

doc. 0133

If found by anyone please send to

Professor Charles S. Slichter
Peabody Museum
Yale University

Jan. 1925 - 1926

3776

Trip to Texas.

see map 560

3820

Apr. 3 - Apr. 13, 1926

Glenn Mt., TX

? dates on either end.

Grant Blanchard



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2

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1874



New Haven, Conn. Dec 31/1925

Thursday

Got up and before having breakfast packed up the two suitcase cases, and then to the club for oatmeal, toast and coffee. Got \$2.50 and then the railroad ticket to Austin, Texas with sleeper service to New Orleans; cost \$82^{1/2}

Got to Peabody Museum by 10.30 and found here Ruedemann, Goldring and Becker. At 12.15 P. M. Luster took me in his Ford to my rooms, and then to the railway, where I checked the large suitcase case.

The train was 15 minutes late so I got started at 1.10 P. M. The day is fine and sunny. At the depot Lagan met Ruedemann and Goldring.

On Hell Gate bridge into Brooklyn we had a grand view of the gate, New York City and East River.

Retired early, about 8.30 just as we were getting into Baltimore.

Enroute to New Orleans, Jan 1-1926

Friday

Got up at Lexington, Va., and had breakfast before we got to Salisbury, N.C. The day is bright but the temperature is below freezing. Fire service in the Southern dinner. By fire in the evening we are in Atlanta, Ga. Travel southward is not yet decided, but the card men are on the train and the public is warned of them by Pullman.

New Orleans, La., Jan 2, 1926.

Saturday.

Got here early this morning and at time, 7.20. Then transferred to S.P.R.R., checked my baggage and then saw again the quaint, but dirty and sadly in need of repair town.

At 10.30 I am off in a St. Charles rubber-neck closed car to see the city, and as I have never seen it before. We went 1/2 mile S.W. out St. Charles street and across to the river levee, then to Lake Pontchartrain, and back to the city over the Creole quarters, the descendants of the white French and Spanish. Got back at one o'clock.

of Louisiana

Then bought three histories, and read a little in them at the hotel Montellone in Royal and Iberville st.

3776

At 9.15 I am off on the Southern Pacific, having
lunch served in car etc. Will get to Houston at 6.30
tomorrow morning.

Sunday enroute to Austin, Jan 3-1926.

Got to Houston on time; the day is dark
and all nature is wet. Had breakfast at the
station and at 9.15 A.M. I am off for Austin.
Doct'r Blosseroll former of Yale and of the Univ.
of Texas is also on his way to Austin and we
spend the six hours together talking about all
things. He now teaches Spanish instead of German.
The Univ. of Texas has 3000 students in Spanish.

I have taken a room in the new The Austin
Hotel and I am thinking of making this my home
during the next ten weeks.

Blosseroll said I would have no trouble in
saying all I want about evolution, only I must
not run down religion and speak against the
Bible. He thought I should give a lecture on the
evolution of man.

Austin, Monday Jan. 4-1926

Got up at the usual hour and was at
Lillard's office before nine; he had not yet arrived.
When he came we talked over the situation,
and at eleven Professor Simonds arrived. It
was agreed I should give the lectures between
7 and 9 P.M. on Tuesdays, Wednesdays and
Thursdays. The three laboratory hours each
week I will have to arrange with the students
later on.

Professor Simonds has a fine office in
one overlooking the entire city and the Capitol
building. In the adjacent room is the Depart.
mental Library and on the same floor the
paleontological laboratory. So I will make
this my headquarters.

Then Professor Simonds introduced me to
President Johnson, a pleasant man of about
Hofmann's age, and a graduate student of Hadley's.
Was Professor of Economics and chiefly of rail-
roading. It was soon very apparent that our
to do capitalized to all hand with to boost
the University and especially the Geological
Dep. that needs a museum to show the natural
resources of the state and to house all of the

Best. I am to be interviewed widely by the
Press and here is my "chance" to bring out the
wonderful geology of Texas and its resources,
all with the ultimate purpose that the oil men
will see to it to raise either among themselves
or for the Legislature to appropriate one million
dollars for a museum building, equipment,
scholarships and fellowships. I will do all
I can but I am thinking that Iplow is
trying to make his \$500,000 work in me
cost ^{essentially} one million dollars, good business
if it all turns out as he thinks!

It appears I will have fair facilities
to do my work, but as yet I have not seen
what fossils they have to illustrate the guide
fossils of the many formations.

Austin, Tuesday, Jan 5-1926.

Was interviewed by the Press this afternoon, by Mr Hornaday. His interview was all towards the application of geology towards the natural resources of the State. He knows absolutely nothing of geology, and when I used the words "younger and older rocks" he called them technical terms and got somewhat confused. At the end of the long interview he admitted that he could not be able to write an intelligent report and wanted to know if I would go over his report and adjust it. Such is publicity in ^{Science} ~~the~~ Texas but everywhere in America, by reporters who are interviewed for their work.

At seven in the evening Professor Semmons introduced me to the class in a very nice way. I expected a clean and audience of about 25 persons but there must have been between 60 to 70 scattered over and three ladies. Dean Harper of the Graduate School, ^{and} Professor Semmons and Sellards were present besides several instructors. I did not have many activities because towards a degree I do not get there.

Thursday, Jan 14-1926.

I have now given six lectures in my course on Stratigraphy. At each one I have from 30 to 60 men and women. As far as I can learn all are well pleased. Most of the evenings I go to the University via the trolley and back to the Couston Hotel via Sellards or Simons car. Lately Paul Seashae a subsurface geologist with the Humphreys Co at Houston takes me in his fine Chrysler to the lecture.

Looking up the Austin Quadrangle I see one marked
E. Thompson Austin, and then on the Colorado river at
Montopolis. To Delvalle and across Onion
Creek to the first marked rise across the road. The bluff
faces Onion Creek that soon goes into Colorado River.
The bluff is known as East Base and is a triangulation
station. The horizon is lowest Navarro, and has
Exogyra costata and not E. ponderosa = Taylor.

Friday, Jan. 15-1926.

Today Paul Seashore at 11.30 took me in his car to see some fossil collecting ground.

We went southeast over the Upper Cretaceous along the south side of the Colorado River, and at 11 miles from Austin ^{the land rises and} we turned in to the bank of the river ^{East Base?} where there is an exposure of about 35 to 40 feet of the Chararro ^{formation} ^{last formation} of the Cretaceous. It is all a ^{hard} soft blue clay with no hard rocks although some thin pieces occur that evidently have more lime than usual.

Fossils that we see readily are Exogyra ^{one is *E. costata*} (2 species) that in about ^{one-half} the cases have both valves. Fossil bones in the shrunken one large Trifonia and a piece of a radiolite like shell. In the more limy zone there was an abundance of small things, mostly bivalves with worm tubes of amites. The sea bottom was then a soft mud bottom, and I failed to see to what the Exogyra were attached; all appeared to have been tilted about from their places of attachment, and thus lost place at any time of life.

Just what this very muddy Upper Cretaceous means in regard to the shore and land I cannot make out. I must look more into this matter with Sellards.

Then left East Base and passed Barfield and
Alysium to Caldwell's gate. Then ^{north} across the farm
to a bend in the Colorado River east or ^{down stream} of the
boundary between Travis and Bostrop counties. Dry
Creek comes in a little ^(one half mile) farther down stream. See
Bostrop Quadrangle. (Miss Sanders call this loc.
One-half ^{mile} above the mouth of Dry Creek and 3 1/2 to 4
miles down-stream from Deffenville, Colorado River.

Above the Panamericardia bella bed is a "dark
gray sandy clay", and above this "a quite similar bed
characterized by the greater abundance of the coral
Flatellum conideum Langham." Here Sanders
has 6 Trilobites, 1 coral, at least 5 pelecypods, and
16 gastropods. "The Midway Dilex contact probably
occurs not far below", means down stream. So my
fossils come from below Midway.

We then continued about 7 miles farther S.E.
across upon ^(Carrington) Cutaneous fine farm lands when there
was a little rise in the country, making the basal
Midway - Escane. There was a perceptible dip sea-
ward of these sandy beds that had an abundance
of large flat concretions. Another mile ^{or more} S.E. brought
us to the gate of J. C. Caldwell's farm, and then
it was $\frac{1}{2}$ or 2 miles to the river to the fossiliferous
Midway. What we saw here was less than
10 feet of ^{highly} Midway all highly fossiliferous. Below
for 5 to 6 feet to river ^{level} was greenish - black very soft
clay replete with Perrinitia ^{bullae} in small nests
and large aggregations (these about one foot thick) that
^{in places} made a hardened layer (took one large lump).
Most of the shells are double valved and gave me
the impression that they were in their original habitat
and probably held in place by a fissure. With these
saw almost nothing else.

Above the Perrinitia bed ^{about 2 feet} is a very fine grained
glauconite some of which we saw and more than 5
feet, and our collecting was out of the central zone.
Here occur many kinds of ^{small} gastropods and smaller
trilobes along with several species of cup hexacorals.
The clay was so wet and soft that I doubt if

Then out to the highway and S.E. to the road going to
Mark's Ferry across the Colorado River. It was on the
Hemphill Prairie that we got the reptiles, some hun-
dreds of feet above the base of the Wilcox.

In the evening J. A. Beede called to see me.
We talked about Texas geology.

my fossils will preserve on this way to fall.
Foraminifera (Prodosaria up to $\frac{3}{8}$ inch long) were
common.

What should be done here is to get out the flu-
vinite in blocks and covered with plaster and cloth,
and then cleared at home. When this is done I am
sure from 50 to 200 species will be the result. It
is said to be the first mid-way place for fossils.

Then we started out to the highway and
went 2 miles further S.E. to a road that went N.
Along this road we went less than 2 miles to banks
of a very thick shelled and long beakled batrea.
They make banks from a few feet may be to ones
10 to 20 feet thick in the Diluvial formation. This
is O. Casey bandera.

In the morning had a long talk with one of my
young students Clifton M. Keeler about some good
Comanchian collecting in the Edwards near Center-
point. On land of J. L. Keitt, one mile east
of Centerpoint, Kerr Co., on old San Antonio
Trail. The best collecting is in the banks of Verde
Creek and Guadalupe River. Keitt can
show us if we wish.

According to Hill and Laughans Flier (Austin Quadrangle)
all that we saw in Glenrose formation - all the way from
Mt. Bonnel down to Bull Creek.

These are Parocystis pruniiformis Craigin

The Requienia bed is low down in the Glenrose.

Sunday Jan 17 - 1926.

In the afternoon Paul T. Leashae took me in his car north west towards Mt. Bonnell beside the Colorado River. We began to collect about 8 miles out of Austin ^{on the hill down the road to Spicewood Springs} in the Comanchian, ^(see page opposite) maybe in the Walnut Clay, ^{or} high up on the bluffs facing the river. Here we got a few bivalves and about 18 specimens of a little regular echini, and one Holcetypus-like irregular echini.

Farther down the long descent of the road, maybe 25 to 35 feet lower down, we got more bivalves and in a thin zone a lot of calcareous algae reminding of Pascobolus. Also one Holcetypus.

Then down the bluff ^{and across} to the level of Bull Creek ^(= Bull Creek) we have another little run ^{rows of}. This is about 1/4 mile above the mouth of Bull Creek into the Colorado River. This is in the Glenrose formation. Here we saw a zone less than one foot thick ^{really the Pascobolus like algae.} composed of Orthis ^{Texana and others.} Texana ^{Here are} Texana ^{probably less than 10 feet} Texana ^{more down we collected} Requienia that made a zone 6 to 20 inches thick. The Glenrose here is an alternation of soft and hard limestone; the fossils come in the soft ones.

BOOSTS CROP PROSPECTS

Snow of Jan 23-24-1926.

Ranks of Snow-Men Appear As Austin Celebrates 25-Year Record Fall.

Old and young in Austin continued a winter frolic Sunday as the heaviest snow of history in this section of the state melted under the sun's rays which appeared from behind grey clouds Sunday forenoon for the first time in over 36 hours. The record breaking snow which began falling at 6 o'clock Saturday morning continued steadily through Sunday night and until 9:30 o'clock Sunday morning making a continuous fall of over 24 hours and spreading a six inch cover of white over the city and surrounding country. According to old-time residents nothing comparable to this blizzard had ever been seen here.

Youthful residents of the university district and the downtown section, revelling in the heaviest snow seen here and the first real snow of the year, seized the opportunity for winter sports, and although their equipment was hastily improvised, several sleds were seen on hills of the city Sunday morning before traffic had changed the six-inch snow into dirty slush partially covering the streets and filling gutters. The principal sport of the morning was snow-balling automobiles and pedestrians, and both in the university district and downtown, of making hundreds of "snow men."

Downtown Battle Ground.

The corner of Seventh and Congress avenue became a snow-ball battle ground about 10:30 o'clock Sunday morning when groups gathered on opposite sides of the street and pelted passing automobiles or threw snow balls at the rival group. Later in the morning young men had lined each side of the block between Seventh and Eighth streets and were showering automobiles with snow balls from the time they entered the block until they left it.

Snow Sculptors Revel.

Snow men in the yard of Roy A. Miller, 604 West Sixth street, and at the Central and Guadalupe street fire stations, attracted particular attention. That at Central station was more than 15 feet high, and 22 feet around at the base.

Young women on Twenty-sixth street went in for artistic sculpture in modeling out a woman's figure, to almost lifelike shape and realism.

Streets throughout the downtown section were rivers of slush as soon as the snow started melting about 11 o'clock. Gutters were filled and streams of water were flowing in the centers of some streets.

Co-eds Are Pelted.

Co-eds continued to draw the fire of students on Guadalupe street at the university, and girls wearing woolen anklets over their hose were especially pelted.

Church attendance was cut over half because of the snow, according to reports from several downtown churches. One Sunday school superintendent said his Sunday school members were playing baseball with snow balls and that attendance had been cut over half.

The snow melted rapidly after the sun began to shine about noon Sunday and early in the afternoon the slush had practically all gone into gutters.

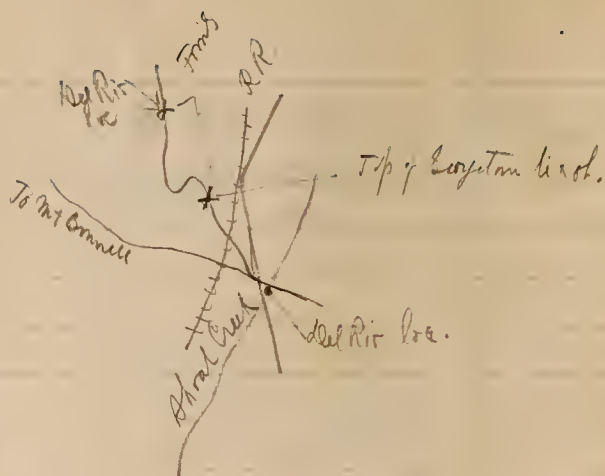
Actual precipitation during the Saturday storm was .41 inches, according to the official reading made by H. H. Henderson, weather observer. In measuring precipitation, snow is melted and a rain gauge is used for determining the inches of actual water. Temperature remained at 25 degrees throughout Saturday, but mounted to 30 degrees during the night and early morning, according to the official reading made Sunday morning.

Austin received a total fall of seven inches of snow during the snow of Saturday and Sunday, according to available information. The fall in other towns and cities in central Texas was as follows: Lockhart, 6 inches, 50-year record broken; Blanco, 6 inches, heaviest in history; Elgin, 6 inches; Thrall, 5 inches; Bartlett, 6 inches, heaviest since 1917; San Marcos, 6.75 inches; Austin, 7 inches.

The following snowfall was reported Sunday: Johnson City, 2.50 inches; Cherokee, blanket of snow; Bertram, heavy snow; Floresville, steady snow; Elmendorf, 2 inches; Big Wells, 3 inches; Devine, 4 inches; Austin, 7 inches; Flatonia, 6 inches; Burnet, 6 inches; Berthab, heavy fall; Taylor, 6 inches; Hallettsville, 2 inches; Nordheim, 6 inches; Yoakum, 3 inches; Victoria, 2 inches; Comfort, 10 inches; Bloomington, steady fall; Rockdale, 3 inches; New Braunfels, 2.50 inches

Texas' Oil Wealth.

ACCORDING to the Dallas News in 1925 Texas produced 150,000,000 barrels of petroleum, the price of Texas oil throughout that year averaged about \$1.75 a barrel and on that basis the value of petroleum in Texas for that year exceeded \$260,000,000. Is there money in oil?



Saturday Feb 13, 1926

Took the trolley to 34 street North Austin, and then walked for half an hour to the locality in the top of the Georgetown. This del Rio locality faces the reflection. Got more of the same things gotten of Jan. 30. There are two kinds of echinoids here. The common one is A. elegans; among some of these are specimens with oysters and serpulids; evidently they did not remain buried after death in the muds, but were washed out by the waves. Got some by oysters.

Collected by myself at Shoal Creek on Feb 15. Got 2 other Enallastera and many fine E. arctica and Cosiphacae. Also a good lot of E. elegans.

Saturday, Jan 30 - 1926

This afternoon Dr. Sellards took me in his Ford to see some Washita collecting ground. We went north west about $3\frac{1}{2}$ miles from the center of Austin in or about $1\frac{1}{2}$ miles north from his home, on the road to Mt. Bonnell. At the furthest out loc. we saw the top of the Red River clays, about 20 feet thick and just beneath the Buda limestone. The latter yields but few fossils and just none. The top of the Red River clays teem with fine specimens of Egyogya arctina and some good Bryophaea mucronata. Other fossils appear to be absent in these dull blue clays.

About $\frac{1}{2}$ mile S.E. beside the road - down the hill - is a fine exposure of near the middle of the Georgetown limestone and small flat top. Here fossils are common but few good ones are to be had as most of them break up in weathering out. Got six good Hemiacosta dejeani, one Nautilites, many Lingera macronis, two Facas and 2 Trigonia. Saw many ribbed Electronia and some large Oristia.

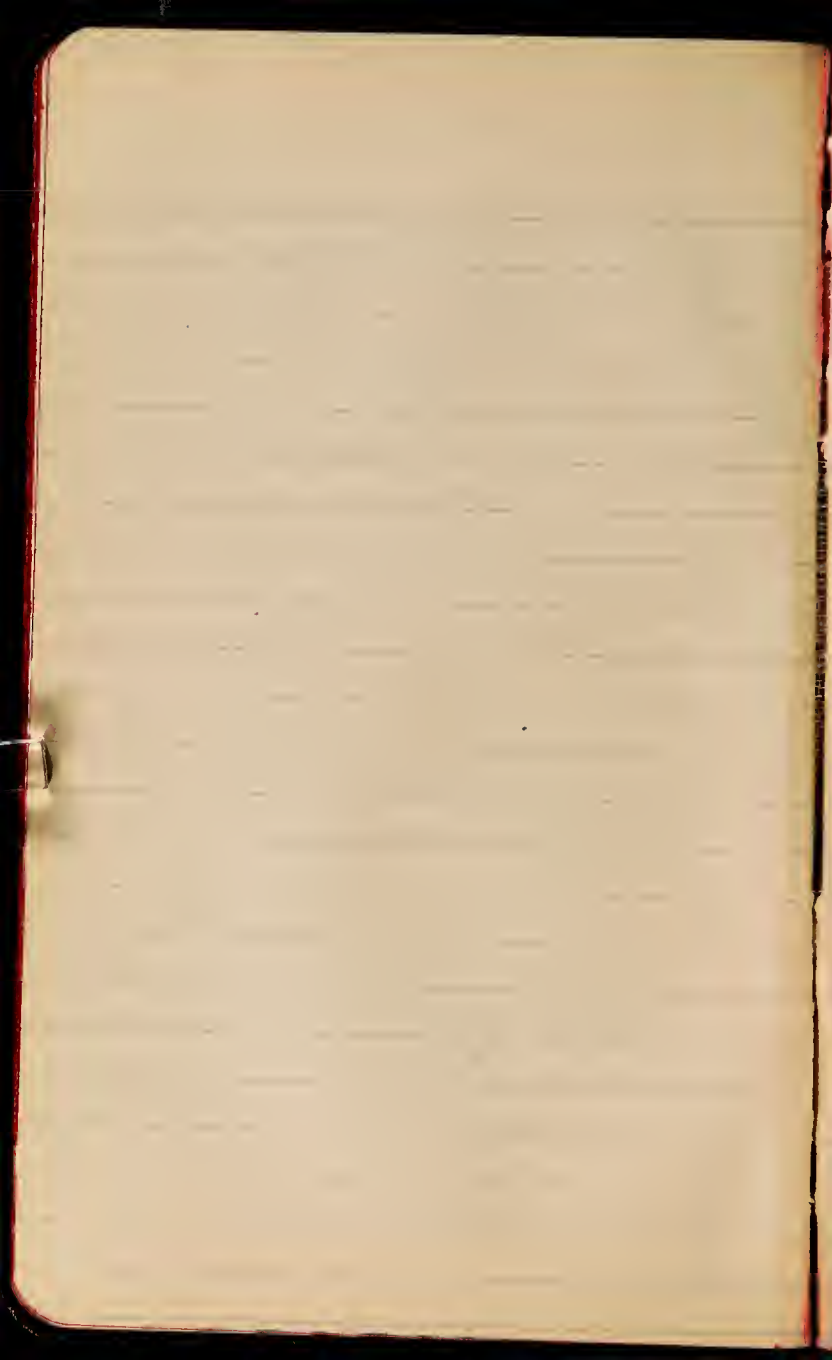
In Shoal Creek, near Austin we collected some in the top of the Red River clays. At the very top we got two Oristia. E. arctina in masses and the had here, Took two good slabs of them.

On Shoal Creek on the ^{limestone} ~~limestone~~ comes the Eagle Ford laminated fine sandy shales, partly then limestone, and heavy sandstones. The whole is exposed shows about 8 feet. Many of the paper thin layers are replete with (ganoid) scales, long and slender teeth and occasional fish bones. Other layers are crowded with small Ostrea like Conycta, while one of the thicker sandstones has small and large fragments of Inoceramus latitatus (is conyctoid). It is an unmistakable Colorado assemblage. Whitney and Dinton both say not a single species passes from the Washita into the Colorado. The discrepancy therefore means considerable if a time break. The actual contact here is covered over by talus.

The presence of sand and the regularity indicate shallow water, and the highly comminuted fish matter also shows wave work. Probably the deposits represent a depth of around 50 feet; saw no pulling up of the bottom, or channeling.

Saturday, Feb 6 1926.

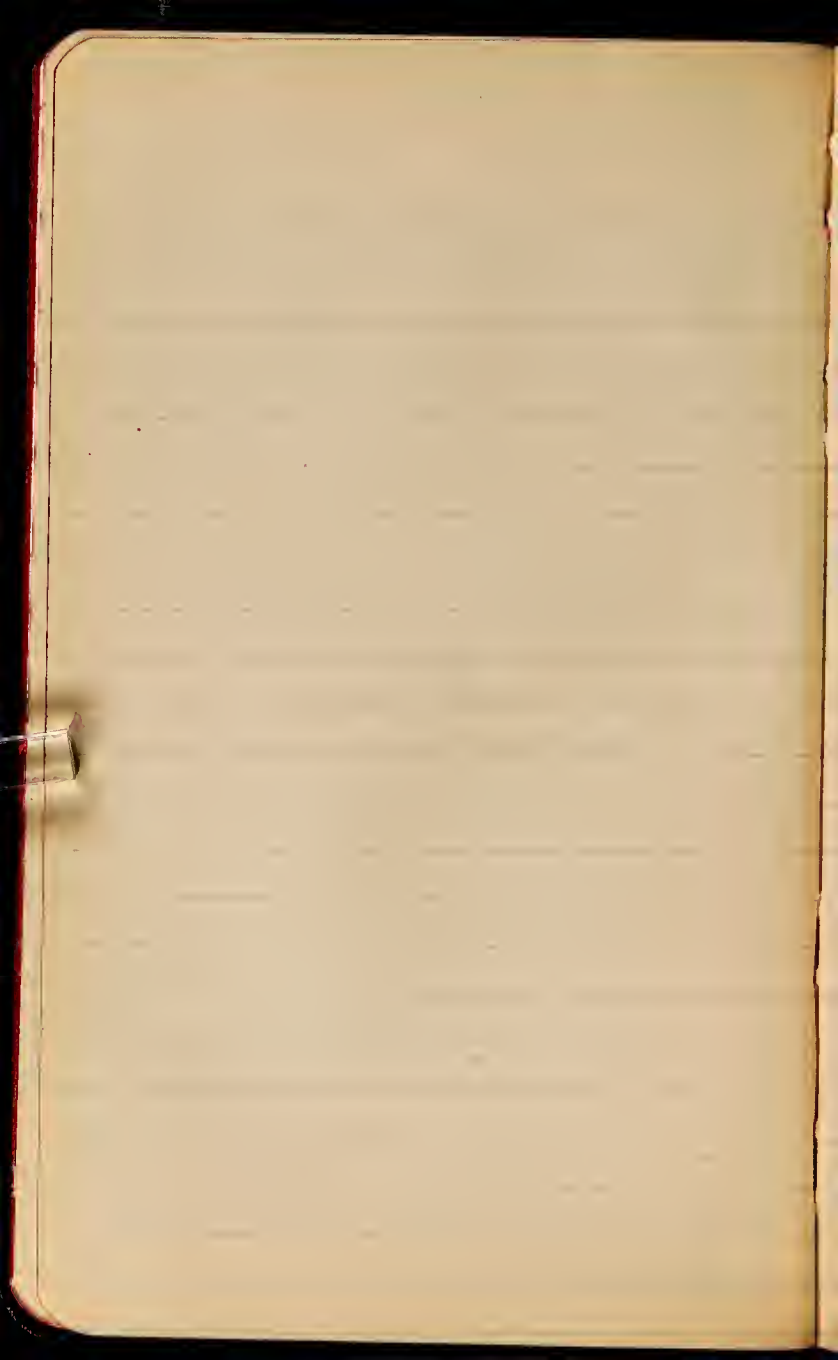
At 6.30 this evening I gathered with about 10 others (among them President Splan, Sellards, Pearce, Whitney, Lonsdale) of the Texas Univ. interested in a State Museum. To be connected with the University. After a good dinner served at the Univ. Commons, I was asked to make the opening address. I read just out of my New Haven Dedication Address, and then launched out for the needs of a University Natural History Museum. Pearce spoke next, then the Director of the Art Museum and several others. Finally President Splan spoke and showed that he was in sympathy with the idea and that the Regents had already voted their interest in the matter. But he also spoke of the difficulties of getting one million dollars for a building, but made suggestions about propaganda to be done. I then moved that we organize ourselves into a Museum Association which was done. Prof Pearce was elected President with Sellards as Secretary. These two officers with three others constituted the Executive Com. to prepare their notices, and circulars. As some money is needed at once I rose and made a present of \$100. The hall is now moving ^{forward} and then will be ^{good results} and then will be



Saturday Feb 20-1926

Spent with Sellards this late afternoon collecting in the Walnut shales at road metal quarry six miles N.W. of Austin Texas, just S.E. of Dry Creek on road to Bull Creek. This quarry is also a good one and from the base in the face of one of the faults of the Balcones system mostly one half of the shales is composed of immature bryozoa, especially a *Texanospira* and casts of gastropods. Of irregular corals, we got 24 that were restricted to a more muddy zone not over four feet thick. The ammonites *Sphenodiscus* was very rare. The whole thickness of the Walnut exposed is about 15 feet.

If we had had two Lewis men here we could have gotten again as many more good fossils. So far this locality had the greatest abundance of fossils and in greatest abundance. Outside of the waters none of the molluscan preserve the shells. The bryozoa fauna was below, about 10 feet thick, then the corals layer above followed by a zone of about 2 feet with the layer and last *Exogyra texana*.



Sunday, Feb 21-1936

After dinner walked west about 2 miles to Barton Springs. The springs (rather large) come out of the fault plane with the Georgetown to the S. and the Austin to the N.

Collected in the top of the Georgetown and saw the ripulation things. Took away but little. In the small lot. Above the Georgetown along the road we see the Red Rio blue clay and above it the thin Buda ls. In the clay just beneath the Buda is some coral. Out of the Austin took some round things that may be sponges; they are from a rippled layer (oscillation ripples).

The Buda has rotitic-like layers and these have irregular flat clay inclusions that are due to storm waves.

Houston, Feb 26 1926

Left Austin last night at 10.40 and got here at 7 A.M. Put up at Rice Hotel. Had a good night in the Pullman. Then called on De Wolf of the Humphreys Oil Co and arranged for this evening talk. Spent most of the time with Mr. Leashae

Next called on R. F. Baker and was with him to the University Club for lunch. Then called on Wallace Pratt but he was in court. Tried to see Mr. Deussen and Miss Lane but they had moved to another building that I could not locate. Miss Elisor was at home with a cold, and as Mrs. Afflin has quit all paleontological office work I saw but of little of the paleontologists here.

Miss Knicker's place in the Texas Co. is now taken by Mr. Miller of Kentucky who got his subsurface paleontology from Sallaway at Columbia. He acts as if he is by all means the best posted man or person on Texas here in Houston.

At 3 P.M. went with Mr. Vetter to the Houston Club to arrange for a stand to hold my 18 maps to illustrate my talk on Texas Shore Lines.

There were about 65 of us to dinner at the Houston Club which began about 7.30 P.M. There were about 20 ladies and among them the paleontologists Mrs Plummer and Miss Lane. The younger Hanna was also present. Among the older men were De Wolf, Pratt, Deussen, Dumble, Baker, Hager (Chairman), Barton and others whose names I do not recall.

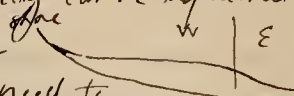
(8.30-9.30)

I spoke about an hour, and held the interest of all, and then my remarks were opened to questions or criticism which I had invited. Deussen believed that I was had shown the salt of the domes to be of Permian age. I showed it to be impossible and besides a bacterium cannot prove the age of any salt.

I had said that since an average salt plug had about one cubic mile of salt, that if it came from a bed 50 feet thick it would have to have flown together from an area of 50 miles radius. I was corrected to 5 miles radius. Therefore the salt does in no case flow very far.

Dumble said since the Cenozoic formations are thicker towards the sea, therefore Llanoria must have been present over them. He is clearly in error since

this thickening can be explained in a perfectly natural way



Hanna agreed to this and said the subsurface minerals all appear to come from the W. Miller later told me that the Cret. forams in the Miocene (2 very characteristic forms) are from the Austin-Taylor formations to the west. Pratt confirmed Dumble that the Cenozoic thickens to the E. but drew no conclusion. The next day R. F. Bader told me that the Cenozoic in the E. he believed to be at least 20,000 feet thick, and that the surface outcrops of the Cenozoic to the N. of Galveston are around 10,000 feet thick.

I made the point that the Inner Salt Domes get their salt out of the Comanchian. In the Pine Is. level field E to Bellevue field the Comanchian is in red beds and there is here at least 75 feet of anhydrite in one zone. Furthermore the Trinity and Fredericksburg thin out against Llano and that is a fact of the Washita geosyncline.

1500 feet



Of what age the salt is in the Coastal domes I could not say, but surmised it to be of Eocene age. I added that I knew of no acid thins in the Eocene.

The leading geologists probably were not convinced with my presentation, but I think no one will claim to know the actual age of the salt in the domes.

I understand there is Permian underground at Uvalde, Texas. The red beds and anhydrite at Malone Texas called by Cragin Upper Jurassic. C. L. Baker has shown in an unpublished small note of Permian age.

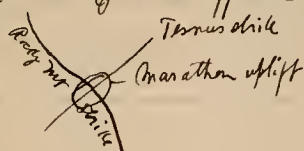
Dumble said there is much anhydrite a gypsum in the older Cenozoic of N.E. Mexico. Look this up.

Plummer and Stager trace the Ceff. MS trend S.W. across Gulf to about Houston area. Plummer said there was an underground ridge east of Jackson Min that has the trend of the Ceff. Look up this matter; if correct, however, apply to older time than the Permian.

Pross shows in his paper of 1926 that the MS of Okla., Ark and beneath Red River have an E-W or better slightly S.E. trend. Reuss counter to the

Appalachian trends.

R. F. Baker told me during the day that the trend of the Tennessee Mts in the Marathon uplift is N.E.-S.W. just the opposite of the Rocky Mts trend



This strike then is not at all in harmony with that of the Ancestral Rockies of Lee.

This is an important matter and needs looking into.

All in all I had a profitable day.

Saturday Feb 27 - 1926 Houston

At noon R. F. Baker and I got started in his car for Galveston on the Gulf shore. The distance by road is about 50 miles and in all this way the slope to sea-level is only 40 feet. The land is as level as a table and, when drained (ditches) is good farm land to within about 10 miles of the Gulf. Few farms are much in advertising. Towards Houston all the streams are cut down to sea level with standing water.

Galveston gets its water out of artesian dry wells about 8-10 miles N. of W. of the city.

Baker tells me that the Hurricane blowing in from the Gulf piled the water 14 feet above ordinary sea-level. This is definitely proven since at the Sulphur Mine sea water came to the 14 foot elevation. This is an important matter to bear in mind regarding shore phenomena. Also that formerly the present shore is about six city blocks farther west than it was before the hurricane. It is again building out to sea.

The land goes very gradually into the sea, and the wind waves roll in very gently, probably more or less than 12 inches - so shallow is the shore out to sea. The sand is very fine, even finer, and blown from the strand where dry the winds blow it into lawns. These dunes grow higher toward the Rio Grande. Beneath the surface the sands are replete with from 15-30 species of small pelecypods and some gastropods. Cray are bored by gastropods. Sea weeds are practically absent. Chitinous worm tubes with shells glued all over them are common. See these samples of sand and worm tubes.

Yale Educator Urges \$1,000,000 Museum for Texas

**Dr. Charles Churchert Points
Out Need for Such Institu-
tion at University.**

In the preliminary steps which have been taken toward the establishment of a museum at the University of Texas, consideration has been given of the great service that it would render not only to the students of the university, but people generally of Texas. Men of science are especially interested in the accomplishment of the project. Dr. Charles Churchert, professor emeritus of paleontology at Yale university, who is conducting a special course of lectures at the University of Texas, is regarded as an authority on museums. He was formerly administrative officer of the Peabody museum of natural history at that school and he has direct personal knowledge of benefits which are to be obtained from such an institution. He has evidenced much interest in the movement to bring about the establishment of a museum at the University of Texas.

Museum Needed

"The people of this state need at the University of Texas a first-class museum to show the vast natural resources of the state," he said. "Not only its mineral and agricultural wealth, but as well to show the animals common to the region and the archaeology of the peoples who once lived in Texas. It should not be merely a place where these things are shown visitors, but above all to also be an educational center for the students at the university studying natural history. It should also be the place from which are loaned collections and books to the high schools of the state and even something of this same sort may be sent out to the public school. This last has been done by museums of some states. Its doors should be open to the public every day in the year, including Sunday afternoons.

Tells of Other Institutions

"The natural history museum of Harvard university has cost more than \$1,250,000, has an endowment of about \$900,000 and its floor space covers about two acres. It is primarily for research. The Peabody museum at Yale university, starting out with a gift of \$150,000, has now a new building costing over \$900,000 and a floor space of about 75,000 feet. It is also primarily a research museum, but is now co-operating with the schools of New Haven and of Connecticut and soon is to have another building wholly devoted to a children's museum.

Million-Dollar Museum Urged

"The University of Texas needs a natural history museum building costing about \$1,000,000 and so designed that additions can be built to it as time requires. A museum, like a library, constantly grows through new accessions and but little of its materials can be thrown away or is lost through the year of time. Let us hope that the people of the great state of Texas will see to it that such a building will be forthcoming. On the other hand, the history of other museums has demonstrated over and over again that the lovers of nature will do their share in building up the collection through specimens and collections, while various individuals of means will come forward with an endowment to stimulate research through the appointments of professorship and the building of special collections."

March 1-1926 Monday.

GEOLOGIST TO LECTURE

Professor Charles Schuchert of Yale university faculty and one of the leading geologists of the world, who is a visiting professor at the University of Texas during the winter term, will deliver a series of five illustrated lectures on the history of the earth, during the first week of March, Dr. E. H. Sellards, associate director of the bureau of economic geology, announced Wednesday.

In his lectures, Professor Schuchert will trace development of the earth through the peopling of the lands, the age of giant reptiles, to the dawning of the present scenery and life. The lectures will be delivered in room five of K hall at 7:30 o'clock on the nights of March 1, 3, 4, 5 and 8.

SPEAKS ON NIAGARA

Niagara Falls is receding up the river at the rate of five miles per year and soon newly weds in Chicago will have to pay less railroad fare to make the honeymoon trip, according to Prof. Charles Schuchert of the Yale university faculty, who delivered the first of five lectures on the history of the earth in K hall on the University of Texas campus Monday night.

Professor Schuchert told of the wearing away of the Niagara cliff to illustrate the general wearing of the earth's surface by water. His subject of the first lecture was "Sculpturing the Earth's Surface with Air and Water." Professor Schuchert will speak again tonight at 7:30 in the same building on the campus. His lectures are illustrated.

March 1, 1926

YALE EDUCATOR HEARD IN TALK

Dr. Charles Schuchert Traces Development of Geology.

March 3

1926

"Nature works in rhythms and in circles, whether her immediate task be production of river or mountain," declared Dr. Charles Schuchert, visiting professor of geology at the University of Texas, in a lecture on "The Coming and Going of Seas and Mountains," declared Wednesday night on the university campus. Dr. Schuchert is professor emeritus of paleontology at Yale university.

"The rain is born of the ocean, and to the ocean it returns with the spoils of the land. It is now known that the oceans have spread periodically and more or less widely over the North American continent at least 20 times," Dr. Schuchert said.

He traced the development of sedimentary land waste brought down by rivers forming deltas and marine deposits into solid beds of rock. This is shown by the delta of the Mississippi river, which began to form about 38 miles north of Cairo, Ill., back in medieval times, according to Dr. Schuchert. Since then it has gradually built itself out into the gulf for 1100 miles, he said.

What had long been a mystery to geologists—the movement of the earth locally up and down—Dr. Schuchert explained was formerly thought due to the cooling of the earth and its consequent shrinking from time to time, is now explained by the lately discovered radioactivity of rocks.

The third lecture of this series will be given on Thursday evening, March 4, at 7:30 in K hall.

HOW OLD IS MOTHER EARTH

Geologists Estimate It at
Five Million Years.

= 500,000,000

No more than five million years were required for formation of the geologic processes which are recorded in the rocks of the earth, Professor Charles Schuchert of Yale university said in estimating the age of the earth in the third of his series of lectures on history of the world at the university Thursday night.

The physicists, however, he said, are more liberal in their estimates and on the basis of the radioactivity of minerals would allow twice or more than twice that amount. Time estimates are made by the geologists, Professor Schuchert stated, in several different ways. One method is the amount and rate of accumulation of salts in the ocean. Another is the time required in the accumulation of thousands of feet of such rocks as limestones, shales and sandstones. Still other partial estimates are made from the retreat of waterfalls. The waterfalls, however, are temporary features and can serve only in estimating short periods of time. The wear of the mountains and the quantity of sediments carried from them afford partial estimates. To wear down a great range of mountains such as the Appalachians, he stated, requires probably not less than fifteen million years.

The next lecture of the series will be delivered tonight on the great reptiles of the medieval world. The lectures are given in K hall at 7:30 p. m., and are open to the public.

March 4
1926

Dr. Charles Schuchert Traces Rise of Dinosaur.

"Animated citadels of flesh with nothing to fear but themselves, two pounds of brains to 76,000 pounds of flesh, brute strength and low mentality." These, according to Professor Charles Schuchert, are among the characteristics of the great reptiles of the medieval world. The medieval time in the world's history, he stated in his lecture at the university Friday night, was pre-eminently the heyday of reptiles. During that era reptiles held possession of the earth; in the air were great dragons with expanse of wing of 25 feet; in the waters were fish-like reptiles of great size; while on the land the dinosaurs, "terrible reptiles," held sway.

The dinosaurs, according to Professor Schuchert, include the most extraordinary animals that the world has seen and the largest land animals that have lived. One of these, called *Gigantosaurus*, "gigantic saurian," has a length of 80 feet, 36 feet of which is neck. Another, *brontosaurus*, "thundering

saurian," had a length of 65 feet, weighed about 37 tons and required a daily ration of probably 700 pounds. Among the vegetable feeders were some having no more than one pound of brain to 80,000 pounds of flesh, or "enough sense to eat when hungry."

Traces Reign of Dinosaur.

The disappearance of the dinosaurs from the earth coincides with the great mountain-making period which gave rise to our rocky mountain system. They occupied the whole of medieval time. "Their career," says Professor Schuchert, "was not brief and its culmination in majestic rise, slow culmination and dramatic fall to the great nations of antiquity." In the latter part of the reign of reptiles the mammals made their appearance, at first few in number and small in size, but representing an immense advance in brain capacity.

The next and final lecture of the series, on "The History of the World," will be given in K hall at 7:30 p. m., Monday, March 8. Professor Schuchert's subject will be "The Dawning of Present Scenery and Life." The lecture will be open to the general public.

Amek 5
1926

DAWN OF THE RECENT

Prof. Charles Schuchert Continues
Lectures on History of Earth.

"The Dawn of the Recent" was traced by Prof. Charles Schuchert in the last lecture on the history of the earth given at the University of Texas Monday night.

The great reptiles of the medieval world disappeared with the changed conditions accompanying the making of the Rocky mountains in North America. Upon this disappearance of the reptiles the mammals, at first small and few in number, took possession of the land. The most notable characteristic of the mammals, according to Professor Schuchert, was increased brain power and increased care of the young. With the disappearance of the great reptiles the spread and increase of mammals over the earth was rapid.

The dawn of civilization is placed by Schuchert approximately 18,000 years BC in Asia Minor, Arabia and Persia. The city of Susa, Persia, apparently goes back to 1600 BC.

"In the pliocene, man in England already knew how to kindle fire and the Neanderthal race buried their dead with their implements, paints and ornaments, showing the dawn of some religious feeling," Professor Schuchert said. "Man's mentality now dominates the organic world and bids the force of nature to his work. However, his further progress is dependent upon himself, depending upon whether he will learn to control himself for the benefit of human society. Man's first duty is service to mankind," he said in closing.

March 8-1926

Had the largest audience, about 400. Among them President H. H. Brown and wife, Prof. Bellard and wife, Prof. Pearce, Prof. Cunningham and wife, Dean Stupper (whose wife did not attend one of them). About $\frac{1}{4}$ of audience were students, rest citizens. All were very appreciative.

Mr. Greuter, mechanic in the University ran the lantern, and he did well. The lectures paid well for the popularity of the book when published.

March 12 - 1926. Friday

On Wednesday evening I gave the last lecture and yesterday at 2 P. M. we had the final exam. I began with a class of at least ⁴⁰ ~~50~~ of whom most were the visitors. Then we settled down to 30 men and finally 12 were taking the work in course toward a degree. Of these 9 are fairly good of B or more. One had C and another D. About 6 of the men have promise of making oil geologists since none have any other ambition.

At noon I handed in my merits and report, and so the contract is closed for which I am to get \$1800.

A news note which comes to us from a Professor of Geology down at the state University states that the earth is 1,500,000,000 years old; and report in the papers a few weeks ago quoted a Yale professor as being able to prove that the earth is 371,000,000 years old. We don't believe either report. The earth is today exactly 9,925 years, one month and 11 days old; but if the Bible didn't tell us that, we wouldn't believe it. In fact, when we observe how some East Texans have abused the earth by letting its virgin soil wash away and the precious fields get all gulleysed-up, we doubt whether it was here when Washington was whipping the British. Any man's earth in the whole universe would have been a blowed-up sucker ages and aeons ago had it been subjected to the abuses we East Texans have perpetrated upon ours—We'd better get to terracing and draining, or our Earth will be a blowed-up sucker, and we will be too.:

March 13-1926 Saturday, Austin.

This afternoon Sellards took me to see the upper part of Edwards limestone. First to a quarry in west Austin, then to Deep Eddy Bathing Pool (a sort of summer resort), then by the Big Dam on the Colorado River, and finally to exposures along the river. Nearly all that I got are *Monopleura's* and true heart urchins.

The Edwards has one bed about 30 inches thick composed of *Miliolina* forams.

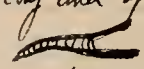
Beneath the few thick and good beds of quarry limestones are thinner beds and at the base of these one bed extensively exposed was semi-cracked long where. Therefore this layer was exposed to the air. The *Miliolina* bed also pebbles of a yellowish nature, made a low angular and up to 4 inches long and an inch thick; these are of an intraformational nature, showing that these waters were very shallow.

March 14-1926. Sunday, Austin

Packed my fossils and arranged lantern slides for the 3 lectures at the Agricultural and Mechanical College. Late afternoon with Sellards called on President and Mrs. Splan.

March 16 1926 Tuesday. Austin.

Got up at 6 A.M. and with Professor Whitney and Mr. King was off in the Univ. car at 7 A.M. to be gone all day to see the Glen Rose of southern Blanco and north-central Comal counties.

Crossed the Colorado River and then S.W. to Cedar Valley and Dripping Spring (Hays Co.?). Then we passed Lone Mountain and the Twin Sisters Mt. These are typical Buttes. Then we crossed the Blanco River and on the south bank went into a German farmer's land to see a reef of radiolites (Schizoderites). All are carbonate of lime pseudomorphs; elongate tent shells up to 8 inches long and up to 2 1/2 inches in diameter. Something like this:  The walls are very thick and fluted and the cone filled beneath the body chamber with encase floors. The layer is 2 to 3 feet thick filled with the shells but hardly thick enough to call it a reef. Took no rock with them since it meant more rock than I could carry. ^{base of the Glen Rose on top of Texas} _{the horizon is at the very} ^{part.}

On the slope down to Blanco River, near the base of the Glen Rose collected some flattened but good Porocystis.

Leaving the German farmer's home we began collecting at about 140 feet above the base of the Glen Rose in limy clay beds, about 2 miles S. W. of the

river. First in a horizon with Salenia and heart
urchins. Then farther on in lower beds a bivalve
zone ^{here etc. which is another} ~~with~~ heart urchins. ^{They} If we had the time
many of these echini could have been collected.

Then turned north and mainly east to the
north side of the Guadalupe River where there is a
high cliff of the Lower Glen Rose. Here occur thin
laminations among shale - lens & zones and one of these
beds 5 or more feet thick weathering a bright red is
filled with Schizophoria. Took a few fragments
of them with Monopleura and a very large Asaf
shelled gastropod.

About 3 miles west of Hancock, Comal County
in a blue clay bed collected a very large species
of Orbitolina - the hat shaped form as yet unclassified.

At 3 P.M. it began to rain and we had to
quit collecting. The roads for many miles were very
slippery, and the great majority of them between Driftwood
Springs and San Marcos very poor. Then the engine of
the car leaked gas all day and most of us got
headache.

PROFESSOR SCHUCHERT WILL LECTURE HERE

Prof. Charles E. Schuchert, curator of the Peabody Museum at Yale University, and professor emeritus of College over March 18, 19, 20, and 21, paleontology, will be here at A. and M.) and will give several lectures on geology and related topics.

Prof. Schuchert has been carrying on certain research studies in the paleogeography of Texas, and is completing a course of lectures at the State University at Austin. The people of Texas are to be congratulated on the privilege of interesting and entertaining a man of Prof. Schuchert's attainments, and both the University and A. and M. College are fortunate to secure a place on his busy program.

Details of Prof. Schuchert's lectures will be announced later, but the following topics have been suggested: Animals, Historical Geology and Research in Science. In addition, to the above, it is hoped that Prof. Schuchert will be able to address all the engineering students on such a topic as "Geology and Engineering" and to meet one or two classes in Geology. Prof. Schuchert has numerous slides to use in connection with his addresses, and all the Campus and Bryan people are cordially invited to attend these lectures.

JAMES H. HANCE, head,
Geology Department

College Station, Texas.

Dark days and more or less of rain.

Left Austin Thursday morning at 11¹⁰ on the International Great Northern R.R. for Valley Junction where I changed to go east to College Station which is 5 miles east of Bryan a county seat. Got to College at 3:00 P.M. Here Professor ^{and Dean Puryear} Hance met me and took me to the Hotel Aggeland. Was interviewed by the Dean of the College at 4 P.M. called on the President Mr. Galton. At 8 P.M. gave the first of three lectures, but the lantern was so faint that much of my lecture was ineffectual.

Friday morning spoke for a half hour to Hance, 61 students, and then visited and interviewed the rest of the day. At 8 P.M. gave the second lecture and now the lantern worked well. Prof. Ball (biology) is a collector of Congress insecticides and more especially of larvae and in which he gets some help from Berg. Many of his specimens are fine. Then called on Prof. Francis (Vertebrian) who has a remarkably good collection of Mammals and prairie mammals from round about this part of Texas. Proboscideans, bisons, camels and horses abound. One fine horse skull, jaw and one leg fine as well.

Saturday morning at 10 gave the final lecture to a jammed audience in the large lecture hall of the physics building. Then visited around all day. The A. and M. College has 30.00 acres and 2400 students under Military Discipline - a good method of training young men.

Sunday morning dawn with heavy showers and
thunder and lightning. Same rain Saturday morning.
Listened to Prof. White's talk on Calvin and his respect
for him as a reformer. Then attended church and saw about
1000 students march to church in military fashion. Had
dinner at Stances home.

Monday (March 22-1936) visited with Stances and
at 12.10 I was off for Fort Smith where I arrived at 7.30.
Put up at Sakers Hotel.

President Walton
Dean of College Professor Farley (Historian).
Dean of Mech. Engineering Prof. Bolton
Prof. White (Economics)
Prof. O. M. Ball (Biology) has bird plants and some
Prof. M. Francis (Vertebrate Zoology) has
fossil mammals.

The Roman Empire was as large then as our present relations
with Western Africa, the Middle East, and Southern India. This
is different from all my earlier views on western Mediterranean
affinities. See the two little maps on which I noted
some of these facts; will place them later on my geo-
graphic maps.

Fort Worth, March 23-1926

Tuesday.

Had a cab take me four miles, S.E. to Texas Christian University, and first met Eagle Hartt and then Professor Dr. W. D. Dinton. Spent the morning talking over the Woodbine formation as a repressive one. At first I could not see it or two after a while it became clearer that the east Texas Cretaceous was a shallow sea spreading north during Tertiary time and remaining a shallow sea during Tertiary time. See the fossils, the dinosaur tracks found at Glen Rose Texas. Then towards later Washita time a ^{or earlier} subsidin area began along the Red River region that ^{extended} out into the Gulf of Mexico to the west coast. The Woodbine is the ^{final} repressive ^{and} phase of this sea. It is thought that the older strata of the Woodbine are to the south and west and the younger to the east and north. The latest Washita = Buda is Proacian in age while the Woodbine is Cenomanian. These correlations I got from Prof. Killian of Grenoble Unit, France. The first beds of the Tertiary Woodbine are Upper Cretaceous ^(Turonian). There is a break (supposed to be sharp) between the Lower Woodbine. This first bed is found in the Eagle Ford. See the paper ^{by Hartt (ms)} gave me and which he is to read this week at the A. C. P. U.

In the afternoon Dinton and Hartt told me about

Dallas, Texas, Wednesday March 24-1926

Got to the Baker Hotel, Dallas, at 10.45 and checked on the 13th floor. Took things easy. In the evening the geologists began to arrive.

Dallas March 25-26-27-1926

This morning the geologists are flooding in at a very great rate and before noon the hotel is filled. The meetings start in fairly promptly and all goes smoothly. Met dozens and dozens of friends, but unfortunately I cannot remember the young people, and they all want to be recognized as remembered.

Friday afternoon there was no session. Had a long talk with Professor Palmer. California. Finally M. Leigh wanted to know if I would consider 3-4 weeks consultation regarding the Miss. Penn. and Permian of Kansas, Oklahoma, and Texas. He thought his company the Seun Co. would pay me \$5000 for my help. This work is to be done either next December or a January 1927. Friday evening Plummer gave a dinner to about 20 people with a view of starting a Paleontological Society in the A. A. P. G. We all got behind the plans with a view towards a publication.

Saturday morning listened to papers. In the afternoon there was a section on micropaleontology with Moore, Kansas as Chairman. Finally Professor Moore took the chair. Another paleontologic society is now at hand. All the papers were read by 1 P. M. and every one was agreed that it was the most successful meeting ever held by the society. This was the eleventh annual meeting.

In the morning there was election of officers. Sumner of Houston got 184 votes and my friend McClogh got 193 (elected) for President. For Vice President Beede got 160 and 217 (elected). For Secretary-Treasurer Fritz Curin got 218 (elected) and Beeder 155. Moore did not run for reelection and so John L. Dick was elected as editor.

Dallas, March 28-1926

The auto of the Bureau of Economic Geology, Univ. of Texas, with Dr. Lonsdale as driver, was ready to start at 7.30 for Austin. We have 200 miles to go and the day is dark and cool. Soon after starting it rained enough to make the roads slippery, and we saw three cars in the ditches of the road. From Dallas we go South to Midlothian, Grandview, Itasca, West to Daco. Here we had lunch at 12.15 and by 1 P.M. we are off again to Temple and at 3.15 we are at the extensive road metal quarry on the Santa Fe R.R. about 1/2 miles N.W. of Baylor College (for girls) at Belton. We came here to see the radiated layer at the base of the quarry. It is not a reef, but a rare-cored crinoid stem of a radiated like Schizocrinus. I had no hammer and time was short so could make no good collection. I have enough to show the nature of the fossil. A clay associated layer rather shaly had many schizoids. The Caprina-like shells come from a zone about 10 feet higher. Fully 15 feet of this quarry has more or less of these radiated.

At 5 P.M. we are off for Georgetown, Round rock, and Austin where I arrived at 8 P.M.

Austin, March 29-1926

Getting ready to go to West Texas. Daul day.

Austin March 30, 1926. Tuesday.

It thundered and rained heavily about mid-
night, and this morning the world is cold. The
morning papers have stories throughout the state
with $7\frac{1}{2}$ inches of snow at Amarillo. Bellards
telegraphed Beede at San Angelo about roads,
and the reply was that they are bad. Then concluded
that we could not go for at least two days. Tele-
graphed Baker at Houston and Kestle at Alpine.

In the evening listened to Keith's second lecture
on 'Topography in relation to earth movements'. He has
a bad cold, and so I understood but little. Keith
also got his cold at Dallas, just I did, but the
Doctor here at Austin has about driven it out of
me.

Austin March 31-1926. Wednesday
Another fine and cool day.

In the afternoon saw Bellards, and he
said he would call for me at 9.30 tomorrow
morning to start for the Marathon country.

Austin, April 1-1926. Thursday

The days fire and at 10.30 A.M. we are off for West Texas in the car of the Bureau of Economic Geology operated by Mr. E. H. Sellards. We go directly west from Austin to Drifting Springs, Johnson City to Fredericksburg. Here we arrived at 1 P.M. having come 83 miles. Had lunch and at 1.30 we turn north and a little west, and soon get into the basal Comanchean that has much of red beds. Then we get down into the Basin of Central Mineral Area and former Cambrian sandstones and shales and then a long reach of steeply upturned Paed saddle schist and red sands. It is 34 miles to Moson ^(left town at 3 P.M.) which is on these old rocks and ^{we} soon rise upon a narrow outlier of the Comanchean, and then over thin bedded Cambrian-Ordovician and finally Pennsylvanian to Brady which is 27 miles N. of Moson. From Brady ^{at 4 P.M.} we go almost directly west and soon get in the Comanchean here a series of variegated clays with calcareous shales above. Then ^{from Eder} N.W. we see Cretaceous and finally Permian on which San Angelo is built. It is about 80 miles from Brady to San Angelo, and about 230 miles from Austin. Put up at San Angelo Hotel. Get here at 6.15 P.M.

About five miles N. of Fredericksburg we had our first view across the basin of the Central Mineral Area

It is a wide shallow basin with rather of granite
dills and bounded on south and west by a gneiss
Comanchean dills a few hundred feet high. The
floor of the basin is Packer's dille schist cut by red
coarsely crystalline granites and upon which are
local occurrences of Upper Cambrian, Cambro-
Ordovician ^{and through the south} Comanchean. In places the
Paleozoics stand steeply, as a rule they lie
in undulations but dipping to the Grand River.
Lillards ^{says} the doming of the Mineral Belt took place
after the Bond and seemingly went on until some
time into the Olden Strain. The Pre-Cambrian
rocks Pope (Foliot) makes all out, and
Lillards says that some schists only deep wells
have revealed Radiolaria. Look into the matter
to see if they are actually Radiolaria. Saw some
granite bedded-dills cutting schist at an angle of about
70 degrees.

The Comanchean tops against the Mineral Min-
eral Belt and finally around it

There is no rim or gneiss around the north side
of the Mineral Belt

San Angelo - Alpine, April 2-1926

Left San Angelo at 7.30 A.M. and passed over Permian to a Comanchean mesa that begins with sands and then the heavy Friedrichs bed. The thickness is small. Further west is more Permian.

Passed through Herwood - Barhart on the Orient R. R. to Big Lake. The Big Lake oil field is about 14 miles farther west. This field was discovered by a wild cat, and in 1920 there were down about 50 ^{across} wells; now there are 90. The field is about 3 square miles, and is now yielding 30,000 barrels daily, being at present the greatest producing field in Texas. The wells are down between 2900 and 3100 feet. On top is 300 of Comanchean, 300 of Triassic and the rest is red beds ^{Permian system} Permian with the oil in lenticles and nodules. One ^{are} well is down 6000 feet and is believed to be still in the Permian; there are black shales below the oil zone. Sellards visited with Graves for 2 hours, ^{and my self} had lunch here. In this region the general dip of Permian is to the N.W. The oil dome has a rise of about 100 feet with a gentle western slope and a steeper eastern one. Thrusting from the E. See Sellards paper soon to be published in A.G.P.G. Bulletin.

Crossed Pecos River at 1.35 P.M. The river is incised about 25 feet. We have about 30 miles to go to Fort Stockton. Now there are many outliers of Comanchean

Alpine Saturday April 3-1926

Started out (7 galgits) at 8.20 A.M. for Marathon (30 miles E.) and then to a place 3 miles south of Saptank which is 35.6 miles N.E. of Marathon. Arrived at 10.10 and began collecting in three zones of the upturned Lower Saptank. The section as measured here by Blanchard and Baldwin for the Mal and Cr. is as follows.

Total thickness measured 608 feet but is considerably thicker

Comanchean Cretaceous above. Saptank in an anticline.

Great ls. conformite

The section begins at the base.

Li. and ss. ^{intraformational} congl. with pieces of li. and chert and some sand.

Thickness variable 10' - 300'. See April 6 for more detail

This is not of basal congl. formation.
Dark gray shale 120' with a lens 3" to 6" of hematite

③ concretionis. Productus zone (see the 3 pieces).

Dark gray shale with iron concretions, 90 feet.

Dark brown and dark gray Fusulina li. 15 feet.

Hard calcareous sandstone ledge with fossils. ^{about 10 feet thick} see the collection. Besides those collected saw Chaetetes millipora

Springera multaterrata, large Bellerophon capax.

Sandstones 6' 3"

Greenish shales 20' Dark gray li 1' (not exposed 25')

Li. 1', shale 4'

Fusulina li and sh. 6' Sandstone 1' Gray shale 9'

① } Difference fossil zone = 16 feet thick.

Thin li (1') shale (3') ss (1') and soft sandstone 4'

Alpine, Sunday April 4, 1926

Traveled east to 4 miles west of Marathon and then ^{turned in} on trails north to the first Permian escarpment to collect Leonard fossils. This place is about 4 miles S.W. of Iron Mt. We collected all the morning 500 feet above the base of the Leonard (there is no Iron here) in a fine crystalline limestone. I called this loc (50) and marked it in the Altuda Quadrangle.

In climbing up to this limestone ^{dike}, we saw many zones of limestone ^{and Orthoceras with} concretion. As a rule the pebbles are well rounded of quartz and chert and usually less than 1/2 inch across, but there are also angular pieces of limestone of all sizes to blocks up to about 1/2 foot long. These must have fallen from cliffs ^{into the canyon} unless by ice transportation for which there is no evidence. There is also much fine sand in these concretionaries.

Then traveled farther N. up the side of a gulch where another dike comes in from the W. and then walked about half mile to the place marked locality (57) on the Altuda Quadrangle. From here found a limestone full of ammonites and we collected many. These beds go from ^{760 to 860 feet} above the base of the Leonard.

These ammonites occur in several zones through about 100 feet of strata and on the top of the dike we

found another great abundance of ^{thin, about 100 feet higher than the lowest layers} delicious
 ammonites with hollow septate chambers. Collected
 a lot of them and one is a very fine large one.
 Also got a Rhynchonella ^{or Alveolites Ho.} This higher bed I
 marked (57a).

There is no Hess in this place Loc (D) nor
 anywhere to the S. The Hess and ^{here} rests on the "series"
 series, and so there is no Gaptank nor Wolfcamp
 here. The road goes north of the S.P.R.R. and
 here is followed by the Tertiary. Therefore the Tertiary
 thins out S. but is still present in the West, but
 the same in time of the Silurian, and none of these
 great formations are present in the Shafter Region.
 Accordingly the Permian of the northern Alamogordo,
 nearly 12000 feet thick, thins down to less than 6000
 feet in the Shafter Region (Look up Alamogordo formation).

A bed of Tertiary with fossils occurs N. of the S.P.
 R.R. at 11 miles east of Alpine. We will explore it
 here at another time. Did or but did not see a single mil.

Farther west a few miles on the S. side of the S.P.R.R.
 the Comanchean dips to the W.

In the Lullin Oil field, E Texas there is a well down
 to 600 and in drilling 600 feet into the Packer shale.

(It is not known that Lower Gaptank is
present here)

In the Solitario the Tesnus is also present
and folded with the same general strike (S.W.) as in
the Golan Mts. Porus also got Silurian here.

The Hafta River in Udden gives a thickness
of 1430 feet = Cretaceous series. Mount Blanchard
says that deposition is continuous here. Supposed
Pennsylvanian goes unbroken into the Permian.
Only lithologic proof for Pennsylvanian; basal
Hatch shales with thin beds of quartzite that
look like Tesnus. No folding here, only domal
uplift; here in the west the folding is thought
to have died out.

Blanchard has seen but one crinoid columnal
in the Wimple li. No other fossils other than sponge
spicules are known in the Wimple.

Stagmond is now regarded as Tesnus. Baker at
first ^{was only interpreted as a quartzite} and therefore this formation is to be
disregarded.

Blanchard says Waco lies below the Penn-
sylvanian li. that has "Chert below", possibly some Penn.
and the Permian. Delaware = Dred. Capitan =
Vidua, and the Lytle beds = William and Tenney

To this locality one goes ^{road} on from Marathon to
Saptank and turns in at the small ranch house
with a wind-mill that is 16.1 miles out from
Marathon. One goes up to a wire fence that
goes up the hill, and then N.E. for less than 1/2 mile
to to a small water dipping hole that is the ^{nest} of
nest of a tank.

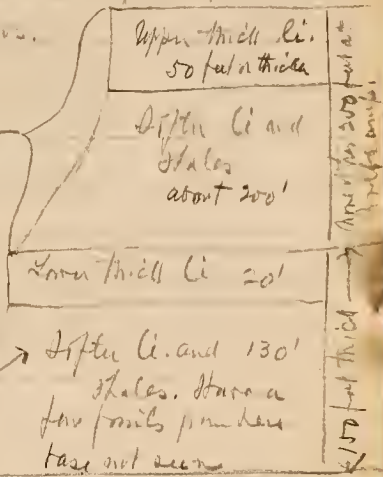
This Lower Saptank ^{has} ^{here} no basal conglomerate
at all.

Alpine, Monday April 5-1926

Started out at 8.15 A.M. for the ammonite loc. in the Upper Saptank 5 miles N.E. of Dolfcamp. The ^(ammonite zone) is 60 feet below the second thick limestone zone or about 330 feet beneath the top of the Upper Saptank, but at this place the upper 200 feet are thought not to be present at Dolfcamp. The section is roughly as follows.

Apparently eroded away at Dolfcamp

(Ammonites)
Common in zone 60 feet below the second li. This ammonite loc. is at base of hill in Heron Quadrangle marked 47752



from Dora Athol

Then started to Saptank. When out 23.4 miles the road rose up a hill that has tilted ^(= Lower Saptank) Tennesse below. Here I saw the same gastropod trail that I collected four miles W. of ^(only for 300) at the ^{same} on the S.P.R.C. The Tennesse here strikes S. 60 E, and dips 40° S.W. ^{more frequently} Cragging the Tennesse is a limestone series that has Lower Saptank fossils

The locality of Saturday is 2 miles to E.
or 3 miles S. of Saptank

See the small ~~list~~ ^{list} of things collected for identification. This ~~is~~ ^{is} Lower Saptank strikes S. 65° W and dips 10° S.E. The fauna is the reputation Pennsylvanian one collected last Saturday.

The road then goes for ^{6/10 miles} further north over folded Tesnus. At 24.4 ^{miles} ^{or from Marathon are again} seen yellowish iron-ore limestone and shales of the Lower Saptank that stand almost vertical. They strike S. 65° W See the fossils; the Chonetes in a sort of reef occur about 200 feet lower than the fauna collected.

These rocks are overlain by limestone flint that have nothing to do with the vertical Lower Saptank. As I got Chonetes massif from the vertical beds ^{from the vertical beds} the lower ones of the Saptank series. ^{these shales may be} It is now established that the Tesnus was folded before the reputation Pennsylvanian sea came in. Then the ~~road~~ was folded and eroded before the Upper Saptank sea came in. (This view was later on completely changed)

Finally collected for a ~~number~~ ^{number} of shales of the ~~series~~ ^{series}. Got mostly Fusulina and Schroferina. Nearly all of the ~~rock~~ ^{rock} here is a coarse conglomerate and sandstone and farther N.E. appears to consist ^{The formation is composed of} of the Complex is very coarse with all kinds of unrounded to well rounded pebbles.

Grant Blanchard says that Hadden did not get the ammonites at Wolfcamp in the Wolfcamp formation but in the Upper Saptank. The error was due to Hadden thinking there was an erosion hole in the Saptank or a gap in which the Wolfcamp was deposited. This is an error. They occur distinctly below the basal conglomerate of the Wolfcamp. Some days later I was able to see clearly that Hadden was mistaken, and all of his 12 species of ammonites are therefore Perm. in age.

This whole matter King thinks is an error and that Hadden is about correct (Dec. 1926).

The tank at Saptank is 20.6 out from Marathon

When I got back to Austin and looked at the sheets in at
the Museum I saw that Hadden's collection, come from
Yolo Co. and N. and N.W. of the town. Hadden
got many species and among them are some n. sp.
Most of the material is now on loan labeled to Zorae
but apparently Beede struck out many of the names.
Beede it seems to me magnifies small values.
Even though there are n. sp. all are around Chico
Kinds. The fauna is unmistakably Permian or Triassic.

Alpine, April 6-1926 Tuesday

Started at 8.10 for Saptank (300 miles to Marathon and then 25.6 to the tank). I tried to collect Upper Saptank all the morning ^{the 300 miles to the cross} and got about 6 specimens. Failed to find Hadden's good localities. See ^{opposite page.}

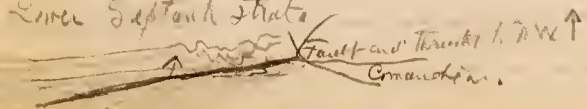
Dellards, Baker and Blanchard started E. to make out the structural relations between the Upper Saptank and the Lower Saptank. The fossils collected ^{together} show the normal Lower Saptank fauna of about

congen time. I had also seen Lower Saptank to the east ^{and south of where they worked but} and found fossils. After lunch we all went ^{to the east} at it again and came to the conclusion that there is no break between the Lower and Upper Saptank.

As we walked farther east to where the Paleozoic strata go beneath the ^{alide are very vertical,} the Upper and Lower Saptank strata, ^{and thickly,} and the blocks jumbled some ^{to me another normal} but on that of us,

the blocks stand nearly at right angles ^{to the east} and therefore disturbed and ^{in the valley between the Upper and Lower Saptank} broken into a jumble. To me there appeared to be a fault present ^{to the east} on the eastern end in northward (to the river) conditions. This is best

seen in a little valley headed by a great yellow patch of Lower Saptank strata



Then examined the Lower Gaptank ^{near that} seen on
Saturday. Before getting to the section we looked at
a conglomerate mass that may be basal to the
Lower Gaptank. Pettles many of li., and in all
signs of to a foot long, rounded to subangular. These
li. reminded me of the Ordovician. Some Nona-
culite in angular pieces also present. One pettle
had four points, a small Lingulella and pieces
of trilobites, reminding me of Upper Cambrian or
Ordovician.

Then looked at the great conglomerate in the
Lower Gaptank thought by Blanchard to be "basal"
Gaptank. Here the blocks are all large many two
feet ^{or more} and nearly all of crinoidal limestone ^{of the Perm. seas.} here
are also other fossils, and as pettles got two
ends. Accordingly this conglomerate is a kind
of intraformational conglomerate since all the boulders
are of Lower Gaptank time. See the fossils and
one on all boulders. This conglomerate must have
formed at the base of a cliff, and in thickness
^{according to Blanchard} varies from 10 to 300 feet. The Lower Gaptank -
Towms "unconformity" seen today had no basal
conglomerate at all.

We are all now satisfied that the most intense
erosion of the Glen Garts took place after Tesnus-
simple time, but the age of the Tesnus is not yet
known. Then after a time of erosion the area
was invaded by the Pennsylvanian sea of about
Cangin time and continued unbroken throughout
Baptant time which means to close of Cisar-
time. Both the Lower and Upper Baptant are
folded alike, though the latter appears to be less
folded. What the relation of the eroding Wolf-
camp is is not yet clear farther than that it
appears to be conformable though separated by a
marked vertical unconformity. Therefore the
second folding may be post Upper Baptant and
it may be post Permian (probably at the close of Permian).

If any event there is a marked break between
the Baptant and the Permian. In some places
there is Wolfcamp and in others there is Permian
or Permian comes to rest on the Baptant. To-
morrow we will learn more about this second
time of erosion.

[Later on we concluded that Tesnus-simple is prob-
ably = Upper Lower Baptant, and that all were folded together
at the close of the Permian = Upper Baptant = Cisar time]



Alpine, April 7 - 1926 *Wednesday*.

Spent the day 3-4 miles W. of Marathon to collect fossils out of the "Tesnus", and all that we saw showed that this Tesnus = Saptank and in all probability the whole of the Saptank.

First collected along the Alpine-Marathon road about 3 1/2 miles W. of Marathon. The strata are well exposed in the road ditch in a horizontal attitude ^(of a syncline) and composed mainly of green shales with fossiliferous thin beds of limestone having the fossils, but a few more on the ^{lower} hill slope above. It is the Saptank fauna and prob. *Up. Sap.*

Then crossed country ^{S.} to the N.P. R.R. cut at mile post 580. Here the strata are vertical, shales, conglomerate (about the kind of small rounded rocks) and (very) sandstone. But a few fossils ^{in the cut, as} *Strophomena acuminata* and *Frustraria cylindrica*.

On the south dump of this 580 mile post cut there is a limestone block out of which Blanchard collected for some time fossils. Deyte is said to have many more. This loose block came out of the railway cut.

Then went to the hills about 1/8 mile farther S.W. from mile post 580 to see the unconformity discovered by me two years ago. After much work of all we concluded that this angular unconformity is due to ^{from centrifugal} apparent unconformity. In the vertical strata beneath the uncon-

form of ^{myrarily} *Fusulina* and *Terebrat.* In the cri-
oidal limestone above ^{the apparent green form} *Fusulina* are more common.
I have no doubts that the ^{green} *Fusulina* found in the loose block
in the railway dump is from the same li. zone.

Strike of anticline S. 50 W. from Star's
Ranch. Strike of lower vertical strata beneath
the ^{apparent} *Fusulina* form is S. 45 W. The upper flat
lying limestone and sandstone dip south to N.
but at east end of hills they stand vertical; on
W side of hills they descend far more gently to
the W.

Then tried to find localities farther south
to the north of Fort Peña, but saw only Chona-
culitz and Ordovician cherts, congl (also in-
traformational) and limestone. Saw here *Al-*
logaptus suggesting Trenton.

Then came out ^{again} *Fusulina* and entered
W. to Dieck Ranch to the N. of the road and
here again are some *Fusulina cylindrica*,
Rhipidomella pectus, *Composita subtilita* and
fragments of several *Pordiculus* species.

Then looked at the *Vidua* beneath the Co-
nstruction 11 miles E. of Alpine but did not see
a single *Vidua* form.

Every place seen today in the so-called
Tesnus turns out to be ^{at least} Lower Saptank with
decided suggestions of the Upper Saptank. It is still
several miles W. to the great mass of the
Permian and plenty of room ^{not only} for the whole of the
Saptank, but as well for the Tesnus-Group if it is
another series ^{which I very much doubt}.
All the fossils reported by Baker in Udden's
Report of the Glauk ^{at the least} are Lower Saptank
species. As there is no break between Lower
and Upper Saptank and as both are equally
folded it follows that the time of Mt. making
is after Saptank time.

To morrow we will collect Wolfcamp
fossils and study the relations of the Saptank
to the Wolfcamp. The great break between
the Pennsylvanian and the Permian comes
in above the Upper Saptank, but what
is Wolfcamp?

Lately it dawned on me that the fossils collected only the lower 20 feet of the Wolfcamp had but few of the species seen farther E. These lower fossils are all silicious in a soft moist weathering li.

All of the other Wolfcamp fossils weather out of softer li, and may be of a higher zone. So there is a fault between the W place of the lower Wolfcamp, and the place of the fine and better fossils that have Rhynchonella etc.²

Blanchard has it five feet →

See 1926.

Apparently my 6-8' li in a. and encl. is not the base of the Wolfcamp as Bl. would interpret it; it lies on lower fr 167 feet and includes the hidden communitarian zone. The top of the Gasland is a 24' bed of li, beneath which are dominantly shales.

Alpsine April 8-1936 Thursday

Motored to Wolfcamp northeast of Marathon. Here we collected all morning in the lower 20 feet of the Wolfcamp, probably half a mile north of the type locality. Left the car a little to the W. of the old deep ^{cut} well and then walked up a cow path along the gulch first N. and then mostly east to another turn in the gulch and ^{then} on the opposite side low down found a good place where the limestone beds of under the weathering and facing the fossils. Astragalinus, Fusulina elongata and another Fusulina are common. Also got Phictodonta, one n. sp. of Aulostyris, Entelites, Hustedia meeki and many other fossils. All in Permian in aspect.

All of these fossils ^{are said to} come out of the lower 20 feet of the Wolfcamp, just above the thick bedded ^{terminal} limestone of the Upper Gaptank. The basal ^{Wolfcamp} limestone 6 to 8 feet thick is bedded, weathers yellow and yields its fossils in a siliceous condition. The basal part of this limestone has a ^{to 2 feet thick} conglomerate which acts in the Gaptank ^{thick li} in a decided erosional unconformity. Sellards says that the Wolfcamp ^{to have a} appears ^{different} attitude and cuts diagonally across different beds of the Gaptank. In any event the Wolfcamp ^{is} a ^{decidedly} ^{different} ^{unit}.



the Saptank one. The true break is of considerable length and easily separates the Permian from the Pennsylvanian.

Then continued to the "unconformity Hill" described on Monday that is 23.4 miles N.E. of Marathon. Bellard and Baker are now satisfied that while the ^{strata in the} hill looks like a genuine unconformity, yet the upper li. may have its present position due to folding and possibly overthrusting.

Then I walked along the road towards Saptank to see if the "Tesnus" had any fossils. He found none. At the unconformity hill the Tesnus stands vertical and on the next hill north the strata dip S. Getting over the crest of the hill the strata dip again N. at low angles to near the place where we collected fossils on Monday where they stand vertical. All of this we had seen farther east and it did not cause me to change my ideas that the "Tesnus" is single. Saptank = Pennsylvanian.

At night packed up preparatory to leaving the Glen Hills tomorrow and put up at night at some place to the E. on our way to San Antonio.

In going to this place we cut out north on the
Saptank road to a place 2.5 miles N. and
then through a gate. It was then 6 miles W to the
base of Leonard Mt to see the outcrop of "Tesnus".
S.E.
^

Here the Tesnus strikes S. 10 W and goes under
the Hess which is nearly all li. with fossils that we
could be imprudent to fill out.

See the small collection of simple fossils.

The question here is, Is the "Tesnus-Simple" of the
Leonard Mt area the = of the Simon and Hopen Saptank?
Or is the Saptank another series above the Tesnus
Simple? Probably there is but one series, named
Tesnus-Simple, and that the whole of the Saptank
is equivalent to the former.

Alpine, April 9, 1926. Friday

Went to Leonard Mt. to see the slightly tilted and more or less crumpled ^{simple} ~~Tesnus~~ ^{series} under the Hess of the Permian. The Hess here in the basal Permian, is about 300 feet thick and to the S.W. vanishes in a few miles. From Leonard Mt N.E. the Hess increases to about 2000 feet and has beneath it the Wolfcamp of the Permian and the Upper Gaptank not to say anything of the Lower Gaptank which may not be = the Tesnus-Simple series.

The "Tesus" at Leonard Mt is ^{composed of} ~~crumpled~~ ^{sandstones} more or less fine crumpled and appears to have no fossils. Apparently higher come in ^{simple} ~~crumpled~~ ^{limstones} but are also more or less fine crumpled and these limstones are in large part made of a debris of fossil fragments. Most of these fragments are tiny pieces of small crinoids, and very rare bits of small brachiopods that may be Productus of the Craig group, and Rhynchonella like lepidodendroides. Spore spicules are very common in certain layers, in supposedly the lower limstones believed to be of the Simple formation. Very rare does one see a crinoid columnar $\frac{1}{4}$ inch in diameter. This "Simple li" appears to me to be of a shallow sea bottom that



Alpine, April 7 - 1926 *Anderson*

Spent the day 3-4 miles W. of Marathon to collect fossils out of the "Tesnus", and all that we saw showed that this Tesnus = Saptank and in all probability the whole of the Saptank.

First collected along the Alpine-Marathon road about $3\frac{1}{2}$ miles W. of Marathon. The shales are well exposed in the road ditch in a horizontal ^(of a syncline) attitude, and crop out in part of green shales with fossiliferous thin beds of limestone having the fossils. Got a few more on the ^{1st} hill slope above. It is the Saptank fauna and probably Saptank. Then crossed country to the S.P. R.R. cut at mile post 580. Here the strata are vertical, shales, conglomerate (about the kind of small rounded rocks) and thin sandstones. Got a few fossils ^{in part, as} *Trinidada camerata* and *Fusulina extirpata*.

On the south dump of the 580 mile post cut there is a limestone block out of which Blanchard excavated for some time fossils. Keyte is said to have many more. This loose block came out of the railway cut.

Then went to the hill about $\frac{1}{8}$ mile farther S.W. from mile post 580 to see the unconformity discovered by me two years ago. After much work of all we concluded that this angular unconformity is due to ^{of an anticline} *overfolding and thrusting* producing an apparent unconformity. In the vertical strata beneath the uncon-

was continually churned up, & it is all the life
in its earliest stages. Nothing had time to grow
to maturity excepting the gulfic grassy things
like Rhynchonella and small forms of Ferostella.

I saw ^{very minute} Fusulina ^{was} Constanti,
looked for and got I am certain that the les-
ure of Pennsylvanian age. It is impossible to see
what part of the Penn. they belong to, but the best
of specimens probably within the lower or middle zone
that the Beuple is probably of Captain
time.

The Iron Mt. intruded igneous mass does
all appear to have affected the strata and dip of
the Permian strata, but Mr. Baldwin's work
at first gave me the impression that it was entirely
in Pennsylvanian time. In speaking to Mr.
Blanchard of this later in the day I lost the
impression that this igneous mass was not above
except trace of the recognizable strata to make
out its time of injection. Not far away is a
dike of the same igneous rock that came up a
fault. See what is said in publications of the
geological relations of this igneous mass to Iron
Mountains. See for me two days later. →

Then continued to Roubidoux Creek to see the Roubidoux
Creek shales with interbedded sandstone. These ex-
posures are south of the D. & W. R. not far to the
S. of Haymarket and to the west of the Anva-
cutilite series. Most of the shales are olive green
shales with an occasional black one of
less than one foot thick. There are more than a dozen
feet of the expected from the region. The sand-
stones are also greenish and weather to a yellow
and are in layers from 2 to 10 feet thick. They have
bits of plants some woody impressions and others
that look like charcoal. Both the shales
and sandstones are very fine micaceous. I saw
no recognizable fossils or large fragments of plants.

Then continued back Haymarket Station and
N.W. to the ^{new} State Road where a low hill side section
cuts across the simple range of hills. Here the
great mass of material is dark shales in beds
from an inch up to a foot thick or more separated
by less dominant shale partings. Apparently in the
higher strata these shales become more limy but
saw no fossils. We also saw at least five feet
of a clay that suggested a decomposed ash. These
are in layers from 3 to 6 feet thick. Sillars took

samples of them, to see what they are
made of. Calu' on arch what he scales of them.

The Thomas-Dimple series in its eastern
or typical exposures gave us an idea of their
age. Their general lithology ^{does not} suggest the western
"Thomas-Dimple," but the structural relations of this E.
series ^{is line} that the western Thomas and Captank series.

At 3 P.M. we left Messrs Blanford and
Walsby, who returned to the mine. Sellards
and I then retraced our route ^(4 P.M.) and
finally at 8.15 we arrived at Comstock where
we stayed for the night.

It was just about two o'clock to appreciate
the scenery of the Pecos River as we descended
into the gorge and then out of it some miles to the
south of the I. P. R. V. bridge. The road down
and out of this canyon has cost a vast sum
of money.

King's Geological Map (M.S.) of the Altuda
Quadrangle (April 11-1926).

Syenite porphyry of Iron Mountain. Accord-
ing to the Hodder and Baker map the syenite in
one place or another throughout the Iron Mountain region
cuts all formations up to the Comanchean inclusive.
Therefore is of Post Comanchean age.

King's map shows no sed. formations in contact
with the syenite other than Quaternary materials and
alluvium "wash. To the N. of Iron Mt. two dikes
cut the Leonard, and even the hind. In the ex-
treme W. of the object another dike cuts the Leonard.
None of these are connected with faults. Therefore
these igneous rocks are clearly Post Permian.

King distinguishes between a "Lower Pennsylvan-
ian (= Tonnes and Simple), and an Upper Penn.
(believed to be Saptank)," and says the two series
are separated by an "unconformity." Both span
across the Leonard of the Permian to the N. and
S.W. of Iron Mt.

In this Quadrangle King has no Wolfcamp,
nor Hens, nor the terminal William and Tenny.
Leonard For. to N. and S.W. of Iron Mt. Ap-
pears to thin to W and finally is cut off by a fault
7 miles W. of Iron Mt. at base of Cathedral Mt.
It is again seen 2 1/4 miles W. of Altuda, west of

S. P. R. R. on James Ranch.

Dard Fr. goes as far W. as 1 mile E. of Altuda. Again on the other side of the valley to W and S. W. of Altuda. There are continuous.

Quartz is part of the Permian in this sheet. Above it lies a thick sandstone series whose age is unknown. It is overlain by the Comanchian.

Saturday

Comstock - San Antonio, April 10, 1936, 1

Left Comstock at 7.30 A.M. Got to Del Rio, 30 miles E., at 8.30.

The small Eryopsa arictaria slat is from 5 miles W. of Del Rio

From Del Rio to San Antonio it is 161 miles.

About 10 miles W. of Uvalde we stopped at the large road metal quarry in the Anacheria limestone of the Upper Cretaceous. Here the lower 12 feet of li. are chayed thin part with asphalt and this porous li. bed is a good illustration of an oil seep looks under ground.

It is this lower ^{zone} that is quarried and the overlying material is stripped away. The section here is about as follows:

Soil about 2 feet

Chalky li., about 5 feet.

Impure clay 7-10 feet.

Asphalt li., about 12 feet. Have of thin layers from pieces.

} continued at end of page 29

Five miles E. of Uvalde passed a great plug of extrusive basalt of the Texas Trap Rock Co. (part) it is in Columbia Pillars

In detail see Walden Hill and account
to Am. The plug is in the zone of the Bal-
cones faulting. Other plugs ^{elsewhere} are altered to
serpentine. I see the sample. Said to be
the hardest road metal in America.

Got to San Antonio at 5 P. M. Put
up at the Guenter

San Antonio, April 11-1926. Sunday

Left the hotel at 7.30 and then looked at the City Park with its Historical Garden, a unique park. Then passed the great Army Post and then 86 miles N. E. to Austin.

Arrived at Austin at 11 A. M.

Spent most of the afternoon with Keith talking over what to do.

In the evening Keith and I called on the Sillards.

Austin April 12-13, 1926 a small amount of

Packing the fossils and selecting Permian material out of the collections at the Bureau of Economic Geology, Texas University. Made lists of Gaptank fossils, Wolfcamp fossils, and selected for identification a lot of Upper Permian fossils.

On April 13 bought more Comanchean fossils of Mr. Bill. Paid him \$30.00 for this lot, and previously I paid him \$60.00 for the first lot of Comanchean fossils.

Gave Philip B. King \$200 to have him and his Mother make me collections of Permian

fossils, in the Glen Mountains. I am to write
out for him what I want to have done.

I have packed today six boxes of fossils.
Then there is the big box Smith books and maps
that came from Gale. Finally there are four ad-
ditional boxes of Comanchean fossils collected by
O. A. Brill and In all there are
eleven boxes to go by Express to Gale (11 boxes).

Philip B. King's brother ^(Robert) was given by Gale
a \$300 Scholarship and is to turn up at Gale
in the Fall. He is to bring on his unwounded
Permian collections to send them out to Gale.
P. B. King will turn up in the fall of 1927 at
Gale. He is a very promising geologist.

Austin, Texas; April 13 - 1936 Tuesday

Had Philip B. King to lunch to talk over the Carboniferous of the Polson Mountains.

He draws it safest in the present to regard the Tornus-Himple series distinct from the Saptank, and the two series separated by an erosional unconformity. In places he finds no Himple or but little Himple beneath the Saptank which can then be explained as eroded out before Saptank time. Finally the lithology is different, the Tornus being more sandy, more cherty and cherty, while the Saptank is a series of alternating shales and limestones with fossils usually in abundance while they are rare or absent in the Tornus-Himple series.

He knows of no angular unconformities between the Himple and the Saptank; only an erosional one.

Both the Tornus-Himple and the Saptank were folded together, which means at the close of Pinar time. He has at least three places in the Altuda Quadrangle to the W. and S.W. of Iron Mountain where the Tornus-Himple and Saptank series go as fossils beneath the Permian series which in this case means Leonard formation.

Bellevue will ship my eleven boxes
of prints and books by Express.

Austin, April 15-1926 Thursday

Attended Keith's lecture last night and then he walked with me to the Baker Hotel. Had some ice-cream and at 10 P.M. we said good bye.

This morning I packed up and at 11 A.M. Sellards calls for me and takes me to the dept. Just a little before the train starts Mrs Sellards comes to say good bye. We were talking to Widdens son when she came. Mrs Sellards assures me that I made many friends at Austin and that I helped along geology a great deal.

At 11.30 I am off for St Louis in a Pullman. The day is bright and cool - rare all at once for this place at this time of year.

Got to Dallas at 2 P.M. Off again at 5.05 P.M. Retired at 8.45 P.M.

En Route to Cincinnati April 16-1926

Got up at 6.20 A.M. when the train was in S.W. Missouri. The day is bright, cool, and there is hardly any budding plants. A few fruit trees about houses are in earlier bloom.

Left ^{at St Louis} on B and O. at noon to get to Cin. O. at 8.40 P.M.



Cincinnati, O., April 17-18-1926

When the train got to Cen. I met Emma, Alice and Albert at the station waiting for me. Then in Albert came to his home in Norwood.

April 17. After breakfast Albert took me to the Westcott Gallery where I staid of an 1/2 hour. Some excellent art here, but outside no picture at all - displayed 'poor'. Because of this and general labels the museum lacks inspiration and effectiveness.

Then looked around town and 12.30 met Albert at the Seiborn Hotel where we had lunch. Then out to Brother Phil to talk over what he should do in the future. His doctor that he is broken down and as he is 62 the best thing to do is, quite all duties. This he will do on Monday and resign his job with the Schulte Co. I am glad that he has come to this conclusion even though in the end I will have to help him financially. Then returned back to Albert's home.

April 18, Sunday. Spent the day at Emma's with Phil's and Albert's families present. Had a grand dinner here and finally a light supper. Everyone induced Phil to quit smoking and regain his health. It rained hard last night and in the morning it snowed a little.



Cincinnati, April 19, 1926, Monday.

The day is bright but cold - below freezing. At 9 A.M. I leave Albert's home, and he takes me to the railway station. He was to meet me at the Gibson Hotel for lunch at noon, and I waited until 12:40 but he did not turn up. Walked to the depot, had a little to eat and then got on the train wondering and worrying about what became of Albert. Five minutes before the train pulled out he turned up, when he had been badly cut on the right jaw by a razor barber - the blade slipped and a gash $1\frac{1}{2}$ inches long almost down to the bone. Why does Albert not shave himself, and why does he get to a razor barber? I did not tell him these things, but the evidence shows that Albert is poor & just what. When the train pulled out I was almost overcome with worry.

Is a fine Pullman not provided. Left for Columbus, Ohio at 4:20. Arrived at 9 P.M.

April 20 - 1926

A fine morning at Albany. The Catskills are all white with snow and look large in the morning light. He got to N.Y. City at 9:40 A.M.

Left at 10 A.M. for New Haven and home once more.









2776½



Doc. 133

DATE:

April 4

NOTE BOOK

1926

PAGE

Alpha town located in Leonard
Terrace. For detail see note book

Loc (17) shown in maps

Correct bed of Leonard

COLLECTOR

J. C. Abner and Leonard
G. V. and Grant Blankenship

doc. 133

1911

3-

20

Doc. 133

DATE: April 4 NOTE BOOK 1926 PAGE

Higher than loc. (50) in Leonard
 Formation. For detail see note book,
 760; above base of Leonard

Loc. (57) also in map.

Marked / on map

COLLECTOR

C. S. and West Blanchard

Doc. 133.

YALE UNIVERSITY

| 3820 |

PEABODY MUSEUM

DATE:

April 4

NOTE BOOK

1976

PAGE

Higher than loc. (50) in L. and
 Formation. For detail see note
 book. 760' above base of the road

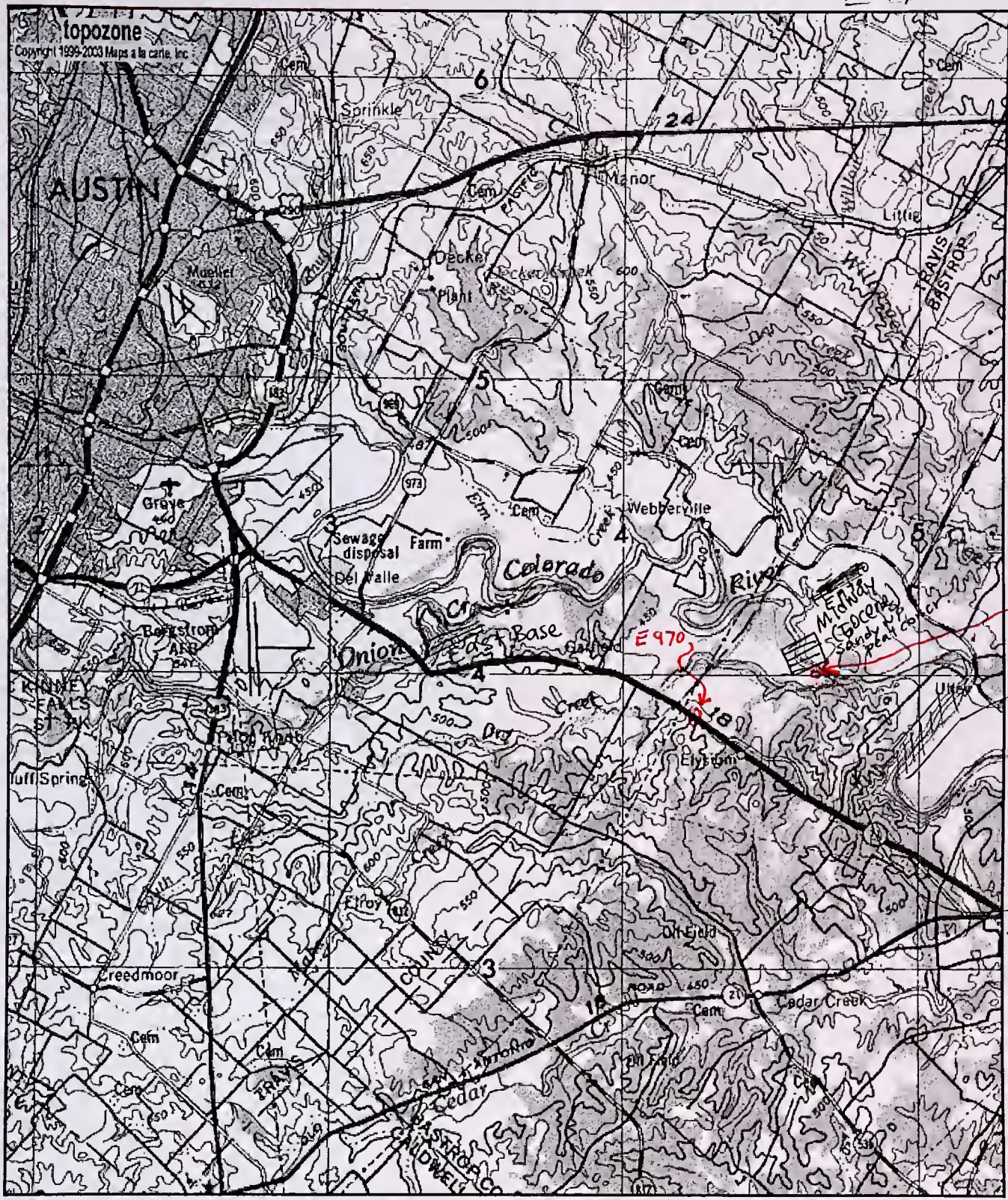
Loc. (50) has pits, in maps
 Sweet bed of ammonites

COLLECTOR

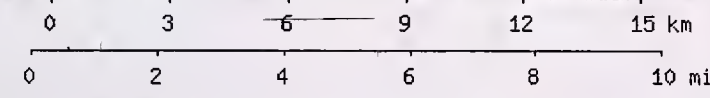
C. S. and Frank Blanchard

Doc. 133

Y. 1. 2. 1. 4. 5. 6. 7.



{E 971
E 972
IPE 971
&
IPE 972
w/er
CORR.
RIV
Caldwell knob



UTM 14 635930E 3342430N (NAD83/WGS84)
Onion Creek, USGS Webberville (TX) Quadrangle
Projection is UTM Zone 14 NAD83 Datum

M=4.946
G=0.711
2640
2,3280

1000
1000
1000
1000
1000

1000

1000

1000



Then left Eastmore and found Southfield and
 Elgheim - Caldwell's gate. Then north ^{to the farm} the farm
 to a road to the Glades Farm east ^{of the}
 boundary between Travis and Bostick sections. My
 creek comes in a little farther down stream. See
 Bostick Geological map. Quinn Rudman call this the
 One half mile the mouth of the Creek and 3/4 to 1
 mile down stream for Bohrens side, Glades River!

One the Phoenicia hella bed is a "dark
 gray sandy clay", and above this "a quite similar bed
 of sandstone" of the fracture of the small
Flatblum concretion trough! "where Rudman
has to Frans, 1 mile, at least 1 mile west, and
to east of the line, where contact with
masses of iron below, means down stream. As my
trails come from below Quinn side!

IMPORTANT
 TO YOU?

IPE. 972

IPE. 971

IPE. 970

So then on road about 7 miles south of S.E.
 corner W. W. Caldwell's farm lands then the
 was a little rise in the country, making the head
Quinn - Erone. There was a perceptible dip in
 road to the south, beds that had an abundance
 of large flat concretions. Another mile S.E. about
 1/2 mile of the gate of W. W. Caldwell's farm, and then
 it was 3/4 to 1 mile to the river to the south.
Quinn Erone. What one saw here was less than
 10 feet of quartz concretions are like fractured iron, below
 to the part to above was fractured. Had very soft
 clay with quartz concretions. Quinn Erone is small masses
 and large quartz concretions there about one foot thick but
 made a concreted layer that is one large lump.
 One of the shells are almost radial and part are
 to be seen in the quartz concretions in the quartz concretions
 and part is held in place by a crinoid. But there
was almost nothing else.

One the Phoenicia hella bed is a very fine grained
quartzite zone of which are one mile or more than 5
feet and the deposition was not of the calcareous zone.
 The mass of quartz concretions and smaller
concretions than one or more species of quartz concretions.
 The clay was not at all of the same kind as the quartz concretions is



Schochet - A
man thinking
ahead of his time!

Then out to the highway and U.S.F. to avoid going to
North's Ferry across the Colorado River. It was all the
Aboriginals' advice that we got the right way, some hun-
dreds of feet above the base of the Colorado.

My fossils will preserve on their way to face,
Strominipora (*Stromaria* up to 3/8 inch long) are
common.

Rock should be done here in to get rid of the flour
miles in Nevada and around with *Stromaria* and *Stromaria*
and then cleared at home. When this is done down
some 500 to 700 species are the the result. It
is said to be the finest *Stromaria* place for fossils.

Then are ordered out to the highway and
over 2 miles further S.E. to a road that runs N.
Along this road are over less than 2 miles to find
of the very thick shelled and long beaked *Stromaria*.
They make banks from a few feet maybe to 10
10 to 20 feet thick in the *Stromaria* formation. This
is *Stromaria* banks.

In the morning had a long talk with one of my
year students *Cliff* (M. Stebbins) about some fossils.



BOOSTS CROP PROSPECTS

News of Jan 23-24-1926.

Ranks of Snow-Men Appear As Austin Celebrates 25-Year Record Fall.

Old and young in Austin continued a winter frolic Sunday as the heaviest snow of history in this section of the state melted under the sun's rays which appeared from behind grey clouds Sunday forenoon for the first time in over 36 hours. The record breaking snow which began falling at 6 o'clock Saturday morning continued steadily through Sunday night and until 9:30 o'clock Sunday morning making a continuous fall of over 24 hours and spreading a six inch cover of white over the city and surrounding country. According to old-time residents nothing comparable to this blizzard had ever been seen here.

Youthful residents of the university district and the downtown section, reveling in the heaviest snow seen here and the first real snow of the year, seized the opportunity for winter sports and although their equipment was hastily improvised, several sleds were seen on hills of the city Sunday morning before traffic had changed the six-inch snow into dirty slush partially covering the streets and filling gutters. The principal sport of the moment was snow-balling automobiles and pedestrians and both in the university district and downtown, of making hundreds of "snow men".

Downtown Battle Ground

The corner of Seventh and Congress Avenue became a snow-ball battle ground about 10:30 o'clock Sunday morning when groups gathered on opposite sides of the street and pelted passing automobiles or threw snow balls at the rival group. Later in the morning young men had lined each side of the block between Seventh and Eighth streets and were showering automobiles with snow balls from the time they entered the block until they left it.

Snow Sculptors Revel

Snow men in the yard of Roy A. Miller, 604 West Sixth street, and at the Central and Guadalupe street fire stations, attracted particular attention. That at Central station was more than 15 feet high and 22 feet around at the base. Twenty-sixth

Austin received a total fall of seven inches of snow during the snow of Saturday and Sunday, according to available information. The fall in other towns and cities in central Texas was as follows: Leckhart, 4 inches, 50-year record broken; Blanco, 6 inches, heaviest in history; Dlgim, 6 inches, heaviest since 1917; San Marcos, 6.75 inches; Austin, 7 inches.

The following snowfall was reported Sunday: Johnson City, 2.50 inches; Cherokee, blanket of snow; Bertram, heavy snow; Floresville, Steady snow; Elmendorf, 2 inches; Big Wells, 3 inches; Devine, 4 inches; Austin, 7 inches; Platonia, 6 inches; Burnet, 6 inches; Bertrab, heavy fall; Taylor, 6 inches; Hallettsville, 2 inches; Nordheim, 6 inches; Yoakum, 3 inches; Victoria, 2 inches; Comort, 10 inches; Bloomington steady fall; Rockdale, 3 inches; New Braunfels, 2.10 inches.

Texas' Oil Wealth.

ACCORDING to the Dallas News in 1925 Texas produced 150,000,000 barrels of petroleum, the price of Texas oil throughout that year averaged about \$1.75 a barrel and on that basis the value of petroleum in Texas for that year exceeded \$250,000,000. Is there money in oil?





Subject: Re: YPM numbers....

From: "JOCELYN ANNE SESSA" <jas884@psu.edu>

Date: Mon, 18 Feb 2008 13:36:15 -0500

To: Susan Butts <susan.butts@yale.edu>

Hi Susan,

The trip to Texas was excellent, so much material to work with!! I have a few updates for you:

IPE.00971 & 00972 - I think are both the Wills Point formation. 00970 is likely Wills Point as well (I didn't actually see any fossils from this particular collection).

For all three, the county is mislabeled and should be Bastrop.

I didn't visit them, but these outcrops, or equivalent strata very nearby, are still exposed on the Colorado River. They are described in:

Zachos, L. G., C. L. Garvie, and A. Molineux. 2005. Definitive locations of Paleocene and Eocene marine fossil localities, Colorado River, Bastrop County, Texas. The Texas journal of science 57(4):317-328.

And of course, I have a question I can read most of Schuchert handwriting, but can't understand what he wrote on the page facing where you delineated the different locs - the last line says " So my fossils come from XXXX Midway" and you underlined it and wrote "important to you?"

and within IPE 971 "What we saw here was less than 10 ft of XXX Midway all XXXX (perhaps 'highly') fossiliferous"

I can scan the note page if you don't have it handy.

Much thanks!! I'll keep you updated on how processing and identifying goes.

~ Jocelyn

On Wed, Jan 16, 2008 04:51 PM Susan Butts <susan.butts@yale.edu> wrote:

Hi Jocelyn,

Mark has the white copy of the loan form in his envelope. You just got the "cc" letter, the "plan to publish" form, and the loc info. Mark, Please return that white loan form when you get a chance! Thanks! It's not particularly urgent (why do I ever say that??? it is like an invitation to ignore the form -- hey, get that form in ASAP!).

Have fun in Texas! Let me know if you have any modifications on the localities I made for the Schuchert locs (hopefully not "under parking lot of new housing development/walmart store/etc., Utley, TX").

Susan.

JOCELYN ANNE SESSA wrote:

Hi Susan,

I received the loan and the locality info today - much thanks! I am leaving tonight for a collecting and museum trip to the Austin, TX region, so having

the maps and Schuchert notes will be extremely helpful.

Yet another question (sorry!) -- in your letter, you state that Mark should return the white copy of the loan form to you. Is this the 'Plan to publish' form? I don't think that is the correct form...I went through the box of specimens and materials, but there is only a yellow packing slip in that box.

I'll be checking email when I can during my trip, and I've cc'ed Mark to this email in case something needs to be done immediately.

In any case, I'll be back from my trip and working on these specimens on Jan 23rd.

Thanks again,
Jocelyn

--

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