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Correspondence re: Kansas Geological Society's 9th Annual Field Conference - Mississippi Valley cross-section. 1931-1935

Thwaites, F. T. (Fredrik Turville), 1883-1961

[s.l.]: [s.n.], 1931-1935

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305 CERAMICS BUILDING
UNIVERSITY OF ILLINOIS CAMPUS

URBANA

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PRESIDENT ARTHUR CUTTS WILLARD

July 19, 1935

Mr. F. T. Thwaites
Department of Geology
University of Wisconsin
Madison, Wisconsin

Dear Mr. Thwaites:

I am sending to you under separate
cover, a blue-print of my cross-section.

Very truly yours,

L. E. Workman

L. E. Workman
Associate Geologist
Subsurface Division

post card

Well	No	Code	Elev	Drift	Galv	St P	L.M.	Trem	Franc	Dres	E.C.	MtS	T.D.				
N. Ill. O & G No 1 Taylor	—	A4503 28d5	820	30	790	360 460	665 155	—	—	680 140	775 45	850 -30	1160 -340	2925-2105	2998-2178		
Rockford Eside	—	A4402 1955W	800	240	560	270 530	520 280	—	—	610 190	750 50	830 -30	1220 -420	1370 ^{red m} -570	1600 -800		
W.P. & L.T. Belmont No 2	78759	01121 24	784	55	729	152 632	265 519	—	—	335 449	445 339	500 284	830 ^{new} 700	—	1225 -441	check on rec.	
Riverside Farm	—	0212 1594	760	190	570	—	—	270 490	300 460	370 390	—	—	—	—	480 280		
Janesville School	8376	0212 0148	820	10	800	70 750	250 570	—	—	300 520	370 450	455 365	—	—	—	470 350	
Janesville City	—	0312 3663	750	246	—	—	—	—	258	—	298	?	650 ^{new} 585	165	—	1087 -337	
Lerow Fa.	—	0312 2967	1020	60	960	200 820	—	—	—	—	—	—	—	—	—	225 795	
Evansville	82321	0410 2762	900	100	800	—	215 685	—	—	280 620	380 520	485 415	780 120	—	—	1014 -114	
Sho It S Fa.	—	0510 1987	1020	40	980	80 940	—	—	—	—	—	—	—	—	—	116 900	
Albion 0609.3	—	0609 26d1	936	101	835	—	—	90 895	—	—	109 827	240 596	435 401	850 -14	860 ⁹⁵ -24	890	
Oregon Ind. School	85135	0710 30a5	892	95	797	—	—	—	—	210 882	275 617	465 427	825 67	828 64	—	—	
Ninespring	74281	0709 25d4	880	110	770	—	—	—	—	180 700	243	—	—	—	—	260 620	
Torrville	71517	0709 13	851	100	751	—	—	—	—	—	135 716	?	731 120	736 115	—	—	
Unit No 3	81774	0710 06a8	850	52	798	—	—	—	—	90 760	145 705	415 435	730 120	753 97	—	—	
Oscar Mayer	50381	0810 21b5	855	372	483	—	—	—	—	—	—	—	—	—	—	568 287	
Golf Club	52712	0809 13a5	920	6	914	—	—	—	14 906	118 802	173 747	—	—	—	—	265 655	
Bernard Pk Kennedy	71431	0809 13591	855	105	750	—	—	—	—	—	—	—	—	—	—	264 591	no A in ch
Conover	54669	0809 26e5	935	28	907	—	—	38 897	84 851	180 755	—	—	—	—	—	215 720	
Waukegan	78975	0809 08h3	910	90	820	—	—	—	—	165 745	230 680	—	—	—	—	305 605	
Sauk City	53365	0906 12	757	128	629	—	—	—	—	—	—	—	300 457	523 234	525 232	—	
Phillipp	54347	1006 27f4	859	190	669	—	—	—	—	—	—	—	360 499	540 319	625 234	—	
Baraboo city test	16606	1106 02	856	215	641	—	—	—	—	—	—	—	—	424 432	428 428	—	
Gravel pit	82648	1206 15e3	990	—	—	—	—	—	—	—	—	—	—	—	—	304 686	
Kilbourn test.	—	1306 03	928	—	—	—	—	—	—	—	—	—	—	450 470	999 -71	—	
Elephants Back	—	1406 21-22	1160+	—	—	—	—	—	—	112 1050	156 1010	—	—	—	—	—	
Rattlesnake off road	—	1606 07	1210	—	—	—	—	—	—	120 1090	—	—	—	—	—	250	to plain level
Friendship Md & well Adams	—	1806 21-32	1250	130	826	—	—	—	—	114 1140	1125	—	—	315 641	310 320	636	
Roche a Cr.	—	1806 30	1165	—	—	—	—	—	—	5 1160	—	—	—	—	—	225	
Porro Coucho	—	2006 28	980	—	—	—	—	—	—	—	—	—	—	—	—	—	
Nebraska	210510	2006 28	980	—	—	—	—	—	—	—	—	—	—	—	—	—	

1m NW of Shultz quarry ls/ss 1005 ^{band} NW of Oregon W 1m - ^{ls} 1100+ ^{ss} bare Pr

3m W of Clin Shultz 15/ss 970 Bare Pr

Kurbin quarry bare Traps 930

Evansville, bare Pr 820

NW of Lerlow ^{band} bare Pr below 900

Lerlow 1020
200 ~~probably low level~~ low level??

1m E 1000
180 probably OK 50

well at 900 NW of Evansville 80 to 55 ss at 800

Contact in Evansville W of river 805

S of Riverside Farm

below River level 750

Faint up to S same top bed
bare Pr 780

sub Decatur at Belmont about 70'

contact mostly negative

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STATE OF ILLINOIS
STATE GEOLOGICAL SURVEY DIVISION

M. M. LEIGHTON, CHIEF
305 CERAMICS BUILDING
UNIVERSITY OF ILLINOIS CAMPUS

URBANA

March 7, 1935

Mr. F. T. Thwaites
Department of Geology
University of Wisconsin
Madison, Wisconsin

Dear Mr. Thwaites:

Thank you for your letter of March 2 and also the blue prints of your cross-section and graph to be used in the report by Twenhofel, Raasch, and yourself.

I am now preparing to ink in the northern portion of my cross-section. I have chosen a route through Rockford rather than through the Taylor well which corresponds with a suggestion in one of your previous letters, and have merely added the lower portion of the Mt. Simon formation down to the bottom depth of the Taylor well. Actually there is no important difference in the sections at Rockford and the Taylor well. I shall reexamine the samples at the top of the Dresbach for a more definite location of the boundary between the Dresbach and the Franconia, although, of course, it will make little difference on the cross-section.

Very truly yours,

L. E. Workman

Associate Geologist
Subsurface Division

move bottom of EC at Belmont to 830

March 2, 1935

Mr. L. E. Workman, Associate Geologist,
State Geological Survey,
Urbana, Illinois

Dear Mr. Workman:

I wish to thank you for yours of Feb. 27 with enclosed drawing. Will state at the beginning that I will agree to whatever changes you desire to make in the base of the Eau Claire in or adjacent to Illinois.

In the paper we have just sent to New York we define the base of the Eau Claire as the lower limit of the fossils of the Cedaria zone. In fact, Raasch has gone so far as to call the non-fossiliferous Eau Claire of the mounds in central Wisconsin (shown on this section) Mt. Simon. This is because he regards the lithology as the determining factor. Now in subsurface studies this will no do. We know that lithology varies laterally and do not like to draw a lot of lenticular boundaries. You will note that despite Raasch's views I have extended the Eau Claire up through central Wisconsin although the lower limit is far from definite and the upper one is likewise vague.

The only objection I could have to your revision in No. 1 Taylor and No. 2 Beloit is that it includes with the Eau Claire strata which are distinctly unlike that formation where seen on the outcrop. However, your section demonstrates the true relations very well. I will check samples in Wisconsin for this sooty zone. After this is done I may want to make other changes in my tracings. Please do not tell Folger to copy anything until this is done. The Janesville well below the top of the Eau Claire is a drillers log.

Under separate cover I am sending some of the illustrations for the Cambrian paper with Twenhofel and Raasch and will be glad of any comments.

In regard to the top of the Dresbach I do not agree at all in fixing the boundary at the bottom of the glauconite, unless it is understood that this will include the Ironston with the Dresbach. I can discriminate Ironston in most of the wells by the coarse grain compared with strata above and below. It was on account of this that I suggested lowering the top of the Dresbach in No. 1 Taylor from 755 as on the blueprint or 775 the lower limit of glauconite to 850. Of course, I have not seen these samples so will leave the decision to you. It will not make much difference at Beloit or to the north.

I am very glad you are getting along so well and are in touch with McQueen.

Sincerely,

STATE OF ILLINOIS
STATE GEOLOGICAL SURVEY DIVISION

M. M. LEIGHTON, CHIEF

305 CERAMICS BUILDING
UNIVERSITY OF ILLINOIS CAMPUS

URBANA

February 27, 1935

Mr. F. T. Thwaites
Department of Geology
University of Wisconsin
Madison, Wisconsin

Dear Mr. Thwaites:

I should like to submit for your consideration some differences of opinion as to the thicknesses of the Eau Claire formation and the Dresbach formation as shown in your cross-section.

A comparison of the numerous records showing Eau Claire gives me the impression that the formation has a rather constant thickness of about 320-400 feet throughout northern Illinois. It varies however from well to well in the characters of the deposits. In general there is an upper shaley and sandy member, a middle thin sandstone which grades laterally into sandy dolomite and dolomitic sandstone, and a lower thick sandstone and sandy dolomite which grades laterally into a predominantly dolomite section. These members are shown on the inclosed drawing of 8 well logs in the Eau Claire in north central and northeastern Illinois. I would place the bottom of the Eau Claire in the Beloit city well at 820 rather than 700 feet and in the Taylor well at 1280 rather than 1170 feet. The sand in the top of the Mt. Simon below these depths is characteristically more secondary crystallized than is the sand in the Eau Claire above. This character continues on down in the Mt. Simon sand. In nearly every well I find the very-sooty zone which I have previously mentioned to you at this horizon. The soot is in reality very finely divided pyrite.

In the Rockford region the lower Eau Claire is entirely sandstone with only a small proportion of it cemented with dolomite. The dolomite content increases to the east until in the Fox River Valley region the section is mostly dolomite containing lingulae and other

Mr. F. T. Thwaites
Page 2.

February 27, 1935

fossils. East of the Wander Company well, in Cook and Lake counties, the Eau Claire is again predominantly sandy in the lower portion. However, the presence of this contact described above can be noted at about the same depth from the top of the formation throughout the region regardless of the characters of the materials. If this is not taken to be the contact it is impossible to choose any other definite horizon for the contact.

If you would agree to this interpretation of the Beloit and Taylor logs, I believe it would be unnecessary to change your cross-section but merely to indicate this change to Mr. Folger for use of the draftsman.

The cross-section shows the base of the Dresbach in the Taylor well to lie at about 860 feet. I find no change in the characters of the samples to a depth of 915 feet. With regard to the Dresbach I find buff dolomitic sandstone at various places in the formation from top to bottom and have recently concluded that the best place for the bottom of the Franconia is the lowest depth at which glauconite occurs. On this basis the bottom of the Franconia in the Beloit well would be 405 feet rather than about 425 feet. The samples are dolomitic in the Beloit well between 405 and 445 feet and between 450 and 460 feet.

I have just finished the review of all cuttings from all wells which will be used in the cross-section and shall proceed to drawing the section itself. The samples between the St. Peter and the Dresbach in the region of Kewanee to Macomb suggest various formations recognized in Missouri and I have sent two of the most complete sets of insoluble residues to McQueen for his correlations.

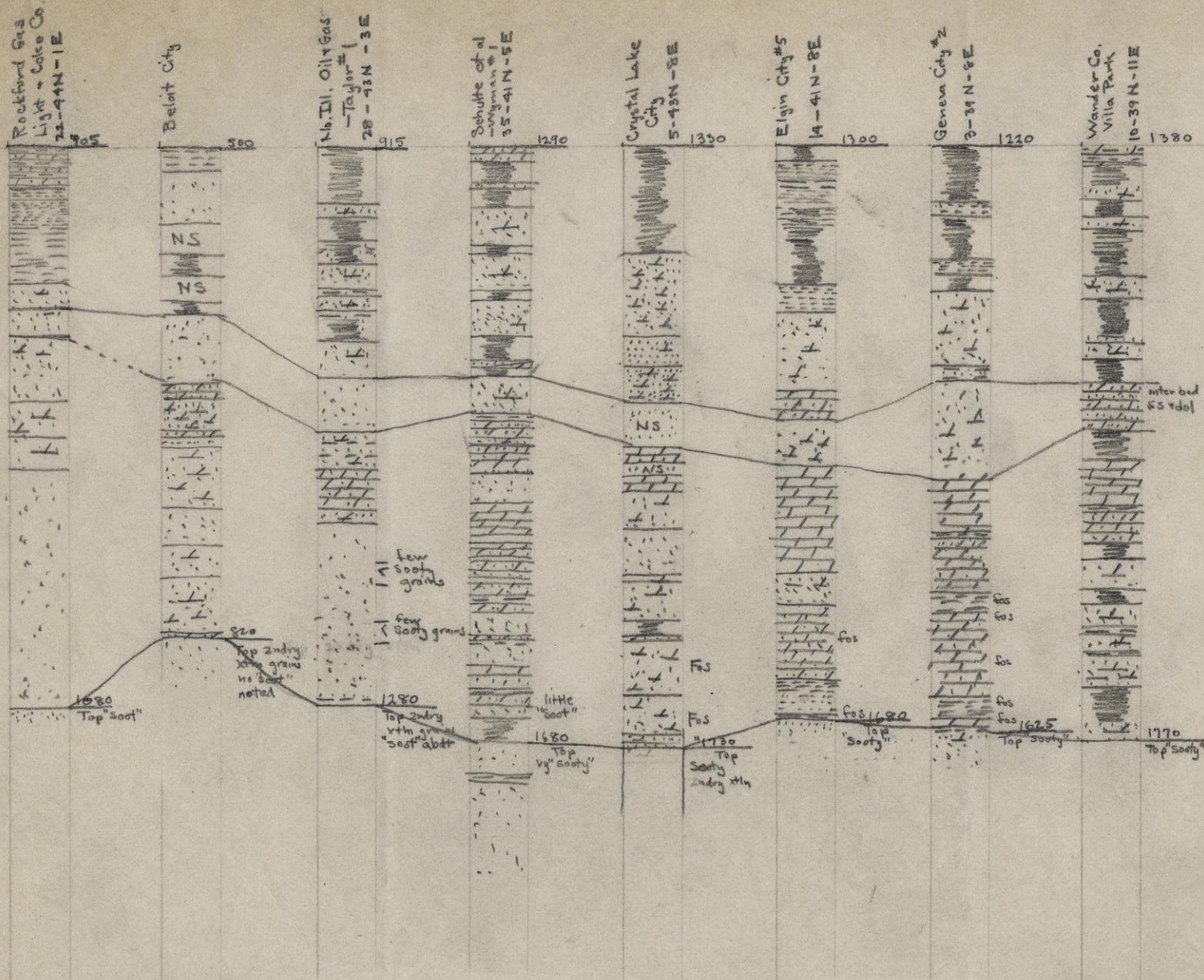
With best wishes,

Yours very truly,

P. C. Workman

Associate Geologist
Subsurface Division

Incl.



Eau Claire in Northeastern Illinois

L.E. Workman - Feb. 26, 1935

Jan. 29, 1935

Mr. L. E. Workman,
Associate Geologist,
State Geological Survey,
Urbana, Illinois

Dear Mr. Workman:

I am sending under separate cover blueprints of my part of the section from northern Wisconsin to the Ozarks which is to be published in the Guide Book of the forthcoming Ninth Field Conference of the Kansas Geological Survey. You will note that I ended on No. 1 Taylor near Irene and that I made some changes in your correlation as given on the blueprint log you sent me. The changes involve the addition of 15 feet of Trappean between 665 and 680 and the pushing down of the base of the Franconia from 755 to 830. Of course, I have not seen the samples so that I may be wrong particularly in the base of the Franconia. My basis is that the "Dresbach" (Ulrich) is normally thin in that region and all distinctly dolomitic strata above should be excluded particularly if they also contain glauconite. The Ironston is usually distinguishable by reason of its coarse grain and poor sorting. Please do not feel bound by these changes but make such adjustments as you see fit between No. 1 Taylor and Beloit (which should have been also marked Wisconsin Power and Light Co. No. 2). Mr. Folger tells me that a pencil copy is all they need but I finished up mine to have decent copies to send to the others and for future reference. I dislike to send away only copies of anything.

With best wishes for you part of this project,

Sincerely,

Copies to McQueen
Folger

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305 CERAMICS BUILDING
UNIVERSITY OF ILLINOIS CAMPUS

URBANA

January 31, 1935

Mr. F. T. Thwaites
Department of Geology
University of Wisconsin
Madison, Wisconsin

Dear Mr. Thwaites:

Thanks very much for the letter of January
29 and the cross-section.

I have had to drop work on my cross-section
until the program of the Illinois Water Well Drillers
Association is made up and the Program Issue of the
Illinois Well Driller goes to press. This work is now
about finished and I shall go back to the old job
again. Of course, I have had to do much of the work
at nights and after hours. It is coming along and I
have learned a lot of interesting things. I shall
write you later regarding these, probably when I send
my section.

With very best wishes,

Yours sincerely,

L.E. Workman

Associate Geologist
Subsurface Division

Jan. 4, 1935

Mr. L. E. Workman, Associate Geologist,
State Geological Survey,
Urbana, Illinois

Dear Mr. Workman:

Your letters of Dec. 4 and 29 (tow of latter date) are at hand. Thank you for sending the Vienna log so promptly. I am returning it herewith also a copy of my cross section through Vienna. When checking up my copy of the log found I had left out the word "St. Louis" on the section.

With regard to the Wisconsin-Missouri I am glad to see that you are ready to start. You are right about the scale and I am enclosing a sample of the cross section paper I used. It was unsatisfactory in that it did not allow of erasure. As I did not know this I made some holes in the paper and as a result am not yet ready to send you a print of my section. It is true that it will have to be redrafted anyway for publication but I would like to redraw my part on tracing cloth before sending it out. I ended my section with the oil test (Northern Illinois Oil and Gas, No. 1, Taylor) near Irene. Will try to work this job in before the end of the semester and should be able to do so as it is now just a straight copy. Am sending copy of this letter to McQueen in hopes that he will get started too.

Sincerely,

F. T. Thwaites

DEPARTMENT OF
REGISTRATION AND EDUCATION
M. F. WALSH, DIRECTOR
SPRINGFIELD

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DEAN CHARLES M. THOMPSON

December 29, 1934

Mr. F. T. Thwaites
Department of Geology
University of Wisconsin
Madison, Wisconsin

Dear Mr. Thwaites:

Please disregard my letter of this date asking for the cross-section scale, for I have on letters of January and February, 1934, in which we decided upon 4 miles to the inch and 400 feet to the inch.

Very truly yours,

L. E. Workman.

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305 CERAMICS BUILDING
UNIVERSITY OF ILLINOIS CAMPUS

URBANA

December 29, 1934

Mr. F.T.Thwaites
Department of Geology
University of Wisconsin
Madison, Wisconsin

Dear Mr. Thwaites:

I am beginning work on the cross-section for the Kansas Geological Society field trip and want to make sure that we have the same scale in all three states. You mention in your letter of October 24, 1933 a vertical scale of 400 or 500 feet to the inch and I must ask you to kindly advise which of these scales you used. Is McQueen using the same?

Please pardon the stenographer's mistakes. She is away for the holidays.

With best wishes,

Yours very truly,

R.E. Workman

Associate Geologist
Subsurface Division

23-6 center 10

~~1240~~

N line

~~1120~~

S line

~~1030~~

23-6 - NE cor 1130

SW cor 1060

23-5 SW cor 36 1060 - or 1080+

24-6 SW cor 32 1130

river in 17/20 1082

N line 4 1170

25-6 NE cor #3 1102

N line 33 1120

S line 33 1170

26-6 to 1 m W of NE cor.

Gen 26 1220

river 23/14 1120 -

4 m E gen cor line

25-6

24-6

1 m E cor line

23-6

1 m W in 23-5

Ref H 43

Nelson X 11

Donna Concha Bluff

Roche - a - Cruz X 83833

Friendship Rd

Stofford Bluff

Easton Rd 31

Shepherd Bluffs

Kelburn X

Grand Pt 82648

Baraboo Test well X 16.613

Phillips Farm X 5.4347

Santa City X 5.3365

Wassuk 15

~~Bell Bluffs~~ 3

Cenozoic 54669

Kennedy - Bernard 71431

North Bluffs

Packington 52712

2 ~~10~~ X 7 Unit No 3

Slater X well?

2 Tipton 71517

1 Niles Spring X 74281

6

Oregon 85135

13 Evansville 82321

15 Faneville 83710

Beltwell 12

went 78759

240
225
15

PENINSULAR PARK

Features of Interest

The tourist who enjoys tramping will take great pleasure in following the strand lines shown in figure _____. ~~On the~~ He will find beaches and bars ~~high above the present lake level down by the present high line in the lake of~~ ~~the Michigan level~~ at various levels up to about 60 feet above the present shore line (fig. ____); on ~~exposed land he will find some of the north~~ ~~the~~ the cliffs ~~which~~ he will find terraces cut by predecessors of the present lake, in some he will find caves ~~not~~ fashioned by the waves of these old lakes (fig. ____).

Vegetation 1-a

Rockford well

Paula

S W S E 6 43-22 Elev 820

Copied

City no 8

S E N W 13 44-19 Elev 728

East Side 44 22 - Sec 19 S W S W 800

Belmont No 2

Elev 784

Liberty & Hancock

Base drift	55	729
Plattville	152	632
St P	265	519
Tremp	335	449
Fire	445	349
Dun	500	284
cc	700	84
bottom	1225	441

78675-

5-4669

1 mile
Bernards Park - { Kennedy } 0809.3591² 71431
1 mile { Bernard }
{ Cartwell } 80114

Tierney 21-8-9 71477

1 mile (contwell 80114
goef Club 0809.36 a4 52712

1 m.
Packing Plant 855 0810.31.65 50381
1 1/4 m

Unit well No³ 0 710.0628 81774

city No 10 0709. see Bill 35

Turrell 0709.25-24 71517

Sewage Disposal 0710. 30 a5 - 74281

Oregon Oct. 26 d 11 (9) 85135 NESE Elev 936

4m sheets 0510, 0728, 980 - page 40, 5510

9m 1 1/2 m. to Clin Shale 051
Evansville 2 wells just N. Dept 10, 13 20 to 55 Elev 900

city 0410. 27 ~~11~~ c 2 82321

Lecow 0312, 29h7 Dmpt 60 15 140 ss 25 Elev 1020

4 1/2 m Panosule Gehölz für Blind. über 800 + 83710

city just 1m NE TD = 1087 and no pre-Camb. project onto here

2 1/2 in Riverside Farm. 02.12.15 94 Elev 760 Dyept 190 190

9 m.

Belmont W side. 78759

Baraboo city text 16606 1/2

Dupe	190	190
1s	80	270
2s	30	300
Class	70	370
5s	30-40	?
	<u>480</u>	

10241291

sh	12	253
calc ss	20	273
y1 ss	20	293
whss	157	450
sh	50	500
ss	580	1080

Feb. 10, 1934

Mr. Anthony Folger,
1107 Union Nat. Bank Bldg.,
Wichita, Kansas

Dear Mr. Folger:

Reply to yours of Jan. 22 was delayed until I had received copies of the replies of the others who are working on the same project.

I had heard through Mr. Bean of the postponement of the Field Conference in this state until 1935 in line with my recommendations to members of the committee when in the south last summer. Naturally I was pleased that you reached the same opinion as I had. I for one could not have done an adequate job of preparation if it had been in 1934. Mrs. Thwaites has promised to leave the youngsters for a while next summer and go out on the road to help log the trip. As she can take notes in shorthand this will help a lot.

With regard to the cross section I am pleased to note that the others agree to my proposed scale of one inch to four miles and 400 feet.

Last fall I wrote to Workman and got his suggestions as to the route across Illinois. I have fixed on the route in Wisconsin and have checked over the well logs including the insoluble residues where that was needed. Now that Ulrich (so I am informed) has surrendered on almost all the controversial questions in this state and agreed to relegate the Mendota and the Devils Lake formations to the discard I feel much less apprehensive over a possible collision with the Missouri pro-Ulrichites. At one time some advised dropping the project as one bound to lead to nothing but more hard feelings. For 20 years I had to endure being classed as an outcast who was perfectly and totally incompetent because I could not see certain views of our friend from Washington! Times do change!

Enclosed are outline maps of Wisconsin and Illinois with proposed routes. I am ready to start drafting the Wisconsin section at any time although it may be necessary to revisit some of the bluffs in the central part of the state and recheck the sections and elevations.

Trowbridge's revised route of the trip just came and Raasch and Tvenhofel are working on the Wisconsin section. Now that almost complete accord has been reached both on this and on nomenclature we should accomplish some real progress before long..

The Wisconsin section will show all formations up to Galena and the wells which strike pre-Cambrian have been indicated on the Illinois section. South of Abingdon no well reaches lower than New Richmond.

With best regards,

Sincerely,

F. T. Thwaites

February 3, 1934

Mr. Anthony Folger
1107 Union National Bank Bldg.
Wichita, Kansas

Dear Mr. Folger:

I wish to acknowledge receipt of your letter of January 32 regarding the plans for the geologic cross section from the Lake Superior highlands to the Ozarks. I had already learned of the plans for postponing the field conference and had put aside work on the section for a while. I should be able to work on this section shortly after February 22, when I shall be relieved of some of the extra work now being handled under this division.

I believe the scale suggested by Thwaites will be satisfactory. The formations which are too thin to show up distinctly in some areas will probably be thick ~~en~~ enough to stand out in other areas.

Very truly yours,

L. E. Workman

Associate Geologist
Subsurface Division

January Twenty-fourth,
1934.

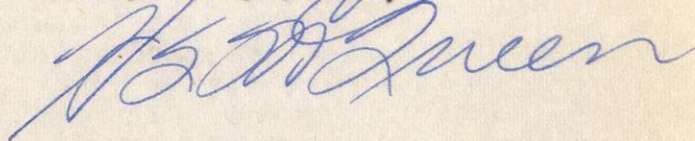
Mr. Anthony Folger,
1107 Union Nat. Bank Bldg.,
Wichita, Kansas

Dear Folger:-

In reply to your letter of January 22nd relative to the change in plans of the 1934 Field Conference. Insofar as I am concerned, the change of the date is most welcome.

I have not had time to give the matter of the cross-section any thought, but I will endeavor within the next month or six weeks to assemble the logs that I plan to use and advise all concerned the route of section through Missouri. The suggested scale of four miles to the inch and four hundred feet to the inch will probably be satisfactory for the Missouri portion. It may be rather difficult, however, to locally show some of the thinner formations that will be present, particularly those in the general area of St. Louis.

Very truly yours,

A handwritten signature in blue ink, appearing to read "H. H. Queen", written in a cursive style.

HSMcQ-P

Gypsy Oil Company

Tulsa, Okla.

1107 Union Nat. Bank Bldg.
Wichita - Kansas.
January 22, 1934.

Mr. H. S. Mc Queen - Rolla, Missouri.
Mr. F. T. Thwaites - Madison, Wisconsin.
Mr. L. E. Workman - Urbana, Illinois.

Gentlemen:-

During the past week I have been going over my 1933 correspondence file for the Upper Mississippi Valley Field Conference. In so doing I made the discovery that I had failed to officially notify you of the fact that this conference had been postponed to 1935 and automatically becomes the NINTH ANNUAL FIELD CONFERENCE. Probably my oversight is not serious in consequence, for undoubtedly all of you have heard of this change in plans.

It appeals to me that this change in date will be advantageous to each of you gentlemen, since, it will give a years additional time for the detailed preparation of the cooperative cross section on which you are working from the Lake Superior Highlands to the Ozarks. We trust that this postponement will result in just that much greater perfection in the details of inter-state correlation represented on this cross section, and that it will not be necessary for you to put off working on this project until the fall of 1934. You will recall that we discussed together the advisability of an interchange of outcrop samples from Wisconsin and the Ozarks by Thwaites and Mc Queen, with a study of both sets of outcrop samples by Workman. With so much extra time, will it not be possible for you gentlemen to accomplish this study early in 1934, leaving the latter part of 1934 for an interchange of well samples (on those wells appearing on the cross section) relative to which there is doubt or argument as to the correlation of stratigraphic horizons?.

Thwaites, in a letter to Workman dated October 24, 1933, suggested a scale of 4 miles to the inch and 400 feet to the inch. This would mean a vertical exaggeration of only 53 times (as against 264 times on the 1931 section). Personally I feel that this scale is quite satisfactory, but I should like to hear the opinion of Mc Queen and Workman on this subject.

Within the coming month I wonder if it will be possible for the three of you by correspondence to settle tentatively upon a route for this cross section and forward me an index map showing its location together with a statement of the stratigraphic horizons such a route would involve.

Very truly yours,

Anthony Folger
Anthony Folger

Copy:- A. C. Trowbridge.

Nov. 13, 1933

Mr. L. E. Workman, Associate Geologist,
State Geological Survey,
Urbana, Illinois

Dear Mr. Workman:

I wish to thank you for yours of the 8th with enclosed blue print log of Northern Illinois Oil and Gas Co., No. 1 Taylor.

I have studied this log with much interest and compared it with the logs I made out at both Rockford and Beloit. I have also checked the residues from the lower dolomite at both Janesville and Beloit. There is no question but that these dolomites are Trempealeau of the Mendota or St. Lawrence or Black Earth type grading into Lodi above. On this basis I wish to suggest the following possible changes in correlation in No. 1 Taylor.

The dolomite from 665 to 680 is Trempealeau rather than Franconia.

I would suggest that the strata down to depth 850 below this dolomite are Franconia unless a portion of the interval from 680 to 700 is basal Trempealeau (Ulrichs basal member which is generally only a few feet thick. This would leave only 65 feet of Dresbach but this is in line with most records to the north as revised in light of present knowledge.

Although some of my Rockford logs show more Eau Claire than you do I consider yours better. I want to check for the sooty grains as soon as I can.

With regard to the strata below 1455 I note that in recent years I have been calling these deeper sandstones Mt. Simon. I can see nothing in your description to suggest Red Clastics of Minnesota although it is true that the red sandstone of the Rockford East Side well does somewhat do so. (I haven't these samples anymore). It has been suggested that inasmuch as the lower Eau Claire fossils are low in the Upper Cambrian (Stauffer mistook some for Middle Cambrian) these sandstones, which certainly are not present on the outcrop, are Middle Cambrian. They are not what I have been calling "Granite wash."

I hope to get started on the section soon but am now working on a section for a paper to be presented at Chicago by Raasch. I intend to use standard 4 X 20 railroad cross section tracing paper so we can exchange blueprints in advance of publication.

We all thought the Tri-State Field Conference was a great success and hope we can do as well next year.

Very truly yours,

STATE OF ILLINOIS
STATE GEOLOGICAL SURVEY DIVISION

M. M. LEIGHTON, CHIEF
305 CERAMICS BUILDING
UNIVERSITY OF ILLINOIS CAMPUS

URBANA

November 8, 1933

Mr. F. T. Thwaites
Department of Geology
University of Wisconsin
Madison, Wisconsin

Dear Mr. Thwaites:

Please find inclosed a blue print log of the Northern Illinois Oil and Gas Company - Taylor No. 1. Our samples of the cuttings near the bottom of the "Galena" section are temporarily misplaced and I am, therefore, unable to give the exact location of the Decorah in the section. However, I believe that the Decorah will be found to occupy the position at 170-195 feet. As soon as I find them I shall let you know about it.

Very truly yours,

R.E. Workman

Associate Geologist
Subsurface Division

Incl.

Oct. 24, 1933

Mr. L. E. Workman, Associate Geologist,
State Geological Survey,
Urbana, Illinois

Copies to Anthony Folger and H. S. McQueen

Dear Mr. Workman:

I have been a long time in replying to yours of the 8th but this is the fall field trip season and despite a record low in students I have been kept busy.

I went over your route carefully and have some questions about it. Why take in Mt. Morris and Polo instead of passing through the Oregon uplift where the formations down into the Cambrian are exposed? Is this because the wells give better data than the outcrops or because you wish to avoid confusion with steep dips? I realize that Polo shows the Red Clastics.

Why make the long detour to the east to take in Forst? Every abrupt change in direction appears like a marked change in structure and it seems to me should be avoided if possible.

It seems to me it would simplify things to either omit or to project the Aubrey city well which is so near to your deepest well.

With regard to scale the great exaggeration of the 1931 section was and is the strongest talking point for critics (by the way, one can't do anything original without arousing such) and, it seems to me, should be avoided at all costs. I suggest a horizontal scale of four miles to one inch and a vertical scale of either 400 or 500 feet to the inch. The latter would permit us to show formations 50 feet thick even with considerable reduction. The vertical range will be from roughly 2000 feet above sea level to 3000 feet below. The longest state section will not exceed 250 miles, or say 65 inches.

A radical point which I want to suggest is that we not make the section continuous but put the three state sections (which are roughly the same length each) one above the other. This will not cheapen the drafting, of course, but it will do so for the printing. Users of the section can cut it up and paste together into a long strip if they so desire. I figure that the original drawing would not be over 65 by 30 inches and if reduced to a third of this size for publication it would be only ~~20 by 10 inches~~ ^{10 by 10 inches}, a quite modest size which could be folded and put into the guidebook.

My proposed route in Wisconsin is from Rib Hill south through Nekeose, Kilbourn, Baraboo, Madison, Evansville, Janesville, to Beloit. No wells south of Oregon reach the pre-Cambrian and none show Red Clastics. A part of the route will be changed so as not to duplicate too greatly the 1931 section. I estimate from a rough map measurement that the total distance is not over 200 miles we can decide soon on scale and route. One thing I would like to do which was not done in 1931 and that is to discriminate, using U. S. G. S. symbols, between dolomite and limestone. Otherwise I think we would do well to follow the style of 1931.

Very truly yours,

STATE OF ILLINOIS
STATE GEOLOGICAL SURVEY DIVISION

M. M. LEIGHTON, CHIEF

305 CERAMICS BUILDING
UNIVERSITY OF ILLINOIS CAMPUS

URBANA

October 6, 1933

Mr. F. T. Thwaites
Department of Geology
University of Wisconsin
Madison, Wisconsin

Dear Mr. Thwaites:

In accordance with your suggestion in your letter of September 28, I am inclosing a tentative list of wells which might be used in extending the proposed Wisconsin-Missouri cross-section through Illinois. The depths and the lowest formations are shown. Should it be desired we could carry the section south from the Monroe Color and Chemical Company through Pike and Calhoun counties so as to run through the St. Louis area. On the advice of Dr. Trowbridge I have called the red sandstone which we have heretofore considered Mt. Simon the "red clastic" series. This will be a subject of discussion when we draw up the cross-section. I have already sent you a copy of my reply to Mr. Folger accepting the job of preparing the section through Illinois.

In considering a scale I would suggest that the size of the cross-section published by the Kansas Geological Society for their Sixth Annual Field Conference, showing a section from western Missouri to western Kansas, as a convenient one, being about 80 x 24 inches. Estimating 300 miles through Wisconsin, 225 through Illinois, and 250 through Missouri, the section will represent a distance of 775 miles. A horizontal scale of 10 miles to the inch would make the length 77.5 inches, and a vertical scale of 150 feet to the inch would give 25 inches. This is comparable to the 80 x 24 inch section mentioned above. The deepest well in Illinois is 3772 feet. Possibly deeper wells in Wisconsin or Missouri will necessitate choosing a smaller vertical scale. Perhaps the deep well log which you saw in Urbana in 1927 was that of the Insane Asylum at St. Louis, which reaches granite at 3843 feet. However, your plan of hav-

Mr. F. T. Thwaites
Page 2.

October 6, 1933

ing the section in three parts with perhaps a different scale
may be more acceptable.

With best wishes,

Yours very truly,

R.E. Workman

Associate Geologist
Subsurface Division

C.C. to H. S. McQueen
Bureau of Geology & Mines
Rolla, Missouri

<u>County</u>	<u>Well</u>	<u>Lowest formation</u>	<u>Depth</u>
Winnebago	Rockford No. 5	Red clastic (?)	1605
Boone, S28, 43N, 3E	<i>North Oil & Gas Co</i> Taylor	Granite	2998
Ogle	Byron No. 2	Dresbach	670
<i>omit?</i> Ogle	Mt. Morris No. 2	Dresbach	900
<i>omit?</i> Ogle	Polo	Red clastic (?)	2100
Lee	Dixon-Epileptic Col.	Red clastic (?)	2000
Lee <i>could leave out or project</i>	Amboy	Dresbach	1100
Lee, S30, 20N, 10E	McElroy Farm <i>No 1</i>	Granite	3772
<i>omit</i> LaSalle <i>detour too far or include Mendota</i>	Peru	Dresbach	2601
Bureau	Buda	St. Peter	1632
Bureau	Kewanee	Dresbach	2427
Knox	Galesburg	Dresbach	2305
Knox	Abingdon No. 2	Dresbach	2586
McDonough	Bushnell	St. Peter	1438
McDonough, S20, 4N, 4W.	<i>Colmar pool</i> Griggsby farm	Plattin	805
Hancock, S12, T4N, R9W	Pepple farm	St. Peter	828
Hancock, S8, T3N, R8W	Miller farm	New Richmond (?)	1367
Adams, S27, T1S, R9W	Monroe Color and Chemical Co.	New Richmond	1225

$\text{well range} = 3000 \text{ W} + 2000 = 5000' = 10''$
 $= 65''$ *f* $65'' \times 30''$
 $\frac{1}{3} \text{ range } 22' \times 10''$
 4 250
 65

STATE OF ILLINOIS
STATE GEOLOGICAL SURVEY DIVISION

M. M. LEIGHTON, CHIEF
305 CERAMICS BUILDING
UNIVERSITY OF ILLINOIS CAMPUS

URBANA

October 2, 1933

COPY

Mr. Anthony Folger
Gypsy Oil Company
1107 Union National Bank Bldg.
Wichita, Kansas

Dear Mr. Folger:

I shall indeed be glad to represent the Illinois Survey in the preparation of the proposed geologic cross-section from the Lake Superior highlands through Illinois to the Ozarks. Mr. Thwaites has already brought up the subject and I shall get in touch with him and Mr. McQueen to make plans for the section through Illinois and establish a suitable scale to propose.

I shall also be glad to study with McQueen and Thwaites any outcrop samples which they might collect and to supplement these with any of interest which we might have from Illinois.

Very truly yours,

R.E. Workman

Associate Geologist
Subsurface Division

C.C. to
F. T. Thwaites
H. S. McQueen

TELEGRAM

Sept 30, 1933.

Thwaites:-

Thank you for your letter of Sept 27th. I have immediately written Workman, a copy of which letter is enclosed herewith. Like you, I am of the opinion that the route of this section should be kept entirely in Illinois, instead of going into Iowa.

Folger.

1107 Union National Bank Bldg.
Wichita - Kansas.
September 30, 1933.

Mr. Lewis E. Workman,
Illinois Geological Survey,
Urbana - Illinois.

Dear Mr. Workman;

In July 1933 Thwaites suggested to Mc Queen that a cooperative cross section be prepared from the Lake Superior Highlands in central Wisconsin, southward through Illinois to the central part of the Ozarks in Missouri. Lack of time delayed action on this project. Just recently I approached both Mc Queen and Thwaites on this matter and suggested that it might be well to undertake this project this winter, and that the Kansas Geological Society would like to sponsor this project in connection with its Eighth Field Conference in the upper Mississippi Valley in 1934. Furthermore that we would draft and print such a section for distribution on that conference.

Affirmative replies have been received from both Mc Queen and Thwaites. I find further that my letter to Thwaites crossed one of his to Leighton suggesting that such a project be undertaken. Thwaites outlined two possible routes to Leighton, one through Illinois and one through Iowa, and stated that he favored the route entirely through Illinois. To this recommendation I wish to most heartily subscribe.

Will you be good enough to discuss this matter with Dr. Leighton and advise me whether the Illinois Survey is willing for you to join with Mc Queen and Thwaites, representing the Missouri and Wisconsin Surveys respectively, in undertaking such a project sponsored by this Society and published by us for our Eighth Field Conference. The matter of the route and scale and detail will be left entirely to you gentlemen, excepting that we will wish to be informed of your decisions in order to give them our final consideration before work is started.

It appeals to us that an interchange of outcrop samples from Missouri and Wisconsin by Mc Queen and Thwaites, and a study of them this winter, together with a thorough study of both sets of samples by yourself, should go a long way in clarifying the problems of interstate correlation which today exist between Wisconsin and Missouri.

We are hopeful that you will consider this project favorably, and that you will advise me of your affirmative decision at your earliest possible convenience. As stated above, both Mc Queen and Thwaites have obtained their Survey approval to undertake this project. With kindest personal regards.

Very truly yours,

Anthony Falgar

Copy:- M. M. Leighton
H. S. Mc Queen
F. T. Thwaites

Sept. 28, 1933

Mr. L. E. Workman, Associate Geologist,
State Geological Survey,
Ceramics Building,
Urbana, Illinois

Dear Mr. Workman:

I was very glad to get yours of the 25th and learn that you are willing to cooperate in the proposed Wisconsin-Missouri section. Since I wrote Dr. Leighton I received a letter from Folger saying that they want to publish this section (first proposed two years ago to McQueen and Folger) in the Guidebook for the 1934 (or 1935) Field Conference of the Kansas Geological Society. Previous to this I had no plans for publication. However, I do not think this change need make any difference. All replies to date have been favorable except that Twenhofel holds that the project will only involve us in bitter controversy with the followers of a certain world-famous geologist who has more critics than the reverse. Nevertheless, I am willing to take my chances in the battle if such ensues. Two years ago nothing happened when I worked on the Iowa section and joined it to Missouri.

With regard to route I feel strongly that the eastern line is best. We should if possible pass through the two pre-Cambrian wells in Illinois at Cherry Valley and Amboy. We then get another such well a short distance west of Hannibal, Missouri. Could you please furnish me with a list of the wells you plan to pass through, their total depths, and the formation in which each is bottomed? I think this would be a good idea. I plan to reach the Illinois line at Beloit west side well of which you have the log, I think. When at Urbana in '27 someone showed me the strip log of a very deep well not far from the Missouri line. I was not much interested at the time and do not recall the location. It may not be anywhere near the proposed section.

I would not do any drawing on the section until Folger decides on the scales. I suggest that we work on railroad profile tracing paper so we can exchange blueprints before final completion. I have suggested to Folger that the three state sections be placed one above the other and then photographed down to $\frac{1}{4}$ size which could then be folded into the guidebook as a plate.

Anyhow, if we work on this section we may be able to forget about the Depression! As I see it the main problems lie in the Cambrian. What becomes of the Dresbach? What lies beneath the Mt. Simon? How and where does the Eau Claire change to a dolomite? And probably others. From the economic standpoint how do these things affect the salt content of the waters? We will certainly have much to puzzle over.

With best regards,
Sincerely,

K 39

Sept. 27, 1933

Mr. Anthony Folger,
1107 Union National Bank Bldg.,
Wichita, Kansas

Dear Folger:

Yours of the 16th crossed a letter of mine to Leighton in re the proposed cross section. I had before this discussed the matter with Mequeen. In doing this I had no definite plans for publication. I also mentioned the matter to Bern. From all of these I had favorable replies. However, Trenchhofel was much opposed to the idea claiming that all I would do would be to get involved in a big controversy. In spite of this, I feel willing to take my chances in the ensuing battle (if any). I also mentioned the idea to Dake but cannot remember speaking of it to Buehler.

In my letter to Leighton I mentioned a possible scale of 4 miles to the inch horizontal and 500 feet to the inch vertical. I am open to suggestions on this point but feel as you do that a scale less exaggerated than that of 1931 is imperative. From a preliminary estimate I hardly think that the section need exceed 600 miles in length. At four miles to the inch this would mean nearly 13 feet. But I suggest why we not attempt to put the section together but instead make it in three parts one above the other. As the vertical range will be roughly 6000 feet this would make the first drawing about three feet from top to bottom. A reduction to $\frac{1}{2}$ size would then make a drawing approximately 45 by 10 inches too large for publication. However, a reduction to $\frac{1}{8}$ th size would be satisfactory. This could be done either with a zinc cut or a photostate negative from which blueprints could be made or a photographic negative depending on cost. With this tremendous reduction I think that the smallest lettering possible would be that with #40 guides. This would introduce some trouble with the thinner formations. The scale was planned for use of 90 guides for the formation names (no reduction).

I suggested two routes to Leighton. First from Rib Hill near Wausau, Wisconsin through Wisconsin Rapids, Necedah, Baraboo, Madison, Evansville, Janesville, Beloit to deep oil test east of Rockford which reaches pre-Cambrian, thence via Amboy test and other deep holes along route selected by Workman to a pre-Cambrian well west of Hannibal, Missouri, as selected by Mequeen. Second from Rib Hill through Wisconsin Rapids, Baraboo, Platteville, Dubuque, thence down the Mississippi River largely through Iowa to the Hannibal test. The first route seems best to me if there are enough good logs to control it.

The controversy (if it arises to plague us) would be in regard to the well-known Mendota Eminence correlation. During a recent field conference near here it was remarked that a certain world famous geologist when he first entered Wisconsin used the (Missouri) fossils to determine his column and not the column to determine his faunal sequence!

I regreted very much that you were not on the conference trip to the Ozarks which I enjoyed very much. Thanks to reduced railroad fares I was able to go. Enclosed is a list of my photographs if any of the society cares to order copies. All but those made in the rain are quite satisfactory.

Hoping we can carry through the project even if the Wisconsin trip does have to be postponed, and with best regards,

Sincerely,

DEPARTMENT OF
REGISTRATION AND EDUCATION
JOHN J. HALLIHAN, DIRECTOR
SPRINGFIELD

STATE OF ILLINOIS
STATE GEOLOGICAL SURVEY DIVISION

M. M. LEIGHTON, CHIEF
305 CERAMICS BUILDING
UNIVERSITY OF ILLINOIS CAMPUS

URBANA

September 25, 1933

Kansas 39

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STATE UNIVERSITY
DEAN CHARLES M. THOMPSON

Mr. F. T. Thwaites
Department of Geology
University of Wisconsin
Madison, Wisconsin

Dear Mr. Thwaites:

Thank you for the samples from the Elmhurst City
Well No. 2. I appreciate the trouble you took in having
these cuts made.

Dr. Leighton has handed me your letter to him re-
garding the proposed geologic cross-section. I would be
very glad to help out in preparing this cross-section and
shall either send you the logs or make a section for Illi-
nois, as you prefer.

I believe that the suggested route through Rock-
ford, Oregon, Dixon, and Kewanee would be more interesting
than the one across the northwest corner of the State. This
section might be continued through Galesburg and Abingdon,
McDonough and Adams County to Hannibal. There is a very
interesting erosional unconformity at the top of the Silurian
and the base of the Devonian in McDonough-Adams County region
which I believe would be appreciated. If these suggestions
are satisfactory or if you have a more preferred route I
shall be glad to hear from you.

Let me add my congratulations to those you have
already received on the arrival of your new member of the
family.

With best wishes,

Yours very truly,

L. E. Woleman

Associate Geologist
Subsurface Division

DEPARTMENT OF
REGISTRATION AND EDUCATION
JOHN J. HALLIHAN, DIRECTOR
SPRINGFIELD

STATE OF ILLINOIS
STATE GEOLOGICAL SURVEY DIVISION

M. M. LEIGHTON, CHIEF
305 CERAMICS BUILDING
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URBANA

K 34
BOARD OF NATURAL RESOURCES
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STATE UNIVERSITY
DEAN CHARLES M. THOMPSON

September 18, 1933

Mr. F. T. Thwaites
Department of Geology
University of Wisconsin
Madison, Wisconsin

Dear Thwaites:

Replying to your letter of September 12th, that part of your letter which deals with the question of preparing a cross section from Wisconsin to Missouri, I am referring to Mr. Workman before replying. Mr. Workman has been ill, but returned today. It may be a few days before he gets out from under the load of duties that have awaited his return.

In regard to the proposed trip along the Wisconsin-Illinois line, I have been so tied up with matters since returning from my vacation that I have not been able to determine upon a date to suggest. I shall have to write you a little later on that. I am certainly anxious to make the trip with you.

Very truly yours,

M. M. Leighton
Chief.

Gypsy Oil Company

Tulsa, Okla.

1107 Union National Bank Bldg;
Wichita - Kansas.
September 16, 1933.

Mr. Fred T. Thwaites,
Department of Geology,
University of Wisconsin,
Madison - Wisconsin.

Dear Thwaites;

On July 16, 1931 you wrote Mc Queen, and, amongst other items in that letter you suggested the possibility of a cooperative cross section from Wisconsin to the Ozarks. It appeals to us that such a section would fit admirably into the data being prepared for next years conference. It should be prepared by Workman for Illinois, Mc Queen for Missouri, and yourself for Wisconsin.

I have approached Mc Queen and find that he is more than willing to enter into this project. Since I am well acquainted with both of you gentlemen, it seems best to inquire your own reaction to this idea before writing Workman.

The geologic information on the section should be in detail, but this Society has not the money to put out as elaborate piece of drafting as it did in 1931 and 1932. Joe Williams however could make a good looking section on a less ambitious drafting scale. The route, scale, and details should be decided entirely by you three men. Presumably it would approach 600 miles in length from the Lake Superior Highlands in northcentral Wisconsin to the central core of the Ozarks. Personally I would favor one of two scales. A scale of 1" to 5 miles & 1" to 200" (exaggeration 132 times), or, 1" to 5 miles & 1" to 400" (exaggeration 66 times). Both of these are much less than the exaggeration of 264 times used in 1931. I somewhat favor the first scale, which you result in a section some 10 feet long, and have it reduced either 2, or 3, or 4 times for the finished specimen.

It would seem to me that an interchange between you and Mc Queen of outcrop samples from Wisconsin and the Ozarks and a study of them this winter, combined with a study by Workman of both sets of samples, should result in clearing up many of your combined problems of correlation. Both Wisconsin and Missouri have enough wells to furnish data down to and inclusive of the Pre-Cambrian. Illinois would be lacking in this, but I presume that any such section should go through the Ambey well in S.30; T.20N; R.10E. in order to show 755 feet of Mt Simon and 1190 feet of Hinckley resting on granite. Certainly the problem of the disappearance southward of the Hinckley, and the regional southward thinning of thick Mt Simon into thin Lamotte should be points of consideration.

The final section appearing in print would be small in size, and could either be reproduced separately to hand out with the Guide Book, or, if it could be reduced to $11\frac{1}{2}"$ by $2\frac{1}{2}"$ could appear as a page in the Guide Book as a folded plate. But I think you will agree that it would be easier and far better to draw originally in large size and plan for substantial reduction.

K 34

I trust you will give this project favorable consideration, and, after taking it up with Dr Bean (if that is necessary) you will let me have your affirmative answer at your very earliest possible convenience. Buehler has already given Mc Queen the Surveys permission to prepare the Missouri part of the section and to make a study of Wisconsin outcrop samples.

I am hopeful that this project will yield fruitful results, and will serve as a means to clear up many of the existing difficulties relative to the small details in inter-state correlation between Wisconsin and Missouri.

With kindest personal regards, I remain,

Very cordially yours,

Anthony Folger
Anthony Folger.

Wn 40
4 1/2
150 m

12/150
3

K 34

Sept. 12, 1933

Dr. M. M. Leighton, Chief,
State Geological Survey,
Urbana, Illinois

Dear Dr. Leighton:

I have been a long time thanking you for the separates sent with your letter of August 15 but have been away on the Kansas Society trip in Missouri, Arkansas, and Oklahoma. All of them were welcome additions to my library.

While on the Kansas trip I talked over with Duke and Hequon the preparation of a cross section from Wisconsin to Missouri similar to the Cross Section of the Central U. S. prepared two years ago. We felt that such a step would aid in the correlation of these two classic areas. I do not think that I had a chance to mention the matter to Dr. Bushler but have discussed it with Mr. Bean since my return. The idea is to prepare a blueprint section for discussion of those interested and let publication go for the present until matters have been fought out a bit more.

I suggested four miles to the inch horizontal and 500 feet to the inch vertical with generalized topography.

There are two possible routes: (a) across the northwestern tip of your state and thence down the Mississippi to a well west of Hannibal which reaches pre-Cambrian or (b) through Rockford, Oregon dome, Dixon, Kewanee, Fulton, and other deep wells in western Illinois to some point in Missouri.

I am starting to prepare the Wisconsin part of both routes and they already have a large scale section across Missouri essentially along the suggested route. If nobody feels like paying for the drafting I will do it myself.

I would like your reaction on the project and if favorable permission to use Illinois logs or Workman's cooperation in preparing the section if he has time.

Not having heard from you in regard to the proposed trip along the Wisconsin-Illinois line which you mentioned I presume you are unable to get off. However, now that the logging of the Kansas Society trip in Wisconsin has been postponed I will be free all but two week ends during the fall. School starts next Wednesday and this week end we plan on going to the World's Fair. I hope we can make this trip someday.

Very truly yours,

F. T. Thwaites

Oct. 28, 1931

Dr. H. S. McQueen,
Assistant State Geologist,
Bureau of Geology and Mines,
Rolla, Missouri

Dear Dr. McQueen:

I wish to thank you for yours of the 16th and the samples which came at the same time. These will be of great value to us.

I hope to get a start on a study of insoluble residues. So far I have had no students who wished to work on such for theses but hope there may be some yet. I have fixed up my laboratory so that preparation of such will now be easier. I have made lots in the past but never kept any. One trouble I have experienced in this work is the highly exaggerated idea of the results which seems to prevail around here. They tell me that you can take any single sample and from its residue place it in the column to the nearest 10 feet. I do not gather this from your published statements, letters, or what the oil men tell me of your work. The position which this obviously false idea places me in is that if I start on similar work and it does not yield results up to this ~~proportion~~ claim then I will be discredited. I would greatly appreciate a statement from you in regard to this. I concede the value of residues in recognizing formations and in finding some definite thinner markers but I certainly have the attitude traditionally ascribed to inhabitants of your state when it comes to the claims mentioned above!

Mr. Raasch has been checking over the proposed correlation table you sent me last summer using published descriptions of Missouri fossils to compare with those he has collected in this state. He agrees as to the correlations up to the Derby-Doerun but not above that. The trouble is that this Mendota-Devils Lake business intrudes itself into all discussions. None of us here can see Ulrich's ideas. Raasch and Wannemacher find that the Devils Lake is in the Mazemarie. The former suggests that the Mendota is cryptozoic St. Lawrence dolomite reefs. (BOTH STATEMENTS ARE CONFIDENTIAL.) Now you can see that until this 12 year old controversy is cleared away which will probably not be in the lifetime of one of the parties, we can do little to settle the Missouri-Wisconsin correlation table.

Thanking you again for this and past favors,

Very truly yours,

Lecturer in Geology

EDWARD M. SHEPARD, SPRINGFIELD
WALTER McCOURT, ST. LOUIS

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BUREAU OF GEOLOGY AND MINES

ROLLA, MO.

October 16, 1931.

Dr. F. T. Thwaites,
Department of Geology,
University of Wisconsin,
Madison, Wisconsin:

Dear Dr. Thwaites:

I am sending you, under separate cover, samples of the original cuttings and the insoluble residues prepared there from, which are characteristic of some of the older formations found in this state.

You will no doubt recall that I promised to send you this material sometime ago. I apologize for the delay, but since the latter part of the summer, I have been engaged in extensive field work and have just had an opportunity to get the samples together. I trust you will find them to be of interest.

The enclosed map and sheet of descriptions will serve as a key to the location of each sample.

Sincerely yours,



McQ/DS
Enclosure.

Township		weels S E of Madison		TD	bottom form
(2)	4	Adgerton	(1)	880	Mt Simon
(3)	4	million omit		700	Eau Claire
(1)	6	Oregon +		860	pre-Cambrian
(7)		Deerfield			
(6)		Jefferson			Pre Cambrian
(4)	5	FT Ahmson	(2)	1066.5	" "
(5)	2	Elkhorn	(3)	1648.5	Mt Simon
(6)	3	Burlington	(5)	1440	Mt Simon
(7)	3	Vinn Grove	(4)	1500	Mt Simon
(8)	4	Kellogg, Clark	} combine (5)	1475	Mt Simon
(9)		Franksville		1810	" " "
(10)	3	Sturtevant		2010	Mt Simon
		Roscoe Herlihy			" "
		W 00 E W			

Onalaska

Tonaw

Rockland Center

Madison, Vint 4

Friendship Twp
or Adams

Heelup Taver
 A D Conover well Mendocino 0809, 26 e 5
 54669 - 54696 Elev 935 levelled

Surface
 18 ft
 Lower magnesian dol. brownish gray, weathered 8 20 20
 (ss. med to coarse, gray, dol., oolite 10 38
 chert broken nodules)

935
 28
 907

Medium-Jordan 19 ft ss. medium fine, yel. gy. dol 19 57

Transparence 27 ft
 54675- dol. silty, light yellowish gray 3 60
 dol. silty, banded purple and green 16 76
 dol. silty, above with 25. fine, gray green, glass, dol. 4 80
 ss. fine above with thin layer pink dol. 4 84
 probably at base

Fravura
 ss. fine, greenish gray, dol, glass.
 11 95

ss. fine gray, glass, dol. none fine
 yellow-gray dol. metam 85 180

Prescott (Galeville)
 ss. medium, white 35 215

copied

Aglaspis

barrandei

Hall

66-72

48-57
54672 Sandstone, fine to medium, light gray, dol.

673 "Mendota" (Trenpfeleum) Dolomite, yellowish gray, silty, much resembles fine quartz

674 60-66 Dolomite, silty, banded, light gray and purple, much aggregated residue

675 66-72 Same, residue fine quartz silt and glauconite

676 72-76 Dolomite, silty mixed, yellowish gray and purple - residue quartz silt and glauconite

677 76-80 Same with some sandstone, fine, dol, glauconite, purple

678 80-84 Sandstone like above with some dolomite, pink Total T 2745

679 84-90 ~~Fraser~~ - sandstone, fine, greenish gray, dol, glauconite

90-95 Same

95-102 SS, fine, gray, green, dol, some fine yellow gray dol silty

copied

A. D. CONOVER (HILLTOP TAVERN), MENOTA, WIS.
0809.26e5 Elevation 935

		Thickness	Depth, feet
	Surface, no samples	20	20
12.	Talus, dolomite, brownish gray	8	28
11.	" sandstone, medium to coarse, gray, dolomitic; chert, gray, oolitic	10	38
10.	Jordan, sandstone, medium to fine, yellowish gray, dolomitic	19	57
9.	Trempealeau, dolomite, silty, yellowish gray, residue very fine quartz sand	3	60
8.	" Dolomite, silty, banded gray and purple, residue aggregates of fine quartz sand	6	66
7.	" Like above; a spall probably from layer above contains <u>Aglaospis barrandei</u> (Hall) and fragments of linguloids; residue fine quartz sand and glauconite	6	72
6.	" Dolomite, silty, mixed yellowish gray and purple, residue quartz silt and glauconite	4	76
5.	" Dolomite like above; sandstone, fine, purple, dolomitic, glauconitic	4	80
4.	" Sandstone, fine, purple, dolomitic, glauconitic; dolomite, pink	4	84
3.	Franconia, sandstone, fine, greenish gray, dolomitic, glauconitic	11	95
2.	" Sandstone, fine, gray, glauconitic; dolomitic; some layers of siltstone, yellowish-gray, dolomitic, hard	85	180
1.	Dresbach, sandstone, medium, white	35	215 T. D.

Samples examined by F. T. Thwaites, 1923 and checked by F. T. Thwaites and G. O. Raasch, Nov., 1933.

Specimen numbers 54669-54696

COMPOSITE SECTION, OUTCROP AND WELL

15.	Dolomite, gray, hard, cryptozoa; chert, gray, oolitic	12 feet
14.	Sandstone, fine, fairly firm, regular beds up to one foot, yellowish-gray, some small cross-bedding especially at top, color brownish-gray to white at top, fossils two feet above base (Madison)	17½
13.	Sandstone, coarse, white to dark yellow, pebbles of dolomite, fine, yellow-gray, ¼ to ½ inch diameter, sandy, all one bed	1½
12.	Sandstone, fine to coarse, gray, dolomitic, hard, finely laminated, some layers yellow-gray, cross bedded below, passes insensibly to bed above (base of Madison, Ulrich)	1
11.	Sandstone, medium, pure white, soft, some cross bedding, heavily bedded, regarded by Ulrich as typical Jordan	7½
10.	Sandstone, medium to fine, yellowish-gray, dolomitic (well)	17

FROM HERE ON FOLLOW WELL LOG

T. 8 N., R. 9 E., Sec. 26, SENW

Section in C. and N. W. R. R. cut, northwest of Mendota, F. T. Thwaites and Samuel Weidman, Nov. 25, 1914

- bottom 40
Wp
32 3/4
1. Sandstone, medium, pure white, soft. some cross bedding, heavy layers 7 ft. 4 inch
2. Sandstone, fine to coarse, gray, dolomitic, hard, finely laminated, ~~layers heavy~~, some layers yellow-gray, cross-bedded below, passes insensibly to layer 3 1 ft to 6 in
- Wp
31 3/4
3. Sandstone, coarse, white to dark yellow ~~sandstone~~, pebbles of dolomite, fine yellow-gray, sandy; size $\frac{1}{4}$ to $\frac{1}{2}$ inch.. All one bed 1 ft. 3 in.
- Wp 30 1/2
4. Sandstone, fine, fairly firm, fairly regular beds up to 1 foot, buff. Some small crossbedding, fossils two feet above base, = Madison building stone. Upper part more ~~cross~~ bedding and coarser than below running to brownish gray and white color. Top 2 feet below bridge which is 924. 17 ft. 6 in.
- Wp = 13
well + 13
5. Dolomite, gray, hard, oolitic chert and cryptozoa, not well exposed 27' - 1" - 7
12 ft.

Notes on June 2, 1915

Went to Mendota with E. O. Ulrich, W. O. Hotchkiss, Samuel Weidman and M. G. Mehl and observed the R. R. cut. Ulrich described the contact above bed 1 as a break or unconformity on account of coarser rock above but observed Madison fossils in the rock above. We had great difficulty in assuring him that the Mendota passes below the bottom of the cut and I doubt that he believed us.

well + 13

7 1/4

T. 7 N., R. 9 E., Sec. 35, east half

Section at Rock Cut, C. and N. W. R.R., F. T. Thwaites and Samuel Weidman,
Nov. 10, 1914.

Oneota part of section not examined- dolomite, gray with oolitic chert

Elevation of contact 927 (top of layer 4). Bottom of cut 887

4. Conglomerate, pebbles not well rounded, average $\frac{1}{2}$ in to 2 in. Some are 8 in. long. All examined are fine grained white and yellow-gray sandstone not much unlike the building stone beds of the Madison. The matrix is somewhat coarser sand. The surface is locally case-hardened into a quartzite. The base is irregular and may rest on an eroded surface. Exposed 3 feet

3. Sandstone, medium, yellowish gray, quite hard, especially at top, locally white, beds 6 in to 12 in with much small cross bedding, Base well marked.

13 feet

2. Much like the lower part of layer 3 but much softer. Color light yellow-gray to white, grain finer than above. Not particularly unlike the yellow

Jordan

11 ft., 6

1. Much like layer 2 but markedly finer grained and averages thinner and more regular bedding of 4 to 6 inches. Fucoids occur down to level of track.

For most part this layer is a pure white sandstone, very soft. Scolitus tubes found some with a greenish filling. Some cross bedding

Including what is seen to north down to top of Mendota (not described) 15 ft.

Notes on June 4, 1915. Visited Rock Cut and Tramps Cave. At Rock Cut E. O. Ulrich declared the division between Layers 2 and 3 to be the main unconformity basing his opinion on coarser grain and "black specks" above. He not admits a great break between the Madison and Oneota-different from last year. At the signal at south end of the cut Mendota fragments were found in debris from battery pit. (Later found this layer exposed in northwest corner of cut.)

T. 8 N., R. 7 E., Sec. 31, NWNW

Section along S. Paul tracks about $1\frac{1}{2}$ miles east of Black Earth, F. T. Thwaites and Samuel Weidman, Nov. 11, 1914

1. Franconia, base of section somewhat below track. Sandstone, medium, cross bedded, gray, glauconitic, lenses of silty dolomitic sandstone up to 3 inches thick, also pebbly zones with pebbles of same kind of rock 8 feet
2. Sandstone, medium, light gray, hard, massive, glauconitic 2 ft. 6 in.
3. Sandstone, like 2 but thinner bedded and cross bedded 5 feet
4. Mixed yellowish-gray dolomitic siltstone and glauconitic sandstone in layers $\frac{1}{2}$ in to 1 in. 3 ft
5. Sandstone, fine, yellow-gray, dolomitic, layers $\frac{1}{2}$ in to 2 in., resembles Lodi 2 feet
6. Sandstone, fine, gray, very soft, glauconitic, worm holes filled with yellow-gray silt 2 ft. 6 in.
7. Sandstone, yellowish gray, mixed dolomitic and glauconitic, irregularly bedded 8 in.
8. Sandstone, very glauconitic, like 6 1 ft.
9. Sandstone, gray, dolomitic and glauconitic, layers up to 4 in. 2 ft. 6 in.
10. Sandstone, glauconitic 2 in.
11. Mendota, elevation of base 854. Dolomite, very sandy, glauconitic, gray, layers $\frac{1}{4}$ in to 6 in. 1 ft.
12. Dolomite, hard, medium grained, layers from 5 in. down in base, above to 2 ft. Sandy, glauconitic, gray to yellow-gray, cryptozoa 8 ft.
13. Siltstone, dolomitic, yellow-gray, not well exposed Not measured

T. 6 N., R. 10 E., Sec. 23, SWSE

Section on Colladay Point, F. T. Thwaites, Oct. 30, 1914

1. Mendota- Dolomite, hard, gray, medium grained, irregular purple and green spots, beds up to 8 inches, cryptozoa, Spec. 18500 4 ft., 2
2. Dolomite, hard, fine grained, yellow to gray, layers $\frac{1}{4}$ to 3 in in bottom foot, above to 5 in. Spec. 18501 2 ft 5 in to 3 ft.
3. Sandstone, fine, soft, dolomitic, yellow to white, not well exposed, Spec. 18502 2 to 3 ft
4. UNEXPOSED covering sandstone locally cross bedded; coarse, ^{3rd 8 ft}₁₅₅ brownish yellow ; see Note below. ^{unexp. 3 "} 14 ft
5. Sandstone, fine, dolomitic, yellow-gray 1 ft
6. Dolomite, sandy, gray, Spec. 18503 8 in.
7. Sandstone, hard, coarse to fine, yellow-gray, dolomitic with locally floating sand grains in a dolomite matrix, irregular bedding, Spec. 18504 7 ft.

Note: In another place found with base 8 feet above top of layer 1

8 feet of sandstone, yellow-gray, medium grained

Notes on June 3, 1915.

Went to Colladays Point and examined the section but with no better success in getting fossils. Ulrich believes the lower bed to be Mendota and that above, Madison but not the white sandstone of the bottom of the cut at Mendota station. On return we obtained Madison fossils from the roadside exposures in NWNW Sec. 27, Dunn. and St. Lawrence fossils from that just across the valley in SESE Sec. 21. Ulrich declares that the Mendota is absent at this point although it is present $1\frac{1}{4}$ miles to the northwest and I think only $\frac{1}{2}$ mile north. He offered us \$25.00 if we sank a test pit here but later retracted when informed that this would not be enough.

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3. Sandstone, fine, soft, dolomitic, yellow to white, not well exposed, Spec. 18502 2 to 3 ft
4. UNEXPOSED covering sandstone locally cross bedded; coarse, brownish yellow ; see Note below. 14 ft
5. Sandstone, fine, dolomitic, yellow-gray 1 ft
6. Dolomite, sandy, gray, Spec. 18503 8 in.
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Check of No 2 Beloit - insolubles

0	78774	265 - 270	Silt, fine gray; glauconite; larger pieces of yellow, brown and white chert
1	775	270 - 275	Sand, medium to fine, quartz; some soft white chert
2	776	275 - 280	Silt, gray; some glauconite
3	777	280 - 285	Silt, gray, largely aggregates (some covered soft fibrous chert)
4	778	285 - 290	Same - some glauconite
5	779	290 - 295	Same; trace of glauconite
6	780	295 - 300	Sand, very fine, lt gray, glauc
7	781	300 - 305	Same
8	782	305 - 310	"
9	783	310 - 315	"
0	784	315 - 320	"
1	785	320 - 325	"
2	786	325 - 330	"
3	787	330 - 335	" (much red color and greenish- gray shale)

70 ft

Nov. 10, 33

All Trempealeau

Checks of Tanerite School insoluble

83765 250-255 ^{Trempealeau} ^{Quartz} sand, very fine, glauconitic
fragments of ~~coral~~ white chert

66 255-260 Same but no corals

67 260-265 Like above, more glauconitic

68 265-270 Sand very fine, some glauconitic

69 270-275 Same

70 275-280 Same

71 280-285 Same

72 285-290 ^{Framingham} red shale, little sand

73 290-295 not examined

74 295-300

Total Trempe 35 ft

now are museum survey well logs

O = original

R = residue

Bonnetine dol.

Had sample Beadon, Iron Co.

2190 Drill Hole, Black, Reynolds Co

Davis form.

2246 Base of Davis sand depth 1165 } Dent Co
2246 Lower " " " 1075 }

Potosi dol

2128 Potosi city well, depth 270

E mineral dol

2244 D.D.H. western Perry Co. depth 280-290

Van Buren dol.

2257 NW Crawford Co, depth 120

Gasconade Dol.

2130 Mansfield city well, depth 600-605

Roubidoux form.

3029 Deep well, Perryville, depth 1240

Cotton dolomite

2236 Ozark city well, depth 165

Kennett ls.

2283 Deep Test, St. Louis Co, depth 1084