Allosaurus)
Letter of Oct 19th, 1883.

Felch writes to Marsh that he is glad the shipment was received. The missing parts of Skull No. 2 possibly remain in unworked blocks. He continues to look for bones to go with skull No. 3. He feels they have both the fore and hind limbs of the Allosaurus as well as enough more to give a "good representation" of the animal. He describes his latest discovery, of the letter of the 19th as being an 'ugly character' with horns on its head. He is as yet unsure whether he and Smith will be able to work through the winter but will continue for the present with weather permitting.

Canon City, Colo.
Oct. 22nd, 1883

Prof. Marsh
Dear Sir

Yours of the 15th and 16th I received tonight. I am glad the boxes arrived safely – for I had felt some concern about them. As I wrote in the letter mailed on Saturday last – that I feared you would find some of skull No. 2. missing it seems I was right – but we can restore some – perhaps most all – one of the pre- maxillaries I found and have all right – most of one lower jaw – and quite a large portion of another – which I cannot yet determine – as a portion of it is in one of the large blocks recently taken out. Of the bones belonging with No 3 – we are at a loss to know what goes with it. We found two limb bones quite near but no signs of vertebrae

These limbs as well as the skull lay quite near the old workings as you will see by reference to the map last sent (limb bone M+) and if the skeleton had mostly lay in that direction = it might have been taken out before. Further developments may throw more light on the case.

These limbs like others taken out near were badly decayed – but thinking they might be valuable in this connection we saved all we could and perhaps I had better send them on with the rest of the skull matter by express as they are not very heavy. In regard to the Allosaurus – I am decidedly of the opinion that we have both the fore and hind limbs - though the diagrams may be wrong. The lower ends of radius and ulna are as different from the tibia and fibula as possible. These with the foot bones – sacrum – illium and a few of the 36 vertebrae traced out ought to give a good representation of the animal.

Our latest discovery – a mention of which was made in my last – I think will prove fully as interesting as any others found – though the animal seems an ugly character - and must have been a terror wherever he lived – with his long stout jaws – sharp teeth – and horns on his head. We are at work on it – carefully – and slowly to save all of it possible. It is some crushed down – those vertical seams run through it crosswise but by stripping up well with cloth as we remove the rock from around it I think we will get it in better shape than the others – at least I hope to do so. Of this – I know that I can send vertebrae that belong with it – have two slabs – in which one or two can be taken out each. These were very rotten – but by using the strips of cloth on each side the slab – will be able to make all hold firmly together till you get them – and there the cloth can be easily removed by

dampening with a sponge - so as to get at the bones. The head with both jaws will be complete. I think we have the scapula also and hope to find more of the same skeleton farther in

In regard to working through the winter - I will write more fully in my next. Smith is also undecided - for he as well as myself have neglected - for want of time some matters that ought to be attended to. At any rate we will not suspend work early as long as good weather continues

Respectfully Yours
M. P. Felch

Rec'd the extra package with "Scribners" Accept thanks

Felch writes to Marsh that he is sending a premaxillary and some other jaws. He states that he sent one piece ahead of the rest of a skeleton as it is quite unusual. He describes the difficulty of working on skull No. 4. It cleans poorly and one has to chisel from a reclining position. He plans to prospect for more of this skeleton.

Canon City, Colo.
Oct. 23rd, 1883

Prof. O. C. Marsh
Dear Sir

I thought I would send the premaxillary- by mail. The piece sent is all that we saved since other fragments coming in with the small caudal vertebrae of the Allosaurus – but so broken and detached from each other as to be of no value One lower jaw we have now ready to pack – and a few other fragmentary pieces. The other lower jaw - we have never seen – unless it be one that I took out some 6 weeks ago near bone F+ just before going to work on the large femur. This is packed up – but as soon as I can leave work on skull No 4 I will look it up and compare them.

I also send a tooth of the same found some little distance away – and the distal end of the radius of the Allosaurus. An explanation of this last follows in the box. I did not like to send a separate piece of the skeleton but I suppose you can keep it safe till the rest is sent. I wished you to see this – for it is totally unlike the end of that marked fibula on the diagram sent. The end of the ulna (distal end) is altogether different from that of the tibia – and there is a still more radical difference between what we call the femur and humerus

If you do not write to the contrary before we get skull No 4 and the rest ready to express I will pack in to the box the end containing the distal ends of tibia – fibula and the astragalus – the piece will not weigh much over 10 #

We have been at work again today on No 4 - It is a slow and delicate job – as it does not clean well from its bed underneath and we have to lie down to chisel under it removing a little at a time and then pasting up. I think this will come out so that with the two slabs containing the vertebrae it will weigh but little over 100 # As soon as we get this out we shall prospect for some more of the skeleton – think the limbs cannot be far away

Respectfully Yours
M. P. Felch

Marsh discusses Allosaurus and what to continue to look for.

Department of the Interior, United States Geological Survey
~~Washington~~ New Haven

Oct 24th, 1883

M.P.Felch,

Yours of 19th inst. just recd. Also diagram of ilium. This is Allosaurus apparently, and I have little doubt that the Skull and neck vertebrae all belong to the same animal. Hence my telegram to send on the whole skeleton by Express.

Your description and sketch of Skull (No4) shows at once that it belongs to a Carnivorous Dinosaur, probably Allosaurus. The small slender scapula found with the neck vertebrae most likely goes with the same skeleton; so you may find the front limbs, and hands very near it. Look out for the hands especially. Also the Sternal bones between or near the Coracoids.

Take up the skull with great care, and spare no pains on packing to make it come safely. We need a Carnivore skull very much, and you may never find another.

You have certainly had good luck to find four (4) Skulls in one small quarry. It is important to get out the skeletons that go with each this fall, as this winter we shall make most of our plates for the Dinosaur Volumes, and the specimens would be worth much more to us now than later.

Please date all diagrams and give position in Quarry. If you cannot get the fore limbs of this Carnivore now, you better send on the skull and the neck vertebrae by Express. Also the sacrum, ilium, pubis and ischia, and one hind leg and foot. I want the whole skeleton, however, here as soon as I can get it.

Don't forget that we are very anxious to get the rest of Skull No1, and No2. We are working on No3 which seems perfect.

Yours very truly
OC Marsh

Felch writes to Marsh in response to the telegram which he just sent. He will send the requested skull (No. 4) which Marsh feels belongs to the Allosaurus. He will enclose the rest of No. 2 along with scapula and vertebrae.

Canon City, Colo.
Oct 25th, 1883

Prof Marsh
Dear Sir

Telegram rec'd - to-night. Will send by Monday or Tuesday next. Seems hardly possible that No 4 belongs with the Allosaurus - Will have the remainder of No 2 - all of No 4 with some vertebrae and scapula - also the skeleton as soon as I can get packing and lumber for boxes.

I send a sketch full size of the head No 4 [ed: not with the letter] - we took it up to-day in two parts - On outside covering the pkg. will be marked to correspond - A - behind the fracture - B in front. We think the eyes are behind the upper point A. The skull seems nearly alike on both sides. Is very narrow on top

Respectfully
M. P. Felch
(over)

P.S. The vertebrae are lower down toward the back of the lower jaw than represented. I have hunted up the jaw I spoke of in my last - found it dated Aug. 7. It was taken out about half way between limb F.+ and skull No 2. I am satisfied from its appearance it is one of the lower jaws of No 2

Felch writes to Marsh that he is shipping 5 boxes and describes the contents. He also gives information on location of some bones and of the care he and his workers used to preserve these specimens. He states that he received Marsh's suggestions on using soluble glue but defends the method that he is using, stating that other methods he has seen are not as good. He does say there are conditions where the soluble glue might work. He gives his expenses for the month and states that Tyler is at the end of his contract but that he and Smith will continue on, weather permitting. He gives an account of local weather as having November and March usually the most disagreeable months. He also says they can have a "New England Indian Summer" for much of the winter.

[Oct 30th, 1883]
Canon City, Colo.

Prof. Marsh
Dear Sir

We ship to-day 5 boxes – No.s 4 to 8 inclusive. Each box has its contents noted under cover – together with diagrams in cans where it is necessary for them to be used - and some more particular directions – explanations of marks etc. The lot includes all of the remaining portions of skull No. 2. I think you will find the jaw in packages marked "Aug 7th" to be one of the lower jaws of No.2. The lot includes all of the skeleton of the Allosaurus, also the limb bone's M+ close to the ends of which lay skull No. 3. You will also find a caudal vertebrae in two packages that I found in June with several others like it close by the two sections of jaws with the long slender teeth that I sent in Reg. Pkg. No 3 – so those teeth were like those in skull No. 3 – and thinking these vertebrae might help solve the question I send one along. In box No 4 you will find skull No. 4 with two sections of vertebrae. If the box arrives safe and nothing broken you can match this. See No 1 on to the head at the point of separation – to a hair – for I used the utmost care after separating not to crumble away any portion of either – that you might not have any doubts about it. In box No. 8 you will find a limb bone – femur I think that is marked A= that belongs to skull No. 4. This you will find to be different I think from the limbs of the other skeleton – at least a different individual. This limb lay only about five feet from the base of the skull on the line of vertebrae that are still in sight and continuous. The limb overlays others – developed enough so that we think them a pubis and illium. These bones pubis & illium seem at one point to be co-ossified. Smith and I have examined them very carefully and cannot find a sign of fracture between them. We may be off altogether wrong but a few days more will tell. Another little bone about 6 inches in length taken up in rock and in the same box (No 8) is all we have taken up. I delayed sending one day that you might have the limb – and we worked all day Sunday to further matters along. The work on this will be slow – for the bones are badly bent out of shape – but I tell Smith we must have every bone and fragment possible to save of this animal if it takes till Christmas. This skeleton discovered by Robert Tyler October 15th, 1883

The work on some of these specimens has cost us a good deal of hard, slow and patient work – that at times has been difficult in the extreme to accomplish good results. I received your suggestions in regard to using soluble glass. There are times where it might be used to good advantage here – but of all the methods we have yet tried – or that I have seen tried by others – and they are many – our plan works the best. Had any other method that I am acquainted been used on the pubis-sacrum-illium and ischia of the Allosaurus – or on the skull of No 4 the specimens would have come out in so bad condition that no intelligent idea of their form could be had – while now by this process you will in most cases be apt to get the exact size and form with little trouble

The expenses for this month will be – self – 75 – Smith 70 – Tyler 50 (full month) Express 20 Total \$215.⁰⁰. Tyler's time will expire to-morrow night 31.st for which I hired him and I shall discharge him. Later if we have to take down a section of the back wall I may have to hire a few days' work. Smith will work on awhile longer – if the weather holds good. Usually our most disagreeable months are November and March. Sometimes we have weather all through the winter months as fine as a New England "Indian Summer" At such times work on fossils could be carried on fairly well

Hoping these specimens will get through safely – and repay you in a measure for the great outlay and expense

I am
Very Respectfully Yours
M. P. Felch

**Tells Felch he did well sending skull with enough rock to protect it (Diplodocus).
Gives him the order in which he wishes the work to proceed in for the rest the year.**

Yale College Museum
New Haven Conn.

Oct 30th, 1883

M.P. Felch,

We have nearly finished cutting out Skull No3, and I am well pleased with it. Had you attempted to cut it out of the rock any more than you did, its value would have been greatly lessened. Always remember that we can cut Skulls and feet out of the rock here much better than you can at the Quarry.

No3. appears to be Diplodocus but this is not yet sure. It is very important to know what bones go with this skull. I hope you keep a careful map of the quarry so that we can tell just what bones were nearest, and just how they laid. By knowing this we can perhaps make out the different skeletons. This skull (No3) appears too small for the large Diplodocus hind limb and tail which Williston helped to take up.

About work this fall. I am very desirous of having the bones that go with the (4) four skulls all here before New Year's, if they can be got out in good shape. It is very important that we have at least enough to make out the species.

All the four skulls belong to totally different animals. The Carnivore is of course quite by itself, but the other three belong to the Sauropoda, and are on the same plan of structure. The bones that will distinguish them are the vertebrae, sacra, and ischia. The hind feet will probably be very similar.

Were all the four skulls on the same level, or so near as to be practically the same. I judge so from your diagrams.

Yours truly
O.C. Marsh

P.S. Your of Oct 25th with diagram of Skull No4 has just come. It indicates a grand specimen, and I hope it will come out in good shape.

Don't throw away a fragment of this skeleton. If the bones are soft, harden them with gum Arabic, or glue, or close in plaster. Every fragment is important

M

Marsh suggests a quarry map and diagram system. Getting bogged down in the letters and misplacing some of the diagrams.

Yale College Museum
New Haven Conn.

Oct 31st, 1883

M.P. Felch
Dear Sir

While we are waiting for skull No4, I have read carefully all your letters in order to get an exact idea of the quarry, and how the skeletons probably lay, with references to the four skulls, and other jaws or teeth. I fear some of your letters have been lost as I cannot make out the position of these skulls from those I have.

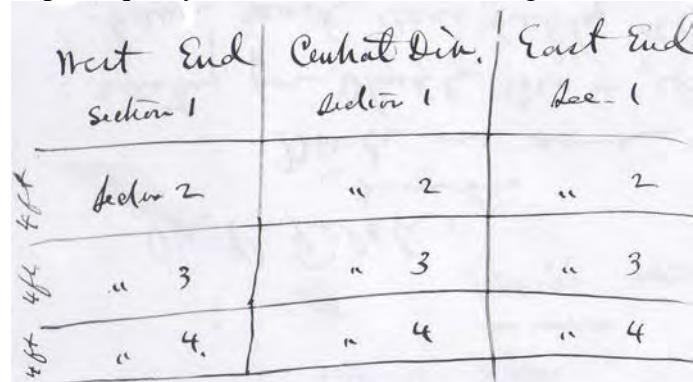
In your diagram of the Quarry (dated July 5th) I find

- 1) the position of the jaws with slender teeth sent by mail,
- 2) Skull No1. under bone N, in the East end of the quarry.

In one other letter you speak of Skulls 2 and 3 as being 10 feet apart, and in another that Skull No4 is 20 ft East of No2. Please send me a small Map of quarry showing particularly

- 1) the position of the four skulls
- 2) " " " " Allosaurus skeleton
- 3) " " ' " big femur 5 ft 10 in long
- 4) position of bones J+ and K+
- 5) " " "the vertebra 39 inch long.

I think a good way will be to map the quarry out in sections, something like this.



Or better still number the sections from the South, then you can add to them as you go into the bank northward.

In this way you can locate the specimens easily. Otherwise it will be difficult to do it here.

Every specimen is now becoming important, and the great thing is to get the skeletons together. Help us all you can, now, or later it can't be done, except proximately.

Yours truly
OCMarsh

P.S. I hope your men do not tell outsiders about the skulls etc.

The crates have arrived and Marsh opens the crate with the carnivore first. It has been damaged and Felch is told to leave on more rock and use more packing.

Department of the Interior, United States Geological Survey,
Washington

Nov 6th, 1883

M.P. Felch
Dear Sir.

The 5 boxes came in today, but I have only unpacked Box No4 with the Carnivore Skull. This is a very valuable specimen, but badly shattered. It would have been better to have taken the entire box for the skull alone, and used 20 lbs more cotton and one or two more sacks around each piece. Perhaps this would not have saved it.

If you find another skull please don't put a chisel or any cutting tool nearer to it than three inches, if you can help it. The more rock around the skull the better, and I rather have 100 lbs extra rock come around a skull than to have a tool within two inches of any part of it. Of course I know that you can't always tell a skull when you first hit it, but as soon as you do make out its nature, Keep it as solid as possible. Skull No3. is coming out superbly because it is in the rock. We have all sorts of fine tools here for cutting away even the hardest rock, without jarring the specimen materially, and if even a fine crack often we fill it with gum or glue, and wait till it is hard.

The Carnivore Skull (N04), is one of the most interesting specimens I have seen from the West. We are now trying to harden it with gum and glue, and in a few days I shall myself go to work on it. It seems to have been complete, and I am in hopes it will give a good drawing, both side and front.

I am glad you are going for the skull of the Allosaurus. Both that and Skull No4. are typical Carnivores, perhaps the same species. This we can tell later, when we can compare the parts of each.

Will write again soon.

Yours with many thanks,
OCMarsh

Please send list of contents of each box by mail in future. We often want to unpack one box before another.

Felch writes to Marsh that he has all available bones out that go with skull No. 4 and gives important details concerning them. He then mentions a new find that has them perplexed. From its location, he thinks a limb may have been taken out in 1877 and a copy made for Prof. Mudge.

Canon City, Colo.
Nov 6th, 1883

Prof Marsh
Dear Sir

Of the new skeleton = Skull No 4 = we have now got out - all the bones there were in sight - at date of last letter with diagram of illium and tibia. We took up the tibia and fibula = the latter very small and slender = also a portion of femur = mate to the one sent in Box 8 = all in one piece. The first illium which lay on sacrum was removed nearly whole - The top of the sacrum was then - with two or three more of the posterior vertebrae connected with it - and these - with the second illium which lay directly under the sacrum removed in two slabs in the same manner as the two sections of vertebrae near the head attached to one of the slabs are small portions of the pubis and ischia that will be marked to show where they belong on the parts first removed. It was quite difficult to separate the mass but we think you will get a very correct idea of all when you get them with the diagram which we worked by in removing them.

The bodies of the vertebrae in the sacrum are much more slender than either those forward or behind it. We are trying to keep a measure of the length of the animal and find the anterior vertebrae of sacrum only about five feet from base of skull. We have found as yet no signs of any fore limbs or foot bones. Smith worked back yesterday and myself and Tyler in front of where the skull lay to find more but found nothing belonging to it, but Tyler and I found directly in front of the skull a large limb, and on one side in front - a large flat bone - and foot bones. The flat bone is apparently an illium - a portion of one end was picked off long ago in taking out a vertebrae. We cleared off of this some five feet in length and 6 inches in width of the top or rim part - and of the limb some two feet in length. On top of the flat bone are a mass - which I cannot make anything out of except it be a monster foot vertebrae. At the present stage of development - I cannot sketch or hardly describe it. The proximal part - about a foot long - 8 or 10 inches wide on an oval face - widening distally - and running into large ridges for articulation with second is whole. The second row is not as long, and though separate seem more or less connected by wide thin plates or processes. If a foot vertebrae it must have spread over nearly a yard square. I have looked the books all through to find some likeness to it - but without success. When I get it more uncovered I will try and measure and sketch it - then I will remove as carefully as possible the rock with bone in place as they come out - marking each section carefully - and if it is worth the freight on it in that way - will box and send on with the rest. It will be impossible for us to try and get all the bone out and ever restore it again.

I think from its location in the quarry that it may belong to with a limb taken out in 1877
– a model in wood of which I made for Prof. Mudge

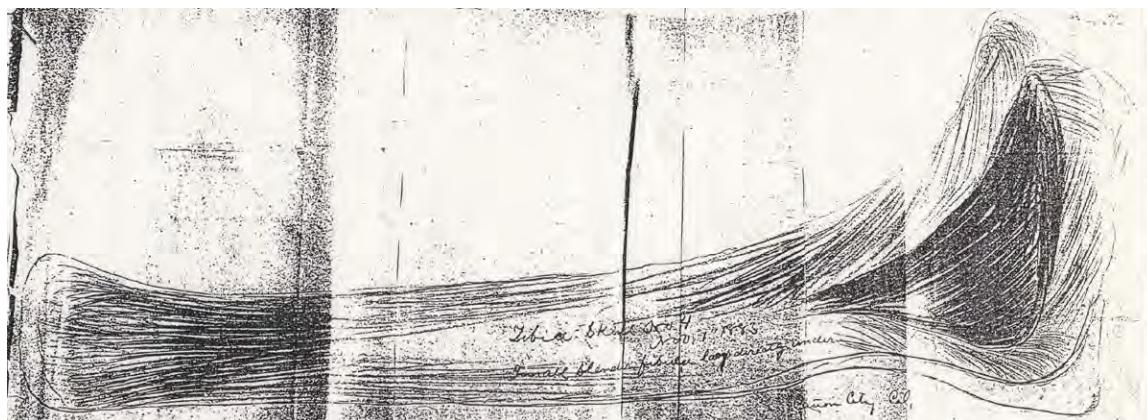
I concluded to keep Tyler till I heard from you – also if you think best to go after any
more of the Allosaurus now or not. We will work on where we are till you write which
of the undertakings you would like to have prospected first

Respectfully Yours
M. P. Felch

P.S. Monday Evening.

I have worked to day on the foot vertebrae am more uncertain what it is than before. The
work is slow around it on account of the rock being brittle and crumbly – have not got it
in shape yet – to give much of a description of it. The large part looks some like a
vertebrae = but the second row I am certain are foot bones all of 8 inches wide and quite
thin in front. Smith in his prospecting for the new skeleton has run on to a very large
limb bone – that so far looks to be the finest specimens of limb bones yet. We begin to
think the new skeleton had but two legs

Felch



Tibia Skull No 4
Small slender fibula lay directly under
Cañon City Col.

Felch writes to Marsh answering questions as to limb proximity to skulls in the quarry and gives references to a map which he has sent. He states that he may have found a mass of bones belonging to the Diplodocus, the femur of which was removed in 1877. He also has a line of vertebrae which he hopes will lead to a new skull. He describes a stratum as being 'like a river bed' and in fact thinks it is an old Jurassic river.

Canon City, Colo.
Nov 10th, 1883

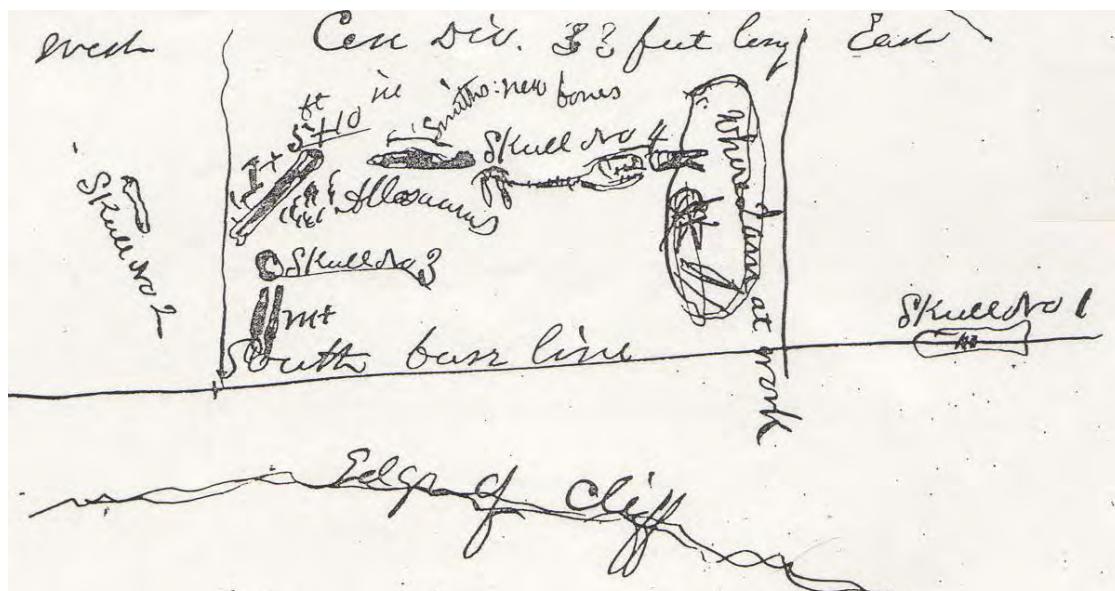
Prof. Marsh
Dear Sir

Yours of the 25th & 31st of Oct rec'd. In regard to the location of the different skulls – I sent a map with roll of diagrams of Allosaurus – This was not complete – and showed only a portion of the Cen. Div. but was enough to show those called for. I will however take the time and make one of the whole quarry – as soon as I can. The nearest limb bones to No 2 was II+ the big femur 5+10 – the nearest limb to No 3 was M+ which almost touched the skull. These limbs were packed and sent with last express matter. We have some long foot bones in rock that belong probably with II+ or M+. In my last I spoke of a foot which turns out to be a vertebrae - and a most singular one at that. By taking out some of the rock with it I can send it so as to be restored again. This lays on one end of a flat bone which I thought was an illium but which on cleaning off proves to be the shaft of a scapula – the wide end being gone The shaft will show by far the longest scapula taken out yet – On top of this also – on the opposite end from the vertebrae – is a large and singular limb bone There was also a portion of the distal end of this limb picked off with the wide end of the scapula and lost Two feet from the vertebrae is another large limb – as yet only partly uncovered – which can be saved in good condition Back – under – and around the big vertebrae a mass of bones crop out showing we have struck them thick as ever again. I think this skeleton will prove to be the lost Diplodocus that I have been looking for so long, as it cannot be more than 18 or 20 feet from where the long femur lay that we took out in 1877. In chiseling out between the vertebrae and one of the limbs I run on to a series - (3) of small vertebrae – that still continue = that were lost sight of in East End in July – These 24 in number - all caudals – were taken out then near bone N_± where skull No 1 lay. These found now are the same but come nearer the head – as the ball shows those in the tail being bi-concave. I am in hope after removing the large bones that by following these up we may get another head. Smith has got his bones almost ready to take up. They are the smoothest and finest specimens of limbs yet found – and I believe are perfect. I think they are the tibia and fibula – that belong with the big femur (II+) though some 10 or 12 feet away. The tibia is 3 feet $\frac{1}{4}$ inchs long 15 inches wide at the upper end – measuring square across – and 13 wide at the lower end and 8 inches wide in the narrowed part of the shaft. The fibula is a little longer than the tibia and is very large. At the lower end of tibia is a bone - that seems attached to it, probably astragalus. If it was not that the fibula lay so close alongside we should try and take up the tibia whole. The three skulls 1 –2 & 3 are on about the same level as the strata go – the lowest, next to it on the marl. No 4 comes

higher up about the middle of the pay streak. No 2 lay under Allosaurus level – the Allosaurus laying directly under the big femur – At this point the regular bone strata is thicker (some 6 feet) than any point in the quarry. The bottom on bed is far from level – shows bars and drifts like a river bed – in fact I think it is the bottom of an old Jurassic river.

Respectfully

M. P. Felch



Skull No 4 heads East tail runs west – Smith was following back to find more of the skeleton of No 4 when he found his big limbs. I started in directly in front of skull No 4. Where I have got into the mass of bones described

My map when finished will show all important bones correctly

Nov. 10th, 1883

Nov. 1

The very first day that comes that we cannot work in the quarry I will go to work and copy off a duplicate of our map – I cannot do this evenings on account of poor eyesight – and we feel like putting in all the time possible while the weather is good. Our map is spaced off in inch squares –an inch to the foot – after you get a copy you will be able to locate them- the bones- as we take them out by range & number thus

Number H 10489654321. 2
Ranger 29 C B A

Marsh refers to unpacking more of the boxes and finding a lot of shipping damage and tool marks. Suggests Mudge and Williston want to "investigate" too much in the field and have taught him wrong. Leave more rock...

Yale College Museum
New Haven Conn.

Nov 10th, 1883

Dear Mr Felch,

I have as yet had time to look over only part of the 5 boxes sent, and find in them bones of much interest.

I can now only say a word or two about these specimens. M+ came in such very bad condition that nothing can be made of it I fear, but I will examine it again when some of the pieces are put together.

Most of the Carnivore bones (Allosaurus) came in fair condition. The Sacrum was very badly broken up. It would have been better to have left more rock on it. If 20 lbs more rock had been left on the side cut out it would have been worth twice as much tons. It was a grand specimen, and we shall do our best to restore it, but if we had had the block of stone containing it here we could have cut it out so as to show all its features.

I mention this, not to find fault, but for your future instruction. You are having grand luck and I want to make the most of it. A skull, sacrum or foot, will bear transportation much better when packed in its own natural rock, than in any other way. It is of course a great temptation to cut out the rock so as to show the entire form of any specimen, but if done with coarse tools out of doors it is very dangerous. Mudge and Williston both wanted to investigate a little too much in the quarry, and this has perhaps given you a wrong idea of the advisability of cutting away the rock around specimens, especially important ones, such as you are finding now, which may not turn up again for years.

You better keep Tyler through the rest of this month, and longer if you find good bones, and the weather allows you to take them out.

I wish very much you could see just what we do with the bones when they arrive here. Then you would understand fully what we need. Perhaps I can arrange later for you to visit us.

Skull No3 improves by each day's work. We have made now cut away nearly all the rock around it. We want especially to know about the vertebrae and limbs that belong with it.

Yours very truly
OCMarsh

Marsh sends monthly payment.

Yale College Museum
New Haven Conn.

Nov 11th, 1883

Dear Mr. Felch,

Enclosed please find check for \$215. as per account sent.

I shall be very busy this week as the Nat. Acad. of Sciences meets here, and I have to preside.

Hoping to hear more good news from you soon

I remain yours truly
O.C. Marsh

Felch writes that he is sorry a skull arrived in poor condition and tells of the difficulties they had with. Marsh apparently felt more matrix could have been left. Felch explains in detail the method used to extract this difficult fossil and states that he felt the method to be successful under the circumstances. He continues this letter on the next day (14th) and continues with a description of the bones. He thinks a huge scapula belongs to the Diplodocus.

Nov 13th, 1883

Prof Marsh – Dear Sir,

Yours of the 6th just rec'd. I am sorry the skull did not reach you in good condition. As to leaving more rock with it let me give something of a detailed account of the difficulties I had to contend with.

As I have written before – I thought in following up the vertebrae – we might strike a skull – but was not looking for anything like what we found – and as part of the base and top was cleared off it did not have any appearance of a head – and it was not 'till the lower jaw was followed up and teeth found in position that we knew what we had found. All or most the rock on top was shaley & rotten like that in which the two sections of vertebrae lay. After the top had been cleaned off – I decided to take it out on one block if possible although one fracture was open a fourth of an inch wide across the front part – where the head was finally separated. To follow out the plan - after carefully pasting up all that was uncovered – we commenced in front (along the course of the lower jaw) then by each end and last on the backside In cutting along this front it was found there were four more transverse vertical fractures besides the open one in front, in the bed of rock under the skull – and that these blocks rested on about 2 inches of soft clayey marl with another rock strata under that.

It was now seen that getting it out in one block would be impossible – so the front was removed first. Then another difficulty was seen – for it was found there was a longitudinal with the skull fracture about the center of the skull corresponding to what I marked a "weak point" in the portion taken up with the rock

Two days of the hardest and most difficult work was spent in cutting down on the backside as there was but little working room on that side next the wall – and the rock was harder at that point than that attached to the part sent with the front part of the jaws. Working in the most difficult positions – sometimes with one foot in front the other on the opposite side – then reaching over the whole and in various other positions. I would with a sharp pointed chisel first cut a channel along the course of the backside a fourth of an inch wide and a half inch deep or so and then with a heavier chisel cut out working room to the first level – and so on to the soft strata underneath which was a foot or more in thickness to it. So much done and what to do next was the question – on this problem I studied one = whole night = a vice of mine by inheritance = and the next morning went to work in gouging out the soft streak under one block at a time to let it away and down from the skull. In this way I removed two in front and one behind leaving the whole in



this shape . Here it stuck – on its bed – the blocks taken away cleaning off without removing but a few fragments but the middle portion would not clear away on the backside – and I did not dare to remove the part in front of the longitudinal fracture for fear it would break down.

Well after taking in the new situation I thought I would try and work a narrow strip of board under each end through the soft streak – to the backside then draw the whole away from the wall so as to get room to loosen up between the skull and blocks on the backside. This plan proved a success. I got it away loosened it up from the backside and took it from the rock with but few pieces left – all of which were after wards taken out and sent. If we should find another in the same situation & condition I should have to adopt about the same plan – but could improve it very much as to using the water glass and glue to harden. I had always been of a notion that anything of that kind used would bother you there and so avoided its use – but now shall use it freely and it will greatly help us here in working. You see we have got to define the limits before we would know where to chisel on any bone. No 3 had its own limits defined plain enough after it was split in two and showed teeth and all and then we let it alone – only cutting it off from the long block it came out in. And another thing suppose a skull came in among a mass of other bones – vertebrae ribs etc. We can't tell which is which only by following in the bone till we get its boundaries. It is much easier for us to leave all the rock – around a difficult specimen – and we shall always do so when we can and know what the specimen is.

Wednesday morning – 14th Nov

I did not have any chance to send to mail this yesterday and so will add a little more. Smith has taken up both of his bones – they are as nearly perfect as can be. Each bone in halves – with perfectly clean fractures and not a fragment lost between them. He has also struck two more very singular limb bones – close by where they laid – short and clumsy but no more of the bones with No 4. I have taken out one of my limbs – also the large vertebrae – also the shaft of the scapula ready to turn over. All the wide part is gone but what is left of the long slender shaft measures 4 feet and 8 inches – it must have belonged to the Diplodocus. The limb that lay across this - must have been the humerus – some

over three feet long and shaped – something  part of the shaft like other limbs – these widening out and spoon bowl with the upper rim A standing up higher than the rest and quite stout and thick. It is just like the one that got powder burnt back in the West End but not so large. The vertebrae is a large dorsal – lay on one end of the scapula – and there is more of the same kind partly in sight I have one more large limb partly uncovered and after we get that out and Smith takes up his two we will then be ready to see if we can find any more limbs or feet of skull No 4. These large limbs come in a little higher strata and have to be taken out first

Respectfully Yours
M. P. Felch

Felch writes to Marsh that he is concerned about a Denver based proposal to bore for oil in the Garden Park area. He earlier filed for the ground in the name of Prof. Mudge and in this way has been able to keep Lucas, Weston and others off. He mentions a few plans to claim land to Marsh and asks for his opinion on what should be done. He then talks of the good qualities of this quarry and discusses stripping off to recover the rest of the bones they are presently after.

Canon City, Colo.
Nov 17th, 1883

Prof. Marsh
Dear Sir

I thought I would write a little this morning as I was going to send for mail – about a little matter that is just now giving me some concern. The Oil fever that has been confined to Canon City and below on the river toward Pueblo has at last invaded Garden Park – some Denver parties proposing to come here soon and bore for oil.

As soon as this fact becomes known every quarter section will be filed on in and all around the Park – and I fear some parties who already think our old Quarry must be of immense material value – will be locating this – thinking to kill two birds with one stone. I filed on the ground once in Prof. Mudge's name and so kept parties off – for a while and since then by a little bull dozing have managed to keep off Lucas, - Weston and some others who have always been anxious to work the ground

I have always thought since I first discovered the bone bed that there were more fossils here than could be found in the same extent of ground elsewhere – and therefore would be likely to produce a greater variety and more valuable collection

I think you will say this is a fact and I still think there are many more good specimens yet to be found although at rather more expense than most ground. Now what I would like to know is – can I take up a claim – as mineral and locate 1500 feet – on a placer claim of five acres? If not – had I not better get some trusty person to locate a quarter section of 160 acres? Smith would be willing to do it but has used his right and cannot do so. I have still my Homestead right unused and could locate an adjoining Homestead to my ranch but it would not be near so valuable to me as to take it in another direction as the ground is almost worthless for a pasture even. If it cannot be located as mineral – I may be able to get some trusty young man to locate on it by giving him the promise of a job for 6 months or longer if the work is carried on there. I could do it myself - if the other plans will not work and would rather than have it fall into the hands of parties mentioned.

Please write to me soon what I had better do in the matter. We have got down with the work on to the tail of Carnivore (No 4) but find no more of it except the tail. We shall refit the tools to-day and all hands commence Monday to strip off over the Allosaurus – and the other large bones that lay above it. We have still a lot in sight and partly worked out in front of where skull No 4 lay which can be worked on at any time – but nothing

more can be done over or around where the Allosaurus lay till a good deal of cap rock is taken off first

Respectfully Yours
M. P. Felch

Canon City, Colo.
Nov 17th, 1883

\$215.⁰⁰

Rec'd of O. C. Marsh the sum of two hundred and fifteen dollars for work on fossils for
self and team for October 1883

M. P. Felch

Felch writes to Marsh that, due to poor condition of bones on arrival due to rough handling in shipping, he will need to repack all boxes he has ready to send. He describes the difficulty in removing bones and states that this is largely due to the close proximity of bones in the bed. He elaborates on this and includes a drawing showing the bone overlap. He has found the humerus belonging to skull No. 4. and will be looking for the rest of it. More drawings are included.

Canon City, Colo.
Nov. 18th, 1883

Prof Marsh
Dear Sir

Yours of the 10th I rec'd yesterday – also check for \$215.00 We were a good deal disappointed to find the contents of the last boxes had not arrived in better condition – for we tried to take extra care in packing. I fear that all the boxes we have packed now will have to be packed over – more box room taken and sawdust or something of that kind used in filling around the bones – or they will all get mashed by the rough handling in transporting. We have some very nice specimens in good condition now and it seems discouraging to think they will stand more than an even chance to get destroyed

The sacrum of the Allosaurus like skull No 4 lay in bad shape to take up. A little diagram Included of that and the femur shows a wide open crack nearly half an inch wide – running nearly lengthwise of the pubis – crossing the upper end of the femur – also the lower end of sacrum – and besides this open crack the usual seams occur every few



inches. The foot bones of the hind leg might have come out in the rock – perhaps in better shape than they did after being once uncovered. The greatest difficulty we have with bones is that they come so thick together they have to be separated to take up. On the skeleton of skull No 4 two femurs – pubis ischia both illiums – and sacrum between the illiums – did not occupy a space of more than 3 feet by 2 1/2 on the surface. There was no other way to get these out except by clearing off the whole on top - and then taking up one at a time 'till the sacrum was uncovered – and that with the under illium taken up last. Hardly a bone we find but is so surrounded by others – either on top – or under or alongside but what we have to work with great care not to injure or destroy them – so we as a rule – follow closely as possible the bone we are on – and not leave it for fear of doing mischief in some direction or other. I hardly think you can appreciate the trouble we have in this way from anything I can write – but I wish you were here and you would readily comprehend it.

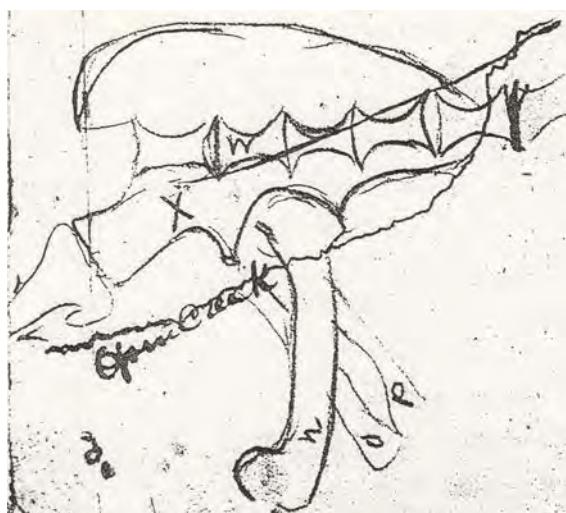
You may be assured we will do the best we can – to make the specimens safe – and your suggestions will be carefully followed in every case where it can *buy* done. I send a

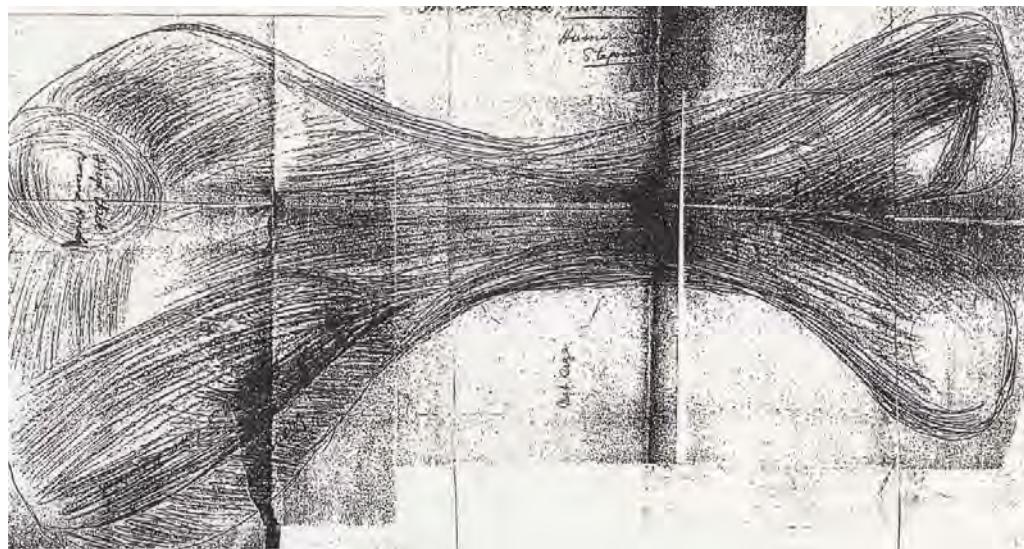
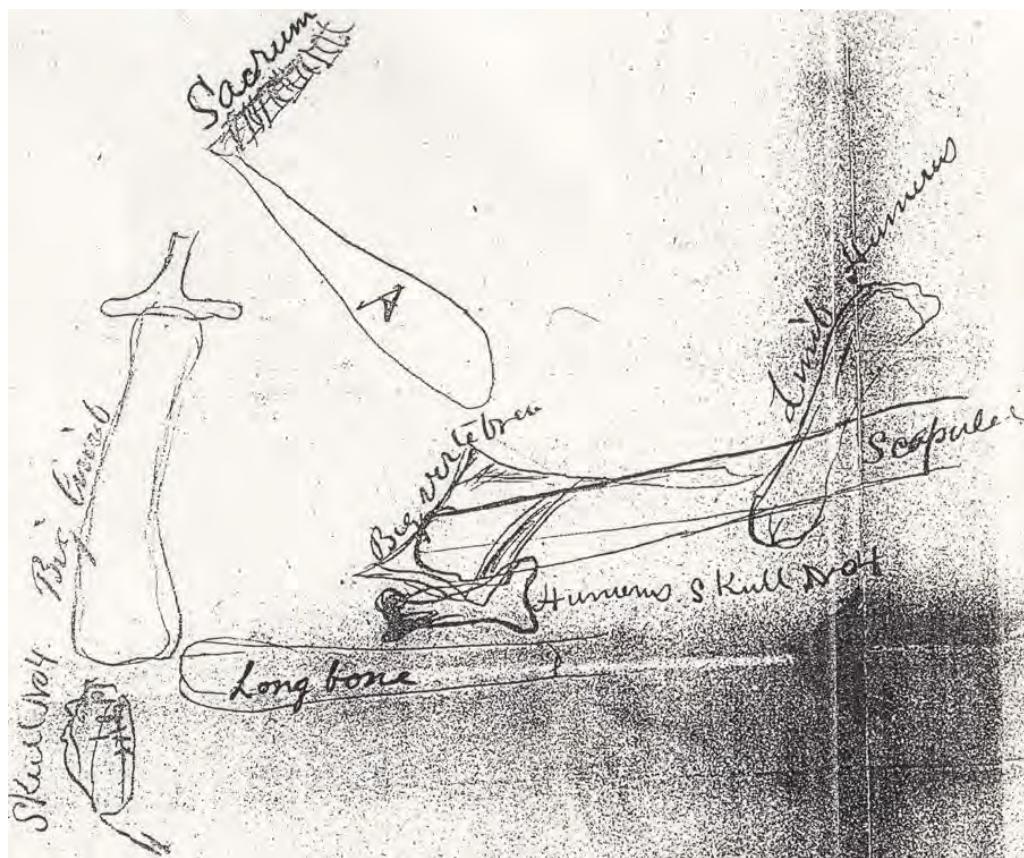
diagram of a new bone with this on the reverse side a rough outline of where Tyler and I have been at work. This will show something of how they are crowded in together and how much care has to be taken to get them out. Close by the snout of Skull No 4 is a large limb = close up and lapping on the lower end of this limb is a bone that I cannot yet tell what it is but which I suppose may belong to something that crops out three feet distant and which I have marked sacrum. The long bone A. also others not shown come from the same source. Some two feet to the right of the first big limb – was the large dorsal vertebrae taken out last week – under that a scapula shaft 4 feet 8 inches long – across that a large humeris – still another long bone some three feet of which is uncovered and looks something like another limb and besides these shown are many others like ribs small vertebrae – processes of vertebrae all of which must be carefully looked after as a good jaw – or skull or some other good specimen might be destroyed

This brings me to yesterday's discovery marked "Humerus Skull No 4" and is what I have been hunting so long for in this direction. This lay under the end of the scapula shaft and the dorsal vertebrae – is twenty inches long (a four inches shorter than the femurs) is very strong and clumsy – and from a general resemblance - structure – grain of bone etc I think must belong with No 4 – my sketch – full size does not give a very good idea – only in its general size and shape. I am in hopes to find the lower limbs farther on and also the hand - and then you will have the animal nearly complete. We have also uncovered 24 more tail vertebrae making it about 6 feet from the last sacral vertebrae. We have got the length of this skeleton from his snout to an inch the figures are at the quarry but I believe the measure so far is 14 feet 4 $\frac{1}{2}$ inches with the last vertebrae found quite small and slender. Tomorrow Smith and Tyler will commence the stripping off while I will continue on where I have been and see if I can find more of No 4

Respectfully Yours
M. P. Felch

P.S. We have got your map spaced off and will try and have it ready to send in a week or so more Felch





Marsh has Felch pursue getting the quarry land filed for him.

Department of the Interior, United States Geological Survey
~~Washington~~ New Haven

Nov 22nd, 1883

Dear Mr. Felch,

I enclose a note from one of my assistants here who will come out to Colorado in the spring. He would like to have you file on the quarry land in his name, and you better do it at once, if it can be done.

Yours truly
O.C. Marsh

Yale College Museum New Haven Conn.

Nov. 22nd, 1883

Mr. M.P.Felch, _
(Canyon City-Colorado)

Dear Sir_

Please to file, in my name, upon the land in Garden Park which includes the quarry you are now working. I shall be out later and settle upon land

Yours truly
E.H. Barbour

Marsh speculating on various bones he has received and asks for what may be found to go with them. Mentions the filing and why it is important.

Department of the Interior, United States Geological Survey
Washington-New Haven

Nov 23rd, 1883

Dear Mr. Felch,

Yours of the 18th inst. is at hand. The humerus you sketch appears to be Stegosaurus. It is too large for No4. if the latter is an Allosaurus of average size. In all Carnivores (Dinosaurs) the fore limbs are very small.

The two limbs of Allosarus you sent with the sacrum are both hind limbs. The portion sent on first by mail was part of the fibula. The only thing yet recd here belonging to the fore limb is the flat claw found separately. Brown sent me a sketch last summer, I believe of the same bone.

I want the fore limbs very much of an Allosaurus. Also the sternum, if any.

I cannot find the Calcaneum with either of the hind feet you sent. Could this have been left in the rock? It is small and might easily be overlooked. The best foot has a place for it, but vacant.

I sent you last evening Barbours request to file on that land for him. This would make it quite safe. I will inquire further about the law, but it will not do to take any chance of losing the quarry, as I may want to work it for years. I will of course pay all charges of filing etc.

You have not yet told me how many boxes you have ready to ship.

Yours truly
OCMarsh

Marsh has received the letter from Felch of Nov. 17 regarding the potential movement of oil prospectors into the Garden Park area. He has sent a telegram to Felch. In this letter, Felch is replying to this telegram. Felch will file a placer claim if necessary and locates the former claim of Mudge. Felch then tells Marsh that he injured his knee in the quarry so is at home working on the map. The others are stripping off.

Canon City, Colo.
Nov 23rd, 1883

Prof. Marsh
Dear Sir

Your telegram of yesterday just rec'd. The locality of Quarry No 1 is described as follows
N. E. 1/4 of S. E. 1/4 of Sec. 28 – Township 17 Range 70 West, Fremont Co. Colo. (See
diagram No. 1) [next page]

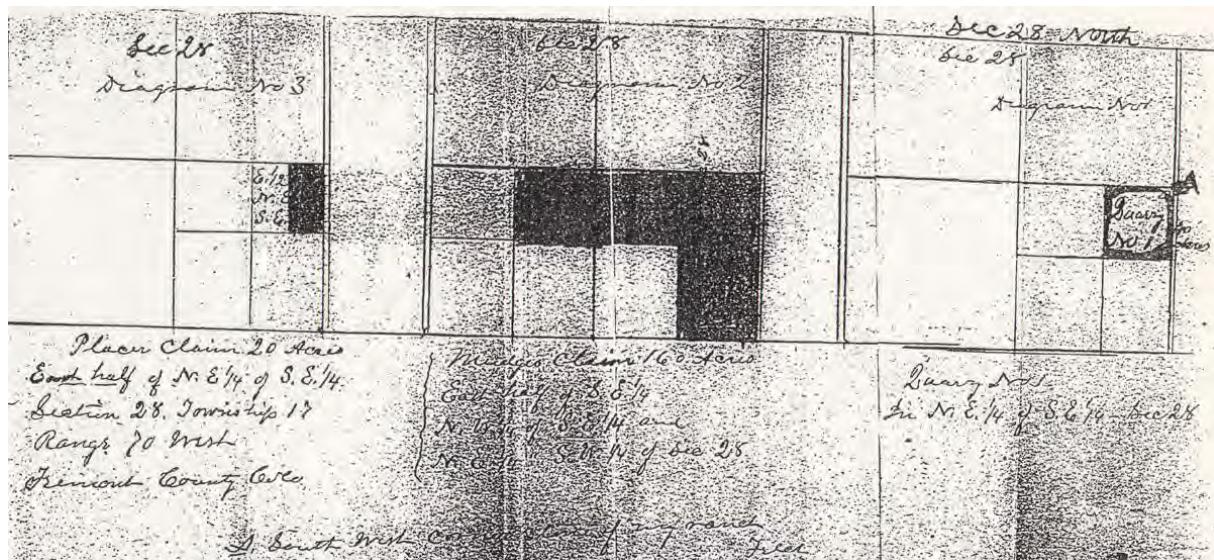
Mudges claim of 160 acres I located as pr. diagram No 2 – and covers the best field for 160 acres. Since my letter of the 17th I find that I can take a placer claim of 20 acres. Description on diagram No 3 covers the quarry. Any of these locations will do – but if I find there will be need of taking any action before hearing from you I will locate the placer claim.

I met with a little accident at the quarry – got a blow on my knee from a heavy hammer – and have had to keep the house for a day or two past – and so have been at work on the map. I have most of the bones down though quite a lot from the West End – some from the East End and the extensions are not shown.

Smith and Tyler are getting along fairly well with stripping but it will take a week or two more to get down on to the bones. They are at work directly back of the Allosaurus and large limbs = some 20 feet long 12 wide and some 10 or 12 feet thick over the bones. I shall send this in by my boy in the morning – also the map.

When I forward contents of boxes by mail I can explain where each can be found

Respectfully Yours
M. P. Felch



Felch writes to Marsh that he accepts his invitation to visit New Haven and will agree to work another season. He then discusses the problem of sending the freight through to New York without a transfer in Chicago and has been advised by the agent at Cañon City to go at least to Denver with the freight. Felch thinks he may have to go the whole way. He then gives the current status of filing a claim for the quarry.

Canon City, Colo.
Nov 27th, 1883

Prof Marsh
Dear Sir

Yours of the 22nd rec'd

I shall be happy to accept your generous offer and visit New Haven - also agree to the proviso = to work another season on my return home.

It will take some 3 or 4 weeks yet to shape the work on hand before getting things ready to go.

In regard to Freight I have been trying for a month or more to make some definite arrangements about shipping - and a few days since rec'd the card enclosed. Yesterday I visited the Agent at Canon - says the current rate to N.Y. will be 2 two dollars pr 100 lbs - that the rates will not be changed before Jan. 1 - that he will give me a car to Denver - that no guarantee as to safe handling can be made - that I had better go to Denver with the freight and see to the transfer myself - and that he will give me letters to the proper ones there who he thinks will send a through car to N.Y. without transfer - but if a change has to be made at Chicago I had better be there to attend to it. I hardly think myself a through car from Denver can be obtained - from want of enough to load a full car although it might make the trip somewhat slow and tedious and incur some extra expense - I will try and see it safe through if you wish me to do so.

Since writing the above have rec'd the letters of the 22nd following the telegram of that date. It is my impression that a filing for Barbor will not be accepted. I have made out several Dec. statements and always had to comply with the form = "I etc - being a resident of ____ locality - etc" with the applicants name signed by himself. I will see however what can be done as soon as I visit town again.

Respectfully Yours
M. P. Felch

Felch has injured his knee but continues to work on diagrams and the claim.

Yale College Museum
New Haven Conn.

Nov 28th, 1883

Dear Mr. Felch

Your diagrams and letter came today. I am very sorry indeed that you have injured your knee. You cannot be too careful with it till you fully recover. Take no chances about it.

The diagrams are just what I wanted. They made all clear at once.

Your placer claim will answer if you can hold it. I sent Mr. Barbours letter to make sure, but I would prefer that you should secure the claim yourself.

Yours truly
O.C. Marsh

P.S. Keep Tyler and Smith as long as you think best.

Felch writes to Marsh that he now thinks that the humerus does not belong to skull No. 4 and gives reasons. He says that none of the current finds are yet boxed but that he anticipates between eight to ten thousand pounds or more. He will describe these and Marsh can let him know if some are not worth shipping. He explains an enclosed strata diagram and mentions the Laosaur. Mentioning a block of vertebrae around 600 pounds that he cannot pack or break up he thinks it best to cover it back up and leave it. He concludes with mention of a visit by Prof. G. von Rath of the university in Bonn "travelling in the interests of science" so he gave him, and his wife, a complete tour.

Canon City, Colo.

Dec. 2nd, 1883

Prof Marsh

Dear Sir

Yours of the 18th is rec'd

We found on working out the humerus that it could not belong to No 4. I think it is wider in proportion to length than the one shown in Part III – Plate VIII of Stegosaur – and wider than shown in the sketch I sent

The Calcaneums you inquire for, was certainly sent in one of the cone, sawdust packages – and so marked. Though some were badly broken in breaking them out of the rock – there were more or less of fourteen different bones to represent the foot and claws

The claw sent and which goes with the fore foot was not the one sketched by Brown – but was found some eight feet directly west of the limb F + by my son – also another smaller one – and near where some limb bones were taken out early in the season.

I do not yet know how many boxes there will be as we have done no boxing for two months or more but pack them away safely till we get ready to ship. I think however if we pack all up that we have out – there will be somewhere 8 or 10 thousand pounds – perhaps more.

There are many that perhaps it would not pay to ship. I will look them over soon and describe them – and you can have them shipped or not as you think best.

I send a sketch of a vertical section of the ground we are now stripping off. We began just back of limb F + in the West End – run North 16 feet – East 28 feet – and at the East End of new ground 12 feet wide. This we thought enough to cover all the remainder of the Allosaurus if it run on continuous from where the sacrum was found. All of the top or marl – was removed first then strata No 1 – and now about half of No 2 – and some of No 3.

On finding the Laosaur.

In working out strata No 2 – we found some small limb bones and vertebrae. As we were not expecting to find bones so high up (never before having found anything except some stray fragment or turtle bones) they being quite rotten – got badly broken up in removing the large blocks of rock we were taking out. We have however got the fragments together as well as we could and think you can restore from them one femur and fore limb – also tibia and fibula and several vertebrae including the sacrum which is nearly all in one good solid block.

We also found a portion of a jaw with the rest showing the teeth of Laosaurus. I will send this and one of the vertebrae by mail soon. We worked the rock all over yesterday to find some other portion of the head but without success. The limbs – femur is some 15 inches long and very hollow. You can locate the sacrum on Range U – No. 57 - The other bones found lay close by

We have as I mentioned before got all of the top marl off = and strata No. 1 – and have on No 2 got past (working East) the Allosaurus – and have begun work on No 3 just back and over F +

No's 1 & 2 work off very well as it splits up easily but No 3 has neither rift or seam – has to be broken out with gads a chunk at a time and is slow tedious work.

We are all at work now – on this work – and help if there are no new skeletons between us and the Allosaur to get on to that this coming week

Since writing the foregoing I have been looking over the bones and find we have a lot of vertebrae duplicates of each other - some dozen or more of one tail – three or four of another and so on we have also the three vertebrae with all their different processes taken out in one mass. Whether it is a sacrum or not we never could tell – at one point the



processes seem to all unite at one point but we may be mistaken. The whole makes a huge mass - of at least 600 lbs weight I think for it was all that four of us could do to raise and move it from its bed. This we cannot either pack or take apart – and I think the best thing to do with it is to cover it up and let it remain. The vertebrae – dorsal that I took out a month since – is partly in rock and will make a bulky package but I think can be got together again with some work.

The big vertebrae 39 inches long – I was not able to get out much more than half of – the under portion was so crumbly. The big cup part and most of the top outline was all I could save and that in rather poor condition. The long scapula shaft 4 ft. 8 in long I took out whole and have that – on hand but whether worth sending is another question

The first bad weather that sets in I shall go to work in making boxes and packing – and if you wish all sent – or wish to let me use my judgement in the matter please let me know soon

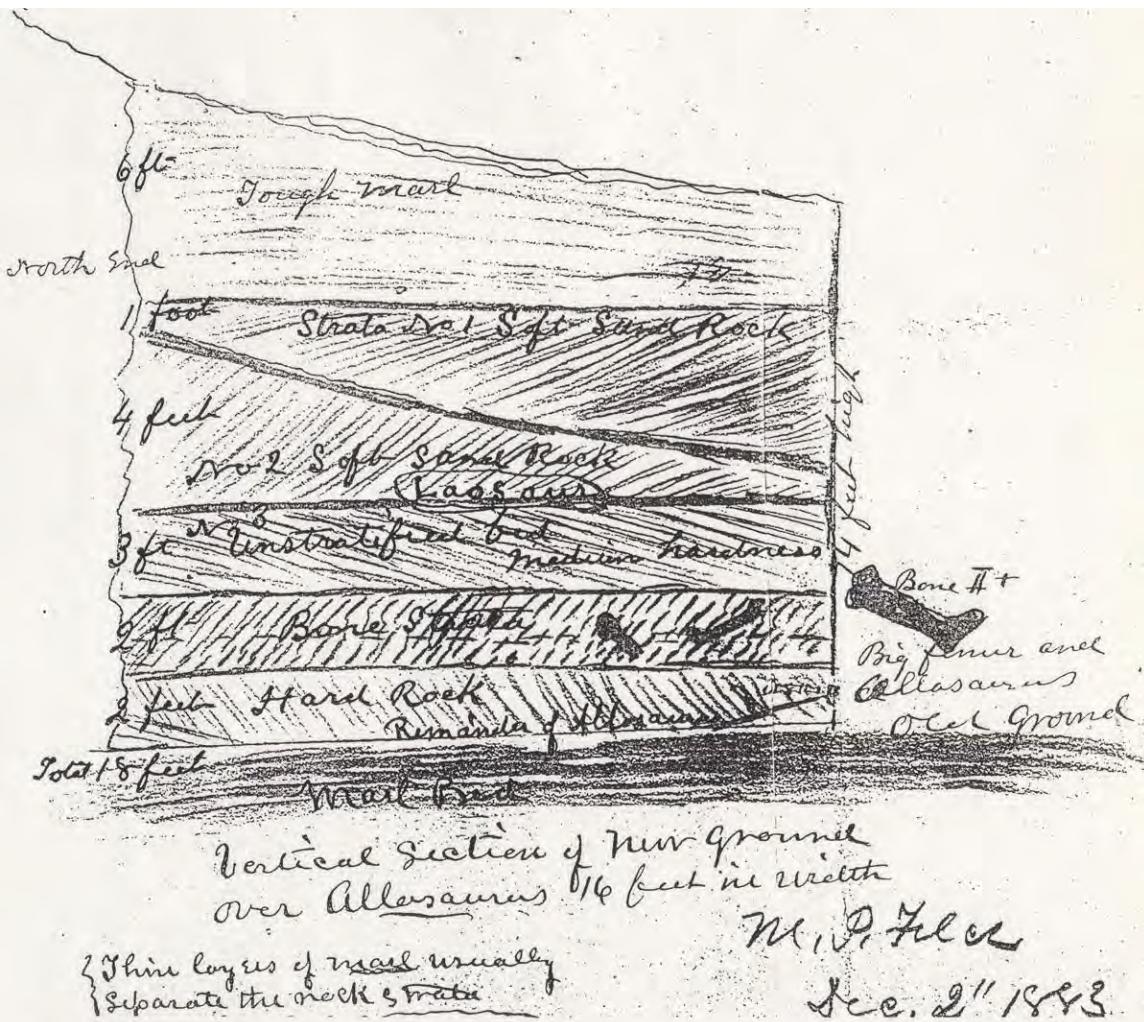
In regard to Novembers pay – you need not send till you hear from me again. If we wind up by the 20th of this month and suspend work from that time on for a month or two. I would like to have the pay sent up to that time so as to square up all round. There are some accounts in town I have not had time to look up – but I will get the whole together soon and let you know what the amount will be.

Respectfully Yours
M. P. Felch

P.S. We have also the block containing the vertebrae that came in just behind the sacrum of No 4 a sketch of which I recently sent. If you do not care particularly for it I would like it.

Felch

We had a visit last Sunday from Prof. G. von Rath of the German University at Bonn. His wife was with him and I showed them the different points of interest in our locality – including the quarry – fossils in position – methods of removing etc. We done our best to make his short stay profitable and interesting – and I think he was greatly pleased with his visit. Both he and his wife expressed themselves as finding here the most interesting locality yet visited by them in America. As a rule I pay little attention to visitors as most come to gratify idle curiosity but knowing he was travelling in the interest of Science and would fully appreciate the work – I thought you would have no objection to his getting all the information he could. He says he visited New Haven to see you in Aug. when you were away – and shall go there again in the Spring



Vertical section of new ground over Allosaurus 16 feet in width
{thin layers of marl usually separate the rock strata}

M. P. Felch
Dec. 2" 1883

Marsh sends more instructions on what and how to ship. Felch getting ready to visit New Haven.

Department of the Interior, United States Geological Survey
Washington

Dec 7th, 1883

Dear Mr. Felch,

Yours with section of Quarry came today.

The specimen with several caudal vertebrae in block with Skull No4. is very important. Please keep it as nearly as nearly as possible as it is, and send it with next lot. Don't cut too near the chevrons or spines as these are the interesting portions.

You better send on everything, but if a bone is all in powder, so that we cannot possibly get it together, you make keep it back, but don't throw it away.

It is very important to have drawings (natural size exactly) made of all bones before taking up. Then if they go to pieces we have the data of restoring the limb approximately which is better than nothing.

I think you better ship all of the bones one month before you start yourself. Then you will be here when they arrive, and can see how they come out.

Any important specimens better be repacked, if you are in doubt about their coming safely. If you can send all in the first lot, send those that belong together.

Yours truly
O.C. Marsh

Felch writes to Marsh that he will not be able to come to New Haven after all. If Marsh sends a man in the spring who can work as he wants, Felch will help out however he can. He writes of has filing on the claim, quitting soon due to weather, and working on bones he would like to finish if possible. He sends a bill for wages and discusses the total bill for the season.

Canon City, Colo.

Dec. 9th, 1883

Dear Sir

I am sorry to have to write you – that it will not be possible for me to visit New Haven this winter. When I wrote that I would go – I had not fully thought the matter over – but now on further consideration feel compelled = much against my inclination however = to deny myself the pleasure and privilege of your very generous offer. It will make very little difference in the work going on for if you send out a man in the Spring who understands just what is wanted and all the methods needed I will cheerfully turn the work over to him – and if I do not work myself will assist him whenever I can

I have filed on the claim – so there need be no uneasiness on that score and you can work it, as long as it continues of any profit in the way of good specimens.

The first cold spell of the season struck us Thursday bringing some 6 inches of snow. We had just got down on to the skeleton of the Allosaurus – run up bone 2 feet from where the last were taken up just forward of the sacrum. and find them turning to the right instead of inclining to the left as we thought they would. We then had to clear off more rock – of strata No 2 and 3 (diagram of last week) and also of the regular bone bed where we run into the usual mass of bones – that we have to look over before going lower down. Among these we have taken out the remainder of a large humerus that lay partly over the big femur II + As part of the humerus having to be removed to get out the femur. There is also partly uncovered the ends of what appear to be two medium sized limb bones and any amount of vertebrae sandwiched through the layers of rock. To look these all over and remove the best, and not destroy anything of value will require several days and then if we do not find what we started for very readily I think we had better suspend as the days are short – the weather is likely to be more or less bad – Tyler cannot work any longer than the 15" – Smith would like to quit now – but has promised to work 'till the 20" or Christmas to help me out but not longer. We have all stuck to the work very close and need rest and recreation to do good work again.

Statement

Amount due November Act	215.00
Tyler to Dec. 15"	25.00
Smith " " 20	<u>47.65</u>
Total	\$287.65

If you can send the above out so that I can get it near the 20" and square up with the men I will let my December account go till I send in my final statement – after getting

through. Early in the season I wrote that I should not charge for team work. I have had to use my team more than I expected too – and at some expense to me so in order not to run behind too much I will have to charge you for hauling the boxes to town and it may be if all the freight has to be delivered at nearly one time I may have to hire a team or two to assist.

Respectfully Yours
M. P. Felch

P.S. While in town on Friday to get the claim filed I got receipted bills as far as I could for expenses incurred on fossil account from Ap. 1st to date.

The total foots up about \$165.⁰⁰ Besides these there are some items of my own that will bring up the total to nearly or quite \$180.⁰⁰ for the 9 months ending Dec. 31. If you would like these bills to look over I will send them with final statement or give the aggregate as you wish. M. P. F.

Marsh wants missing parts of Skull.

Department of the Interior, United States Geological Survey
~~Washington~~ New Haven

Dec 12th, 1883

Dear Mr. Felch,

I find that the back part of both lower jaws of Skull No2. and the three bones of the skull that join on to them (viz quadrate, quadratojugal and pterygoids) are missing. They probably all were torn off of the head together, and may have been scattered not far from where the skull lay.

I hope you saved all bones large and small that you found in that region, as without these missing parts we cannot make a restoration of the skull. Some fragments of importance that were broken off from the jaws sent have not yet turned up. Have you any more pieces small or large?

Skull 3 we shall soon figure. It came out well.

Yours truly
OCMarsh

Marsh is disappointed that Felch cannot come after all.

Department of the Interior, United States Geological Survey
~~Washington~~ New Haven,

Dec 14th, 1883

Dear Mr. Felch,

Yours of the 9th inst. is at hand.

I am very sorry you cannot come on here this winter. I wanted to give you a pleasant and profitable vacation.

I hope you can continue work with all three men till the end of the month, so as to fill out the quarter. Even if you can only clear up things for next spring, or use the men to help you get the fossils to the Depot in good shape after careful packing I rather fill out the quarter.

I wish to keep out as many small bills as possible, as there is always trouble about getting vouchers for separate items. Unless I have duplicate bills for purchases etc. I cannot get them paid readily, if at all, and it makes accounts complicated.

You may consider that you are in my employ during the winter months. I expect you to see that no one disturbs the quarry, and if you can do any work in fine weather, prospecting, or collecting, etc. you may do so.

Yours truly
O.C. Marsh

Felch writes to Marsh saying they are finished in the quarry and will be packing up boxes. He gives information on a humerus and a bone mass still over Allosaurus. He will be sending bone locations for mapping purposes in his next letter.

Canon City, Colo.
Dec. 16th, 1883

Prof. Marsh
Dear Sir

We finished up at the quarry – for a while – yesterday. Smith and I will tomorrow go at packing up and try if the weather and roads hold good to get all the boxes in during the next ten days.

I think I wrote in my last of taking up the remainder of a humerus – a part of which was taken out in August. The pieces first taken out were laid away with others – had been moved from place to place several times – and it took me some time to sort them out – to match but now we have it in shape to be restored. I think it belongs with the big femur as it lay partly over one end of it. We have also taken up two more limb bones near where the humerus lay. These are = we think – a tibia and fibula – and belong with the radius and ulna J = and K = though the tibia and fibula G = and H = lay between them. It is evident that the bones of two large animals were mixed in here together – from the difference in the limbs and vertebrae.

There is still quite a mass of bones over the Allosaurus one end of another large bone coming in close by where the last two limbs were taken up. We have never found any foot bones here – with the exception of a large clumsy claw – but we think we will find them a little lower down

Before writing again I will get the exact location of all these last bones so you can locate on map.

Respectfully Yours
M. P. Felch

Felch writes in reply to a question from Marsh concerning missing parts of skull No. 2. He states a bit of the jaw is visible in with the Allosaurus and will come out later. He feels finding more is unlikely but not impossible. The weather is bad and they are packing. Most of the bones are down from the quarry but the snow will cause a delay.

Canon City, Colo.
Dec 18th, 1883

Prof Marsh
Dear Sir

Yours of the 12th just came today. I am afraid the missing portions of Skull No. 2 = with perhaps the exception of some of jaw No 2 = will never turn up.

Brown worked up quite near to this point in May - and then the work was not taken up again 'till Aug. or Sept. I am sure that all we have found in the later workings has been sent.

Of jaw No. 2 – I think I have explained before a small portion is still in sight – laying alongside a small caudal of the Allosaurus – and some three or four feet west of where the sacrum of that skeleton was taken up. It lays in the lower strata and almost down to the marl bed. When this lower strata is worked out for the remainder of the Allosaurus it is barely possible the missing parts may be found – as it is the base of the jaw that is in sight. After we get the bones off I will take a look of the ground and see what there is – though I doubt if I should know the skull portions if separate from the jaw without some further drawings to know about how they will look when found

The weather is bad again but we have most of the bones down from the quarry and can do some of the packing work indoors. I was in hope to have got in a few loads this week but the snow fall will delay somewhat.

Respectfully Yours
M. P. Felch

**Marsh writes on a variety of matters with the usual admonishment at the end to
"Say nothing outside about discoveries."**

Yale College Museum
New Haven Conn.

Dec 18th, 1883

M.P. Felch Esq
Dear Sir,

Enclosed please find check for \$287.65 as per account sent. I have been away or should have written sooner.

I hope you have that other Allosaurus skull, as we need it very much. Skull 4 is very badly broken. Skull 3 grows better and better. Now our figures of it are made. It appears to be Diplodocus.

The freight charges to NY are satisfactory. The main thing is to have all important specimens so packed that they cannot be seriously injured by even rough handling.

You may send 500 lbs more by Express if you have any more skulls or jaws, fore feet of Allosaurus, or other very important fossils.

After I have published figures of Skull 3 etc, I shall prepare an article on the Skull and skeleton of Allosaurus, and shall then need all the material of that femur I can get.

I will send vouchers soon for end of quarter. Bills for purchases have to be sent in duplicate, or I cannot get them allowed.

Yours truly
O.C. Marsh

P.S. Tell Tyler and Smith that you will want them when you begin work again. Say nothing outside about discoveries.

Marsh tending to financial details.

Department of the Interior, United States Geological Survey
~~Washington~~-New Haven

Dec 19th, 1883

Dear Mr. Felch,

I enclose duplicate vouchers for quarter ending Dec 31st. I have made them at \$200, per month.

If this does not fully cover the amount, I will send another for Jules to sign to cover his wages

Yours truly
OCMarsh

Felch writes to Marsh about expenses and that Tyler has left but Smith will help him pack. They are now using the water glass and glue method which they wish they had known about sooner. He then tells of some discarded sternal bones that were not recognized at the time.

Canon City, Colo.
Dec 20th, 1883

Prof Marsh
Dear Sir

Yours of the 14th I rec'd today

If you send me \$430.⁰⁰ for Nov. & Dec. I will try and make it cover all expenses for work to Dec 31st including team work and getting the boxes to town.

Smith will help me out – but Tyler has left. We are trying to do the packing so that they will stand rough usage on the way. Some of the bones we have taken out and used the water glass and glue on, to harden, which makes them very much firmer to handle. Had we known of the method sooner we could have done much better work in the first part of the season.

We fixed up two (as we think) sternal bones to-day with glass and glue - one of which I think is a fine specimen. This was found lying under (partly) the big femur. The other was found with scapula X and limb Y in the East End not shown on the map I believe. I think we have seen at least two besides these this season – one quite small – which puzzled us at the time – and we called them fragments of larger flat bones and did not save them - not knowing of anything like sternal bones 'till we saw them figured in the plates

I can do some work to advantage in good weather and do some necessary work in getting ready for another year – which I will write more fully of a little later on

Respectfully Yours
M. P. Felch

P.S. The total amount for the quarter ending Dec. 31st will be \$645.⁰⁰ for which you want vouchers if my account is correct and accepted

M. P. Felch

Marsh continues to ask for more of the Allosaurus.

Department of the Interior, United States Geological Survey,
~~Washington~~ New Haven

Dec 20th, 1883

Dear Mr. Felch,

Among the things we want soon are the Cervical vertebrae of Allosaurus and the fore limbs. If you have more of the vertebrae back of Skull no4, you better send them by Express in the next box. Also anything that will tend to complete the skeleton.

I shall take up the Carnivores as soon as I finish Diplodocus (Skull No3.)

Yours truly
OCMarsh

Please send measurements of skeleton with Skull No 4. as it lay.

Felch writes to Marsh about accounts as he has received less than he feels he should but will accept it. He writes, however, that he cannot continue to do this and he outlines what he needs. He suggests a man be sent out to take charge and do reporting which would make it reasonable for him to continue at the current rate. He will finish the current obligation but after that, new financial arrangements will need to be made.

Canon City, Colo.
Dec. 27th, 1883

Prof Marsh
Dear Sir

I sign and send on the vouchers as you request. Have rec'd a check for 287.^{65/100} dollars which with amt (\$215.⁰⁰) rec'd for Oct. = \$502.^{65/100} – this less \$600.⁰⁰ amt of vouchers – will leave my balance due for the qt. Ending Dec 31st - \$97.^{35/100}.

It is not quite as much as I should have but I will accept it.

I cannot though continue work at the same price. I have paid a man 30 dollars pr month this season to work the ranch – this with his and my living out of 75 dollars leaves but a small margin – and I have furnished a small house exclusively for the safe storage of the bones – and had to put up extra sleeping rooms for help at an expense to me of over 50 dollars. Besides this I have used my team a good deal – have had to pay 25^{cts} on every hundred dollars or fractional part to have checks cashed and many other little items which in the aggregate amount to something and come out of my allowance.

In this respect the seasons work has been somewhat unsatisfactory to me. If you will send on a man to take all the charge – responsibility and writing – I will work for the same and make full time and furnish these things as reasonable as anyone will if wanted.

The care of the work to keep things straight etc has taken all my time to the exclusion of everything else – and is much harder on me than any of the men who have had only their regular days' work of 10 hours to do.

Now let me say here – I will not grumble at what has been – it was my own offer – but I wish to look out for the future.

As soon as I get the remainder of the boxes – and from that time on 'till Apr 1" I will do what I can in good weather towards getting out the fossils most needed – after that time I wish to make different arrangements. It is somewhat uncertain yet about getting Smith for he owns a ranch – which unless he can rent to good advantage will pay him better to work it himself than to work for wages. He tells me he cannot go to work before Apr. 1st again any way if then.

Tyler also who is young and one of the best workers I ever had – has been offered the full charge of a large ranch near Canon which he has accepted – so he will not be able to work on the fossils.

Respectfully Yours
M. P. Felch

Canon City, Colo.
Dec. 27th, 1883

\$287.^{65/100}

Rec'd of Prof. O. C. Marsh the sum of two hundred eighty seven 65/100 dollars – part
payment for work on fossils for Nov. and Dec. 1883 for self and outfit

M. P. Felch

Felch writes to Marsh of a problem that the freight bill price quoted meant prepayment which he was never told. He will send an explanation of crate content and how to match them to the quarry map.

Canon City, Colo.
Dec. 31st, 1883

Prof. Marsh
Dear Sir

Enclosed find Freight Bill for the fossils. When I made arrangements and got the price pr. hundred to N.Y. there was nothing said about pre-payment – but after I loaded them in the car, the Agt. said the rate of \$2.^{53/100} meant pre-payment and would not state the rate on the bill.

Had I known the fact sooner – I would have tried to have made a more definite, and satisfactory bargain – with the Agt. of the A. T. & Santa Fe Rg. at Pueblo.

The boxes are strong well hooped and packed as well as we could do it – and start off in good condition

I will write up soon = the contents of boxes, and review a little so as to make the unpacking come out with as little confusion as possible.

With the aid of the map of the quarry which I suppose you received and the explanations which will follow – I think you will not have much trouble in locating the different bones – and in finding those most needed – at any time.

In regard to the map.

It was not made on as good paper as I would have liked but was the best we could get.

Had I used the sheets you sent it would have been much better – but I did not discover 'till recently – but what the size was too small.

Truly Yours
M. P. Felch