

doc 318

Typed from original by C. Rose  
in 2002 ±

BOOK 3

Leonardian and Wordian notes

(and a few other notes; Oklahoma, revisited some Wolfcampian sections, etc.)

C.A. and J.R.P. Ross, Summer 1959

PG. 1

7/8/59

Brooks Ranch Section 2

1) Shale, blue-gray, 1/4"-1/2" bands of brown siltstone - 10'.

2) Covered - 15'.

---- Top of Lenox Hills fm <-> Base of Leonard ----

3) Limestone - light gray to light gray weathering 3" to 2' beds, very fine fossil hash for most part - fusulinids in thin beds within this unit.

Collection 2-3A - 8' up

Collection 2-3B - 22' up

Collection 2-3C - 37' up

-- shale interbeds gradually thicken to 6" or so - 48'.

4) Limestone, like below and shale, light brown to light gray - limestone are 1' to 1.5' thick, shale beds are 1.5' to 3' thick - 27'.

5) Limestone, light gray to light brown, very fine grained, clayey and silty - 3" to 2' beds -

Collection 2-5A - 12'

Collection 2-5B - 35'

PG. 2

Collection 2-5C - 52' up; --total for unit --95'

6) Dolostone, light brown weathering; and shale (covered mostly) - light brown-gray very fine limestone near top 1' to 3' beds -



Collection 2-6A - 33' up, Coll. 2-6B - 85' up----- 112'

7) Limestone, light gray-3' to 6' beds, few and thin shale interbeds. Coll. 2-7 - -  
----- 32'

8) Limestone, light orange-brown weathering, very fine frag. ;  
3' to 5' thick separated by 2-7' shaly intervals. The limestone have a "Staffella"  
fauna, and locally scattered "fusulinids" - - - 90'.  
Cyclothems—10 to 12 - get progressively more shaly toward top of unit.

9) Limestone, orange-brown weathering, 1' to 4' beds. Omphalathrocos type  
gastropods.

PG. 3

7/9/59

near base - fusulinids recrystallized

Collection 2-9A - 42' up (Top of ridge 140')

Collection 2-9B - 145' up

Limestones become progressively more silty and change to light gray  
weathering.

Collection 2-9C - 160' up

Collection 2-9D - 185' up; total ----- 215'

10) Limestone and dolostone, orange-brown weathering - very silty - 2" to 6"  
beds - shale interbeds up to 1'.

Collection 2-10A - at 5',

Saddle at 80'

Collection 2-10B - 105' up

Rose colored dolo 3' separated by 4' of orange weathering silt-clay stem. Cyclic  
beds become.

{note: illustration:

bed 2: silty limestone (+-)

bed 3: silt-sand, silt-clay

bed 4: dolo pink to orange}

PG. 4

fusulinids are rare - recrystallized when found. Gastropods - brachiopods and  
ostracods, locally abundant. - 187'.

11) Shale, light gray, and limestone, light gray - shale - 2-5' beds. Limestone -  
1/2 to 1' beds.

Collection 2-11A - 5' up.

at 35-50' *Ophalotrocos* outlines common  
limestone is porous and recrystallized). - 89'.

12) Limestone, conglomerate, well sorted - 25'.



13) Sandstone, light brown silicified crinoid stems and brachiopods well sorted, fine grained - grade vertically into calcarenite. Collection 2-13A - 32'. 105' top of ridge to saddle -  
thickness of unit--158'.

PG. 5

14) Dolostone - brown-gray, porous, sacchoidal, weathers to pitted surface - 3 to 6' beds - 10'.

15) Limestone, light gray, 6" to 2' beds - little in the way of shales or siltstone.

2-15A - 42' up

2-15B - 65' up

Several different limestones in this unit - all are very fine sand size or lutites limestone. The more rubbly beds are white, sand size and are brown-gray. 4 or 5 alteration of grain size. - total for unit -  
- 205'

16) Limestone, orange-brown weathering, [relict outlines of fusulinids (abundant) 5' at base]. Like 15 below.

Collection 2-16A - 53'.

[at 65' a mottled quartz ss. bed with shell fragments]

[at 97' - silty bed 1', brown-orange, brachiopods].

Collection 2-16B -at 185'.--- total for unit --197'.

PG. 6

17) Sandstone, orange-brown weathering very silty, calcareous cement - 3" to 1' beds. at 30' a shell hash - recrystallized, no fusulinids, but has crinoid columns. -----42'.

[base of Leonard Facies?]

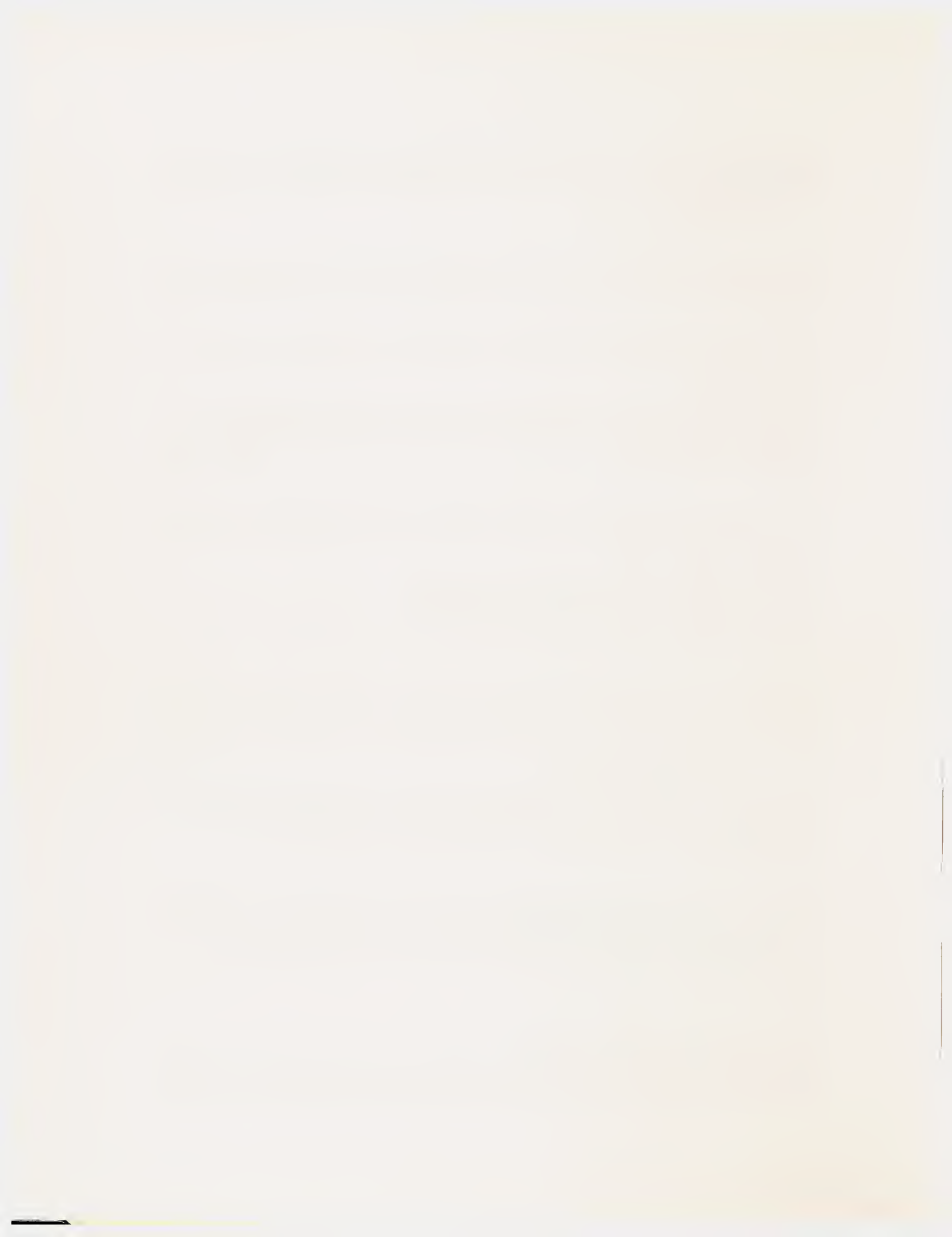
18) Limestone, gray-brown weathering, 1' to 3' beds, pock marked, silt and fine calcarenite for most part. [22' recrystallized fusulinids abundant] [154' and 3' conglomerate bed, including quartz, quartzite, chalcedony pebbles to 1.5" diameter].---157'

[West?] Afternoon looked at the rest of the Leonard fm., lower part of Word fm. There isn't much difference between the Hess facies and these upper units this far east [west?]. King's Sect. about 2 miles east is supposed to be quite markedly different in the 2 facies of the Leonard fm, but can't say that is true here.

PG. 7

{note: attached illustration of beds}

[From the top of these hills one can see beds in the Leonard fm thicken and thin within short distances. The units of brown-gray dolomite limestone may change



from 120' to 0' thick in 300 yards. Thus there seem to be few "key horizons" in this interval - We have 3 or 4 chert pebble conglomerate zones near the top of the Leonard, a couple of conglomerates in the Hess facies - and that is about all. Even these are probably not of to great a regional significance as they are mostly 3 to 6" conglomerate lenses (near the top of the fm), and the ones lower are calcirudites with locally derived pebbles and cobbles of limestone.

7/10/59

18) cont. chert frag. scattered throughout upper 150'; pebble bed at 190' - 3" pebble band - -----293'.

19) Limestone dolomite, light gray to light brown weathering, 1/16 - 1/8" laminate of limestone alternating with dolostone - 2'. Dolostone [algal laminae?? supratidal?]

PG. 8

20) Dolostone, light brown pitted surface - 15'.

21) Like 19 - 8' [algal laminae?].

22) Like 20 - [20-28' up - quartz frag. conglomerate thin pebbles - 74].

23) Limestone, light gray, with some 1/8" bands of irregularly bands of dolomite, 6" to 1' beds -

Top of ridge (Fulk ranch)

Locally angular limestone pebbles and cobbles make 6" beds.

24) Dolostone brown-gray, with Leptober outliers, in 6" to 2' beds pebble conglomerate 6' up 3" band - 37'.

25) Limestone, brown-gray, shelly, Collection 2-25A - 5' up.

PG. 9

Collection 2-25B - 24' up - 3" bed of fusulinid "cochina"

[P. iveri Collection] - 42'.

26) Limestone, light gray, poorly bedded. 2' to 3' beds, weathers crumbly - [65' up - crinoid columnal hash - 2'] [local intraformational conglomerate - limestone pebbles] - 185'.

27) Sandstone, brown, red-orange, very fine quartz sand - 5'.

28) Limestone, blue to purple-gray, irregular wavy bedding- 42'.

29) Limestone, light gray, massive 2'-3' beds, excellent silicified faunal of gastropods, Brachs ?, pelecypods. - 12'.

PG. 10

30) Limestone, light gray, to white, fossils replaced by calcite, 4' to 6' bed, 30' (Cretaceous K?).

PG. 11

7/10/59

Allison Ranch, Section 1

Covered below on this west side of road -

1) Limestone, brown, silty and sandy, 3" to 1' beds - 4'.





- 2) Sandstones, cream, lime cement, cross bedded, 3'.
- 3) Limestone, dark brown-gray, - 3' black, dense.
- 4) Covered - shale and marly limestone. 18'.
- 5) Limestone, like 1, silicified fossils - 8'.
- 6) Covered - 7'.
- 7) Limestone, like 1 and shale above it, collection 1-7 [Fusulinids] 5'.
- 8) Limestone, like 1- gastropods - 1'.
- 9) Covered - 8'.

PG. 12

10) Limestone, gray-brown, 2" to 6" bedding, 3', 6" of rubble beneath - Collection 1-10.

Fusulinid cochina - 4'.

- 11) Limestone - yellow-brown, vertical fracture - rubbly weathering, Collection 1-11. - 5'.
- 12) Covered - 9'.
- 13) Limestone, brown, fossil hash, fusulinids and Ornaphalotrochus gastro - 1'.
- 14) Covered - shale? - 4'. Collection 1-14.
- 15) Limestone, like 10 - 1'.
- 16) Covered - 3'.
- 17) Limestone - like 10 - 2'.
- 18) Covered - 4'.
- 19) Shell-hash - everything in gastropods, echinoids - 6".

PG. 13

- 20) Covered - 10'.
- 21) Limestone, yellow-brown, fine grained calcarenites - Collection 1-21 - 2'.
- 22) Limestone, light yellow-gray, marly - 3" to 6" beds - 5'.
- 23) Covered - 29'.
- 24) Limestone - dark gray, 6" bedding - recrystallized fossils - 8'.
- 25) Covered - 12'.
- 26) Limestone, yellow-brown weathering and fresh, graphic recrystalization - part - 3'.
- 27) Covered - 15'.
- 28) Limestone, gray-brown, 1' to 2' beds - fine shell hash - 10'.

PG. 14

- 29) Covered - 37'.
- 30) Limestone, light brown, indistinct lamination, 6" to 1' beds - 7'.
- 31) Covered - 13'.
- 32) Limestone, light yellow-brown - 4'.
- 33) Covered - 11'.
- 34) Limestone, medium gray-brown, 3" beds - 3'.
- 35) Covered - probably more shaly interval of 34 - 12'.
- 36) Limestone, orange-brown, 6" beds, silty and sand (very fine grained) - 8'.
- 37) Ss., white to very light gray, cross bedded - 15'.



38) Limestone, yellow-brown, very sandy, massive - 3'.

PG. 15

39) Covered - 8'.

40) Limestone, brown-gray. 3" beds, recrystallized fossils - 2'.

41) Covered - 7'.

42) Limestone, medium gray-brown, 6" beds small fusulinids? 3'.

43) Covered - 4'.

44) Limestone, light brown-gray, silty, recrystallized fossils, several shale beds 6", beds 6" - 12'.

45) Covered - 11'.

-----Subtotal 356'

46) Limestone, light gray, fine grained, dense - 2'.

47) Covered - 4'.

48) Limestone like 46 - [2'?)

49) Covered - 6'.

PG. 16

50) Limestone like 46 - 1'.

51) Covered - 2'.

52) Limestone, orange-brown, silty, shell hash - [2'?).

53) Covered - 22'.

54) Limestone - brown-orange, sandy and silty, 6" beds; and shale 4' to 6' beds - 24'.

55) Limestone, fusulinid cochina, gray-brown, 6" beds. Collection 1-55 - 2'.

56) Covered - 9'.

57) Limestone, dark gray -shell hash - 6".

58) Covered - 8'.

59) Limestone, like 57 - 1'.

PG. 17

60) Limestone, orange-brown, sandy and silty - 2'.

61) Covered - 3'.

62) Limestone, gray-brown, sandy, silty, shellhash, 6" beds- 1'.

63) Siltstones, brown to yellow weathering, partly covered, - 17'.

64) Sandstone and siltstone - 2'.

65) Limestone, light brown-yellow, 1' beds - 3'.

66) Covered - 37'.

67) Ss., purplish-gray weathering - 2'.

68) Limestone, gray-brown, shell hash, 3" beds - Collection 1-68 - 61'.

-----subtotal 160'

69) Ss., orange-yellow weathering, 1' beds - 3'.

PG. 18

70) Covered - 10'.



- 71) Ss., like 60 - 9'.
- 72) Shale, gray in 5-15' bed, alternating with ss in 6" beds - 53'.
- 73) Ss., like 69 - 3'.
- 74) Shale, gray; friable ss (white and purple) and 6" ledges of resistant ss - 38'.
- 75) Ss., like 69 - 3.5'.
- 76) Covered for most part - some purple-brown limestone with large calcite crystals, and ss. - 22'.
- 77) Ss., like 69 - 2.5'.
- 78) Shale and Ss., (orange) - 22'.
- 79) Ss., gray to brown, cross bedded - 6'.

PG. 19

- 80. Ss., orange-brown, like 69 - 12'.  
 -----Subtotal 184'
- 81) Limestone, light to medium gray, chert frags, common, 2' to 3' beds. [27' up an orange-brown weathering silty limestone] - 45'.
- 82) Ss., - light brown - grades vertically into silty fine grained limestone {note: illustration followed} - 15'.
- 83) Like 82 - 17'.
- 84) Like 82 - from limestone at top-Collection 1-84 - 12'.  
 -----Subtotal 44'
- 85) Limestone, gray-brown, 6" to 2' beds fossil hashes - 25'.
- 86) Like 82 - 12'. Limestone has algal plates.

PG. 20

- 87) Limestone, blue-gray, 3" to 6" beds, fine shell hash, recrystallized fusulinids in a few beds - 35'.
- 88) Covered - one or two thin limestone ledges - 22'.
- 89) Limestone, medium-gray, ironstone nodules common, 6" to 2" beds, fossils recrystallized. - 35'.  
 -----Subtotal 92'
- 90) Shale and Ss., - 7' to 10' bed alternating with limestone, dark gray - 52'.  
 Traversed NW 150 yards.
- 91) Covered - 11'.
- 92) Limestone, medium gray, brown "tubes" on weathered surface. 1/2'.
- 93) Covered for most part, ss. orange, limestone purple and siltstone yellow, outcrop in patches - 3.5'.  
 -----Subtotal 95.5'

PG. 21

- 94) Limestone, medium gray, 2" to 2' beds with some covered intervals - 34'. Calcite crystals - replaced fossils?
- 95) Covered - 7'.
- 96) Limestone, mottled gray and orange-brown weathering 3" to 6" beds - 11'.
- 97) Covered - 21'.



- 98) Limestone, medium gray, silty and sandy - 2'.
  - 99) Largely covered, probably siltstone, also every 4' to 10', a 6" ss (orange-brown) crops out - 48'.
  - 100) Limestone, light gray, very silty, sandy, clayey, persist at beds - 2'.
  - 101) Shale, largely covered, and Ss. 2 beds, orange-brown - 8'.
  - 102) Covered, except for 3, 6" beds of ss - 31'.
  - 103) Ss., orange-brown, limy cement, massive - 2'.
- Subtotal 122'

PG. 22

7/12/59

Section 3

Western part of Brooks Ranch

remeasured King's Sect. 26 (probably closer to sect. 27 of King (King's 30) His bed numbers as shown in his sec. 26.

King's beds

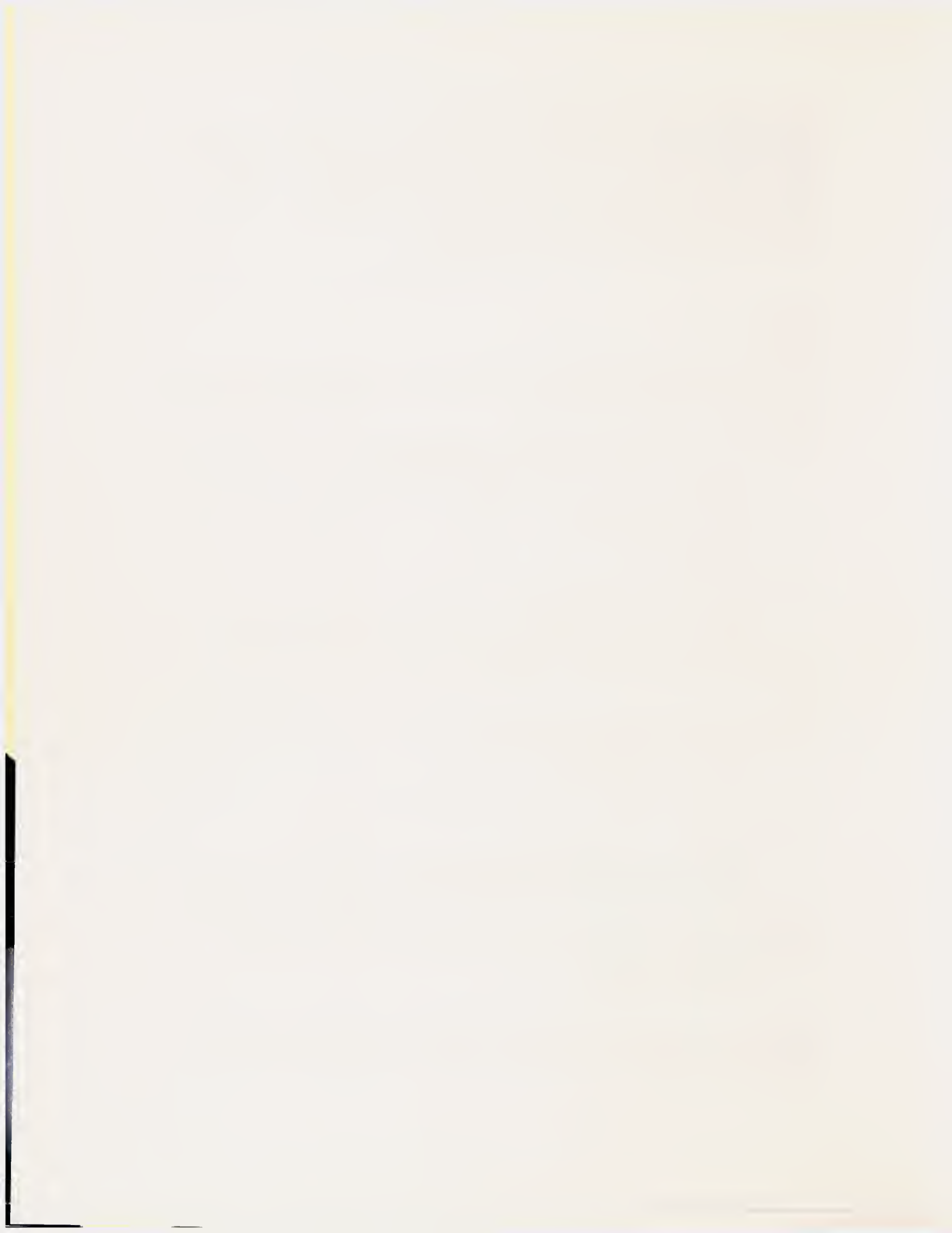
- 9) = *S. crassitectoria* zone with large *Omphalotrochus*  
Collection 3-(9)A first appearance at base of bed  
Coll. 3-(9)B - 35' up. -----108'
- 10) Collection 3-(10)A - 5' up.  
Collection 3-(10)B - 50' up. -----270'
- 11) Double Ledge  
Coll. 3-(11)A - 2' up.
- 12) Collection 3-12X - 2 bag 15' up.  
Collection 3-12XA - 35' up.  
Staffella are common throughout the lower beds - (9) through (12)
- 13) Second ledge Coll. 3-13-A - 30' up.

PG. 23

- 14) Coll. 3-14A - lower limestone ledge  
Coll. 3-14B - top of unit.  
Coll. 3-14C - algal bed.
- 16) Coll. 3-16 - 15' up.  
Coll. 3-16B - 35' up.
- 17) Coll. 3-(17)  
Coll. 3-17B - in section, 50' up.  
Base of King's fossil bed is a conglomerate.  
In Coll. 3-17B fusulinid occur with gonatite, s camacatochid, Omphalot, Thindeus.
- 18) Coll. 3-18A - base of bed we think King's pisolite bed, pisolites are fusulinids with algae coatings.  
Coll. 3-18B - 35' up.

PG. 24

Near top of King's bed 19 or in the base of bed 19 - red siliceous shale and siltstone - 10' +/- thick.





The lower part of King's section was much easier to follow than the upper part. This might be in part the result of the topography for beds 14 and higher are exposed on the top of the mountain. Here again there seems to be a change in lithology at the interval of the Hess fossil bed and just above and below - Thus, although we tried to follow the route of the measured section it is possible we missed it in the upper units.

The fossil bed is a pretty poor unit here and is not the resistant cliff it is to the west.

Fusulinids (often recrystallized) really make up a lot of this interval above and below the Hess fossil bed.

PG. 25

7/14/59

With Cooper, Grant, Skinner and Wilde, and Stehli.

Collected from Hess ranch horst and from the Word about 1 mile NW of Hill 5779 north of Leonard Mt.

Word 1 limestone - 35' - 3 collections.

Word first shale Collected 5-2A Word - 35' up.

Word first shale Collected 5-2B - 45' up

5-2C - 65' up

Limestone becomes more abundant and the upper 50' are 2' to 3' limestone beds -

Collected 5 -3A - 15' up.

Collected 5-3B - 20' up. -----Total 140'.

Word limestone - position of second limestone -

Collected 5-4 - ----- 7'.

Shale-----155'

Word - 1' beds of limestone -

Collected 5-5A - [near base]

Collected 5-5B - 5' up. -----10' [I think this is what the

notes mean.]

PG. 26

Shale ----- 20'

Limestone - Collected 5-6A. -----2'

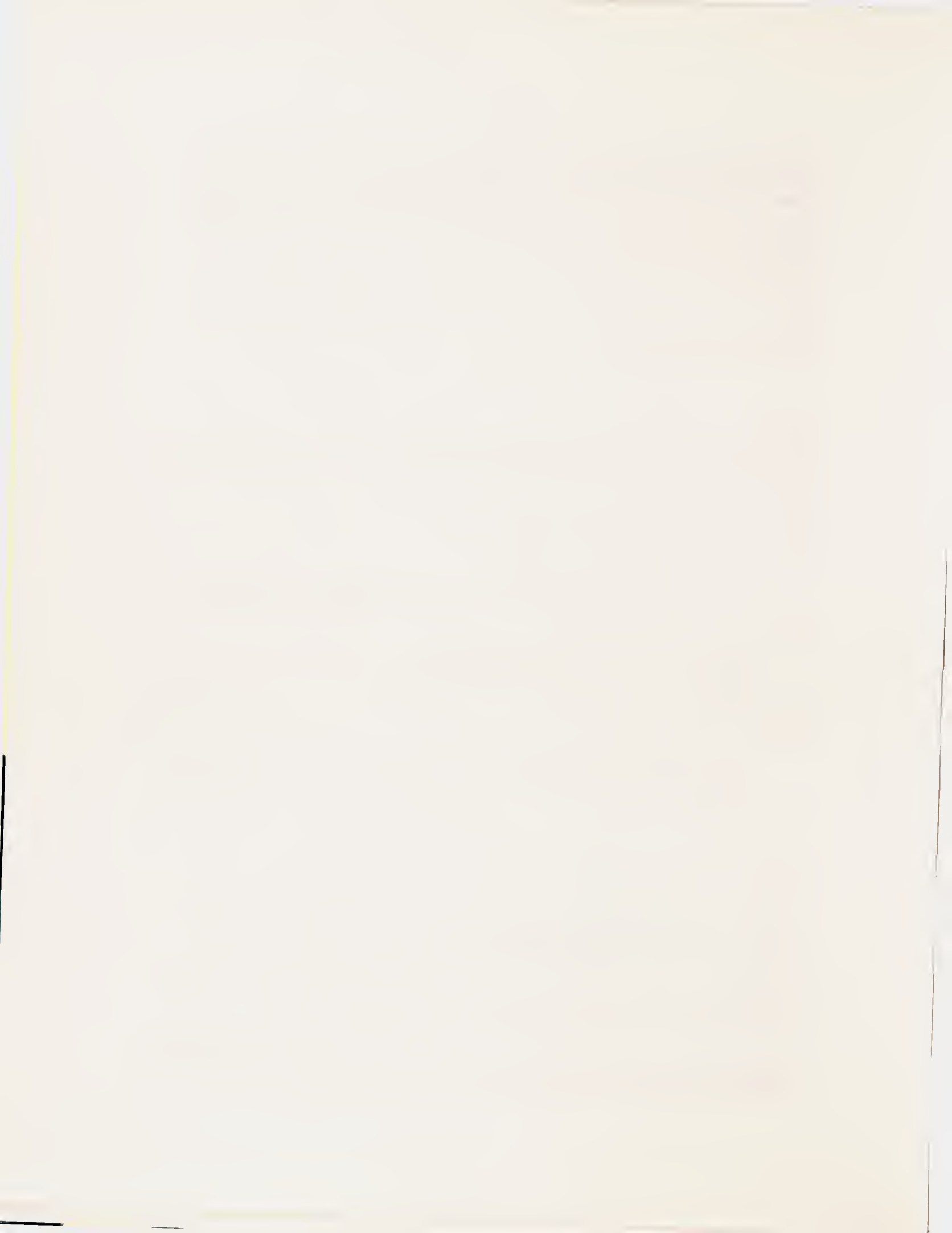
Shale ----- 20'.

Limestone - base third Word limestone- Type locality of Paraf, sellardsi according to Skinner. Collected 5-7A. ---- 3'.

Shale - 12'.

Cephalopod zone - 2' limestones at base of next limestone, medium gray (upper part of third Word limestone[?]) - no fusulinids ----- 65'.

The first Word limestone is thinning to the NW - mainly at the top by intertonguing with siliceous shale - The limestones just below Word limestone 2? are fine



grained lutites, and a few 6" limestone are rare (2 or 3) between second limestone Word and third limestone. Cooper pointed out a high Leonard limestone locality just north of the road up Gilliland Canyon at the base of the Word fm.

#### PG. 27

It seems that Cooper's "Hess Ledge" can be traced around the end of the ridge behind the Hess ranch House and behind the horst to a point opposite the gap between the hills in the horst. He doesn't find this fauna on the front of the limestone escapement to the south (Hess escapement) because in his words "it isn't the right lithology". Thus he would rule out the idea that his fauna occurs in several horizons.

Wilde is using the first Leonard limestone of King (1930) as equal to the Hess fossil bed. - This seems to solve a few problems - but I wonder how many? The section we measured in the Word seems to best fit in with King's 1930 Sect. 18, p. 71, but this on depositional strike 2.5 miles +- to the NE.

#### PG. 28

7/15/59 [Old Word Ranch]

Split Tank

Collection 3-(19) from upper dolomitic limestone in Hess facies - most of this is a crinoid cochina - 15' below top. (maybe in lower limestone of Leonard).

Collection 3-(2) Leonard -[3-13]. The upper beds of Leonard (2) have abundant fusulinids.

Road to Red Tank

Word first limestone - has limestone cobbles in the upper unit. Overlain by 15-20' of siliceous shale followed by dolomitic #2 limestone.

Collection from float near top of first limestone.

Collection - 4 to 5' above Word limestone #2.

#### PG. 29

The fourth Word limestone and the Vidrio are dolostone facies for most part here. They like the Upper 250' of Hess facies locally they have abundant relict outlines of fusulinids but we couldn't find any that were well preserved.

The Split Tank Leonard section is faulted in several places and we were able to follow King's section in only a general way. Cooper said each limestone was a lense which pinches out within a short distance and each of these apparently contains a distinct brachiopod assemblage.

#### PG. 30

7/16/59--Hess Ranch

Loc. 2 Word limestone; second limestone by the road north of the horst - This is apparently second or third limestone - in the field I judged it to be the second limestone - or #1.



Loc. 3 Word 4 limestone - [Collection] A-12' up in ledge probably #3 [Word Limestone]. 3/4 mile up valley [Collection] B-16' up in ledge, from earthen tank. This is not too close to the massive beds at the top of the ridge - which King calls Vidrio - say 125' to 150' below the Vidrio - The sequence is a silty, dirty limestone in 2" to 6" beds with a few scattered fusulinids in some of the more indurated beds -  
[See later page for Word 4-Vidrio Section.]

PG. 31

Road Canyon, East end-meager collection from Word third limestone  
-----35' up (A)

{note: illustration:

- bed 1: 3rd limestone, goniatite bed, --35'.
- bed 2: orange-brown ss., with a few thin (6") yellow-gray limestone.----250'.
- bed 3: limestone silicified - 6'.
- bed 4: shale or covered ---145'.
- bed 5: limestone 7' silicified fossils. ----7'.
- bed 6: Ss., orange-brown, ---120'.
- bed 7: dolo-limestone, ---25'.
- bed 8: Sandy dolomite limestone, ---18'.
- bed 9: dolo-limestone, -----3'.

PG. 32

There is a fault cutting the SE face of section at Road Canyon - also several Terra Blocks have dropped down. The Word 4 limestone lenses are just about gone here with the Vidrio dolo. lying conformable but with an abrupt lithologic change. [probably unconformity here]

PG. 33

7/17/59

Sect. 5 Leonard Mt-

0) (see p. 36, 2 pages over) Covered below - mainly dolomitic and limestone interfingering in tongues and patches.

1) Limestone, medium to dark gray or fresh surface, massive 10 to 20' beds, Sacchinella zone of G.A.Cooper, weathers to rounded surfaces, one 5-6' zone of shaly 1' limestone beds 65' up ---112'.

2) Limestone, dark gray, 1 to 2 foot beds, crinoid and bryozoan fragments - 43'.

Leonard Formation±

3) Limestone, medium to dark gray, 6" to 2' beds, caps ridge, a few pits, angular weathering - conglomeratic locally - 37'. Collection 5-3.

4) Limestone, dark gray, 3" to 1' beds - 12'.

5) Calcirudite, 4" cobbles, with 4' of dark gray 6" limestone, in middle - 34'. top of ridge. Collection 5-5 Leonard anthill top of ridge.

6) Limestone, light gray, shell hash, silicified in part - 3'. [Wilde's locality - Collection 5-2 gully probably about bed 2].



PG. 34

- 7) Covered in part, thin limestone (dark gray) and siliceous shale - King's fault zone - but no fault here. Silty limestone and shaly limestone in part - 18'.
- 8) Calcirudite - light gray, massive, 2-5' beds, 16'.
- 9) Calcirudite, dark gray limestone matrix, 6" bed, 21'.
- 10) Limestone, light gray, 2' beds, (calcarenite), one brown bed (Collection 5-10 [??]) 5' up - 20'.
- 11) Calcirudite, dark gray matrix - 12, 3' cobble.
- 12) Limestone, 2" crinoid columnal bed, light gray, 5-6' beds - shell hash - calcarenite - 5-12A - 3' up.  
5-12B - 8' up.-----38'.

PG. 35

- 13) Calcirudite, dark gray limestone matrix, 2" cobbles --- 6'.
- 14) Calcirudite, light gray grading virtually into shell hash - several of these cycles repeated - (3)-----37'.
- 15) Shale, siliceous, red and orange ----- 33'.
- 16) Conglomerate, limestone matrix and a few cobbles, chert fragments - 2' --> 6'-7' to SE 100 yards ----- 2'.
- 17) Shale, orange - siliceous, platy. ---- 32'.
- 18) Limestone, light gray, massive, silicified fossils, chert frags conglomerate near top - ---56'.
- 19) Shale, orange-brown, with 1'-2' limestone beds (conglomeratic chert pebbles) ----- 67'  
silicified cochina.
- 20) Limestone, light brown-gray, 2'-3' beds silicified bands - ---17'.

PG. 36

- 21) Shale orange-brown, silicified. [continued below]

-----  
0) [cont. from 2 pages ago] base of Hess ledge rest unconformably on truncated edge of Lenox Hills fm. 3' relief, 5° difference Lenox Hills, dips more south.  
Collection 0-A, 10' below unconformity.  
Collection 0-B, 1' below unconformity.  
Collection 0-C, 1' above in Hess ledge.  
-----

- 21) Shale, orange-brown, silicified, top 6" beds of sandy limestone ---- 47'.
- 22) Shale, orange weathering (black fresh) with 1"-3" shell hash band - ---- 55'.
- 23) Covered ---- 115'.
- 24) Shale and siltstone orange ---- 23'.
- 25) Limestone, black, shell, bryozoans and brachs ---- 6'.

PG. 37





- 26) Siltstone, yellow-orange, becoming near top was a fenestellid heaven  
-----24'.
- 27) Covered, mostly gray shale ----- 87'.
- 28) Conglomerate, chert frags, brown weathering, many bryos and brachs  
silicified ----- 1.5'.
- 29) Covered, mostly gray shale and a few 6" silt and s.s. (orange) bed-shell  
hashes - ----146'.
- 30) S.s., orange-brown, brach shell hash, Collection 5-30 (Leonard) -  
-----12'.
- 31) Covered - 86'.
- 32) Word limestone. Here it has a s.s. at the base, 2-3' beds orange to brown-  
gray; 20' above we get a massive calcirudite.----100'+

PG. 38

7/18/59

Rained out--Saw G.A. Cooper and Dick Grant in town

7/19/59

Section 4 [ +- King's section 23]

- 1) Silt --- 20'.
  - 2) Shale, brown, with thin clay rich dolomitic limestone ---72'. Collection 4-  
2; 6' down from top.
  - 3) Limestone, brown-gray weathering with large calcite crystals - -----4'.
  - 4) Shale, brown, and thin limestone. 4-4A - 5' up. 4-4B - 11' up. - ---  
23'.
  - 5) Limestone, brown-gray, 2' beds, calcite crystals in long "bodies" - -----13'.  
[9/2000 Middle transgression in Lenox Hills Fm]
- Top of Lenox Hills Fm with an unconformity with 5' to 8' relief in 200 yards -
- 6) Limestone, medium to dark gray, calcarenite, many fusulinids - 2' to 4' beds.  
Collection 4-6A - --- 3' up.

PG. 39

and shaly limestone - 'snail' limestone

Coll. 4-6B is 15' up,

Coll. 4-6C - 23'. {note: illustration followed}.

2 cycles of limestone 6' to 8' and shale 18'-20' --- 52'.

- 7) Limestone, light gray, with brown-orange chert concretions - massive.  
Collection 4-7A - ---- 16'.
- 8) Shale and limestone, brown and light brown weathering - varicolored shales  
and white ss. 25' up - --- 32'.
- 9) Limestone, brown-gray, 4" to 3' bed - mottle zone 1' at base. Small  
recrystallized *Staffella* are common throughout -17'.
- 10) Shale and shaly limestone - 6" bed of white s.s. --- 12'.
- 11) Limestone like 9 - 10'.

PG. 40

[base of Hess Ls.]



- 12) Limestone, gray, 1'-2' beds, vertical fracture on weathering. Collection 4-12A - 3' up.  
 Collection 4-12B - 12' up.  
 Coll. 4-12C (Problematical fossil)- 22' up.  
 Coll. 4-12D - 32' up. (and top of bench) ----32'
- 13) Limestone, dark gray, calcarenite, 6" to 1' beds.  
 Collection 4-13A - 20' up. ----- 23'.  
 Follows Neal fence here upwards
- 14) Shale, brown, grades upward into clayey limestone and finally into a calcarenite at top.  
 Collection 4-14 at top - ---- 27'.
- 15) Limestone, light to medium gray, 6" to 1' bed.  
 Collection 4-15A - 12' up.  
 Collection 4-15B - 50' up.  
 Shaly beds commonly reach 10-15' in this unit.  
 Coll. 4-15C - 78' up. -- --106'.

PG. 41

- 16) Limestone, medium gray, little shale, 6" to 2' beds, rubbly in part -  
 Collection 4-16A - 3' up.  
 Collection 4-16B - 25' up.  
 Several beds of dolostone common very fine calcarenite - becomes dark gray above 30'; light gray above 42'.  
 Collection 4-16C - 43' up.  
 Collection 4-16D - 58' up. ----- 59'.
- 17) Limestone, light gray, silty, 3" to 1' beds rubbly - with thin shale bands - small "Staffella" fusulinids common in all beds - above 33' dark gray - small, subcylindrical fusulinids replaced by dolomite (47') --- 52'.
- 18) Dolostone, brown-gray and limestone, gray-brown,  
 Coll, 4-18A - 11' up --- 27'.
- 19) Limestone, light gray, 2'-4' beds, silty, clayey; ----37'.

PG. 42

- 20) Limestone medium gray to light gray, thin bedding 2" to 6", and shale and siltstone, dolomitic;  
 Collection 4-20A - a 2' calcarenite 26' up ----- 37'.
- 21) Limestone, light gray to cream, massive 3' to 5' beds with thin bedded medium gray limestone.  
 rubbly bed Collection 4-21A - 30' up.  
 rubbly bed Collection 4-21B - 35' up.  
 rubbly bed Collection 4-21C - 42' up. --- ----54'.
- 22) Limestone, light gray, 2" to 4" beds, fossils are common but dolomitized - -----82'.
- 23) Limestone, light gray, massive, 2' beds.  
 Collection 4-23A - 17' up.  
 Collection 4-23B - 29' up. --- -----34'.



PG. 43

- 24) Limestone, light gray to cream, thin irregular beds, 2" to 4" laminated, Pink tones about 65' to 80'. -----87'. beds -
- 25) Limestone, light brown-gray, wavy bedding, in beds 2' to 3' clayey and silty. massive,
- SEVERAL SMALL FAULTS ----- 97'.
- 26) Limestone, medium gray, 2' beds, with brown shale cycles of these, the shale gradually becoming dominant --- 193'. Hess Fossil Bed]
- [up to Hess - Neal gate. This is very near the base of the Hess Fossil Bed]

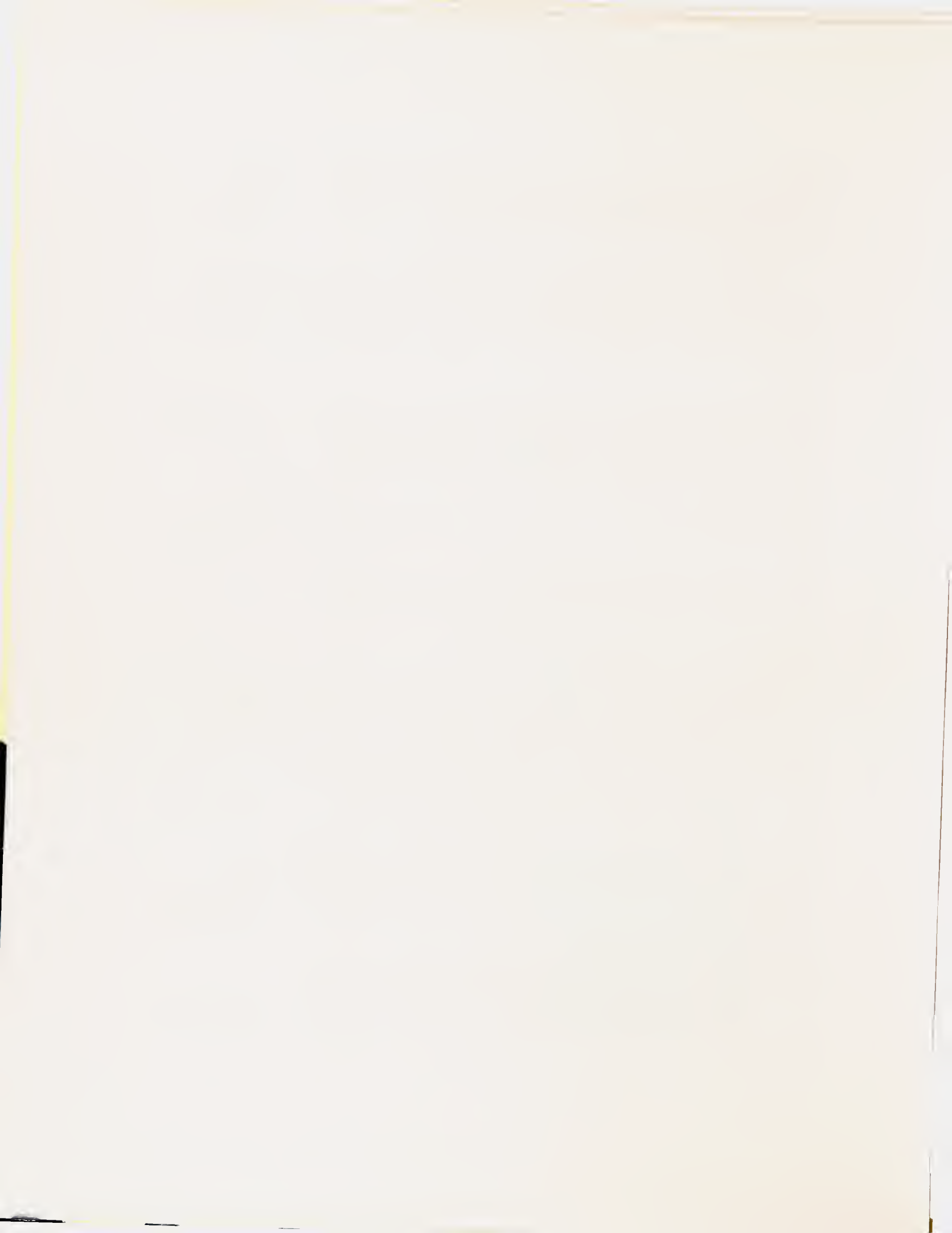
PG. 44

- 7/20/59 -[walked about a 1/3 to 1/2 mile east along bed 26 and found section better exposed and better preserved]
- Coll. 4-26m - 1/2 mile east of section 4, 25' below fossil bed.
- Coll. 4-28mB - 1/2 mile east of Sect. 4, from a 35' to 40' light gray limestone above fossil bed. - 8' up.
- Coll. 4-28ma - 5' up.
- Coll. 4-27ma - fossil bed, silicified just above 2-3' limestone ledge 15' beneath top.
- Coll. 4-28mc - 35' above fossil bed.
- Coll. 4-29ma - massive limestone about 25' above top 4-28.

PG. 45

- 27) Fossil bed, two lithologies
- a) basal calcirudite----- 28'.
- b) Shale and limestone, shale is brown; limestone is medium gray, abundant silicified fossils - brachiopods, collection of bryozoans, yellow silty limestone. -----27'.
- 28) Limestone, medium gray, 1'-3' beds, dolomitic, chert nodules. Collection 4-28A - 42' up. Omphalthrocos common. Collection 4-28B - 64' up. Top of hill at 89'. Total ----- 115'.
- [?]Hess fossil bed includes bed 28; Leonard Fm bed 29 to 34 [?].
- 29) Limestone, brown-gray, 2'-4' beds, with lime mud blebs and pebbles ----- 24'. chert
- 30) Shale and limestone, brown, siliceous shale; dolomitic or limestone. 2' beds ----- 29'. dolomitized
- 31) Dolostone, dark gray-brown, 4' beds ----- 21'.
- 32) Limestone, light gray, "graphic" dolo-limestone beds.--12' [Word Fm starts with bed 33].
- 33) Limestone conglomerate (calcirudite) with chert frags 3-4' beds - ----- 9'.

PG. 46



34) Limestone and shale, siliceous, w/ chert nodules .-----25'

35) Dolostone, brown-gray, pitted ----- 250' est.

Word 2A limestone, Coll. 4 --25' up.

Word 2B limestone (Coll.)-----50' up.

The following (2C and 2D) are 10-15' above the top of the second limestone and separated from it by siliceous shale and sandstone.

Word 2C limestone (Coll.) - 65' up (top).

Word 2D limestone-about same horizon as Coll. from Word 2C.

Word 2D is from saddle.

Word 2E - 25' above 2D; 35' below first massive limestone in Third[?]  
Word limestone.

PG. 47

Word third limestone A - 5' up.

Word third limestone B - 8' up.

Word third limestone C - 18' up.

----35' total thickness of limestone.

Dolomite - 12' to top of ridge

Word first limestone - Collection 4-Word 1a, 20' below top of King's unit "a"

The Word limestone contain a lot of conglomeratic stuff at this place - most pebbles and cobbles of limestone probably intraformational in part, and fine chert pebbles - Where we saw the formation, the basal limestone (#1a is very little different from #1b although King's separation isn't too bad. The distance between #1 and #2 is closer to 83' than 14' and I think these members are reversed on King's 1930 page 143. The distance between #2 and #3 is a little high - unit 6 becomes limestone and unit 5 has fossiliferous limestone tongues in it. [This area is near the Wordian shelf break and thicknesses and facies change abruptly, so if we were offset a bit from King's line of section these differences would be understandable.]

PG. 48

7/21/59 Southside of Leonard Mtn.

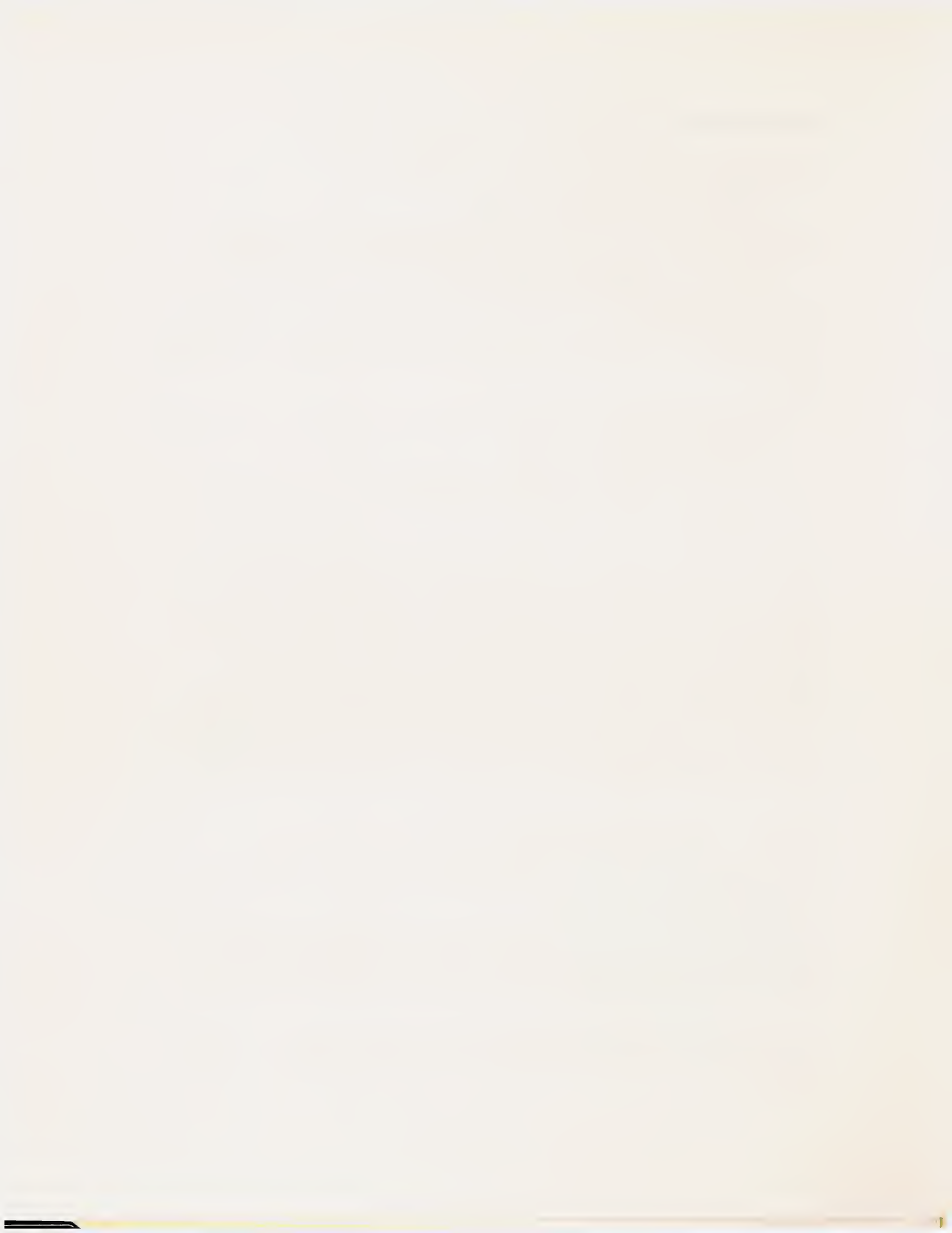
The southside of Leonard Mtn. is complicated by:

- a) facies change
- b) irregular dolomitization of beds
- c) several faults

I have perhaps drawn the top of the Lenox Hills Fm. a little high but we'll let it stand for the moment - [Changes on] the Lenox Hills Fm is thin here as if on an eroded pre-Leonardian anticline.

Jail Canyon where road ends on map -

1) No Altuda shale on SW end of Hill 5789 - This is King's Capitan, upper member -





2) Vidrio = Capitan upper member apparently and it seems likely that Altuda shale and lower member [of Capitanian] are equal to upper part of Word. [In 2004, I don't think this was correctly interpreted and need to study this part of the facies transition much more thoroughly.]

PG. 49

Section 5 Jail Canyon

Section on East side of Old Blue Mt., Jail Canyon.

Covered below

- 1) Limestone, medium gray, 2-4' beds, gastropods and crinoid columnals, recrystallized; - ---15'.
- 2) Limestone, (buff) light brown weathering, 6"-1' beds, siliceous bands -----  
- 85'.
- 3) Limestone, medium gray, pitted weathering, surface, 2-5' bed (similar to unit 1); calcarenite lenses (Coll 3A).----51'.
- 4) Ss., orange-brown to light brown, weathering, 2" to 6" beds, a lot of calcite cement, "siliceous bands are irregular throughout unit - 112'.
- 5) Limestone, medium gray, calcarenite - 2' to 6' beds, silicified and replaced fossils -

Jail Canyon - Coll. 5A-about 3' up.

Conglomeratic in part- calcarenite, very fine to 1"-2" pebbles -

Calcirudite. [See King's Sect. 16, unit 5]. -----about 20'

- 6) Limestone, tan, calcirudite and ss., pinches out to South - varies from 10' here to 30-40' on ridge 400 yards North.

PG. 50

7) Limestone, medium gray, 2'-3' beds, to top of Hill.

His unit 3 is missing where we measured section but becomes thicker to southwest - His units 3 and 2 = upper part of his unit 1. {note: illustration followed}. [This is the area of the upper

Word and lower Capitanian shelf break so facies and lithologies are changing abruptly.]

PG. 51

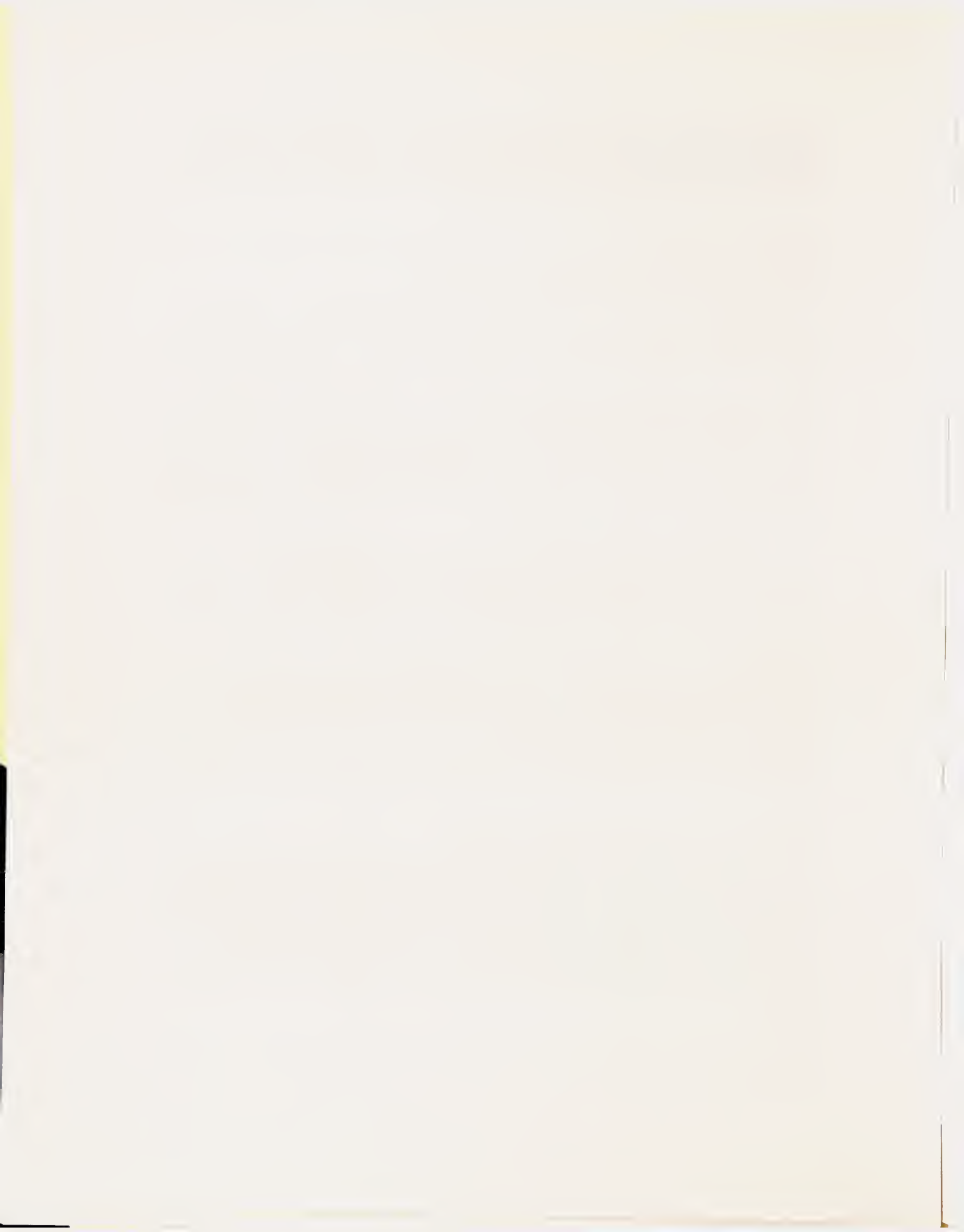
[3 3/4 miles about N30°W of Skinner Ranch].

The Word limestone which King maps along the west side of Gilliland Canyon is probably his third limestone, not the first one. (Collection Iron Mt. road Word Limestone A) is from this - includes a few scattered fusulinids, cephalopods and a "scachinella" brachiopod. There seems to be no need for the fault further southwest. The top of the hill we climbed is a terrva block. The Gilliland Anticline poops out to the south of this point and beds regain their 10° NW dip.

PG. 52

Blank

PG. 53



7/16/59

Elbow in Hess Canyon

[note: illustration]

Bed 1. Ss., and dolomitic limestone with silicified layers.--10-15'

Bed 2. Fusulinid hash. Coll. A. -----8'

Bed 3. Like #1. -----22'

Bed 4: Limestone, well-bedded, in 2' beds, fusuliniferous.

Coll. B in basal bed.

Coll. C, 2' up;

Coll. D, 18' up;

Coll. E 30' up. -----total about 35'.

Bed 5. Covered. -----45'

Bed 6. dolostone, Vidrio Member -----200'+,

PG. 54

Blank

PG. 55

7/22/59

Clay Slide - The upper part of Leonard is badly covered by terra blocks from the Word limestone above. [note: illustration]

Covered below.

Bed 1. Shale, ss., and orange limestone. two collections from float. CS-X1  
and CS- X2, -----35'+.

Bed 2. Covered -----90'.

Bed 3. Shale, black chert, and limy ss. in 2" beds; some fossil hash limestone lenses.-----14'.

Bed 4. Limestone (calcilutite) with lenses of shell hash,  
Collection A (CS-A.), 19' up. -----23'.

Bed 5. Calcilutite, papery limestone, light gray, 1" beds, Collection B ( CS-B)  
at 20'. -----37'.

Top of Ridge

PG. 56

Clay Slide

King's ammonite collection locality, 1/2 mile SW of King's dip symbol "12". along road.

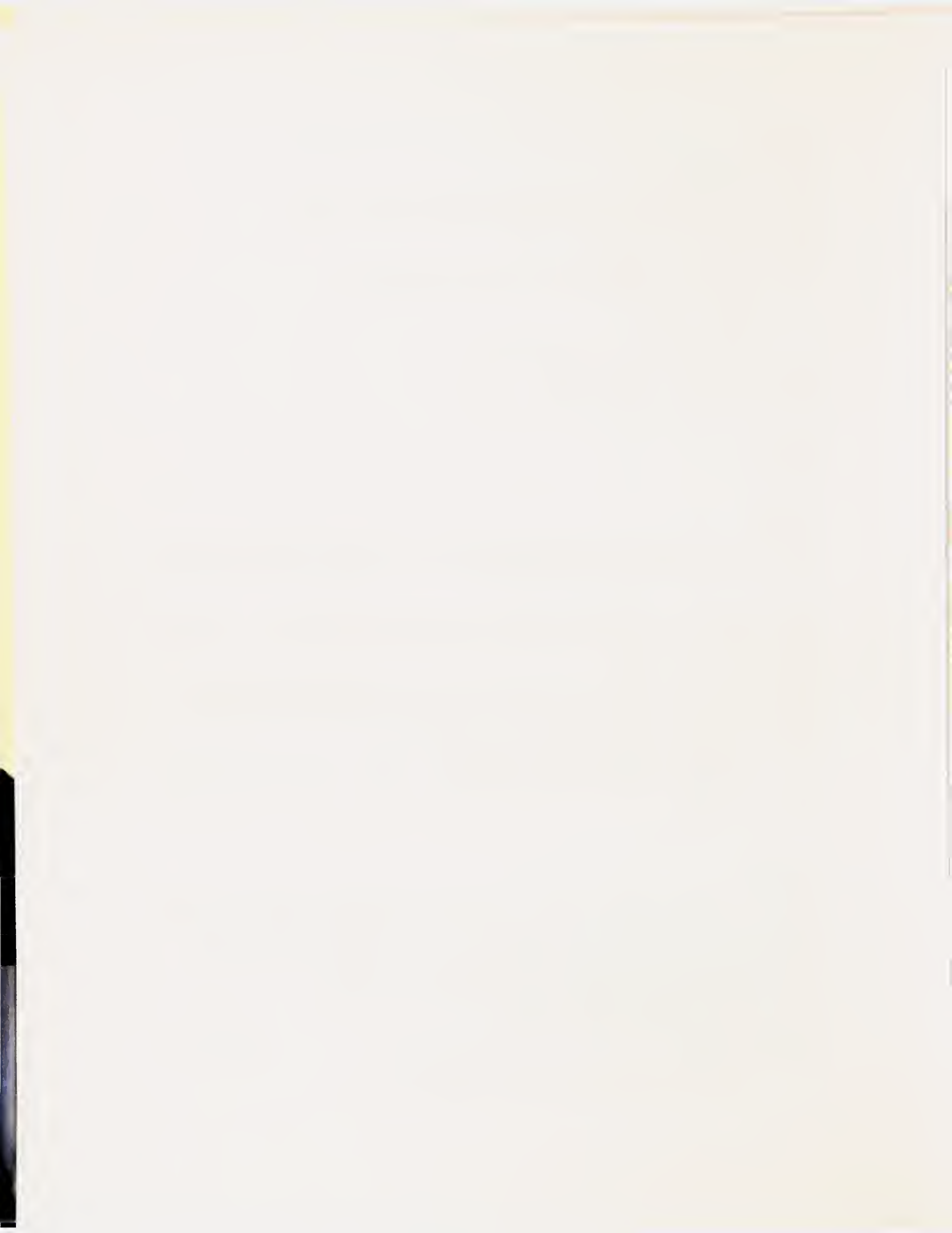
Sullivan Ranch Road and Clay Slide limestone cap - junction [where limestone that caps Clay Slide meets road]. 3 Collections:

20' -1) Word Limestone Coll. C - in lower 20' of gray limestone.

25' -2) Brown to yellow weathering bed.

35' -3) Word limestone Coll. D in lower part of massive recrystallized  
limestone 10' up.

Word limestone Coll. E, 6' below top of ridge.



PG. 57

7/23/59

Morning - climbed from the "Hess" ledge up to the second Leonard limestone - made three collections based on King's Sect. 12.

The base of the Capitan at Sullivan peak is a beautiful unconformity - 40' or more relief and parallel bedding.

Afternoon - base of little knob of Coopers' SW end of Lenox Hills - base of hill shale and siltstone and sandstone dip 10°. to the S10°W. note: illustration:

Bed 1: First Ls, 35'. (3) Collection, C (Top).

Bed 2: S.s., orange-brown shale-gray. 85'.

Bed 3: Limestone, 3 Coll. 60', Second Leonard limestone.(Coop's Knob)

This section is cut by a fault or faults and the exact relation of the knob is dubious - it is probably the second Leonard limestone, but?

PG. 58

The Leonard fm in the Lenox Hills consists of series of limestone tongues which tend to become thinner to the SW and break up into a number of thin units by additional shale tongues. The structural problems are big especially in the area south of Sullivan Peak, between Dugout Mt. and the Altuda uplift. Of course, it is all covered but there is still a real problem to figure out.

King's map is wonderful, but his isn't very consistent about his boundary between the Word and Capitan - his Leonard and Word also have problems - the Ammonite bed which he places in the Leonard in the west is about the right horizon for his first Word limestone in the east. i.e.,[?] It seems the Word-Leonard boundary is also inconsistent.

The base of the Word in the west seems to be about the third limestone of the eastern Mts. In Section 12 this unit is greatly thickened and may represent the reef between

PG. 59

the hash reef faces to the east and the basin to the west.

PG. 60

7/25/59

Decie Ranch - Sullivan Peak

Collection from lower 25' of bituminous Word limestone of King's Sect. 12.

Collection King's Sect. 12 Coll. B float 25' below top.

Collection King's Sect. 12 Coll. C in place 20' below top.

Collection King's Sect. 12 Coll. D in place 10' below top.

(B and C and D are from King's section 12, bed 3.)



Kin'sg Word bed 4 is conglomerate - 3" to 4" limestone cobbles from younger [older] Word or Leonard limestone, some chert. Collection - King 12 - Word 4.

Collection King's Sect. 12, Word bed 5, 12' up.

Collection from King's Sect. 12, bed 6 (maybe 9 or 8).

Collection from float from King's bed 18, Sect. 12.

PG. 61

7/25/59

Iron Mt. Ranch

Section 5A

covered below:

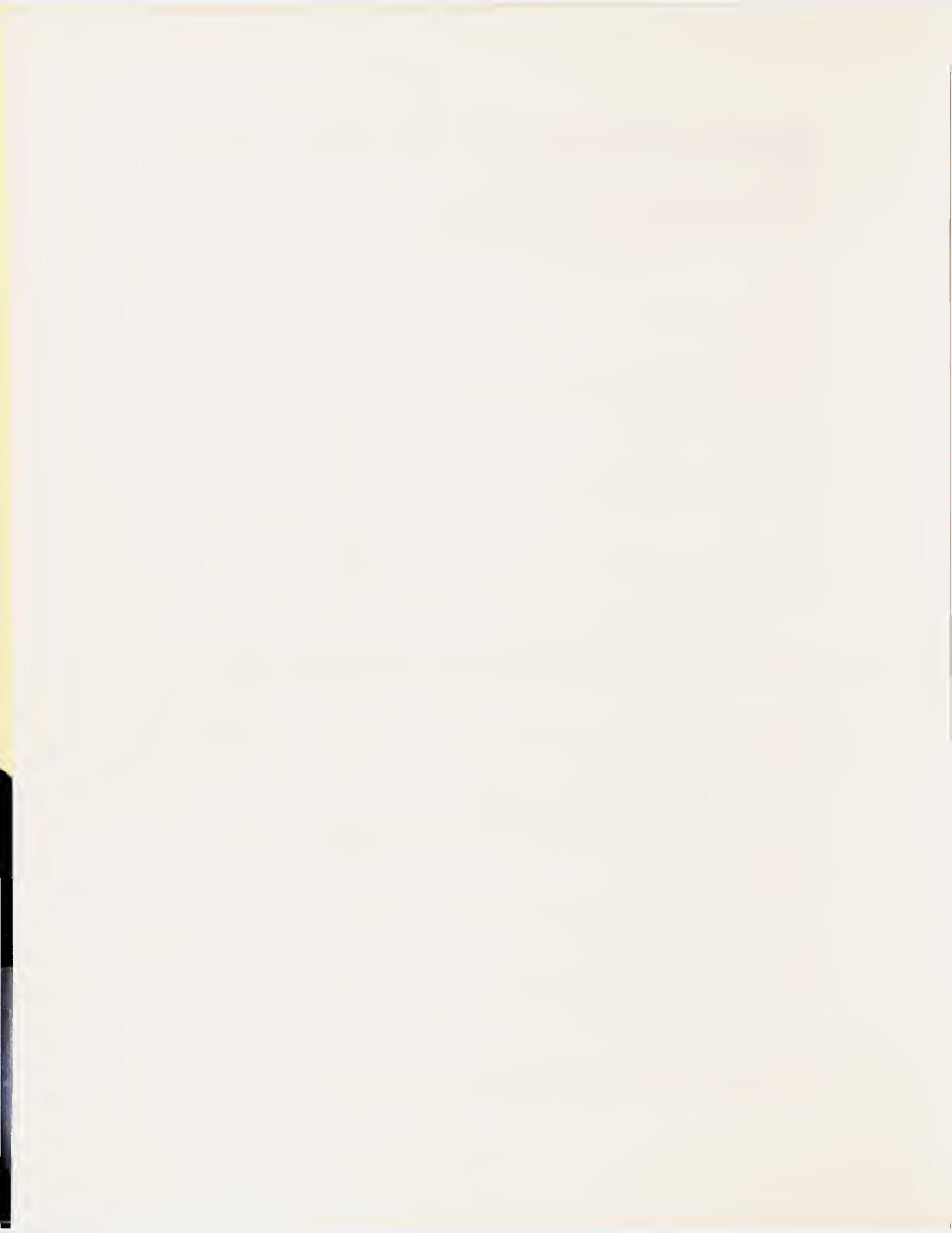
- 1) Siltstone and shale, with thin platy sandstones, yellow-brown weathering, 1/4"-1" beds ---- 58'.
- 2) Calcarenite, medium gray weathering, fusulinids. 1' ledge, Collection 5A-2 ----- 1'.
- 3) Limestone, orange and gray weathering, fossil hash of brachs and fusulinids - Collection 5A-3 ----1'.
- 4) Limestone, orange-brown weathering, sandy fusulinids - Collection 5A-4 -- -- 2'.
- 5) Sandstone, yellow-brown weathering, limy, 1' to 6" beds - -----27'.
- 6) Limestone, medium gray, 1' to 2' beds, even bedding. Collection 5A-6A, Collection 5A-6X float ----- 2'.
- 7) Siltstone and sandstone, yellow-brown, with limy beds of same color - ----- 37'.

PG. 62

- 8) Limestone, medium gray, massive beds, 5' to 10' cliffs, thin irregular brown chert bands.----- 56'.
- 9) Siltstone and shale, covered for most part, yellow to light brown weathering, upper 15' becomes a sandstone. - -----123'.
- 10) Limestone, medium gray; basal 2-3 a calcirudite, becomes finer grained upwards, fusulinids common in a 6-12" band just above conglomerate. Collection 5A-10 -- ---- 8'.
- 11) Siltstone and shale, yellow to green-gray. ----- - 48'.
- 12) Limestone, gray weathering, 3" to 1' beds, thin (1/2") shale interbeds.- -- --4'.
- 13) Sandstone, siltstone sequence, tan to orange-brown weathering ----- 62'.
- 14) Limestone, calcilutite, gray, 3-6" beds. ----- 5'.

PG. 63

- 15) Sandstone, orange-brown, 6" to 6' beds, calcarenous cement.





----- 56'.

16) Calcilutite, brown-gray weathering, 2" to 3' beds, irregular bands of chert (3 cycles) nodules, grades upwards into quartz sandstone beds, at 56-60' there are several lenses of shell hash with silicified fossils -

Collection 5A-16 at 60' ----- 137'.

17) Limestone, brown-yellow weathering, 6" to 2' beds scattered white chert patches, cliff forms, saccharoidal with purple weathering patches, pitted surface ----- 25'.

18) Limestone, brown-gray weathering, 6" beds ----- 17'.

Unconformity - 8' of relief in 100 yards along strike.

19) Dolostone, brown-gray, rubbly cemented by clear calcite matrix - forms top of ridge - 65'+.

[Start here.]

PG. 64

Section 5. Section at West end of Road Canyon. 9°S dip to the S70W King's fault contact of the Word against Vidrio is true, although there is [also] possibly a fault 100 yards further up the hill.

Vidrio [top of section]

10. Dolostone, brown-gray with large clear calcite crystals and a calcite matrix (Collection of this) - to top of hill. Unconformable contact - several (2') of relief? [Top of Word, Fourth limestone]

9. Limestone, calcilutite, yellow-brown, 2"-6" beds with chert nodules - ---- --12'.

8. Ss., dark brown weathering, siliceous bands with calcareous cement where calcite cement remains weather, light yellow- brown - -----32'.

7. Limestone, calcilutite, yellow-brown weathering, brown on fresh surface, 1' to 2' beds patches of chert crystals ---- 20'.

PG. 65

6. Limestone, medium gray, massive lenses 1' to 4' thick in rocks like above unit -----12'.

5. Limestone, yellow-brown weathering, brown chert nodules, 6" beds. Collection of fusulinid from here.----- - 18'

4. Ss., dark yellow-brown weathering, 1' to 3' beds chert crystals - -----8'.

3. Limestone, yellow-brown weathering, brown chert nodules, 6" to 1' beds - -- -----10'.

2. Ss., dark brown, siliceous ----- 6'.

Probably top of third Word limestone

1. Limestone, light gray weathering, platy, - ---10' exposed.

0. Covered beneath.

PG. 66

Blank



PG. 67

7/26/59

Section 4A.

Examined the middle of King's Sect. 12, Lenox Hills, and remeasured it in part, see book [King 1930 section].

Then drove to Hess-Hall boundary fence and measured from road north to the top of the ridge and across the rolling slopes about 400 yards.

Section along Hess-Hall boundary fence.

1) Limestone, dark gray, silicified fossil hash, 3' to 6' beds.

----- - about 20'.

2) Covered, probably siliceous shale. ----- - 126'.

First Word limestone:

3) Limestone, medium-gray, finely laminated, very silty with bands of brown siliceous replacement, lenses of fossiliferous calcarenite, (Collection 10' from top) ----- 84'.

4) Dolostone, "dirty" gray, 5' beds, a yellow weathering limestone 6" about 20' up - -----40'.

Second Word limestone:

5) Shale, red-brown weathering ----- 10'.

6) like 4 below - ----about 30'.

PG. 68

Blank

PG. 69

7/27/59

Dugout Mt. Section

Section 7 - dip 14°WNW.

Siliceous siltstone below.

1) Limestone, medium gray weathering, 1' to 2' beds, bands of brown silica, fossil hash, conglomerate, chert pebbles up to 1" diameter ----- 24'.

2) Limestone, medium gray, lenses of shell hash up to 6' thick, silicified nodules common.

Collection 7-2[-A] -- 3' up.

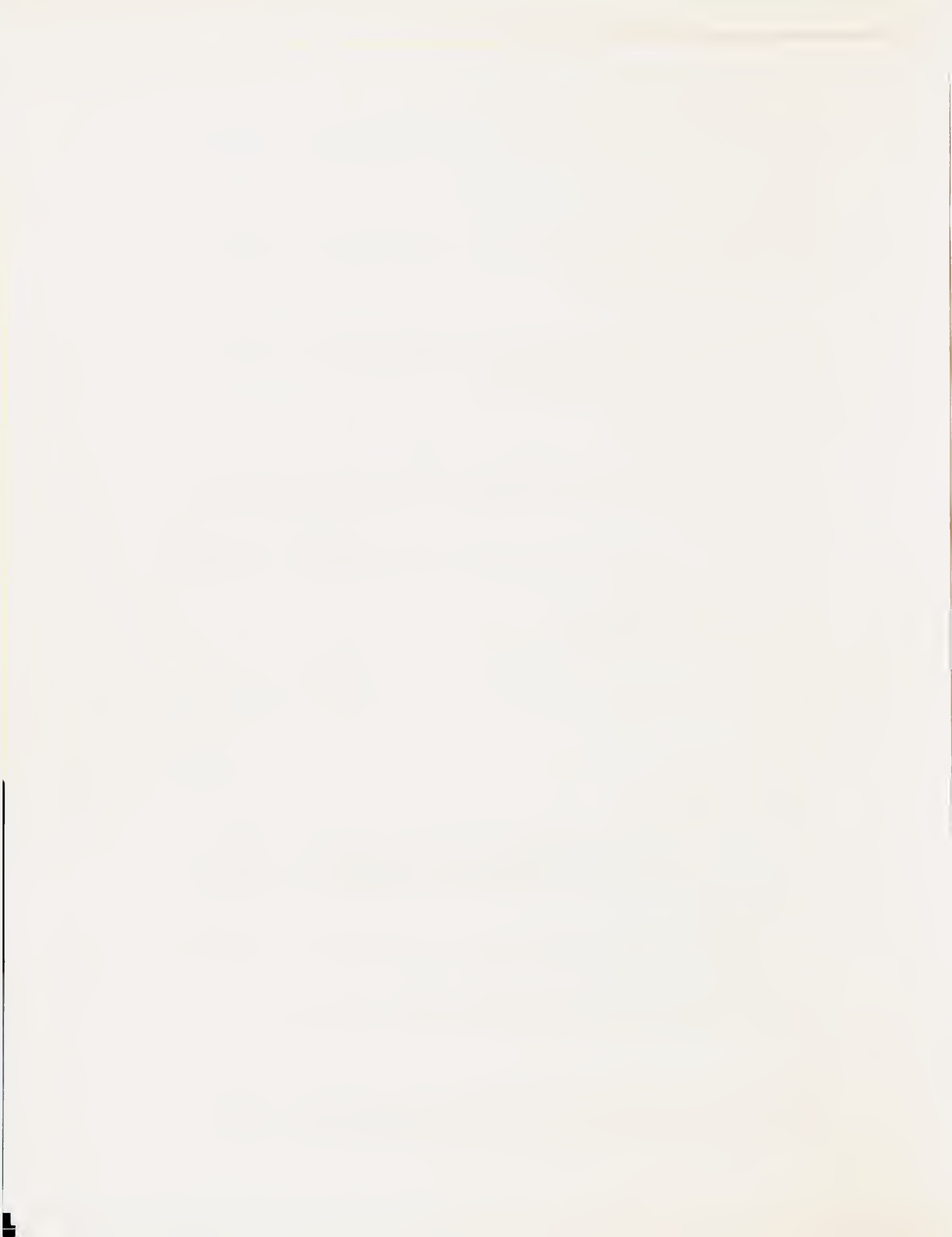
Becomes interbedded with blue-gray calcarenite upwards - Collection 7-2-B --31' up.

Shale breaks at 35' and 40'. Total ----- 53'.

3) Shale, siliceous with chert bands, and thin limestone calcarenite ----- 8'.

PG. 70

4) Calcirudite, brown weathering, 6" cobbles in 4' beds and shale, siliceous, red-brown in 6' beds calcarudite has abundant silicified corals ----- 27'.



- 5) Calcarenite, gray, 1' grading up into quartz ss. ----- 12'.
- 6) Calcarenite, medium to dark gray, 1' beds,  
Collection 7-6A -- 1' up?  
A few pebbles - calcarenites have siliceous through the pores - gets brown weathering color. Upper part of a conglomerate - dolomite also in patches. (Cephalopods and bryozoans to the west).----- - 18'.
- 7) Sandstone, red-brown weathering, and conglomerate, chert pebbles in a dolostone and siliceous matrix, 4 repetitions.  
-----30'.

PG. 71

- 8) Limestone, brown weathering, shell hash, some beds conglomeratic, siliceous deposits in voids, 1' to 2' beds -  
-----40' (to top of knoll).  
To the west these beds change facies into orthoquartzites, siliceous shales, to a large extent.  
Above, beds which I think are the same as unit 8, there are:
- 9) Sandstone and shale, friable, yellow and red-brown weathering, some bands of dark brown siliceous shale ----- 30'.
- 10) Sandstone, light brown, orthoquartzite and thin beds of shales.  
(6° WNW dip).- -----15'.
- 11) Covered above, some beds are exposed but strikes are variable and apparently the sequence is broken by several faults.  
------(King's est 525') mine —about 400'.

PG. 72

- 12) Shale, yellow-brown weathering, impart siliceous.  
----- 25' exposed.
- 13) Conglomerate, local lens. -----about 30'.
- 14) Ss., and shale, gray-yellow ----- 232'.
- 15) Limestone, yellow-gray weathering, finely laminated with some cherty bands, lenses of calcarenite -  
Collection 7-15A -- 5' up.  
Collection 7-15B --12' up.  
Collection 7-15C --17' up. -----Total 17'.
- 16) Shale, yellow-brown, thinly laminated, lenses of calcarenite with fossil hash - -----14'.
- 17) Limestone, medium gray, 1' massive beds, fossil hash calcarenite.  
Collection 7-17A 1' up. - -----2'.
- 18) Shales and ss., red-brown to yellow, thinly laminated, siliceous, one 6" calcilutite bed in middle. - -----10'.

PG. 73

- 19) Limestone, medium gray, conglomeratic in lower part, calcarenite higher -  
Collection 7-19A - 6" up.  
Collection 7-19B - 1.5' up ----- 2'.



- 20) S.s., brown to red-brown weathering, siliceous, thinly laminated, 1" beds, friable ----- 260'.
- 21) S.s., brown-red, cliff former, 6" to 3' beds, conglomeratic. ----- 60'.
- 22) Limestone, dark gray, conglomeratic ----- 2'.
- 23) Covered ----- 37'.
- 24) Limestone, light gray to chalky weathering, a series of ledges, fossil hash -- ---- 35'.  
 [Fault N of Ss cuesta] (dip 6° to the ESE)
- 25) Calcarenite, light gray to brown weathering, 2" to 1' beds.  
 Collection 7-25A 6' up.  
 Collection 7-25B 10' up. Total ----- 12'.

PG. 74

- 26) Covered
- 27) S.s., dip 14° to the WNW, brown weathering, 1' to 3' beds, cross bedded locally, conglomerate in bands - 70' up a Cephalopod locality.  
 Collection 7-27A - ----110'.
- 28) Limestone, dark gray, 6" beds, calcarenite.  
 Coll. 7-28A --5' up.  
 Coll. 7-28B --12' up.  
 20' of light brown calcilutite  
 Coll. 7-28C dark gray limestone ---4' up.  
 12' of brown siliceous shale and siltstone  
 8' of limestone, black, Coll. 7-28D --6' up.  
 10' of siliceous shale.  
 4' of very fine grained calcarenite. Coll. 7-28E.
- 29) S.s., brown and siliceous shale ----- 62'.
- 30) Limestone, calcilutite, yellow-brown and siltstone alternating in cycles - chert nodules common in upper part - 175'.  
 -----more than 50' (up as far as we went).
- 31) Gray Capitan dolomite.  
 [Start Here]

PG. 75

7/28/59

Tried to chase down King's section up Little Blue Mt. - met a Mr. Mills who was of great -[help] [Mills is son-in-law of Ferguson and now, 7/59, is taking care of Little Blue Mtn. pasture.]

The fusulinids in King Sect. 17, p. 77 are mostly funny spots in the limestone but are not apparently fusulinids. His thicknesses here is about right.

PG. 76 Blank

PG. 77





7/29/59

Section 2A. Walker and Falk Ranches. Eastern Glass Mountains.

Covered below

1) Dolostone, brown to gray-brown weathering, 1' to 2' ledges, chert pebble  
lenses ----- 48'.

2) Limestone, medium gray, 6" to 1' beds, fossil hash, many fusulinid-  
bearing calcarenites:

Collection 2A-2A 24' up

Collection 2A-2B 26' up

Collection 2A-2C 31' up

Collection 2A-2D 43' up

Collection 2A-2E 48' up

Collection 2A-2F 62' up (platy in upper 20')

----- Total 67'.

3) Limestone, gray, 1-2' beds, abundant fusulinids, almost all fusulinid  
limestone in total -

Collection 2A-3A 2' up - -----14'.

(--> King's base of the Word Ls. here)

4) Dolostone, probably like unit 3 below originally.

PG. 78

Sect. 2B - (on Fulk ranch here and higher)

4) Dolostone, gray-brown weathering, pitted surfaces (relic fusulinids), 1'-3'  
bed, a poorly silicified brachiopod bed about 25' up ----- Total 85'.

5) Dolostone, 1-3' beds, light gray in lower 200' becomes medium gray in upper  
part. ----- - est. 700'.

PG. 79-82

Blank

PG. 83

Salt River Section, Arizona

Collection 0 to 3 are in first road above Molasses-Redwall road cut. Collect 4 is  
in second road 10' above Collection 3, but the structure is a bit odd, is several  
NW plunging folds, slightly faulted? so that Collection 4 may possibly be same as  
Collection 0 (doubtful) because of lithologic dissimilarities however?

Collection 5 - Coral-Brach-Crinoid-Bry bioherm Prismopora and Fenestelloids.

PG. 84

Blank

PG. 85

Gap Tank area, Marathon/Glass Mountains, West Texas.

Stop 1.



Photog. April 16, 1964

Sect. 43, Bed 17 lenses into Sect. 40, from about bed 15-19.

43-16 looks to be about as thick as 43-14 as shown on section.

Distance between 43-15 and 43-13 is too great as shown on section

Stop 2. 39-1 is = 40-21; Lenox Hills conglomerate cut out limestone units 39-7 to 39-12 about 100 yards east of where Sect. 39 measured. "Stream channel" about 250 yards wide E-W.

Stop 3. 39-1 = [40-]38.21

{note: illustration followed along side}

and 38-4 = 39-7

37-9 = 38-24

and 37-9 = 36-6

38-21 = 37-5 and 37-6

PG. 86

4-19-64 A

Sunday April 19

Near Sect. 29

about 70-80' below 29-1 about 200 yards east of section 29 out on flats.

"Uddenites" zone of Keyes??

4-19-64B = 31-11

Ammonoid = 31-13

4-19-64C

4-19-64D = 31-13

Gray limestone conglomerate in flank of bioherm forming face of hill.

PG. 87

4-19-64π

Section 21 revisited

{note: illustration:

Bed 1: 31-11; algal mudstone

Bed 2: covered

Bed 3: 31-13; limestone congl, crossbedded

Bed 4: 5' covered

Bed 5: 7'. Fine ss., yellow, 6" beds, silty near top. Eolian?

Bed 6: 6". recrystallized algal limestone.

Bed 7: 18'. Mostly covered, some s.s., as below in lower 4'.

Bed 8: 2.5'.

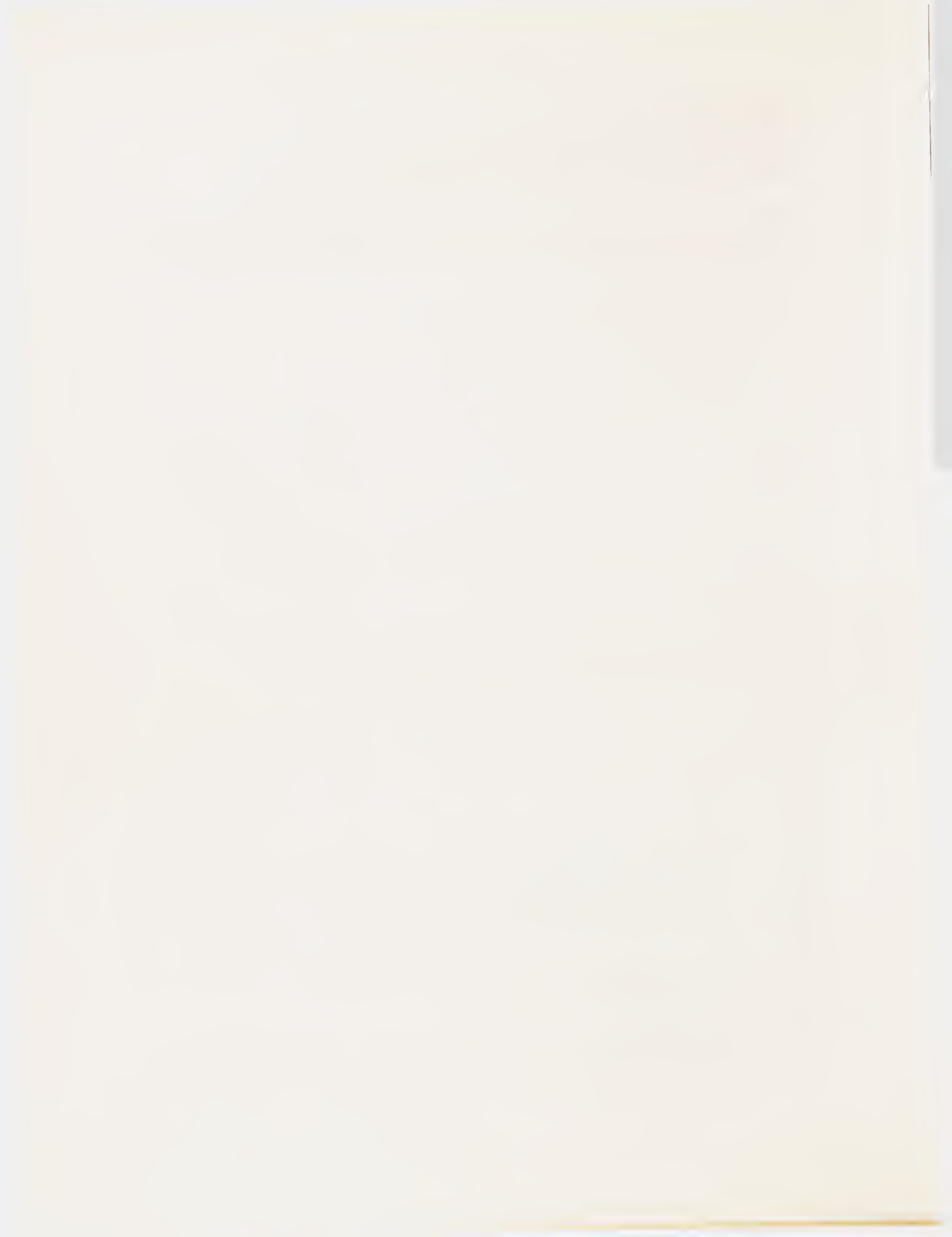
Bed 9: 5'. Algal limestone. Limestone congl. and calcarenite.

Bed 10: 7'. 2' reddish and s.s..

Bed 11: Coll. 4-19-64E, 4' up in red limestone.

Bed 12: Coll. 4-19-64F.

Beds 11+12 (14'; jumbled up like concrete mixer (=30-8) limestone mud - 2"-  
2' beds mottled reds and brown).



Bed 13: 6', cover.

Bed 14: 5'; Limestone light gray, 2' beds, mudstone.

Bed 15. [Calcirudite] 25-40'.

{note: this section is illustrated on following page 87}

PG. 88

{note: illustration followed}

PG. 89-182

Blank

PG. 183

Decker and Merritt Okla Geol. Survey 1931, Bull 55.

Measured 1/4 mile west of US 77. Didn't find Bed 9. Sponge sect.

1) Bromide, Deckers Sect. 4, bed 16 calcarenite; buff weathering; rubbly.

Collection 4-16 Diplotrypa zone. (upper Tulip Ck poorly exposed - didn't find Decker's bed). Seems to be all a "calc". SS.

2) McLish - Collection in Decker's Sect. 4, beds 72 and 73; rubbly limestone.

3) McLish - Collection in Decker's Sect. 4, beds 75/76, calcarenite, bry thin sect. here.

4) McLish - Collection in Decker's Sect. 4, bed 80; weathers buff; calcarenite; bry. colonies.

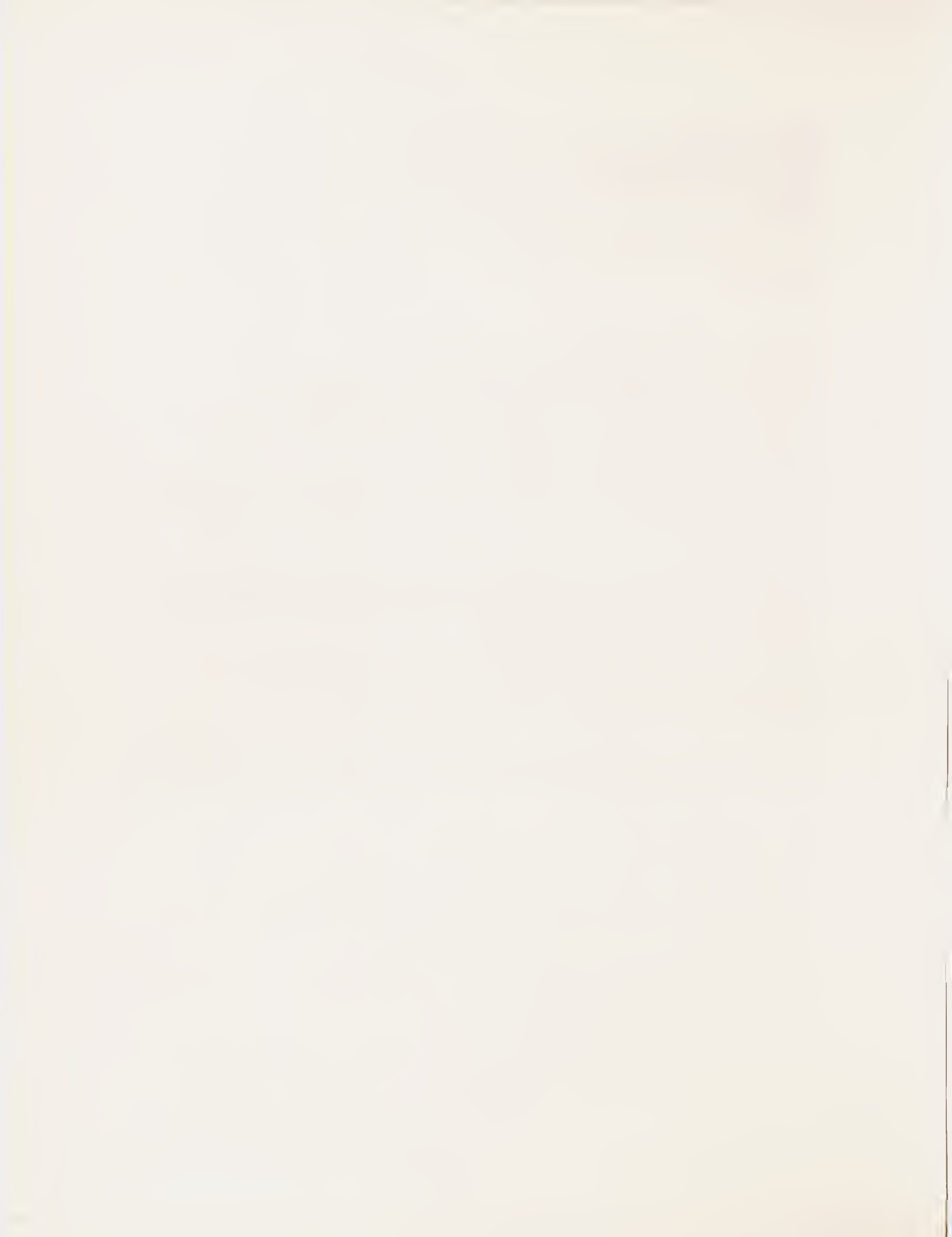
5) Oil Ck - Collection in Decker's Sect. 4, bed 87 poorly exposed medium gray limestone; thin beds 2'-3'; very rubbly overlying more massive thin bedded units with few bryozoa and these in turn overlie a massive finely crystalline light gray limestone. Rhinidictyids with ramose bry.

"Decker's section measured along edge of Ardmore - Davis Highway (US 77)

Dip 55° SW. Strike N60°W.

PG. 184

"Strat and Physical Char. of the Simpson Gp." C.A. Deckers and C.A. Merritt.



Doc. 318



doc 318  
0318

COLLECTIONS MADE BY CHARLES A. ROSS

The following collections were used in Charles A. Ross' 1965 Journal of Paleontology article "Late Pennsylvanian Fusulinidae from the Gaptank Formation, West Texas" vol. 39, p. 1151-1176.

Section 26, bed 2 (26-2)	30-3	31-3	32-1*
26-8	30-6	31-8	32-11 (2 bags)
26-10B	30-10	31-13	32-12
28-1*	30-19		32-16 (?3 bags)
			32-16 (=7-16-57-loc.7 (not 7-17-59-loc.7 & not <u>6753</u> (Leonard?))
34-15	36-4	37-1	
35-6	36-6	37-9 (8-20-57; 6683	
35-7	36-7	37-9 (float)	
35-10		37-11	
		37-12 6683	

The publication locates the collections quite well. These samples were retained by Charles Ross from the main samples for future reference. They are part of YPM accession 6683

Charles Ross had a note to me that he was still tracking 37-36b which may be from the lower part of the Hess facies. He was also trying to locate the source of samples 8-31-66-J and 8-31-66-0 and -Q; probably southeastern Arizona.

doc. 0318

C.A. + J.R.P. Ross

Summer 1959

Book 3

If found please return to  
Peabody Museum, Yale University  
New Haven, Conn.

These are Leonard and  
Wood sections and  
samples

6755/





doc. 0318

7/8/59

189

Brooks Ranch

Section 2

1.) Shale, blue-gray,  $\frac{1}{4}$ - $\frac{1}{2}$ " banding  
brown siltstone — 10'

2.) Covered ————— 15'

————— Top of Lenoxhills fm. ————— Base of Leonard —————

3.) Limestone - light gray to light gray weathering  
3" to 2' beds, very fine fossil track  
for most part - *fenestrids* in  
thin beds within this unit.

Coll. 2-3A - 8' up

Coll. 2-3B - 22' up

Coll. 2-3C - 37' up

————— shale interbeds gradually thicken  
to 6" or so ————— 48'

4.) Limestone, like below + Shale, light  
brown to light gray - ls. are 1 to  $1\frac{1}{2}$ ' thick, +  
shale beds are  $1\frac{1}{2}$  to 3' thick  
————— 27'

5.) Limestone, light <sup>light</sup> gray, <sup>to brown</sup> very fine grained, clayey  
or silty - 3" - 2' beds -

2-5A - 12'

2-5B - 35'



2-5C-52' up

95'

6.) Dolostone, light brown weathering, and shale (covered mostly) - light brown-gray v.f. ls near top 1 to 3' beds -

Coll. 2-6A - 33' up

Coll. 2-6B: 85' up

112'

7.) Limestone, light gray - 3' to 6' beds, few thin shale interbeds

2-7

32'

8.) Limestone, light orange-brown weathering, v.f. frag. - 3 to 5' thick separated by 2-7' shaly interbeds

The ls have a "Staffella" fauna, and locally scattered "Fossilus" etc.

90'

Cyclathura - 10-12 - get progressively more shaly toward top of unit

9.) Limestone, orange-brown weathering, 1' to 4' beds. *Cyphalathura tyrogastris*

7/9/59

near base - fossiliferous

2-9A - 42' up

(Top of ridge 140')

2-9B - 145' up

limestones become progressively more silty and change to slight gray weathering

2-9C - 160' up

2-9D - 185' up

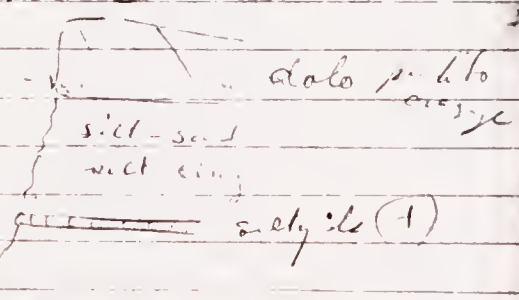
215'

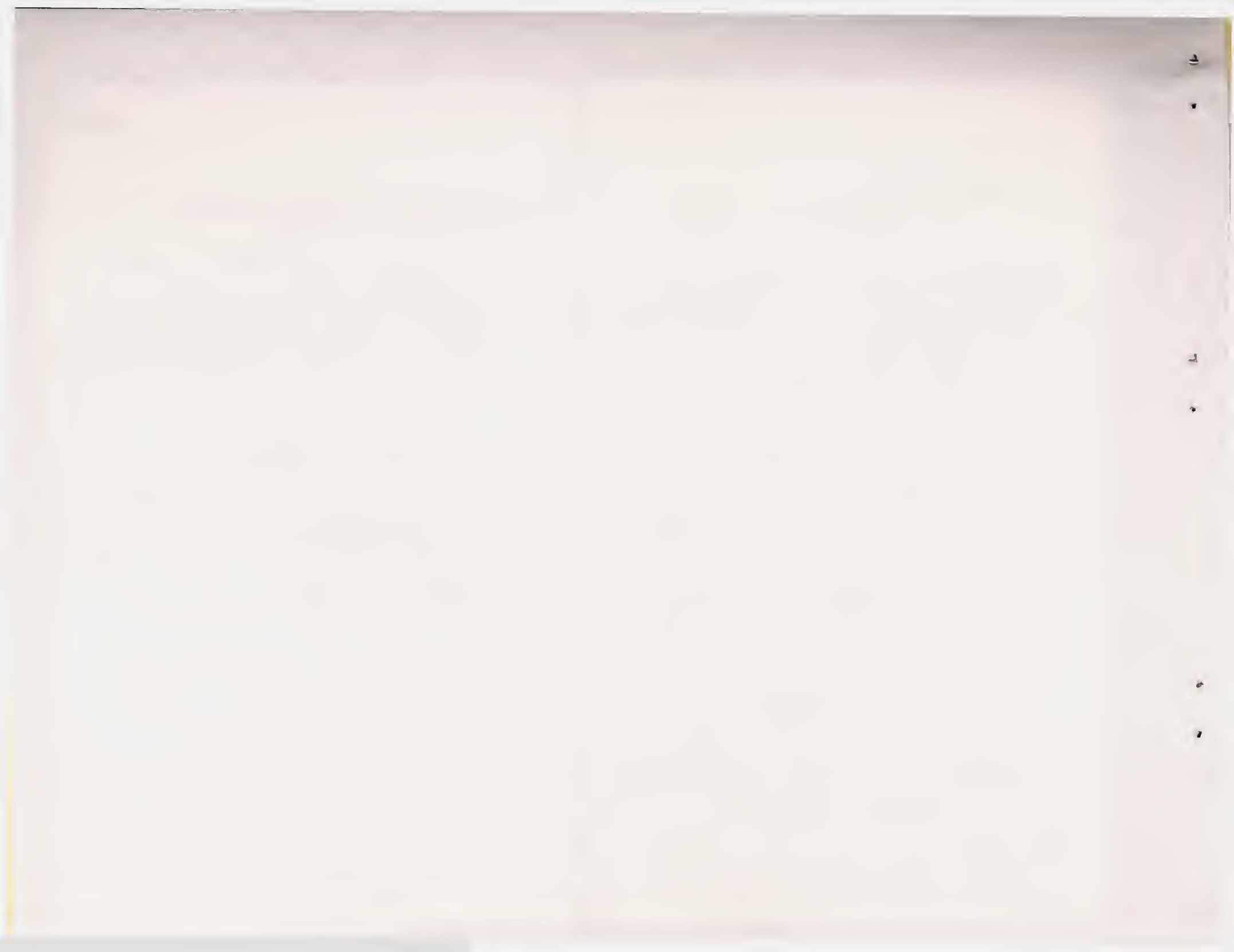
10.) Limestone, <sup>Dolostone</sup> orange-brown weathering, very silty - 2" to 6" beds - shale interbeds up to 1" Coll. 2-10A - 5'

Saddle 30'

2-10B - 105' up

Rose colored ls 3' separated by 4' of orange weathering silt-clay thin cyclic beds becoming





faunal remains on surface - reworked when found.  
Gastropods, brachiopods + ostracods.  
Coccoliths etc. etc.

— 187'

- 11.) Shales, light gray, + ls., light gray -  
sh - 2-5' beds  
ls. - 1/2 to 1' beds  
2-11A 5' up

33-50' Ophiolite clay-sandstone  
common (15 is possible?)  
— 89'

- 12.) Limestone conglomerate, well sorted  
— 25'

- 13.) Sandstone, light brown, silty  
crinoid stems + brachiopods  
well sorted, fine grained - grade  
vertically into calcarenite  
Coll. 2-13A - 32'

to saddle

— 158'

- 14.) Dolostone - brown-gray, porous, saccoidal,  
weathers to pitted surface - 3-6' foot  
beds. — 10'

- 15.) Limestone, light gray, 6" to 2' beds -  
little in the way of shales or siltstones  
2-15A — 42' up  
2-15B — 65' up  
— 205'

Several different limestones in this  
unit - all are v. ss. or lutites. Limestone  
The more rubblely beds are white, ss. are  
are brown-gray. 4 or 5 alternation of  
grain size

- 16.) Limestone, orange brown weathering,  
[relict outlines of faunal remains (abundant)  
5' at base]

like 15 below

Coll. 2-16A 53'

[at 65' a mottled quartz ss. bed w/ shell  
fragments]

[at 97' - silty bed 1', brown-orange,  
brachiopods]

Coll. 2-16B. 185'

— 197'



- 17.) Sandstone, orange-brown weathering,  
very silty, calcareous cement  
3" to 1" beds  
30' - shell hard - rextalysed, no fossils!  
but has crinoid columns,  
42'

- 18.) Limestone, gray-brown weathering,  
1' to 3' beds, rock marked  
silt + f. calcarenite present part.  
[22' rextalysed fossils to abundant]  
[154' a 31' congl. bed, including  
quartz, quartzite, cherty pebbles  
to 1 1/2" diameter.]

Afternoon looked at the rest of the  
Leonard fm., lower part of Wood fm.  
There isn't much difference between  
the Hess facies and these upper  
units this facies. King's Sect.  
about 2 miles east is supposed to  
be quite markedly different in the  
2 facies of the Leonard fm., but I  
can't say that is true here.

From the top of these hills one can see  
beds in the Leonard fm. thicken & thin  
within short distances. The units  
of brown-gray dolomitic ls. may change  
from 120' to 0' thick in 300 yards.  
There there seem to be few "key horizons"  
in this interval - we have 3 or 4  
chert pebble conglomerate zones near the top  
of the Leonard, a couple of conglomerates in  
the Hess facies - and that is about all.  
Even these are probably not of too great a  
regional significance as they are mostly  
3 to 6" congl. lenses (near the top of the f.),  
and the ones lower are calcarenites with  
locally dense pebbles & cobbles of limestone.

[chert frag scattered throughout upper 150' 7/10/59  
18 cont. [pebble bed at 190' - 3" pebble bed  
- 293']

- 19.) Limestone-dolomite, light gray to light  
brown weathering, 1/16 - 1/8" laminae  
of ls alternating with dolomite - 2'





20.) Dolomite, light brown  
pitted surface - 15'

21.) like 19 - 8'

22.) like 20 —  
[20-28' up - quartz frag. congl  
fine pebbles  
74']

23.) limestone, light gray, with  
some 1/8" banding irregularly bands of  
dolomite, 6" to 1' beds -

Top of ridge (Fault ranch)

locally angular ls. pebbles + cobbles make  
6" beds

— 29'

24.) Dolomite, brown, <sup>gray</sup> with Leptodus  
outlines, in 6" to 2' beds  
pebble congl 6' up 3" band  
37'

25.) limestone, brown-gray, shelly,

Coll. 2-25 A - 5' up

Coll. 2-25 B - 24' up - 3" bed of  
quartz and coquina

[Pivetti collection]

— 42'

26.) limestone, light gray - poorly bedded  
2' to 3' beds, weather crumbly -  
[65'-crinoid calvarial back - 20']

[local intraformational congl -  
ls. pebbles]

165  
— 185'

27.) Sandstone, brown, red, orange,  
v.f. quartz sand - 5'

28.) limestone, blue to purple gray, irregular  
wavy bedding, 42'

29.) limestone, light gray, massive 2'-5'  
beds, excellent silicified fossils  
Gastropods, Brachiopods, Jellyfish.

— 12'



30) limestone, light gray to white,  
fossils replaced by calcite, 4 to 6' beds  
30' (K?)

7/10/59

Allison Ranch, Section 1

Covered below on this side of road -

- 1) Limestone, brown, silty & sandy, 3" to 1'  
beds - 4'
- 2) Sandstone, creamy, lime cement, X bedded  
3'
- 3) Limestone, dark brown-gray, - 3'  
black, dense -
- 4) Covered - shale & marly ls. 18'
- 5) Limestone, like D, silicified fossils  
8'
- 6) Covered - 7'
- 7) Limestone, like D and shale  
above it, coll. 1-7 5'
- 8) Limestone, like D - gastropods - 1'
- 9) Covered - 8'

base →  
top #9

57'



10.) limestone, gray-brown, 2" to 6" bedding,  
3', 6" of rubble beneath -  
Coll. 1-10. *Furculoid coquina* - 4'

11.) limestone - yellow-brown, vertical  
fractures - rubbly weathering,  
Coll. 1-11. — 5'

12.) Covered — 9'

13.) ls., brown, fossil heavy  
*Furculinids* + *Orphalotrochus gastero* - 1'  
*trochus*

14.) Covered - shale? — 4'  
Coll - 1-14

15.) ls., like 10 — 1'

16.) Covered — 3'

17.) ls. — like 10 — 2'

18.) Covered — 4'

19.) Shell hash - everything  
- gastropods, *echinoids* - 6"  
*echinoids*

20.) Covered — 10'

21.) ls., yellow-brown, fine grained  
*calcareous* —  
Coll. 1-21 — 2'

22.) ls., light yellow gray, mostly -  
5" to 6" beds — 5'

23.) Covered — 29'

24.) ls. - dark gray, 6" bedding -  
rextallized fossils - 8'

25.) Covered — 12'

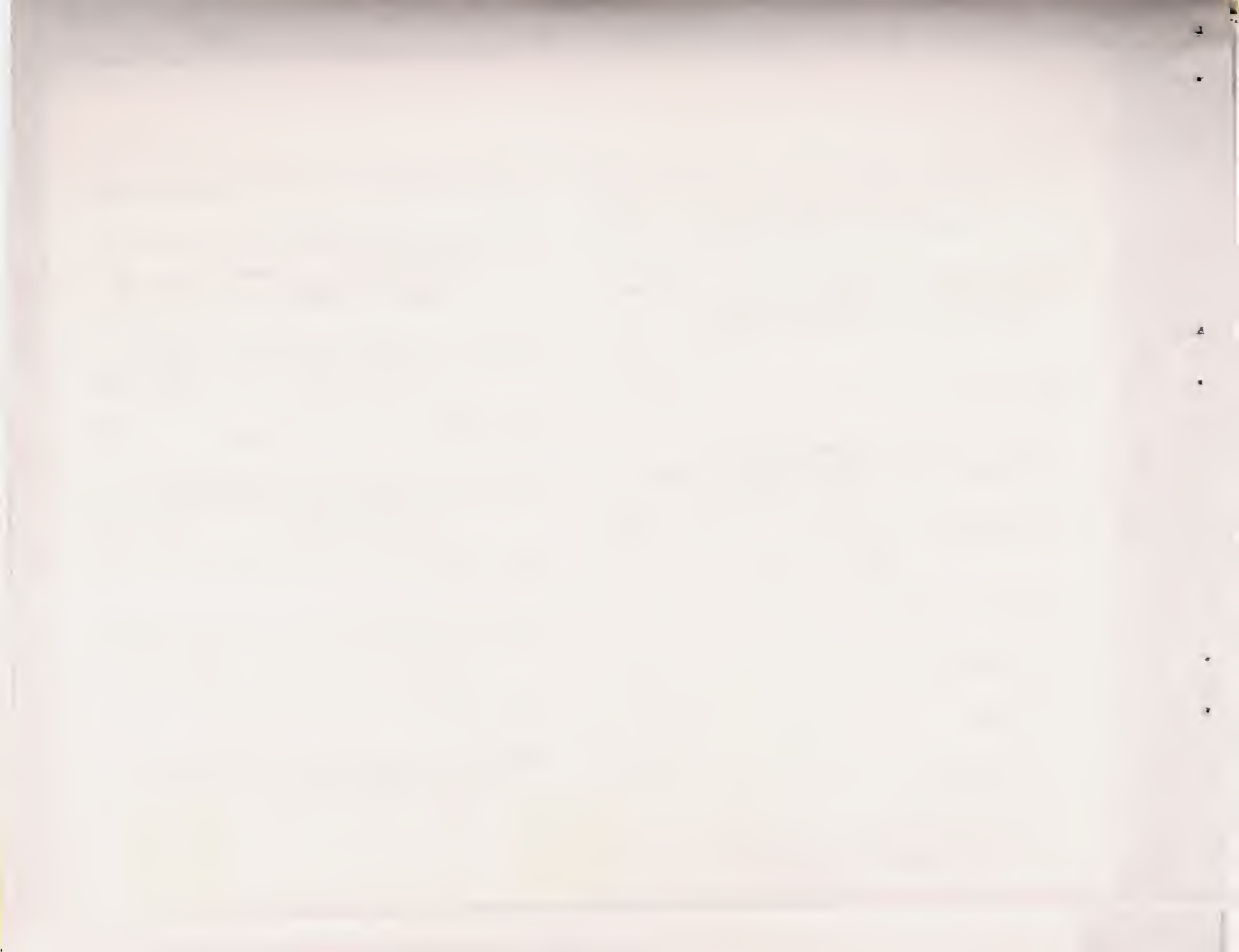
26.) ls., yellow-brown weathering + fresh,  
graphic rextallization - part - 3'

27.) Covered — 15'

28.) ls. of gray-brown, 1' to 2' beds -  
fine shell hash — 10'

base →  
top #19  
90'6"

base →  
top #28  
184'6"

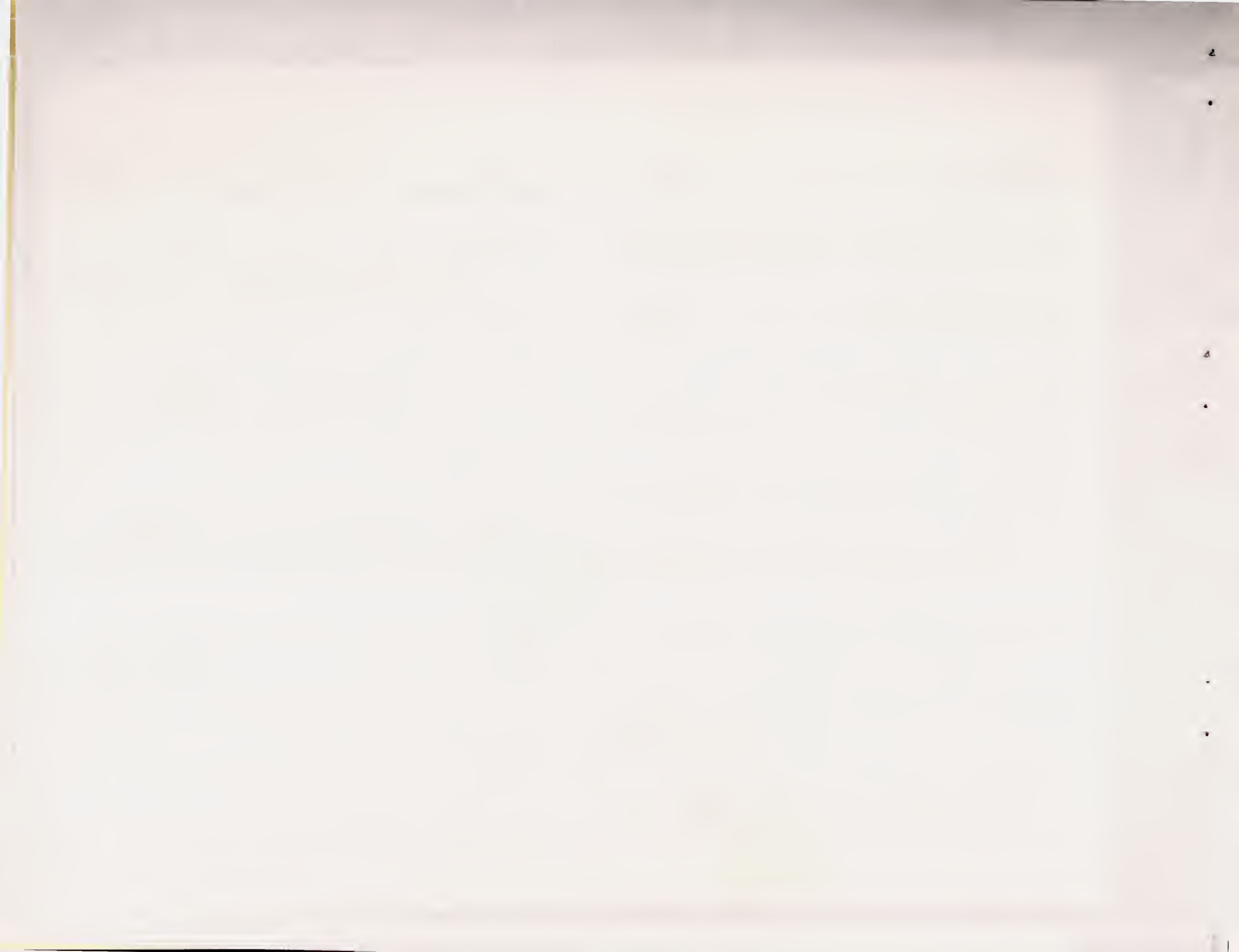


- 29) Covered ————— 37'
- 30) Ls., light brown, indistinct laminating,  
6" to 1' beds ————— 7'
- 31) Covered ————— 13'
- 32) Ls., light yellow-brown, — 4'
- 33) Covered ————— 11'
- 34) Ls., med. gray-brown, 3" beds — 3'
- 35) Covered — probably more shaly  
internal of 34 ————— 12'
- 36) Ls., orange-brown, 6" beds,  
silty + sand (H.F.G.) ————— 8'
- 37) Ss., white to very light gray, X-bedded,  
————— 15'
- 38) Ls., yellow-brown, very sandy,  
————— 3'

base →  
top #38  
297'6"

- 39) Covered, ————— 8'
- 40) Ls., brown-gray — 3" beds,  
crystallized fossils ————— 2'
- 41) Covered ————— 7'
- 42) Ls., med gray-brown, 6" beds,  
small fossiliferous? cont. of 42 3'
- 43) Covered ————— 4'
- 44) Ls., light brown-gray, silty,  
crystallized fossils, several shale  
beds 6", bed 6" ————— 12'
- 45) Covered ————— 11'
- Total 356'
- 46) Ls., light gray, fine grained, dense,  
————— 2'
- 47) Covered ————— 4'
- 48) Ls. like 46
- 49) Covered ————— 6'





50) Ls, like 46, ——— 1'

51.) Covered ——— 2'

52) Ls, Orange-brown, silty, shell  
hash, ———

53.) Covered ——— 22'

54) Ls - brown-orange, sandy  
silty, 6" beds; shell  
4 to 6" beds ——— 24'

55) Ls, Fossiliferous, gray-brown,  
6" beds  
Coll. 1-55 ——— 2

56) Covered ——— 9'

57) Ls., dark gray - shell hash - 6"

58) Covered ——— 8'

59.) Ls., like 57. ——— 7'

60) Ls., orange-brown, sandy-silty,  
——— 2'

61) Covered ——— 3'

62) Ls., gray-brown, sandy-silty,  
shell hash, — 6" beds ——— 1'

63) Siltstone, brown to yellow  
weathering, partly covered, — 17'

64) Sandstone + silt. stone ——— 2'

65) Limestone, light brown-yellow,  
1' beds ——— 3'

66.) Covered ——— 37'

67.) Ss., purplish-gray weathering, — 2'

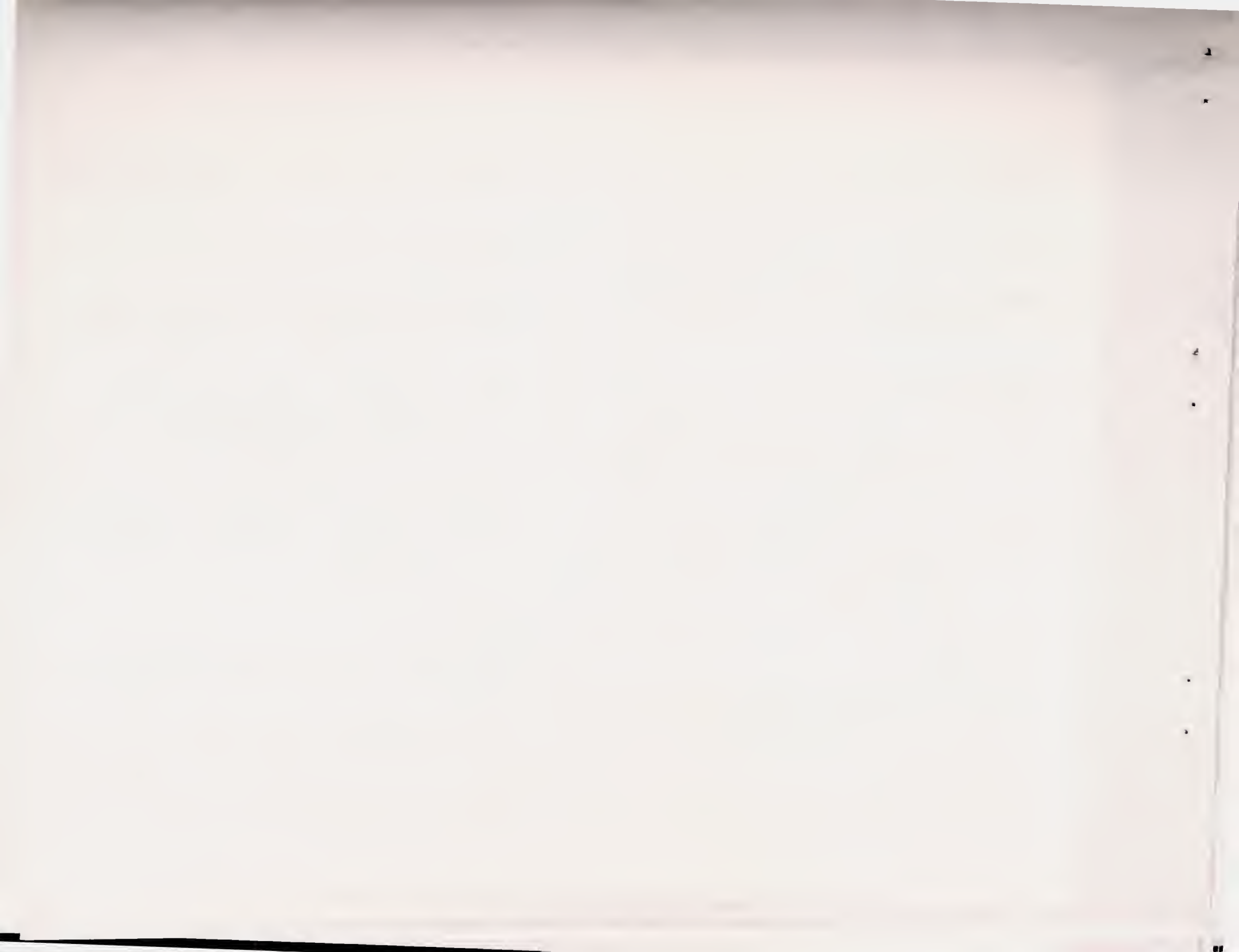
68.) Ls., gray-brown, shell hash,  
3" beds ——— 6'

Coll. 1-68

Total 160

69.) Ss., orange-yellow weathering, 1' beds,

——— 3'



70) Covered ————— 10'

71) Ss., like 69 ————— 9'

72) Shale, gray in 5-15' bed, alternating  
with ss in 6' beds ————— 53'

73) Ss., like 69 ————— 5'

74) Shale, gray; friable ss. (white +  
purple) + 6" ledge resistant ss. — 38'

75) Ss. like 69 ————— 3½'

76) Covered for most part —, some  
purple-brown ls. with large Calceola  
X shells, & ss. ————— 22'

77) Ss. like 69 ————— 2½'

78) Sl. & Ss. (orange) ————— 22'

79) Ss., gray to brown, X bedded, — 6'

80) Ss., orange-brown, like 69. — 12'

Total 184

81) Ls., light to mid. gray, chert frags.  
common, 2' to 3' beds

[27' of orange brown weathering  
silty ls.] ————— 45'

82) Ss. — light brown — grades laterally  
into silty fine grained ls.

III 2'  
13'

15'

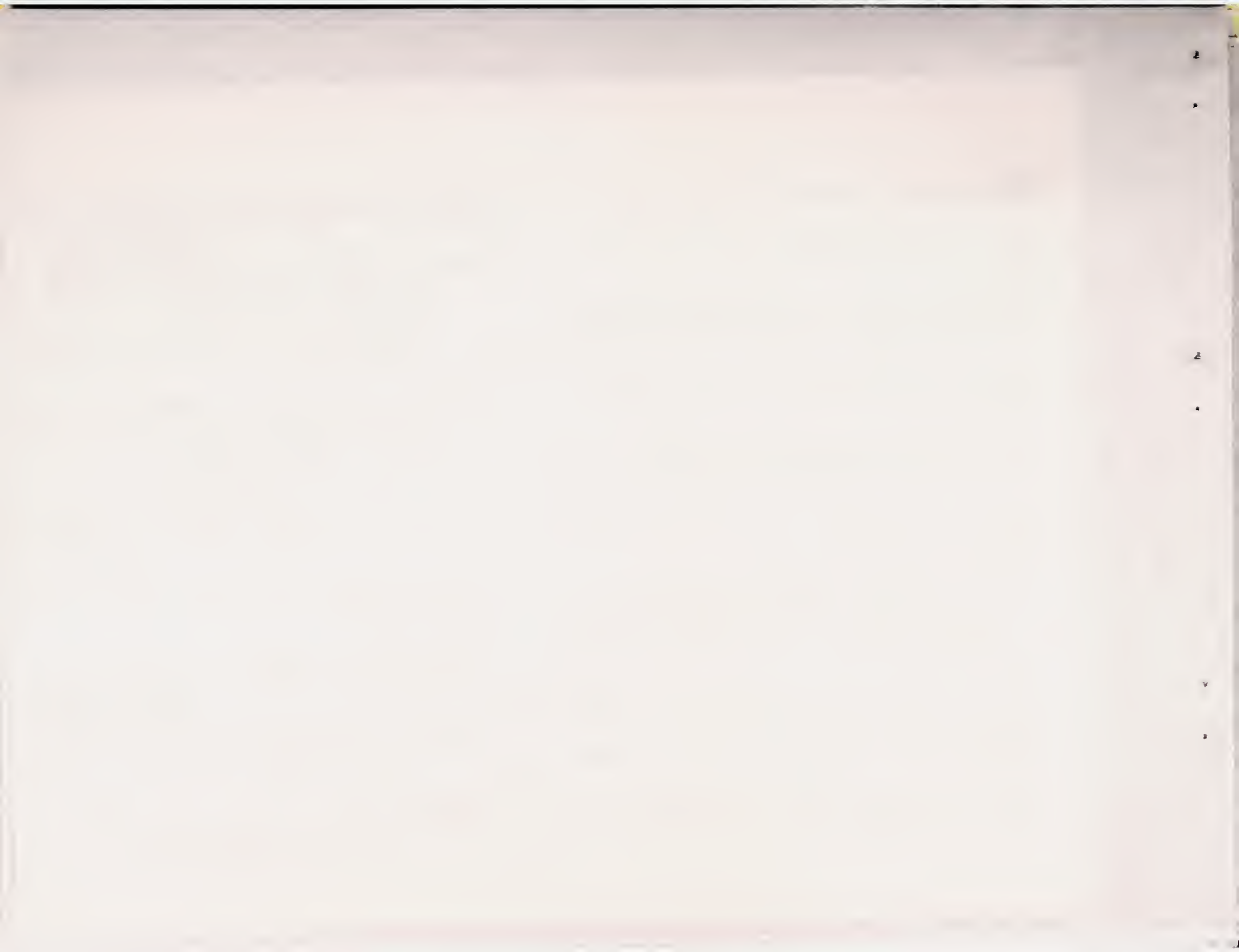
83) like 82 ————— 17'

84) like 82 — from limestone  
at top — coll. 1-84 ————— 12'

Total 144

85) Ls., gray-brown, 6" to 2' beds  
fossil brachiopods ————— 25'

86) like 82 ————— 12'  
ls. has algal plates



87.) ls., blue-gray, 3" to 6" beds,  
fine shell hash, recrystallized  
fossils in a few beds. — 35'

88.) Covered — over two thin  
ls. ledges — 22'

89.) ls., med-gray, concretion  
nodules common, 6" to 2'  
beds, fossils recrystallized  
Total 92' — 35'

90.) Shale and ss. — 7 to 10' bed  
alternating with ls., dark gray,  
Traversed area 150 yds. — 52'

91.) Covered — 11'

92.) ls., med. gray, brown "tubes"  
on weathered surface 1/2'

93.) Covered for most part, ss. orange,  
limestone purple +, siltstone, yellow  
outcrop patches — 32'

Total 95 1/2'

94.) Limestone, <sup>med</sup> gray, 2" to 2' beds  
with some covered intervals — 34'  
calcite shells — replaced fossils?

95.) Covered — 7'

96.) ls., mottled gray + orange-brown weathering  
3" to 6" beds — 10'

97.) Covered — 21'

98.) ls. med. gray, silty + sandy — 2'

99.) largely covered, probably siltstone, also  
every 4 to 10 a 6" ss (orange brown) cap rock — 48'

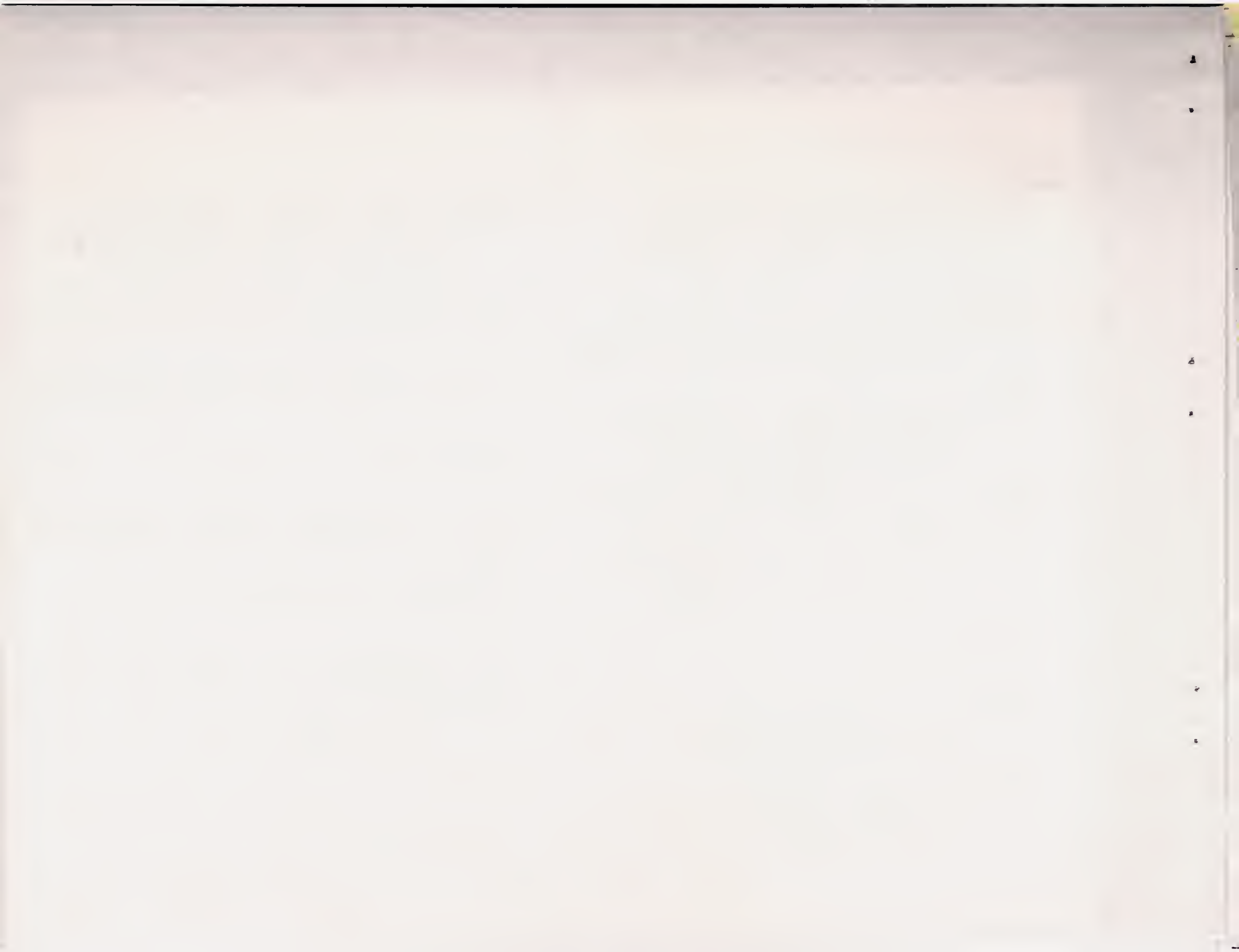
100.) ls., light gray, very silty, sandy, clayey,  
persistent bed. — 2'

101.) Shale, largely covered, + ss. in  
2 beds, orange-brown — 8'

102.) Covered, except for 3 6" beds of ss — 31'

103.) ss., orange-brown, lining cement,  
massive — 2'

Total 122'



7/12/59.

# Section 3

Western Brooker Ranch  
reexamined King's sect. 26

His beds

- 9.) = S. ~~constructive~~ zone  
with some *Omphalot* block  
3-(9) A first appearance <sup>at</sup> <sub>base of bed</sub>  
3-(9) B - 35' up
- 108'
- 10.)  
Coll. 3-(10) A - 5' up  
3-(10) B - 50' up
- 270'
- 11.) Double ledge  
3-(11) A - 2' up
- 12.) Coll. 3-12 X - 26' up 15' up  
Coll. 3-12 A - 35' up
- 13.) 2nd ledge 3-13 A 30' up

- 14.) 3-11 A - lower ls. ledge  
3-11 B - top of unit

3-14 C - algal bed -

Staffella are common throughout  
the lower beds - (9) through (12)

- 16.) 3-16 - 15' up  
3-16 B - 35' up

- 17.) 3 (17)  
3-17 B - in section, 50' up

Base of King's fossil bed is a  
conglomerate

In 3-17 B fossiliferous occur with  
*Goniatites*, *Cammarotochid*, *Omphalot*  
*rhynchonella*

3-18 A - <sup>had</sup> We think King's fossils  
are fossiliferous with algal coatings.

- 3-18 B - 35' up





Location of King's bed 18 or in the  
base of bed 19 - red siliceous  
shale with stone - 10' ± thick

The lower part of King's section  
was much easier to follow than  
the upper part. This might be in  
part the result of the topography  
for beds 14 and higher are exposed  
down the top of the mountain. Near  
again the section seems to be a change  
in lithology at the interval of  
the Hess fossil beds & just  
above & below - I saw although  
we tried to follow the route of  
the mountain section it is  
possible we missed it in the  
upper units.

The fossil bed is a pretty  
good one here and is not the  
reverted to cliff formation to  
the west. Trilobites really  
make up a lot of this interval  
above & below the Hess fossil bed.

7/14/59

With Cooper, Grant,  
Shinner + Wilde,  
and Stehli

Collected from Hess ranch house and  
from the word about 1 mile NW of Hill  
5779 north Leonard Mt.

Word 1. ls. - 35' - 3 coll.

Word 1<sup>st</sup> shale Coll. 5-2A word - 35'  
" " " 5-2B - 45'  
5-2C - 65'

ls. become more abundant and the  
upper 50' are 2' to 3' ls. beds -  
Total from top of 1<sup>st</sup> ls. 80'

Shale, siliceous with 2' ls. beds -  
— Coll. 5-3A - 15'  
— Coll. 5-3B - 20'  
" " - total 140'

Word ls. - position of 2<sup>nd</sup> ls. -  
Coll. 5-4 - 7'

Shale 155'

Word - 1' fossiliferous - 5-5A -  
(10') 5-5B - 5'



Shale - 20'

ls. - 2'

Coll. 5-6A.

Shale - 20'

→ ls. - base 3<sup>rd</sup> Word ls. - Type Paraf.

shlandei Coll. 5-7A

3'

→ Shale - 12'

→ Aphelozone - 2' ls. at base of next

ls. - and gray 3<sup>rd</sup> Word ls.

no fossiliferous - 65'

The first Word ls. is thinning to the NW & mainly at the top of intertonguing with siliceous shale - the ls. just below Word 2? are five greenish lenticles, and a few 6" limestone are rare (2 or 3) between 2<sup>nd</sup> & 3<sup>rd</sup> Word ls.

Copper pointed out a high Leonard ls. locality just N of the road up Eschler Canyon at the base of the Word ls.

It seems that Cooper's "Hess ledge" can be traced around the end of the ridge behind the Hess ranch house and behind the front to a point opposite the gap between the hills in the front. He doesn't find this fauna on the front of the ls. escarpment to the south (Hess escarpment) because in his words "it isn't the right lithology". Thus he would rule out the idea that this fauna occurs in several horizons.

Wilde is using the 1<sup>st</sup> Leonard ls. of King as equal to the Hess fossil bed. This seems to solve a few problems - but I wonder how many?

The section we measured in the Word seems to best fit in with King's Sect. 18, p. 70, but this on depositional strike 2 1/2 miles to the NE.



7/15/59

## Split Tank

Coll. 3-(19) from upper ls in Hess  
facies - most of this is a crinoid  
coquina - 15' below top.

(mostly in lower ls. of Leonard)

Coll. 3-(2) Leonard - [3-13]

The upper beds of Leonard (2)  
have abundant graptolites.

## Road to Red Tank

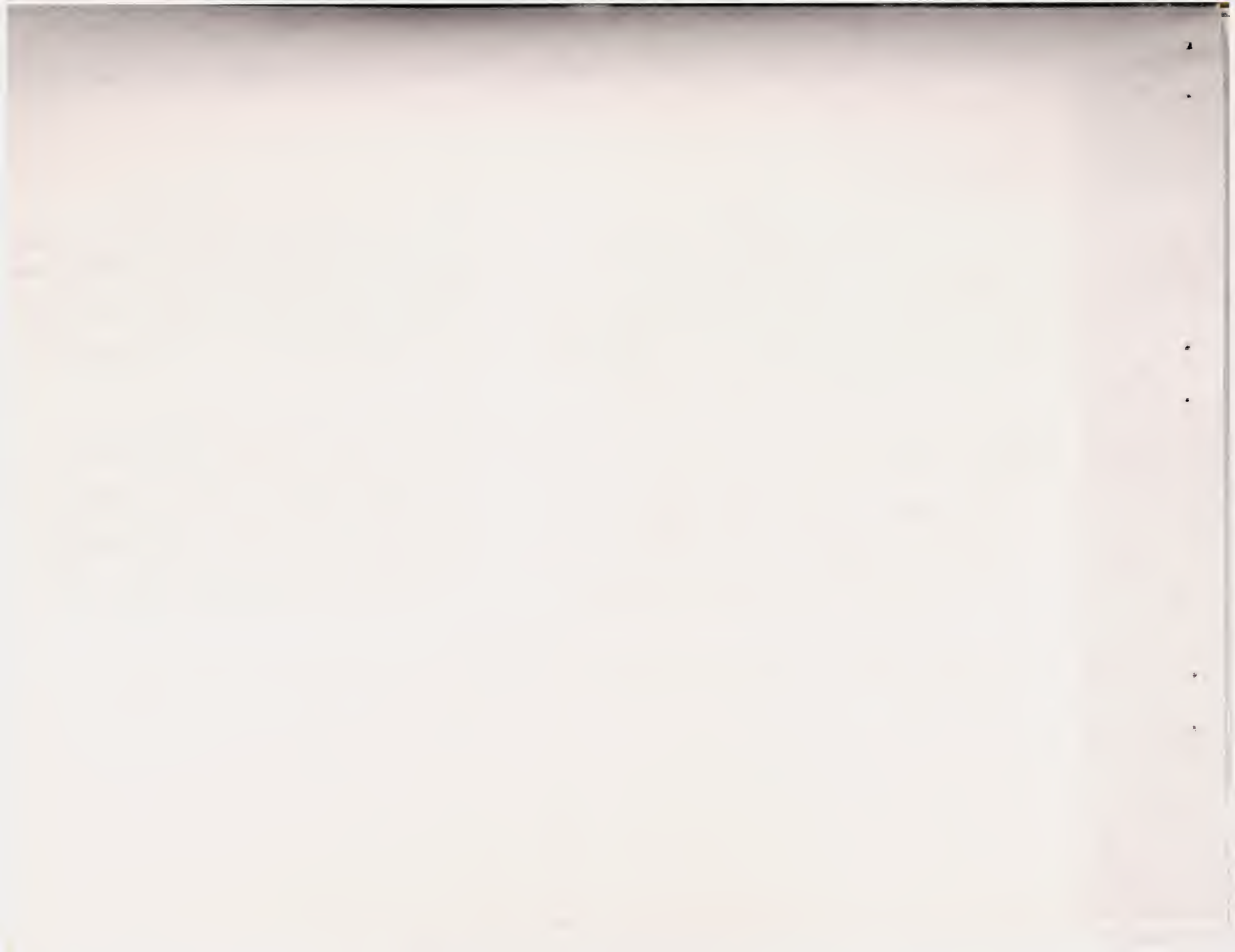
Word 1st ls. - has ls. cobbles in  
the upper unit. overlain by 15-20'  
of siliceous shale followed by  
dolomite #2 ls.

→ Coll. from float near top of  
1st ls.

→ Coll. - 4-5' above Word  
ls. #2

The 4th Word ls. and the Vidrio  
are dolostone facies for most part here.  
They like the upper 250' of Hess facies.  
Locally they have abundant relict  
outlines of graptolites but we couldn't  
find any that were well preserved.

The split tank Leonard section is  
faulted in several places and we  
were able to follow King's section  
in only a general way. Cooper  
said each ls. was a lens which  
pinches out within a short distance  
and each of these apparently contains  
a distinct brachiopod assemblage.



Hess Ranch - 7/16/59 -

✓  
Loc. 2 Word 2; 2<sup>nd</sup> limestone by the road north of the house - This is apparently 2<sup>nd</sup> or 3<sup>rd</sup> ls. - in the field I judge it to be the 2<sup>nd</sup> ls. - or #1

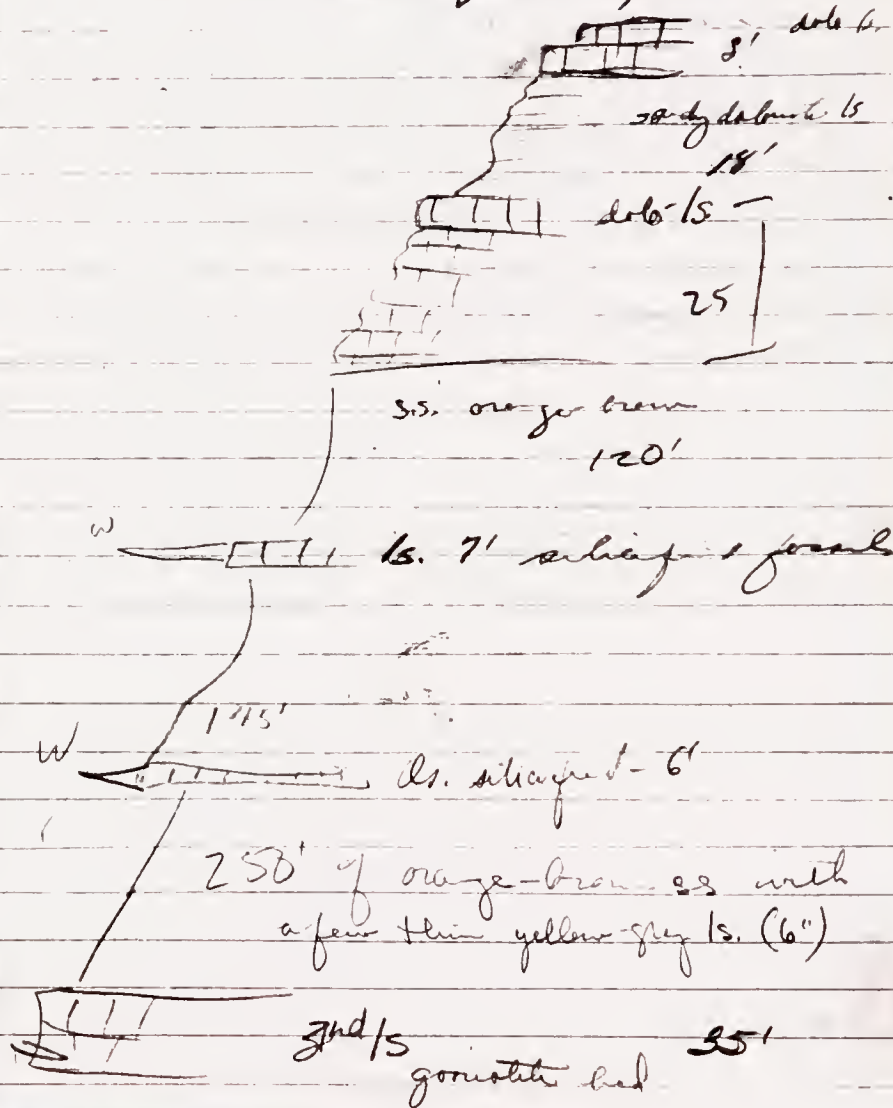
✓  
Loc. 3 Word 4 ls. - A - 12' up in ledge probably #3 3/4 mile up valley B - 16' " " " " from earthen tank

This is not too close to the massive beds at the top of the ridge - which being near Vidua - say 125' to 150' below the Vidua -

The sequence is a silty, dirty limestone in 2" to 6" beds with a few scattered fusulinids in some of the more indurated beds - 135' of this up to 4<sup>th</sup> ls.

See Caliche page for word 4 - Vidua Sect.

Road Canyon, East end -  
✓ → meager coll. from Word 3<sup>rd</sup> ls  
35' up (A)







7/17/59

There is a fault cutting the SE face of section at Road Canyon - also several Tenna Blocks have dropped down.

The Word 4 ls lenses are just about gone here with the Vidua dolo. lying conformable but with an abrupt lithologic change.

### Sect. 5 Leonard Mts -

0) - (see ~~next~~ page over)

Covered below - mainly dolomite and ls. interfingering in tongues & patches

1) ls., med. to dark gray fresh surface, massive 10 to 20' beds, *Sacchinella* zone of G.A.C., weathers to rounded surfaces, one 5'-6' zone of shaly 1' ls. beds 65' up — 112'

2) ls., dark gray, 1 to 2 foot beds, crinoid & bryozoan fragments — 43'

3) ls., med to dark gray, 6" to 2' beds, caps ridges, a few pits, angular weathering - conglomeratic locally — 37'  
→ Coll. 5-3 dendrod

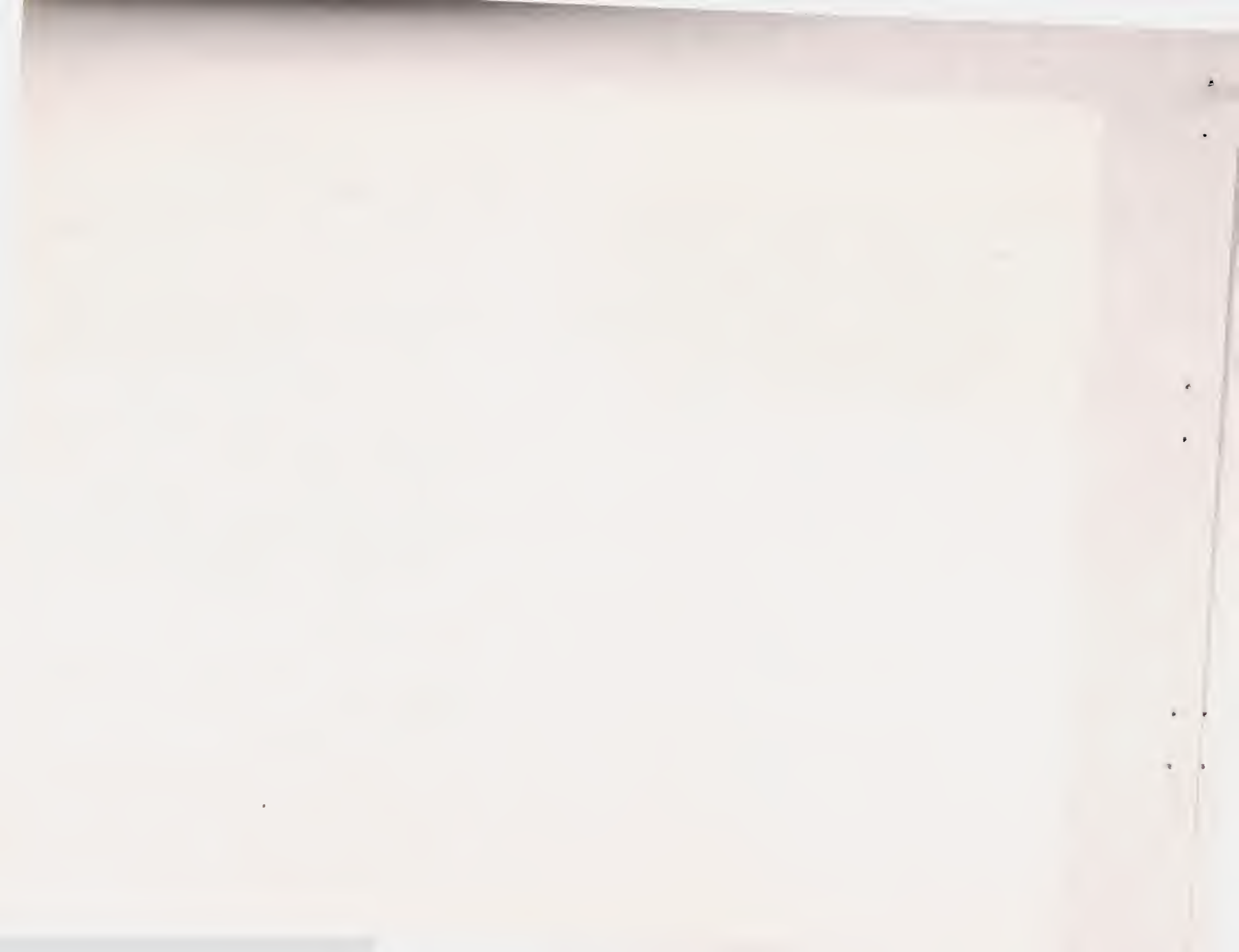
4) ls., dark gray, 3" to 1' beds — 12'

5) Calcirudite, 4" cobbles, with 4" of dark gray 6" ls. in middle — 34'  
top of ridge

Coll. 5-5 top of hill top of ridge

6) ls., light gray, shell best, *reicijid* in part — 3'

Wildie's locality - coll. 5-4 gully  
probably about bed 2



7.) Covered in part, thin ls. (dark gray) - siliceous shale - King fault zone - but no fault here

alt. ls. + shaly ls. in part - 18'

8.) Calcareous - light gray, massive, 2-5' beds, 16'

9.) Calcareous, dark gray ls. matrix, 6" bed 21'

10.) Ls., light gray, 2' beds, (Calcareous), one brown bed (Call. 5-10 head) 5' up - 20'

11.) Calcareous, dark gray matrix - 12 3" cobble

12.) Ls., 2" crinoid colonial beds, light gray, 5-6' beds - shell break - arenite - 5-12A - 3' up, 5-12B - 8' up 38'

13.) Calcareous, dark gray ls. matrix, 2" cobbles 6'

14.) Calcareous, light gray grading vertically into shell break - several of these cycles repeated - (3) - 37'

15.) Shale, siliceous, red + orange - 33'

16.) Congl., ls. matrix + few cobbles, chert fragments - 2' → 6'-7' to 50 East 100, 2'

17.) Shale, orange - siliceous, platy. 32'

18.) Ls., light gray, massive, siliceous, fossiliferous, chert frags <sup>cryst.</sup> near top 56'

19.) Shale, orange-brown, with 1'-2' ls. beds (conglomeratic chert pebbles) - 67' siliceous coquina

20.) Ls., light brown-gray, 2'-3' beds striped bands 17'



21.) Shale, orange-brown, siliceous,

0.) base of Hess ledge rest unconformably  
on truncated edge of Leachville fm.  
3' siliceous, 5' dip. lower Leachville dip. ss.  
col 0-A 10' below unconformity  
0-B 1' " "  
0-C 1' above in Hess ledge

21.) Shale - orange-brown - siliceous -  
top 6" bed of sandy ls., - 47'

22.) Shale, orange weathering (like fresh)  
with 1"-3" shell hard band  
- 55'

23.) Covered - - - - - 115'

24.) Shale + siltst. - orange - - - - - 25'

25.) Ls., sh., shell, brach + brach - 6'

26.) Siltstone, yellow orange - becoming  
near top *Trinacroteta* leaves - 24'

27.) Covered, mostly gray shale - 87'

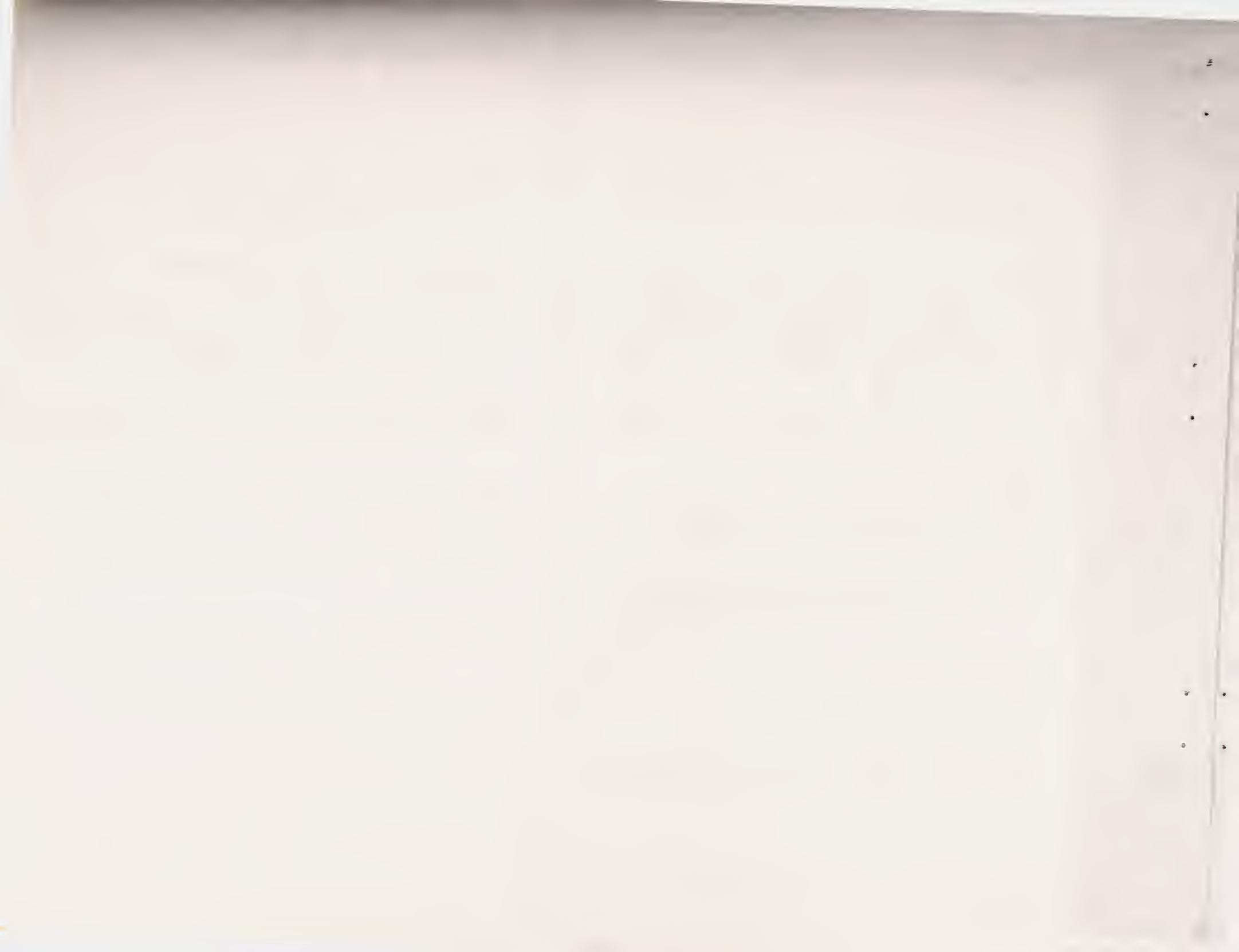
28.) Congl., chert frags, brown weathering,  
many brach + brach silicified - 1 1/2'

29.) Covered, mostly gray shale - a few  
6" silt + ss (orange) bed - shell brach - 1 1/2'

30.) S.s. - orange-brown - brach shell  
hard - Col. 5-30 hard - 12'

31.) Covered - - - - - 86'

32.) Wood ls. - - - - - 100' +  
here it is a ss. at the base - 2-3' beds  
orange to brown gray - 20' above  
we get a massive calc. ind. t.



7/18/59 - no incident -

Cross G.A. Coyle on Dial quadrant in town

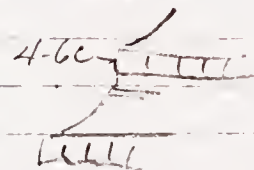
7/19/59 Section 4

- 1) silt — 20'
- 2) Shale, brown, with thin clay rich dolomitic ls. — 72'  
Coll. 4-2 — 6' down from top
- 3) ls., brown-gray weathering with large calcite crystals — 4'
- 4) Sh., brown, + thin ls.  
4-4A — 5' up  
4-4B — 11' up — 23'
- 5) ls., brown-gray — 2' beds, calcite shales in long "beds" — 13'  
→ Top of Henryville fm. ←  
covered from top with 568' relief in 200 yds. —
- 6) ls., med to dark gray, calcareous, many granules — 2 to 4' beds.  
Coll. 4-6A 5' up

and shaly ls. —

small ls. 15' up (4-6B)

4-6C — 23'



2 cycles of ls. 6' to 8' + shale 18'-20' — 52'

7) ls., light gray, with brown-orange chert concretions — massive  
Coll 4-7A — 16'

8) Sh. + ls., brown + light brown weathering — [varicolored shales + white ss 25' up] — 32'

9) ls., brown-gray 4" to 3" bed — mottled zone 1' at base  
small red-bellied *Strophomena* common throughout. — 17'

10) shale + shaly ls — 6" bed of white ss. — 12'

11) ls. like 9 — 10'





12.) Ls., gray, 1'-2' beds, vertical fracture  
on weathering.

Coll. 4-12A - 3' up

4-12B - 12' up

problematic fossils - 12C - 22' up

4-12D - 32' up

top of bench

13.) Ls., dark gray, calcarenite, 6" to 1' beds

Coll. 4-13A - 20' up

Follows - Neal fence here up

— 23'

14.) Shale, brown grades upward into  
clayey ls + finally into a calcarenite  
at top

Coll. 4-14 at top - 27'

15.) Ls., light to med. gray, 6" to 1' beds

coll. 4-15A - 12' up

coll. 4-15B - 50' up

shaly beds commonly reach 10-15'  
in this unit

4-15C - 78' up

— 106'

16.) Ls., med gray, little shale, 6" to 2' beds,  
rubbly in part -

Coll. 4-16A - 3' up -

Coll. 4-16B - 26' up

several beds of dolostone common

at calcarenite - becomes dark

gray above 30'; light gray above 42'

Coll. 4-16C - 43' up

Coll. 4-16D - 58' up

— 59'

17.) Ls., light gray, silty, 3" to 1' beds

rubbly with thin shale bands -

small "Staffella" juveniles common in  
all beds -

— above 33' dark gray

— small, subcylindrical fossils replaced  
by dolomite (47')

— 52'

18.) Dolostone, brown-gray, + ls., gray-brown

4-18A - 11' up

— 27'

19.) Ls., light gray, 2-4' beds, silty, clayey,  
— 37'



20.) Ls., med gray to light gray, thin bedding  
2" to 6" — and shale + siltstone.  
dolomitic; —  
Coll. 4-20A — a 2' calcarenite 26' up  
— 37'

21.) Ls., light gray to cream, massive 3 to  
5' beds with thin bedded and gray  
Cc.  
rubby bed Coll. 4-21A — 30' up  
rubby bed Coll. 4-21B — 35' up  
massive bed Coll. 4-21C — 42' up  
— 54'

22.) Ls., light gray, 2" to 4" beds, fossils  
are common but dolomitized —  
82'

23.) Ls., light-gray — massive 2' beds,  
Coll. 4-23A — 17' up  
4-23B — 29' up  
— 34'

24.) Ls., light gray to cream, thin irregular beds,  
2" to 4" beds — laminated,  
Pink tones about 65'-80'  
— 87'

25.) Ls., light brown gray, wavy bedding,  
in beds 2' to 3', massive, clay &  
silty:  
SEVERAL SMALL FAULTS  
— 97'

26.) Ls., med. gray, 2' beds, with brown shale  
cycles of these, the shale gradually becoming  
dominant — 193'

up to Hess - Neal Gate  
This is very near the base of the Hess Formation  
Bed — ~~delete~~



7/20/59

✓ 4-26m - 1/2 mile east of section 4, 25' below fossil bed.

✓ 4-28mb - 1/2 mile east of Sect 4, from a 35' to 40' light gray ls. above fossil bed. - 8' up

✓ 4-28ma - 5' up

✓ 4-27ma - fossil bed, silicified part above 2-3' ls ledge 15' beneath top

✓ 4-28mc - 35' above Fossil Bed

✓ 4-29ma - massive ls about 25' above top 4-28 -

27.) Fossil bed,

a.) basal calcarenite 28'

b) Shale + ls., shale is brown; ls. is medium gray, abundant silicified fossils - brachiopods, coll. of Bryozoa yellow - with ls. 27'

28.) ls., med. gray, 1'-3' beds, dolomitic, chert nodules,

coll. 4-28A. - 42' up

Omphalothere - common

coll. 4-28B - 64' up

top of hill - 89' - 115'

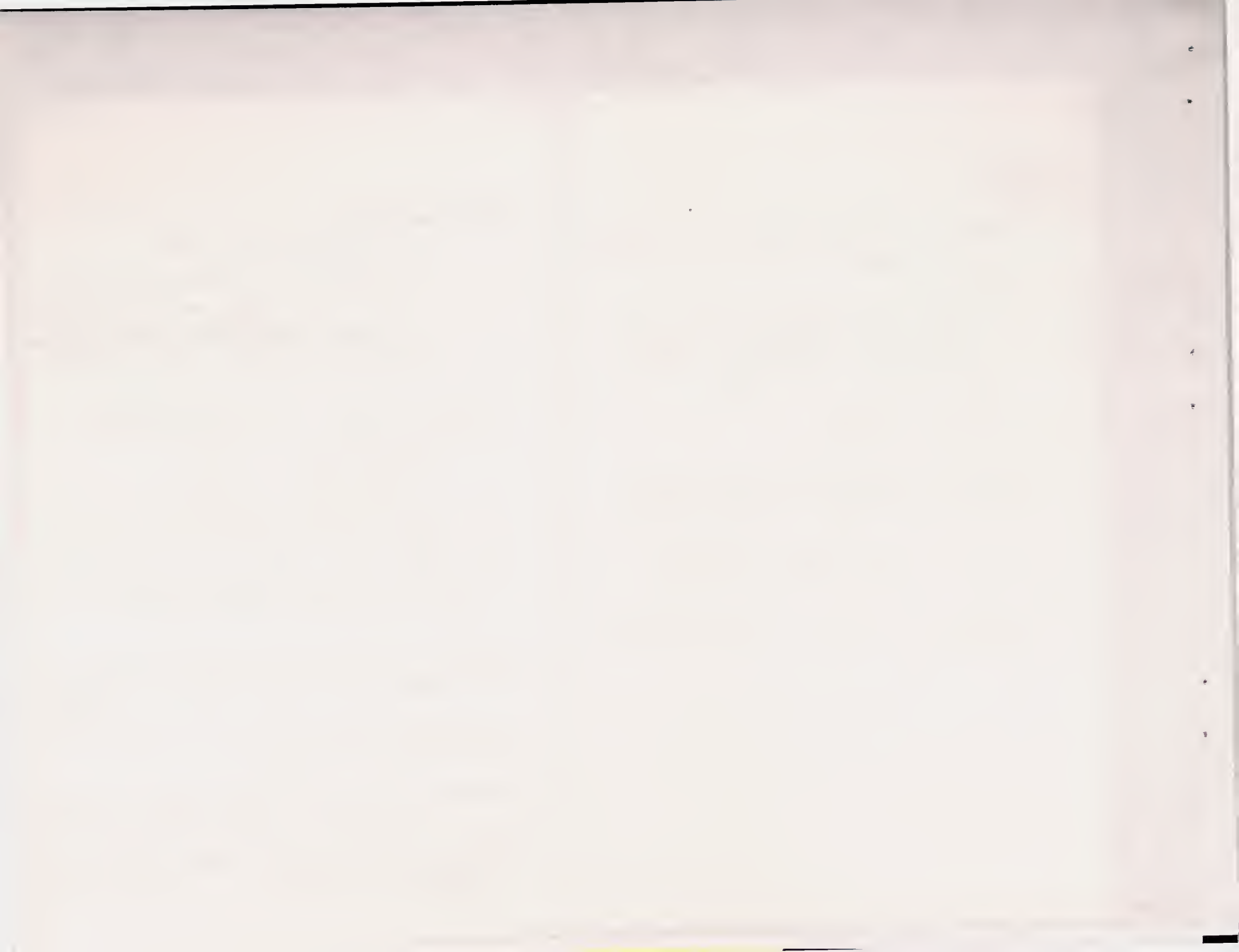
29.) ls., brown gray, 2-4' beds, with lime and blebs & chert pebbles - 24'

30.) Shale + limestone, brown-siliceous; dolomitic or dolomitized ls. 2' beds - 29'

31.) Dolomite, dark gray-brown, 4' beds - 21'

32.) ls., light gray with "graphic" dolo-ls. beds - 12'

33.) ls., conglomerate (calcareous) with chert fragments 3-4' beds - 9'



34) Red sh., siliceous 25'  
Chert nodules

35) Dolomite, bra-sig. pitted - 250'<sub>est.</sub>

↑ start here

Call 4 - Word 2<sub>A</sub> ls - 25' up

Word 2<sub>B</sub> ls - 50'

These are { Word 2<sub>C</sub> ls - 65' up (top)  
10-15' above

the top of { Word 2<sub>D</sub> ls - about same  
the 2<sub>B</sub> ls { because as 2<sub>C</sub> -  
S.S., separated from it by siliceous sh.  
Word 2<sub>D</sub> is from saddle

Word 2<sub>E</sub> - 25' above 2<sub>D</sub>  
35' below First Massin  
limestone 3<sup>rd</sup> Word ls.

Word 3<sup>rd</sup> ls. A - 5' up ✓

Word 3<sup>rd</sup> ls. B - 8' up

Word 3<sup>rd</sup> ls. C - 18' up

12' dolomite - top of ridge

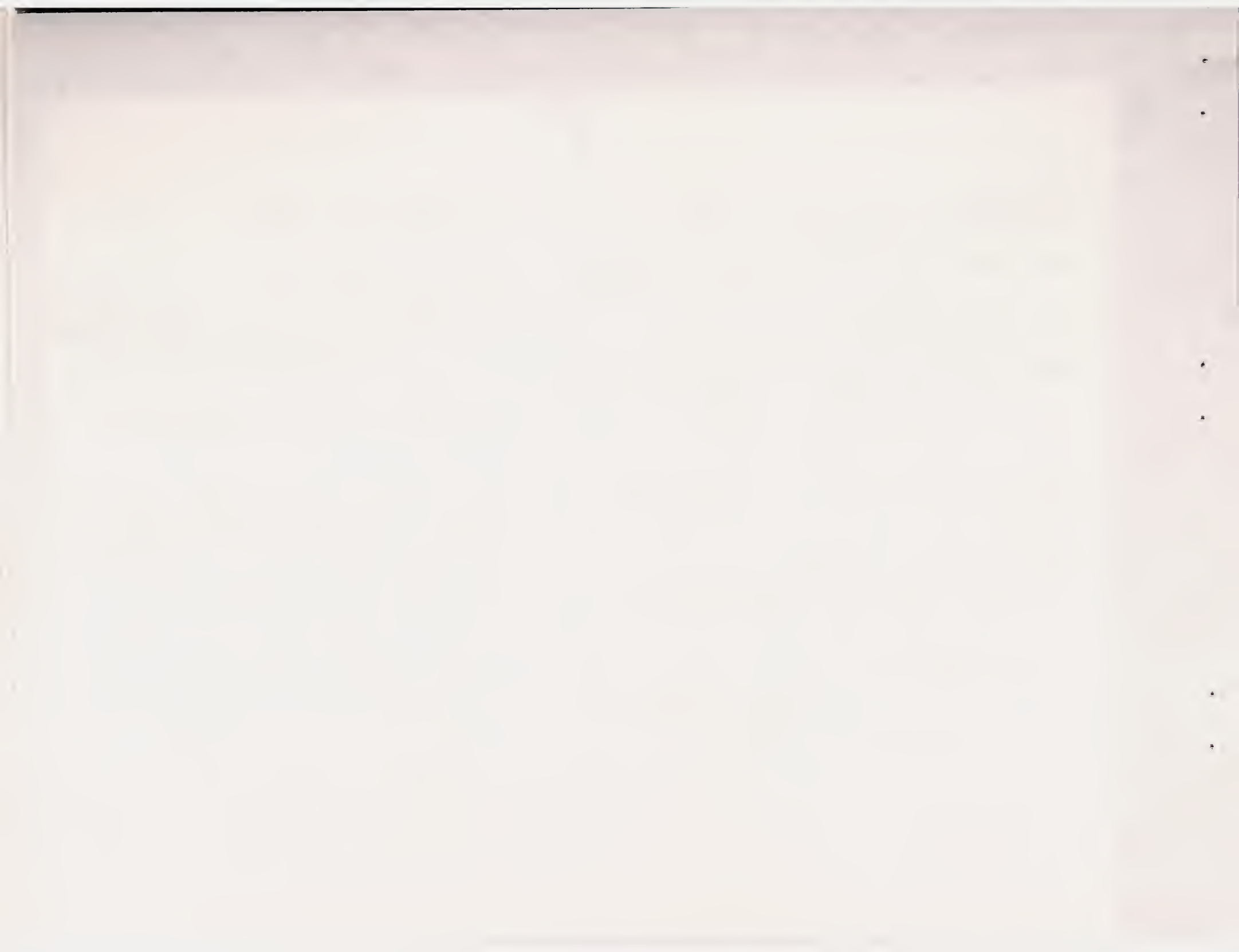
35'  
total thick of ls.

Word 1<sup>st</sup> ls. - 20' below top of King's  
unit "a" Coll. 4 - word 1a

The Word ls. contain a lot of conglomeratic  
strata - most pebbles + cobbles of ls.  
probably intraformational in part and  
fine chert pebbles - where we saw the  
formation, the basal ls. (#1a is  
very little different from #1b although  
King's separation is not too bad. The  
distance between #1 & #2 is closer  
to 83' than 14' and I think these  
numbers are reversed on #43.

The distance between #2 & #3 is  
a little high - unit 6 becomes 15.  
and 5 has fossiliferous ls. layers  
in it.





7/21/59

The south side of demand is complicated by:

- a) facies changes
- b) irregular dolomitization of beds
- c) several faults

I have perhaps drawn the top of the Tenophylla zone a little high but will let it stand for the moment - Changes in the Tenophylla zone in thin here as an eroded anticline (pre-demand).

Jail Canyon where road is down map -

- 1) No Alameda shale on SW end of Hill 5789 - This is King's Capitan upper member -
- 2) Vidua = Capitan upper member apparently + it seems likely that Alameda sh. + lower member are equal to upper part of Wood.

## Section 5 Jail Canyon

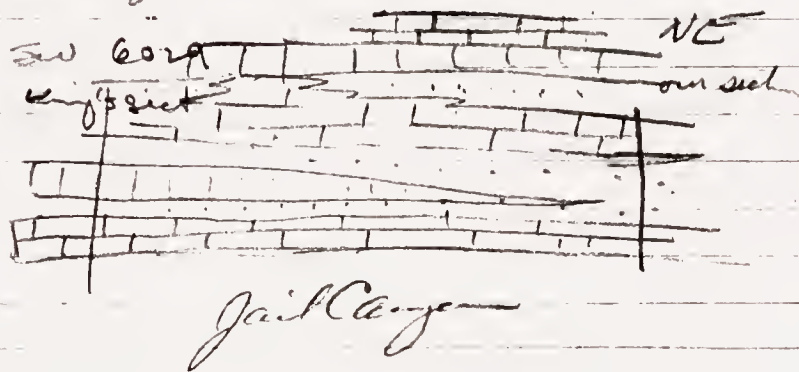
Section on East Side of Old Bluff Mt  
Jail Canyon  
Covered below

- 1) Ls., mid gray, 2-4' beds, gastropods + Orinoid Columnaria, *rethallized*; - 15'
- 2) Ls., (buff) light brown weathering, 6"-1' beds, siliceous bands - 8.5'
- 3) Ls., mid gray, pitted weathering surface, 2-5' bed (similar to unit 1) - 51' lenses of calcarenite (coll 3A)
- 4) S.s., orange-brown to light brown, weathering, 2" to 6" beds, stony calcite cement, "siliceous" bands are irregular throughout unit - 112'
- 5) Ls., mid gray, calcarenite - 2-6' beds, silicified + replaced fossils - Jail Canyon - 5A - 3'  $\pm$  Congl. in part - v.f. calcarenite to 1"-2" pebbles in calcarenite (See King's Sec. 16, unit 5) 20'  $\pm$
- 6) Ls., tan, calcarenite + s.s., pinched out to South - 10' 30-40' on ridge 400 yds N.



7.) Ls., med. gray, 2'-3' beds, to top  
of Hill.

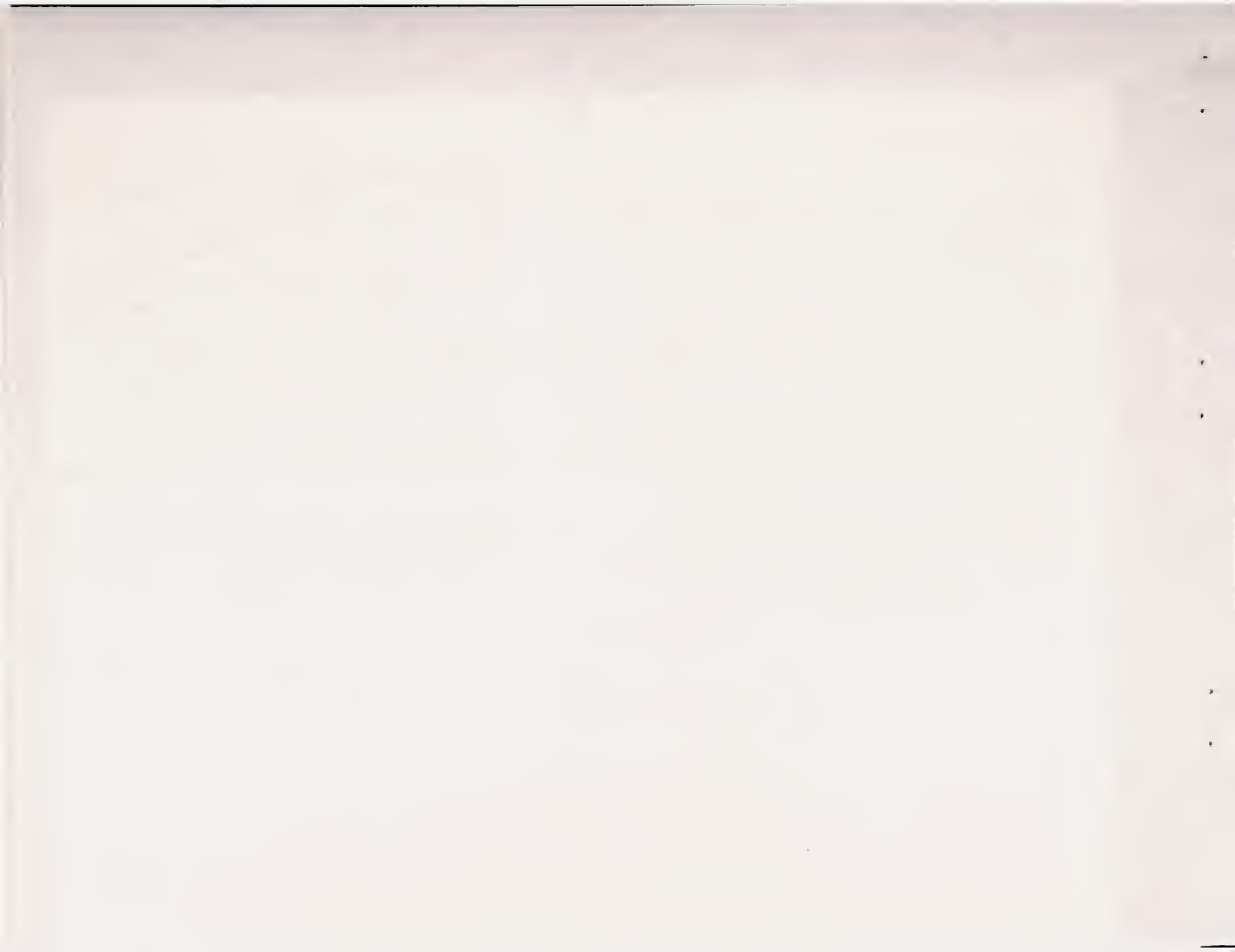
His unit 3 is missing where we  
measured section but become thicker  
to SW — His units 3+2 = upper  
part of his unit 1



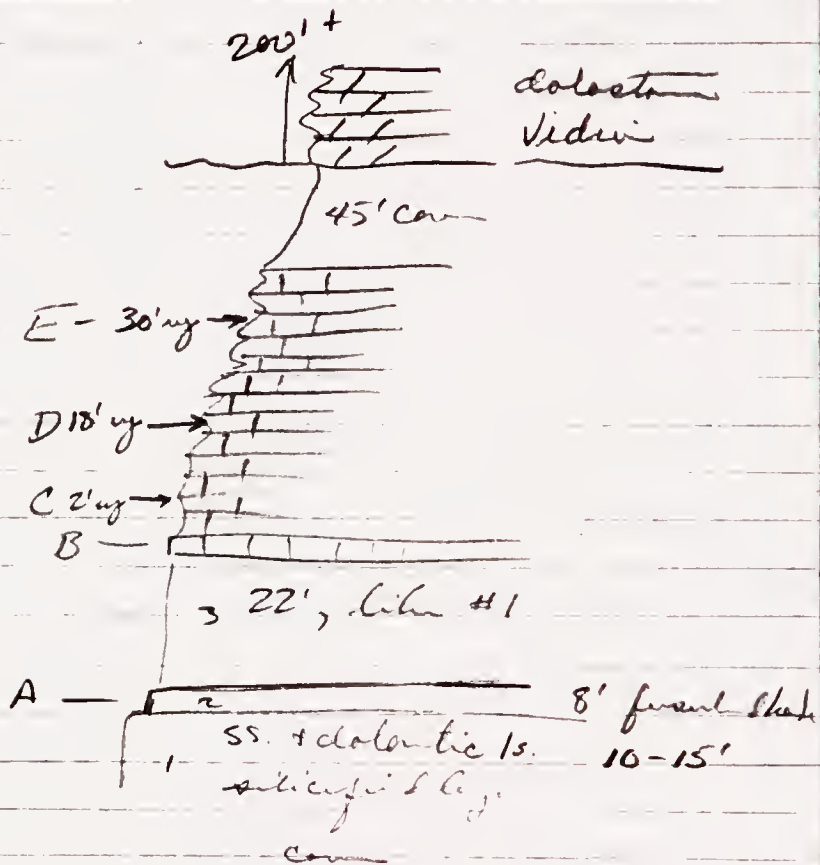
[3 3/4 miles N 30° W of Skinner Rock]

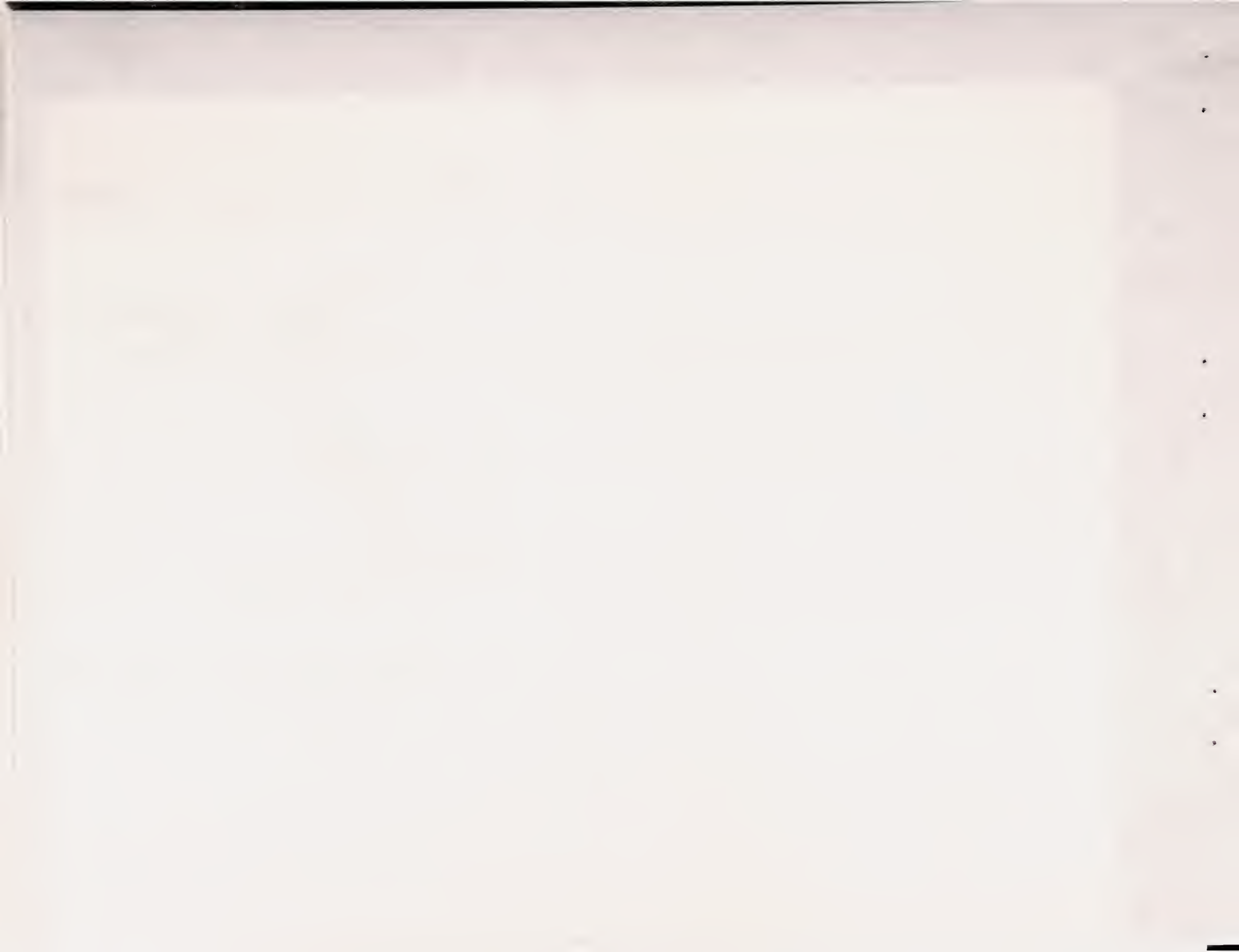
The Word ls. which King maps  
along the west side of Giffiland Canyon  
is probably his 3rd ls. not the first  
one. (Coal. Iron Mt. red Word ls. A)  
is from this — includes a few  
✓ scattered fossils, cephalopods &  
a "Scallopella" brachiopod. There  
seems to be no need for the  
fault further SW. The top of the  
hill we climbed is a tenon block

The Giffiland Anticline goes out  
to the south of this point & beds  
regain their 10° NW dip



Elbow in Ness Canyon - 7/16/59

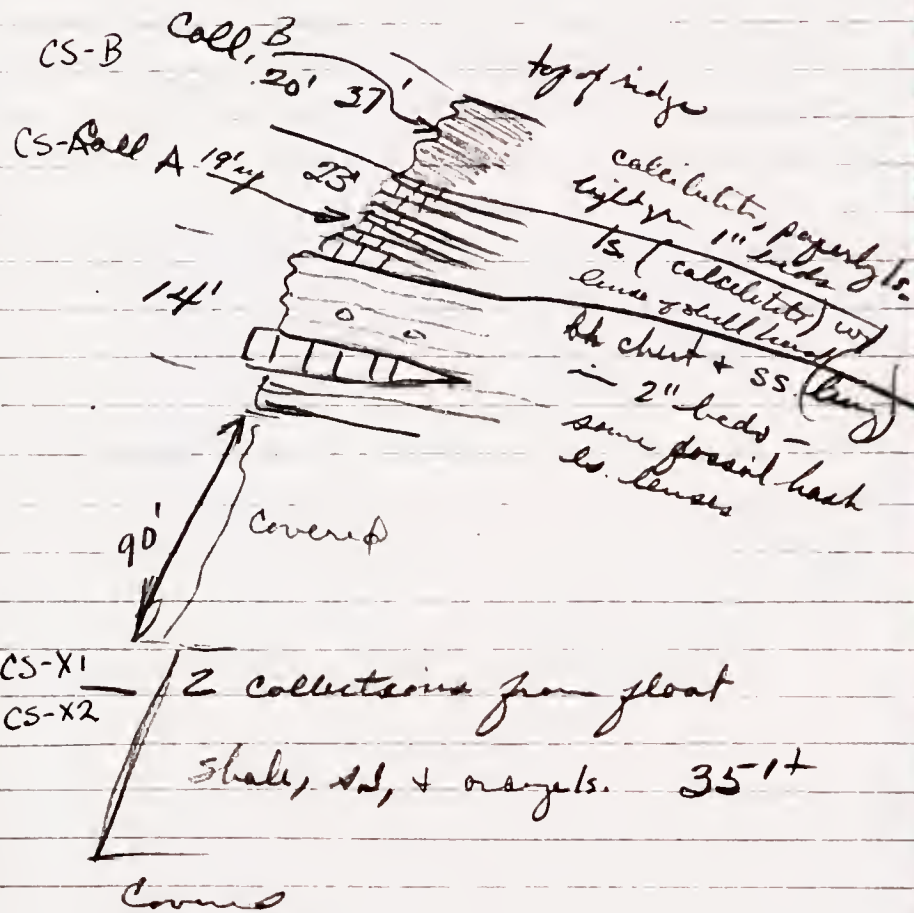




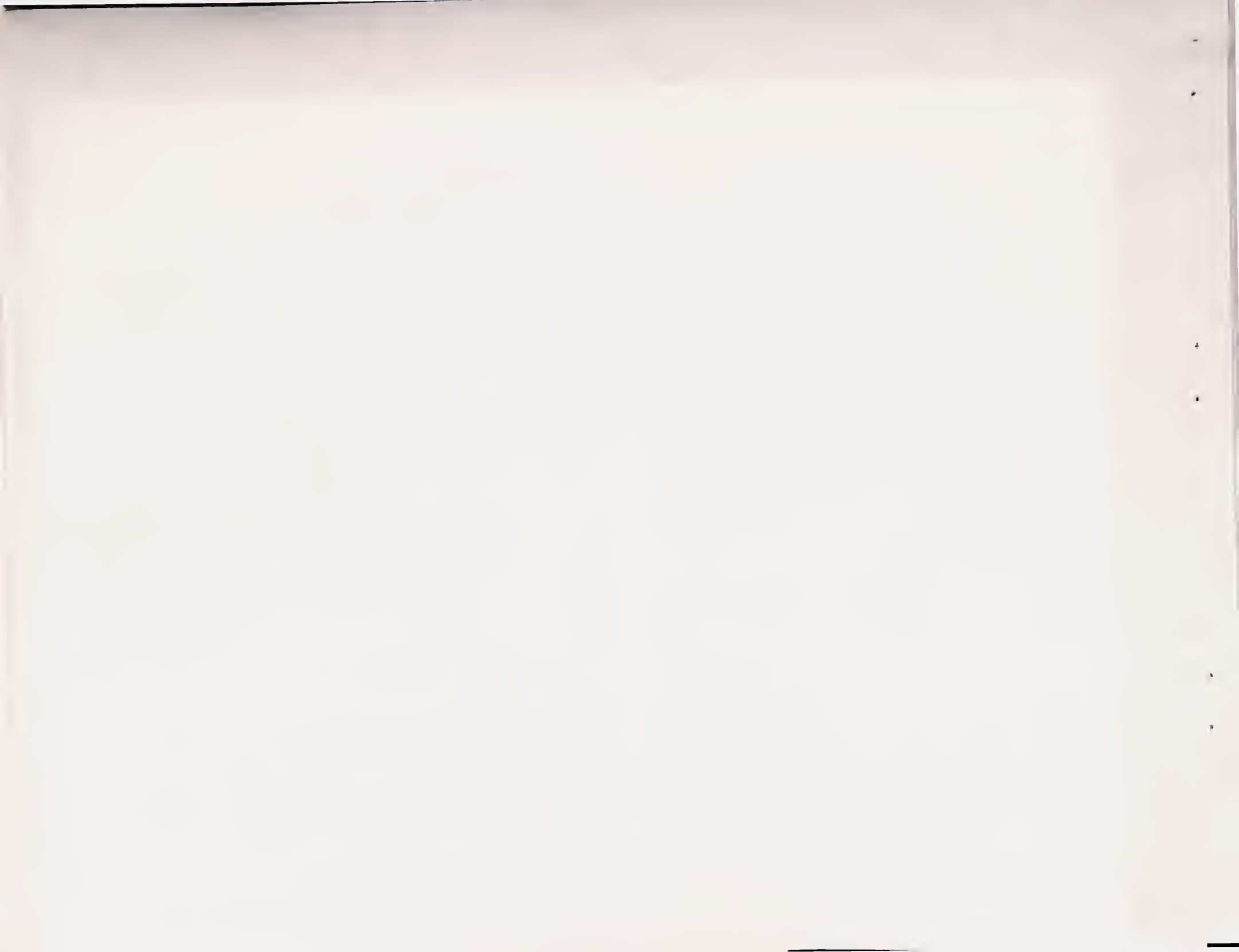
7/22/59

# Clay Side -

The upper part of mound is badly covered  
by terra blocks from the Wood  
H. above.







✓ Clay Slid  
 Account to Coll. 1/2 mile SW of  
 Kings dip sample 12° along road.

Sullivan Ranch Road & Clay  
 Slid Escarp - junction -  
 3 collection -

20 { (1) Wood ls C - in lower 20'  
 of gray limestone

25 { (2) Brown to yellow weathering bed

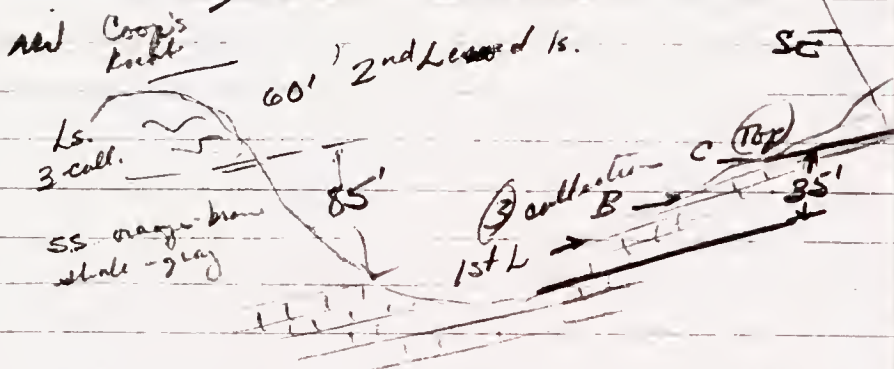
35 { (3) Wood ls D in lower part of  
 massive reworked ls 40' up  
 Wood ls E, 6' below top of ridge

7/23/59

✓  
 Morning - climbed from the "Hess" ledge  
 up to the 2<sup>nd</sup> Leonard ls. - made three  
 collections based on King's sect. 12

The base of the Capitan at Sullivan peak  
 is a beautiful unconformity - 40' or  
 more relief and parallel bedding.

Afternoon - base of little knob of  
 Cooper's SSW of Texas Hills -  
 base of hill shale + siltstone + sandstone  
 dip 10° to the S10°W



This section is cut by a fault or faults  
 and the exact relation of the beds is  
 dubious - it is probably the 2<sup>nd</sup> Leonard  
 ls., but?



The Leonard fr. in the Kern hills  
consists of a series of ls. tongues which  
tend to become thinner to the S.W. and  
break up into a number of thin units  
by additional shale tongues. The  
structural problems are big especially  
in the area south of Sullivan Peak,  
between Deegout Mt. and the Altuda  
uplift. Of course it is all covered but  
there is still a real problem to figure out.

Kings map is wonderful, but his isn't  
very consistent about his boundary  
between the Word and Capitan - his  
Leonard + Word also have problems -  
the ammonite bed which he places  
in the Leonard in the west is about  
the right horizon for his 1st Word  
limestone in the east. I.E. It  
seems the Word Leonard boundary  
is also inconsistent.

The base of the Word in the west  
seems to be about the 3rd ls. of the  
eastern Mts. In Section 12 this  
unit is greatly thickened and  
may represent the reef between

The back reef facies to the east - & the base  
to the west.



7/24/59

Decie Ranch - Sullivan Park  
Coll. from lower 25' of ~~between~~  
Words of King's Sect. 12

Coll. " " B float 25' below top

Coll. " " C in place 20' " "

Coll. " " D " " 10' " "

B+C+D are from King's bed 3

King Word bed 4 is congl. - 3-4" ls  
cobbles from sponge under  
sea and ls., some chert.

Coll - King 12 - Word 4

Coll. King's Sect 12, Word bed 5  
12' up

Coll. f. King's Sect 12, bed 6 - 4035

Coll from float from King's bed 18, Sect 12

7/25/59 - IRON Mt. Ranch  
Section 5A

Covered below

1.) Siltstone and shale, with thin platy  
sandstone, yellow-brown weathering,  
1/4"-1" beds - 58'

2.) Calcareous, med gray weathering, fossiliferous  
1' ledge, Coll 5A-2 - 1'

3.) ls., orange + gray weathering, fossiliferous  
of brachiopods + fossils - Coll. 5A-3-1

4.) Limestone, orange-brown weathering, sandy  
fossiliferous - Coll. 5A-4 - 2'

5.) Sandstone, yellow-brown weathering, lenticular  
1' to 6" beds - 21'

6.) ls., med. gray, 1' to 2' beds, even bedding,  
Coll. 5A-6A  
Coll. 5A-6x float " " - 2'

7.) Siltstone and sandstone, yellow-brown,  
with lenticular beds of sandstone - 37



8) Ls., med gray, massive beds  
5 to 10' cliffs, thin irregular brown  
chert bands, 56'

9.) Siltstone + shale, covered for most part,  
yellow to light brown weathering, upper  
15' becomes a sandstone 123'

10.) Ls., med gray; basal 2-3 a calcarenite,  
becomes finer grained upwards,  
fossiliferous common in a 6-12" band  
just above congl. Call. 5A-10 8'

11.) Siltstone + shale, yellow to green-gray,  
48'

12.) Ls., gray weathering, 3" to 1' beds,  
thin ( $\frac{1}{2}$ " shell) interbeds 4'

13.) Sandstone, siltstone sequence,  
tan to orange-brown weathering - 62'

14.) Ls., calcarenite, gray, 3-6" beds - 5'

15.) Sandstone, orange-brown, 6" to 6' beds,  
calcareous cement 56'

16.) Calcarenite, tan-gray weathering, 2" to 3"  
beds, irregular bands of chert  
(3 eyes) nodules, grades upwards into  
quartz sandstone beds; at 56-60'  
there are several empty shell holes and  
silicified fossils - Call. 5A-16 at 60'  
137'

17.) Ls., brown-yellow weathering, 6" to 2' beds  
scattered white chert patches, cliff former,  
saccharoidal with purple weathering patches,  
pitted surface 25'

18.) Ls., brown-gray weathering, 6" beds - 17'

Unconformity - 8' of relief in  
100 yards along strike

19.) Dolomite, brown gray, rubbly  
cemented by clear calcite matrix -  
forms top of ridge - 65'+

↑  
Start here





## Section 5

Section at West end of Road Canyon  
 King's fault contact by the word against  
 Vidua is true, although there is  
 possibly a fault 100 yards further  
 up the hill

to the  
 95 dig S70W

Vidua

10 dolostone, brown gray with large  
 clear Calcite Xalls and a calcite matrix  
 (Call of this) ————— to top of hill

unconformable contact -

several (?) of rock?

9 Ls., calcareous, yellow brown, 2"-6"  
 beds with chert nodules. ————— 12'

8 Ss., dark brown weathering, siliceous  
 bands with calcareous cement  
 when calcite cement remains weather  
 light yellow brown ————— 32'

7 Ls., calcareous, yellow brown weathering,  
 brown on fresh surface - 1" to 2" beds  
 patches of cherty Xalls ————— 20'

6 Ls., mid gray, massive lenses  
 1' to 4" thick in rocks like  
 above unit ————— 12'

5 Ls., yellow-brown weathering,  
 brown chert nodules, 9" beds ————— 18'  
 Coll. of fossils for here →

4 Ss., dark yellow-brown weathering,  
 1' to 3" beds chert Xalls ————— 8'

3 Ls., yellow brown weathering, brown  
 chert nodules, 6" to 1' beds ————— 40'

2 S.s., dark brown, siliceous, ————— 6'

1 Ls., light gray weathering, platy,  
 (probably top of 3rd word Ls. ————— 10'  
 exposed

————— Covered beneath



# Section 4A

7/26/59

Examined the middle of King's Sect. 12, Leinthill,  
and remeasured it in part, see books

Then drove to Hess-Hall boundary fence  
and measured from road north to the top of  
the ridge and across the rolling slope 700 yds.  
Section along Hess-Hall boundary fence

1) Ls, dark gray, silified fossiliferous beds, 3' to 6' — 20' ±

2) Covered, probably siliceous shale — 126'

1st Ward ls. { 3) Ls., mid gray, finely laminated, very  
silty with bands of brown siliceous  
replacement, lenses of fossiliferous calcarenites  
(call 10' from top) — 84'

4) Dolostones, "dirty" gray, 5' beds,  
a yellow weathering ls 6" about 20' up, — 40'

2nd Ward ls. { 5) Shale, red-brown weathering, — 10'

6) like 4 below — 30' ±



7/27/59 Dugout Mt. Section

Section 7 - dip 14

Siliceous siltstone below

1) LS., mid gray weathering, 1 to 2' beds,  
bands of brown silica, fossil hash,  
conglomeratic, chert pebbles up to 1" diam,  
— 24'

2) LS., mid gray, lenses of shell hash  
up to 6' thick, siliceous nodules common,  
Coll. 7-2 — 3' up  
becomes interbedded with blue gray calcarenite  
upwards -

Coll. 7-2 B - 31' up  
shale breaks at 35' + 40'

Total — 53'

3) Shale, siliceous with chert bands, and  
thin ls. calcarenites — 8'



4.) Calcareous, brown weathering, 6"  
cobbles in 4' beds and shale,  
s. limestones, red brown in 6' beds  
Calcareous has abundant silicified  
trials. 27'

5.) Calcareous, gray, 1" grading up into  
quartz. s.s. 12'

6.) Calcareous, med to dark gray, 1' beds,  
Coll 7-6A - 1' up?

(Cephalopods  
+ bryozoans  
to the west)

a few pebbles - calcareous have  
siliceous through the pores - get  
brown weathering color.  
upper part a conglomerate -  
dolomite also in patches  
18'

7.) Sandstone, red brown weathering, and  
conglomerate chert pebbles in a dolomite  
+ siliceous matrix, 4 repetitions - 30'

8.) Ls., brown weathering, shell hash,  
some beds conglomeratic, siliceous  
deposits in beds, 1' to 2' beds, -  
40' to top of Knox

To the west these beds change facies into  
orthoquartzitic, siliceous shales, to a large  
extent.

above beds which I think are the same  
as unit 8 there are

9.) Sandstone and shale, friable, yellow  
and red-brown weathering, some bands of  
dark brown siliceous shale. 30'

10.) Sandstone, light brown, orthoquartzitic  
and thin beds of shale 15'  
(6° WNW dip)

11.) Covered above, some beds are exposed  
but retines are obscure and apparently  
the sequence is broken by several faults

(Fig 525' at)

Hor. 1





12) Shale, yellow & brown weathering, - part  
siliceous 25' exposed

13) Conglomerate, local lens<sup>+</sup> - 30'

14) Ls. + shale, gray + yellows - 232'

15) Ls, yellow gray weathering, finely  
laminated with some cherty bands,  
lenses of calcarenite - Coll 7-15A - 5' up  
Coll 7-15B 12' up  
" 7-15C 17' total 17'

16) Shale, yellow-brown, thinly  
laminated, lenses of calcarenite  
with fossil hash 14'

17) Ls., med. gray, 1' massive beds, fossil bed  
calcarenite Coll. 7-17A. - 1' up - 2'

18) Shales + S.S., red-brown to yellow,  
thinly laminated, siliceous, one  
6" calcilutite bed in middle - 10'

19) Ls., med gray, conglomeratic in lower  
part, calcarenite higher -  
Coll. 7-19A - 6' up  
7-19B - 1 1/2' up - 2'

20) Ls., brown to red brown weathering, siliceous,  
thinly laminated, 1" beds, fossil 260'

21) Ls., brown-red, cliff former, 6" to 3' beds,  
conglomeratic, 60'

22) Ls., dark gray, conglomeratic 21'

23) Covered 37'

24) Ls, light gray to chalky weathering, a  
series of ledges, fossil hash 35'

[Fault N of S.S. crest] (dip 60° to the ESE)

25) Calcarenite, light gray to brown weathering,  
2" to 1' beds.

Coll. 7-25A 6' up  
Coll. 7-25B 10' up - 12'



26.) Conud

dip 14° to the WNW

27.) Ss., brown weathering, 1' to 3' beds,  
X bedded locally, congl. in bands -  
70' up a *Cephalopod* locality  
Col. 7-27A

— 110'

28.) Ls. dark gray, 6" beds, calcarenite

7-28A - 5' up

7-28B - 12' up

20' of light brown calcarenite

7-28C - dark gray ls. 4' up

12' of brown siliceous shale + siltstone

8' of ls. black, 7-28D 6' up

10' of siliceous shale

4' of v.f. gray calcarenite 7-28E

29.) Ss., brn + siliceous sh. — 62'

30.) Ls., calcarenite, yellow-br + siltstone

50' up ↗ alternating in cycles — chert nodules  
common in upper part — 175'

as far as we went.

31.) Gray *Copula delamiti*

↑ Start Here

7/28/59 —

Tried to clear down King's  
section up Little Blue Mt. — met  
a Mr. Melts who was a great —

The fossiliferous in King Sect 17, p. 17  
and mostly funny spots in the ls.  
but are almost apparently *Fossiliferous*  
This thickness here is about right.







Sect. 2B - Fuller ranch

4.) Dolostone, gray-brown weathering,  
pitted surfaces (relic pinnacleds),  
1-3' beds, poorly silicified brachiopod bed  
about 25' up — Total-85'

5.) Dolostone, light gray in lower  
200' becomes med gray in upper  
part — est. 700'  
1-3' beds



