Correspondence re: Kansas Geological Society's 9th annual field conference - General - 2. 1933-1942

Photographs taken by F. T. Thwaites on Ninth Annual Field Conference of Kansas Geological Society, Aug. 25 - Sept. 2, 1935

1247 Cedar Valley limestone, quarry at Linwood, Iowa.
Sec. 13, T. 77 N., R. 2 E.

1248 Mississippi River below Palisades State Park, Savanna, Ill.
Sec. 33, T. 25 N., R. 3 E.

1249 Looking south from Reservoir Hill, Stockton, Ill.
Sec. 11, T. 27 N., R. 4 E.

1250 Looking north from Reservoir Hill, Stockton, Ill.
Sec. 11, T. 27 N., R. 4 E.

1251 Group in quarry on Reservoir Hill, Stockton, Ill.
Sec. 11, T. 27 N., R. 4 E.

1252 View from end of Terrapin Ridge, Elizabeth, Ill.
Sec. 19 T. 27 N., R. 3 E.

1253 Cut in Silurian dolomite, Millville, Iowa
Sec. 16, T. 91 N., R. 2 W.

1254 Cave in Prosser formation filled with glacial gravel, highway north of Guttenberg, Iowa

1255 Mississippi River from McGregor Heights, Iowa

1256 Mississippi River from McGregor Heights, Iowa

1257 Mississippi River from McGregor Heights, Iowa
Sec. 22, T. 95 N., R. 3 W. (private claim).

1258 Cliffs at Galesville, Wis. Dresbach and Eau Claire
W. 1908.33g7

1259 Looking up Mississippi River from Eagle Cliff, Trempealeau
W1809.28g2

1260 Looking down Mississippi River from Eagle Cliff, Trempealeau
W1809.28g2

1261 Conference at Stockton Hill, west of Winona, Minn.
Sec. 30, T. 107 N., R. 7 W.

1262 Stockton Hill from near crest

1263 Top of New Richmond sandstone, Lanesboro, Minn.
Sec. 35, T. 103 N., R. 10 W.

1264 Bottom of New Richmond sandstone, Lanesboro, Minn.
Sec. 35, T. 103 N., R. 10 W.

1265 Dells Pond from top of Mt. Simon, Eau Claire, Wis.
W2709.08c7

1266 St. Paul from St. Paul Heights Sec. 12, T. 28 N., R. 23 W.

1266
1266 Eau Claire and Mt. Washington from Mt. Simon, Eau Claire
W2709.08c7

1267 Marshall Kay talking at Ellsworth, Wis.
W2617.19

1268 Gorge at River Falls, Wis. Oneota, New Richmond, Shakopee
W2719.01

1269 Another view at River Falls, Wis.

1270 St. Paul from St. Paul Heights Sec. 12, T. 28 N., R. 23 W.

1271 Looking west from St. Paul Heights

1272 Decorah shale exposure overlain by drift, St. Paul Heights

1273 Bridge over Minnesota River, Fort Snelling, Minn.
Sec. 28 T. 28 N., R. 23 W.

1274 Type locality of Jordan sandstone, Jordan, Minn.
Sec. 19, T. 114 N., R. 23 W.
1275 Type locality of St. Lawrence, Sec. 28, T. 114 N., R. 23 W.

~~1276 Quarry in Kasota, Minnesota Sec. 32, T. 110 N., R. 26 W.~~
1276 Quarry in Kasota, Minnesota Sec. 32, T. 110 N., R. 26 W.
1277 Type section of Kasota formation, Kasota, Minn.
Sec. 32, T. 110 N., R. 26 W.
1278 Quarry in Mankato, Minn from New Richmond level.
Sec. 6, T. 108 N., R. 26 W.
1279 Irregular Oneota base, Mankato, Minn.
Sec. 13, T. 108 N., R. 27 W.
1280 Same locality as 1279
1281 Sioux quartzite conglomerate Sec. 27, T. 110 N.,
R. 30 W.
1282 Looking north from locality of 1281
1283 Jordan cliff, Stillwater, Minn.
Sec. 21, T. 119 N., R. 20 W.
1284 Looking up St. Croix Valley from Stillwater, Minn.
Sec. 21, T. 119 N., R. 20 W.
1285 Possible Madison sandstone, Osceola W3319.27d5
1286 Dalles of St. Croix, Taylors Falls, Minn.
Sec. 24, T. 123 N., R. 19 W.
1287 Franconia sandstone, Taylors Falls, Minn.
Sec. 25, T. 123 N., R. 19 W.
1288 St. Croix River from locality of 1287
1289 Quarry at Sandstone, Minn. Hinckley sandstone.
Sec. 10, T. 131 N., R. 20 W.
1290 Looking up Kettle River, Sandstone, Minn.
Sec. 10, T. 131 N., R. 20 W.
1291 Carlton slate, Carlton, Minn.
Sec. 5, T. 137 N., R. 16 W.
1292 Quartz vein in slate, Carlton, Minn.
Sec. 5, T. 137 N., R. 16 W.
1293 Thrust fault, Ammicon Falls, Wis.
W4812.29d2
1294 Falls of Ammicon River over thrust fault
W4812.29d2
1295 Shale dike in diabase flow, Montreal River.
4601.21
1296 Same as 1295 (shaken).
1297 Same as 1295
1298 Vertical diabase flow, Montreal River 4601.21
1299 Dry falls, Montreal River 4601.21
~~1300 Party, post-conference trip No. 2, Sept. 2, 1935 after leaving power plant on Montreal River. 4601.21a8~~
1301 Ski slide camp. Limestone Mountain. 5135.24e7
Raasch, Bays, F.T.T. Bridge
1302 Looking northeast from ski tower 5135.24e7
1303 Looking southwest from tower 5135.24e7
1304 Looking northeast from Little Limestone 5135.23c1
1305 Big Limestone from Little Limestone 5135.23c1
1306 Looking southeast from Big Limestone 5135.23g2
1307 Oblique of Ski Slide Camp 5135.24e7
1308 Looking west from Sherman Hill 5134.18a1
1309 Big Limestone from southwest 5135.23a5
~~1310 Little Limestone to right of 1309~~
~~1311~~
~~1312 Big Limestone from northeast~~

1309 Big Limestone from northeast 5135.13f5

1310 Little Limestone from southwest 5135.23a5

~~1311Big Limestone from southwest 5135.23a5~~

1311 Big Limestone from southwest 5135.23a5

1312 Ski Slide Camp, Big Limestone Mountain 5135.24e7
Bridge, Bays, F.T.T. Raasch

1300 Post-conference trip No. 2 at falls of Montreal, Sept. 2, 1935
Smith, Riggs, Bays, Snider, Atwater, Poor, Raasch, Ekblaw,
F.T. Thwaites, Bay, Edson, Bridge

NINTH ANNUAL FIELD CONFERENCE

Number Corresponds with those in Pictures

NUMBER	NAME	NUMBER	NAME
1	A.K. Miller	41	Fritz Aurin
2	Helen M. Sherman	42	E.C.Moncrief
3	A.L. Morrow	43	Lawrence F. Lees
4	Lane Mitchell	44	C.W. Couser
5	F.T.Thwaites	45	M.A.Stainbrook
6	R.B.Dunlevy	46	William H. ElRod
7	R.S.Clark	47	Charles K. Bayne
8	Allen C.Tester	48	Phil K. Cochran
9	G.C.Siverson	49	James I. Daniels
10	Wayne V. Jones	50	Anthony Folger
11	A.C.Trowbridge	51	R.J. Riggs
12	L.H.Lukert	52	Jerry E.Upp.
13	D.M.Morgan	53	John F. Kinkle
14	L.W.Kesler	54	D.C.Nufer
15	John R.Ball	55	Forbes Robertson
16	Norval Ballard	56	Harold E. Redmon
17	Russell S.Poor	57	Merritt H. Brown
18	William H.Lamprecht.	58	Percival Robertson
19	Carl A. Bays.	59	E.P. Philbrick
20	Geo.W.Baughman	60	Geo. M. Davidson
21	R.A.Carmody	61	Gordon I. Atwater
22	L.W.Wood	62	Eric A. Rudd
23	W.L.Stryker	63	Charles Ryniker
24	Judson R.Griffin	64	Kenneth K. Landes
25	Edward P.Burch	65	?
26	T.L.D.Hadwen	66	A.I.Levorsen
27	Olive L. Hoffman	67	Ray L. Six
28	Harry Bay	68	Lawrence Whitcomb
29	Fanny Carter Edson	69	Norman D.Newell
30	Marvin Lee	70	L.L.Nettleton
31	H.Q Banta	71	Ernest J.Carmon
32	Ellis H.Scobey	72	R.W.Clark
33	L.C.Snider	73	W.H.Emmons.
34	Edward A.Koester	74	Ernest R. Smith
35	Everett A. Bradley	75	G.M.Schwartz
36	Henry S.McQueen	76	Walter A. VerWiebe
37	W.B.Sinclair	77	George Ekblaw
38	Jack M. Copass		
39	Ellen Posey		
40	John E.Adams.	Between 69 - 74 C.S.Gwynne	

UNIVERSITY OF MINNESOTA
COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS
MINNEAPOLIS

DEPARTMENT OF GEOLOGY AND MINERALOGY

February 5, 1935

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

Dear Mr. Thwaites:

I have your letter of January 23rd and enclosed prints which are useful to us and much appreciated.

Regarding the questions raised in paragraph two on the usage of the terms St. Lawrence and Franconia. The correlation as used on my print does correspond to our surface usage but is at variance with usage of others outside the state. The situation is this, as I understand it. The St. Lawrence at the type locality is very highly glauconitic. The Franconia at the type locality has very little glauconite. Therefore we see little justification for calling beds Franconian in Minnesota just because they are highly glauconitic. I have worked for three years on the subsurface geology of the Minneapolis-St. Paul metropolitan area which happens to extend almost to Franconia on one side and St. Lawrence on the other. The correlation as we use it seems to fit the well logs very well indeed and gives a rather complete tie up between the two type sections although it can not be said to be perfect in all respects. The fact is that we would have practically no St.Lawrence except the Lodi beds if we used glauconite as an indication of Franconia. The following is my average thickness for these horizons for the Minneapolis-St. Paul area, calculated mainly from well logs.

Jordan sandstone	90 feet
St. Lawrence formation	180
Franconia sandstone	65
Dresbach formation	155
Hinckley (Mt.Simon) sandstone	220
Red clastics	2458 (in Stillwater well)

I wish you and Professor Twenhofel could see the mass of data I have on this region and the way it works out. This, of course, does not mean that it would fit the conditions in Wisconsin, or that the type sections in Minnesota are necessarily good ones, but the correlation is very convenient for use in this state and since it has been used in its main outlines for fifty years I suspect it will be with us for a long time to come. I am not a stratigrapher and would not think of suggesting changes myself.

Sincerely yours
C. M. Schwartz

THE KANSAS GEOLOGICAL SOCIETY

WICHITA, KANSAS

NINTH ANNUAL FIELD CONFERENCE

EASTERN IOWA, NORTHWESTERN ILLINOIS, CENTRAL AND WESTERN WISCONSIN, EASTERN MINNESOTA

BEGINNING IOWA CITY, AUGUST 25—**1935**—ENDING DULUTH, SEPTEMBER 1

With the Cooperation of

THE STATE GEOLOGICAL SURVEYS OF IOWA, ILLINOIS, WISCONSIN, MINNESOTA

February 5, 1935.

To the Leadership of the
Ninth Annual Field Conference
of the Kansas Geological Society.

Gentlemen:

The first announcement of the forthcoming Ninth Annual Field Conference will be issued some time during the coming few weeks. Copies of this announcement will be transmitted to all of the Leadership. Since the majority of you have not participated in past field conferences of the Kansas Geological Society, and may not be acquainted, therefore, with some of the customs of these conferences, it is the desire of the Committee on Arrangements to call one custom in particular to your attention.

On past conferences it has been the inviolate practice for the Leadership and the Committee on Arrangements to pay the same fee for the Guide Book as any other participant. At first thought this custom may seem unjust to some of the Leadership inasmuch as the majority of you are giving, without thought of compensation, many hours of time and labor in behalf of this Conference. Thus it might be reasonable for you to expect that the Kansas Geological Society should graciously give complimentary copies of the Guide Book to each member of the Leadership. While our Society has always felt this would constitute a just practice, it is impracticable from a standpoint of sound finance. All of you will appreciate, I am sure, that if complimentary copies were given to the Leadership, and to the Committee on Arrangements, it would necessitate a gift of 42 Guide Books. This would cut materially into the Society's income, and gross income is a very vital consideration in rendering a conference self-supporting.

It is our best judgment that it will be obligatory to charge a fee of $10.00 for each Guide Book. This same fee was asked for Guide Books in 1930, 1931, and 1932. After nine years of experience, we are able to estimate with considerable accuracy the cost of a Guide Book's publication. Estimates for the 1935 Guide Book are far in excess of any previous year, and annually (except in 1929, 1933, and 1934) the Society has suffered material loss. Thus, the Conference cannot attempt self-support without a $10.00 fee.

Because of your continued co-operation without thought of compensation, we felt it would be unjust to transmit your announcement, with order blank inclosed, and anticipate the return of a signed order from each member of the Leadership without some explanation going forward to you of the background and history of this past custom of our Society field conferences. In the event any of the Leadership feel this practice is unfair, even though it has been followed unalterably since the Third Annual Field Conference, in 1929, we invite further discussion. We appreciate thoroughly your side of the situation, and it is our hope that after reading this letter you will understand our side which must, of necessity, be based on sound finance. Lastly, we trust each of you will realize the impracticability of the Kansas Geological Society assuming a loss of $420.00 by this aforementioned gift of Guide Books, much as this Society desires that such an arrangement were possible.

The Committee on Arrangements takes this opportunity to extend to each of you their appreciation of your cordial and continued co-operation on all Conference matters. Present outlook indicates that this will be the Society's most successful field conference. We feel sure that if this anticipated success becomes actual, the satisfaction of the participants will, in a large measure, repay us for our combined effort.

Very cordially yours,

/Anthony Folger

Anthony Folger.

AF/B

Feb. 4, 1935

Dr. J. M. Wanenmacher,
Box 1191,
Tulsa, Oklahoma

Dear Jo:

I did not answer your note of July 13, 1934 because I was in the feild working with a Penrose Grant when it came and by the time I was able to get around to it Twenhofel had sent the separates of your paper.

As you probably know the Kansas Geological Society will hold its Ninth Annual Field Conference in Illinois, Iowa, Minnesota and Wisconsin next summer. Almost the entire burden of the preparation of the guidebook for Wisconsin has fallen on me. This trip passes through the Baraboo district with stops at Devils Lake and Ableman only for that is all I can get in if they are to go to the Dells.

I would like permission to reproduce in the Guide Book the following figures from your thesis:

Figure 6, cross sections of the North Range
Figure 25, structure map
Figures 26 and 27 road profiels north side of South Range
Figure 28, same as above.
Areal geology map.

Of course due credit will be given for these. The Kancas Society will redraft them if necessary but it seems to me that Vandyke positives could be photographed directly. Now, I do not know where the Vandyke negatives for these drawings are and infer that you must have them. If so could you get me either blueline prints or Vandyke positives. I cant offer to pay for them as I will be out of pocket a lot over the trip anyway but possibly I could persuade Folger to do so as this would save them a lot of drafting expense. The areal map would require a lot of liming to replace the colors but this could be put on the positive. Or maybe they could ink in blueline prints so that they could be photographed.

Andy Leith is to write the description of the pre-Cambrianbut I expect has not started yet although he got up several maps for the Tri-States Conference last fall.

Hoping we can make some satisfactoryarrangement so that I do not have to trace these maps (I have to draw new a lot of others) and that you will be able to take in the trip, I am,

Sincerely,

Best regards from Amy also F. T. Thwaites

THE KANSAS GEOLOGICAL SOCIETY

WICHITA, KANSAS

NINTH ANNUAL FIELD CONFERENCE

EASTERN IOWA, NORTHWESTERN ILLINOIS, CENTRAL AND WESTERN WISCONSIN, EASTERN MINNESOTA

BEGINNING IOWA CITY, AUGUST 25—**1935**—ENDING DULUTH, SEPTEMBER 1

With the Cooperation of

THE STATE GEOLOGICAL SURVEYS OF IOWA, ILLINOIS, WISCONSIN, MINNESOTA

February 3, 1935.

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

Dear Thwaites:

Under date of December 17, 1934, on page 2 of your letter, you state that you are preparing a large table showing comparative nomenclature of the Cambrian from Owen to the present. You offer to contribute this table for inclusion in the forthcoming Guide Book.

We wish to accept your offer with our very cordial thanks. When it is completed, I wish you would have two white prints run off, forwarding one copy to Trowbridge and the other to me. Kindly keep track of this expense, advise me the cost of making these two white prints, and I shall have Mr. White reimburse you.

At some later date, I shall advise you whether it will be desirable to turn in a Vandyke positive which will be suitable for direct reproduction in the Guide Book.

Again thanking you for your offer, and with kindest personal regards,

Very truly yours,

Anthony Folger

Anthony Folger.

AF/B
c. c. to A. C. Trowbridge.

Dictated 2-2-35.

THE KANSAS GEOLOGICAL SOCIETY

WICHITA, KANSAS

NINTH ANNUAL FIELD CONFERENCE

EASTERN IOWA, NORTHWESTERN ILLINOIS, CENTRAL AND WESTERN WISCONSIN, EASTERN MINNESOTA

BEGINNING IOWA CITY, AUGUST 25—**1935**—ENDING DULUTH, SEPTEMBER 1

With the Cooperation of

THE STATE GEOLOGICAL SURVEYS OF IOWA, ILLINOIS, WISCONSIN, MINNESOTA

February 3, 1935.

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

Dear Thwaites:

Item Number 22 of the "List of Maps and Reports to Be Included in the Guide Book" calls for a report on "The Stratigraphy and Structure of the Baraboo Range" by Thwaites, et al. In your letter of December 17, 1934, on page 2, you discuss certain Baraboo information and certain maps which will be prepared thereon, and I infer from your remarks that you will prepare this paper.

However, I am not certain of this, and moreover, I have never formally requested you to prepare this paper for publication in the Guide Book. Herewith our formal invitation, and I trust that you will accept, since it is the belief of the Committee on Arrangements that this paper on the stratigraphy and structure of the Baraboo range should be one of the outstanding special papers included in the Guide Book. In addition to the areal map by Winnemacher, the structure sections by Andrew Leith, the block diagrams by yourself, and the map of the Ableman Gorge, it might be well to include also some photographs.

It is difficult for us to suggest the exact length of this paper, and I wish to leave that to your own best judgment. I would think, however, that the report and all its illustrations should occupy the equivalent of some 10 to 15 single spaced pages.

Will you advise me at once whether or not you accept this assignment, and also advise the exact title of the paper and the names of all the men who will contribute illustrations for this paper provided their names should be included with the title of the paper. In other words, will it be best to list this paper in the first announcement as "The Stratigraphy and Structure of the the Baraboo Range, by F. T. Thwaites," and then when the paper appears in print, you can acknowledge the help of the men

who prepare the illustrations, or do you want these men's names to appear in the title of the paper along with your own name.

Cordially yours,

Anthony Folger

Anthony Folger.

AF/B

c. c. to A. C. Trowbridge.

Dictated 2-2-35.

THE KANSAS GEOLOGICAL SOCIETY

WICHITA, KANSAS

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BEGINNING IOWA CITY, AUGUST 25—**1935**—ENDING DULUTH, SEPTEMBER 1

With the Cooperation of

THE STATE GEOLOGICAL SURVEYS OF IOWA, ILLINOIS, WISCONSIN, MINNESOTA

February 3, 1935.

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

Dear Thwaites:

I wish to acknowledge herewith the receipt of your letter of January 30, together with a carbon copy of your letter to Workman, and a blue print of a portion of the log of the Number 3 city well at Ft. Atkinson.

Relative to the graphic sections, after examining the blue print you inclosed, I think it will make no difference whether you send me the blue prints or the originals. However, I wish to emphasize that all of the material for the Guide Book is to be sent direct to Trowbridge before it comes to me. The only alteration of this ruling is that when you prepare your final road log, I wish you would make an extra copy and would transmit me one copy of your road log at the same time as you forward the original to Trowbridge. Extra copies of the graphic sections, typewritten sections, illustrations, and photographs will not have to be sent me.

One point more in relation to the graphic sections. Your inclosed blue print shows a great deal of detail. It appeals to me that much of this detail had better be incorporated in the detailed typewritten sections rather than on the graphic section. In other words, the graphic section is to bring out the important lithologic units, whereas the typewritten sections are to bring out the details of each bed, such as is shown on the blue print you inclosed.

I am indeed glad to learn that your portion of the Wisconsin-Missouri cross section has been completed, and I shall look forward to its receipt.

Relative to the last date that material can be included in the Guide Book, that is rather a difficult question to answer. All of the road logs, graphic sections, route maps, typewritten sections, etc., should be in the hands of Dr. Trowbridge at a

date which I think he has already informed you. Certainly, it is long before June. In the event that any one has a map or an illustration, the information on which will have to be procured during the summer vacation, it might be possible to incorporate this map at the proper point in the Guide Book at a very late date. It is our present plan and hope that this Guide Book will go to press the first of July. Because of the complicated nature of the Guide Book, and because of the largeness of the edition, the printer advises that they would like one month to prepare these books. It is the desire of the Committee that the Guide Book will be ready in final bound form by the first of August. Whether or not we shall be able to successfully realize this desire is, of course, unknown. Always before, Guide Books of Society Field Conferences have been finally assembled and bound some two or three days before the Conference convenes. I remember one Conference when it was the night before that we got through.

If a map or illustration, such as that for the Ableman Gorge,is particularly important, or if some pictures will have to be taken this summer which are also important, (as those which you mention seem to be) it might be that those particular pages of the Guide Book on which they would appear could be held up from being printed until the last possible date, which might be some time during the latter part of July. In connection with the pictures at Ableman, I suggest that you take these just as soon as you go into the field this summer, and transmit them to me at once, unless it will be possible for someone to make a special trip to Ableman in the meantime to procure these pictures.

I note that Bays expects to prepare a written statement on some of the Wisconsin Ordovician sections in which he is not in entire agreement with G. Marshall Kay. Do you anticipate incorporating this information in the road log or in a separate short paper? If a separate paper, kindly advise me the exact title at once, so that mention of it may be included in the first announcement of the Field Conference, which will be issued this month. In any event, when Bays has prepared this statement, I shall be appreciative if he will send me a copy, and may I suggest also that a copy be forwarded to Trowbridge.

I read with considerable enjoyment your long paragraph relative to the adoption of a standard section for the Ordovician and Cambrian of the Upper Mississippi Valley. I shall not at this time incorporate any remarks relative to this paragraph of yours. I am in communication with Trowbridge in which we are suggesting back and forth some possible solution to this problem, and after I hear from him again, I shall probably write you.

Answering specifically the second paragraph on page 2 of your letter, all maps and drawings, in fact, all information of any kind to be included in the Guide Book is to be forwarded direct to Trowbridge, and again to make it clear, may I request copies of all written material forwarded to Trowbridge to be sent to me at the same time.

I am glad to learn that Raasch is beginning work on his Cambrian paper, and that Bays is also busy helping you. It is quite evident that most of the

Mr. F. T. T. 3 2-3-35.

Wisconsin Conference work is being done by Mrs. Thwaites and yourself, a fact of which we are truly appreciative.

With kindest personal regards to you both,

Very cordially yours,

Anthony Folger

Anthony Folger.

AF/B

c. c. to A. C. Trowbridge.

Dictated 2-2-35.

Jan. 30, 1935

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

Dear Folger:

I wish to thank you for your letters of Jan. 18 and the copy of Weller's road log in Illinois. Both Mrs. Thwaites and I have read this with much interest. We fear that we will not be able to compete with it in amount of detailed information on stratigraphy. In this state there is almost nothing in the Survey files except for a few small areas. We have a copy of Ulrich's notes but I wish anyone joy who tries to use any of them! You see that I was removed from all but subsurface work at the close of 1924 and Twenhofel was in 1917. Since 1930 no work of any kind has been done if we except some road material work in the western part of the state which I fear is of little value for scientific purposes especially as it does not touch any of the sandstones.

I understand what is wanted now in graphic sections and strip maps. I intend to start as soon as possible (it now exam time) on some sections which will resemble my graphic well logs sample of which is enclosed. In 1917 I started a similar system for all surface sections but others took no interest and it was dropped soon. The main point is: shall I send you blueprints of these or the originals? I will alter the typography to resemble that of the other guidebooks. Will use 1" = 40'

The strip maps I will send in pencil as there is nothing in them which I care about for my files.

I am glad to be able to inform you that the Wisconsin part of the Wisconsin-Missouri cross section is now done. I drafted that up with care as I plan a network of such sections across the state if this style and scale proves satisfactory. As I presume that it will all have to be redrafted to secure uniformity I will send you blueprints only. Please advise me what written matter you desire with it.

I am now looking out photographs from both the Survey and my personal collections to use in the Guidebook. It is evident that more will have to be taken at Ableman and possibly other places. Two of our seniors are to map the Ableman gorge in detail for a thesis. They are to take Mapping with me so that I will personally supervise the contouring although Andy Leith will have charge of their geology. Please advise me of the latest date at which this material can be included in the Guide Book as they will probably not do much before June.

Bays promises some writeups of the Wisconsin Ordovician sections which will show where he does not agree with G. Marshall Kay. I do not think the differences are at all comparable to those of the 1913-33 controversy with "Uncle Edward"!

In respect to uniformity of nomenclature in the several states this is a hope to be compared with that for "Two dollar crude",

international disarmament, etc. etc. It will certainly not be realized in 1935 or for that matter as long as some of the present "powers that be" hold their jobs. Personally I advocate a program which involves scrapping of all Minnesota formation names in both Cambrian and Ordovician followed by agreement between the Iowa Survey, Illinois Survey, and Wisconsin University (not Survey) groups. I seriously doubt that any missionary work in "darkest Minnesota" will do one bit of good. It is clear to me that their surface and subsurface formations are not the same. Original definitions of formations were so hazy that I would like to just throw them overboard and start new. Probably I will not get very far with this radical program and we will have to use the tentative nomenclature of Trowbridge and Twenhofel with the distinct understanding that it is not the official Wisconsin usage and not that which I use on my well logs. I will still cling to Ulrich's version of Dresbach for that locality is just as poor a type for those strata (Trowbridge's Galesville) as it is for the vastly enlarged application of the name now suggested. I fully sympathize with Beans objections to a change at the present time and feel that priority should be scrapped in favor of clarity. I also feel that common usage among drillers and engineers should have weight over technical questions and that even if errors in application were made in the past that long and common custom afterward should be recognized. I am in favor of getting a new name to replace "Shakopee", keeping "Mazomanie" instead of Franconia (all now admit, except Ulrich, that these are the same thing), keeping "Dresbach" in Ulrich's 1914 meaning until we can educate everyone to use "Galesville", and then using a new name either "Chippewa" or "Red Cedar" for what Trowbridge and Twenhofel now want to call "Dresbach (not the original usage). Meantime, I advise abandoning hope of any agreement as long as we cling to any Minnesota names whatever. I advised against adopting them in 1914 and still think the same way about them!

In forwarding maps and drawings do I send them direct to you or via Trowbridge? There will be alot ready soon.

Raasch is running "heavies" for his Cambrian paper but I know of no other work for the Conference except a little by Bays. Mrs. Thwaites has started typing the road log. Both the "Indians" have had colds which has rather delayed that part of the work. When spring comes and they can play in the yard I hope more will be done!

Sincerely,

F. T. Thwaites

Sorry to ACT

Jan. 29, 1935

Dr. A. C. Trowbridge,
Assistant State Geologist,
Iowa City, Iowa

Dear Trow:

Yours of the 23rd is at hand. I fully realize the demands which the Conference is making upon you. I could have help from one of the F. E. R. A. students but my experiencehas been that such help is not worth much and may hinder more than anything. The only qualified persons I know of are also tied up with other work. However, the Wisconsin-Missouri corss section is now practically out of my hands. Gilbert Raasch is to write up the Cambrian as a whole but so far has done little but run "heavies".

With regard to Day 2 I have put in the next draft of the log to arrive at Black Hawk bridgehead at 3.45 P. M. and reach La Crosse at 6.00. Personally, I am not at all keen on this section of the trip. Highway 35 is rougher than any other part of the route. The map calls it "all weather earth" but I thought it would be better to call it "no weather boulder" road! Although I have not seen the Victory gulley (wonder if the C. C. C.s have filled it with dams by now) I feel that the party will see the same section at Lansing and at Trempealeau Mountain. When visited first by Raasch it was before the recent (I should say current) drought and then furnished a complete section. Mr. Bean tells me that 35 may be closed for construction next year because the C. W. A.s left it in terrible shape where they messed things up south of LaCrosse.

On Day 3 I have prepared from the topographic map a log from the downtown district of LaCrosse to the state line and return. We eliminated Grandfather Bluff when we talked at Devils Lake last summer, I think. Anyhow, I do not see how it is possible to get it in unless the day in Minnesota is short. We could run it as an extra at the end of the day and if so log the sidetrip from the map. With regard to length of stops I used my own judgment and agreed with Bean that all Bluff stops should be allowed 60 minutes. However, if you think it can be done in less that is all right with us.

Day 4 presents serious problems. I departed considerably from any of the original three alternatives for several reasons. The main one was to save distance by not going too far down the ridge south of Viroqua. At the last minute I included Liberty Pole Hill because it represents a transitional phase between the Iowa and Lead Region sections (as informed by Bays and Raasch). Then I found that we would have to swing south to Mineral Point to see a decent section of the Lead Region Platteville. The city quarry there is worth going a long way to see and I have an excellent photograph of it plus a section by Bays. The different members show up well in the photograph. Highways had nothing to do with this change. There are practically no good exposures on Military Ridge now. I thought that we had agreed to include Iron Hill when at Devils Lake. We simply cannot get it in to Day 4 or the Farwell Point stop either. The only way we could make a shift would be to omit the Mazomanie-Black Earth detour. I do not want to do this as Mazomanie is the only place that we see the

eastern phases of the Trempealeau and get an introduction to the famous Mendota controversy.

I have explained my troubles with Day 5 before. At present I cannot see how to get in any stops in the Baraboo region except on West Bluff and at Ableman if we are to include both Goodenough Hill and Tunnel No. 2. The two last named supplement one another and ought to be kept if possible. With regard to Black River Falls they have 60 rooms and 80 beds at the Freeman Hotel and could doubtless look up enough tourist rooms to care for any excess which can reasonably be expected. Personally I doubt that the total number will be anything like that talked of. Of course, no definite arrangements for hotels or meals can be made until some reasonabbeestimate of numbers is available. That effectually prohibits any definite logging of routes in some cities.

Any arrangement you make with respect to day 6 will be all right with us. Possibly I allowed too much time for the Osceloa and Hudsonstops. At Hudson we have to climb a steep bank through bad poison ivy but Osceola is easy except that we have to walk some distance between the Oneota base and the stairs down to the falls.

Folger seems (in a letter to Raasch) to have the idea that the Iowa, Illinois, and Wisconsin Surveys have agreed upon a uniform nomenclature for the Cambrian. Such is far from the truth. Bean is absolutely opposed to any further changes although I cannot make out if he stands by Ulrich's 1934 section or the Raasch-Twenhofel-Ulrich section of 1932. So far as I am aware the matter has never been discussed with Illinois. I have had no reply to a latter to Schwartz when I sent him a copy of the correlation chart (I am sending you one under separate cover). In this I said that I was in favor of abandoning all Minnesota type localities. I suggest retaining Mazomanie instead of Franconia and substituting either "Chippewa" or "Red Cedar" for your version of "Dresbach". If you stop to think the type section at Dresbach includes only a very small fraction of the strata to which it is intended to apply the name. It is worse even than Franconia where only about half the formation is known. I am not making any change in my well sections and do not intend to at present. But I do feel (as I felt in 1913) that the use of Minnesota names in other states is most unwise. They never defined the names properly and the geologists there use them in varying ways. I still cannot make Twenhofel see the point as he puts much weight on historical precident but I think that Raasch would come over to my views. In the mean time, there is no hope of obtaining general agreement on the Cambrian nomenclature for 1913!

Must quit now and go to town to give an exam for a student who is going out on soil erosion work. Both of the children have had colds and that has set us back a lot but Mrs. Thwaites has started to type the next draft of the Road Log and soon I can start on the graphic sections.

Sincerely,

F. T. Thwaites

Jan. 23, 1935

Dr. G. M. Schwartz,
Dept. of Geology,
University of Minnesota,
Minneapolis, Minnesota

Dear Schwartz:

Thank you for the blueprint cross section of the South St. Paul wells received some days ago. In return I mailed you advance copies of the illustrations for the forthcoming paper on the Cambrian prepared mainly by Twenhofel and Raasch.

Your subsurface correlations aroused our interest. It is obvious that you are using the term St. Lawrence in the Iowa way so as to include in it our Franconia which is marked by an abundance of glauconite. This correlation is not that commonly used in your state in surface work if we understand things correctly. Your correlation of the wells evidently makes your (subsurface) Franconia the same as Ulrich's Dresbach or Trowbridge's Galesville member of the Dresbach. Now these strata have no glauconite and are decidedly coarser than the Franconia above or the Eau Claire(original Dresbach of Winchell) below. Unfortunately this horizon seems to be weakly developed in the upper St. Croix valley. In studying Ulrich's notes of former days I find that he correlated certain strata at Osceloa as "Dresbach" (his version of that term) which Twenhofel and Raasch have no hesitation in calling Franconia. At Hudson there is also difficulty in finding very much Galesville. Most of the trouble, however, is due to incomplete exposure. In the subsurface I have no difficulty in tracing the horizons when samples are accurate and full.

Your usage of the term Dresbach on the section is undoubtedly correct. It is obvious that when Ulrich moved that name to higher strata he was not fully acquainted with the type locality and also failed to note that the section at that place is far from complete. I always found that Ulrich called certain parts of sections "in situ" which I would unquestionably call "talus". I expect that this failing of many of the older geologists is chargable to the poor and shallow exposures they had to work with. It is also clear that they often called certain formations "missing" where with the more accurate work of today we would conclude that they aresimply"concealed".

I have previously touched on the Hinckly-Mt. Simon controversy. This is a matter of type locality. The unfortunate thing about your type locality is that the relations to adjacent formations cannot be there determined. At Mt. Simon they can be. See our section.

At present I am urging the scrapping of all the remaining Minnsota names from our column on the ground that the type sections are almost all very incomplete and that there has been so much confusion in the application of all Minnsota names for the Cambrian section. This is why Ulrich scrapped St. Lawrence in 1924. I urge a continuation of this process of elimination of poor type localities before it is too late. Will be glad to learn your reaction on the above.

UNIVERSITY OF MINNESOTA
COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS
MINNEAPOLIS

DEPARTMENT OF GEOLOGY AND MINERALOGY

Department of Geology
University of Minnesota
Minneapolis, Minnesota

Prof. F. T. Thwaites
Department of Geology
University of Wisconsin
Madison, Wisconisn.

Dear Mr. Thwaites:

In connection with our studies in the Minneapolis - St. Paul area I am attempting to review the data with regard to the correlation of the Hinckley sandstone and the Mt. Simon sandstone. I have looked up the data in publications between St. Paul and Eau Claire, but find very few well records which penetrate what is now called Mt. Simon in Wisconsin.

I wonder if it would be too much trouble for you to furnish me with a list of available logs of wells between Eau Claire and Hudson which penetrate the Mt. Simon, with the depth or elevation at which it is struck. I dislike to ask for anything that involves so much work, but there seems to be no other possibility of arriving at the relations.

Trowbridge seems to think that the Hinckley sandstone at the Twin Cities is very doubtfully correlated with the sandstone at Hinckley, but very definitely correlated with the Mt. Simon. I am trying to see just what the evidence is in both directions, and will greatly appreciate any help you may be able to give me.

I am going to send you, sometime later, a blueprint of all the wells at South St. Paul.

Very truly yours,

G. M. Schwartz

GMS:BH

Dr. G. M. Schwartz,
Department of Geology,
University of Minnesota,
Minneapolis, Minnesota

Dear Mr. Schwartz:

Reply to your recent letter in regard to well records in northwestern Wisconsin was delayed first because I had to get some blueprints made and second because of the Holidays.

Enclosed please find logs of the only wells of which I have good records in the area described, namely the New Richmond, Menomonie, and Hudson wells. I have also finished a comparative cross section through the same region which is to be published in a paper on the Cambrian written with Messers Twenhofel and Raasch. If you desire it I can get you a print of this at an early date. All the information available demonstrates that the Mt. Simon of the type locality is the so-called Hinckley of deep wells. The real question lies in the connection between this sandstone and that which is exposed at Hinckley where stratigraphic relations cannot be discovered. Twenhofel tells me that the two sandstones are superficially similar but, of course, that does not prove equivalence. As I have never seen the sandstone at Hinckley will not venture an opinion but I strongly suspect that there are two "Red Clastic" series. One in the north, say Stillwater well, etc is arkosic and probably Upper Keeweenawan; the other as in northern Illinois wells is simply a pink quartz sandstone and is probably the downward extension of the known Upper Cambrian. This southern red series may well be Middle Cambrian.

Will be glad to get the blueprint you mention.

Sincerely,

Itinerary of the Kansas Geological Society's Field Conference

To be held in 1935

Davenport to Dubuque

Compiled by J. Marvin Weller

From personal observations, published and unpublished data in the files of the Illinois State Geological Survey, information personally communicated by members of the Survey staff, and other sources.

Summary

The stratigraphic succession in northwestern Illinois is as follows:

Pennsylvanian System

Outliers

Unconformity

Devonian System

Unconformity

Silurian System

*Port Byron dolomite
Racine dolomite
*Waukesha dolomite
*Joliet dolomite

*Unconformity

*Kankakee dolomite

*Unconformity

*Edgewood dolomite

*Unconformity

Ordovician System

*Maquoketa shale

*Unconformity?

*Dubuque dolomite
*Galena dolomite
Decorah shale
Platteville dolomite
Glenwood beds
St. Peter sandstone

The starred formations and contacts will be examined at one or more of the eight stops made in Illinois.

For about half of the way the route follows the Mississippi Valley and the physiographic features related to its Pleistocene history may be observed.

000.0 Enter Mississippi River bridge. Leave Iowa, enter Illinois. (Map. No. 1).

This bridge was built by the U. S. Army Engineers Corps in 1895-96. It is a two level bridge; overhead are the tracks of Chicago, Rock Island and Pacific Railroad.

To the right (west) is Mississippi River Dam No. 15. It and the locks located to the left of the far end of the bridge were also built by the U. S. Army Engineers Corps. Construction started in 1931 and was completed in 1934. The difference in water level at Dam No. 15 is seventeen feet. Two locks are provided for the passage of river traffic. The larger is about 700 feet long and will accommodate a steamboat and several barges. The movable span of the bridge, which swings horizontally, and the lock gates and sluices are operated by electricity and controlled from a pilot house above the bridge.

At Cordova, 18 miles northeast of Rock Island, Mississippi River enters a narrow valley cut in bedrock into which it was diverted from its ancient course by outwash from the Wisconsin glacier. Rapids were formerly present here and in a distance of twelve miles the river dropped about twenty feet.

000.3 Leave bridge. This is Rock Island in Mississippi River for which the city of Rock Island was named.

The United States Arsenal located on this island is the largest arsenal in the world, not excepting the great Krupp Works in Germany. It was established by act of Congress in 1862 and during the World War some 15,000 persons

were employed here in the manufacture of arms of all kinds. The present buildings, stores, and equipment are valued at 400 million dollars.

During the Civil War over 12,000 Confederate prisoners of war were confined here.

000.4 Replica of Fort Armstrong on the right erected by the D.A.R. in 1916.

The mainland near Rock Island was the site of the principal village of the Sauk Indians, a tribe of Algonquin affinities that had been driven westward from Michigan by the Iroquois and had finally settled in an area comprising northern Illinois and southern Wisconsin. This area had been depopulated as the result of a war between the Illinois Indians, another Algonquin tribe, and the Winnebagos who belonged to the northern branch of the Sioux. In 1804 William Henry Harrison negotiated a treaty with five chiefs of the Sauks and Foxes, a closely allied tribe, whereby fifty million acres of land lying principally between the Illinois and Mississippi rivers was ceded to the United States Government in consideration of an annual payment of one thousand dollars. By the terms of the treaty the Indians might retain possession of the land until it was sold to settlers by the government.

During the War of 1812 two expeditions, the second being commanded by Zachary Taylor, set out from St. Louis to dislodge the British at Prairie du Chien, Wisconsin, but with the aid of the Sauks and Foxes the British repulsed both expeditions at Rock Island. At the close of the war in 1816

peace was made with the Indians and Fort Armstrong was erected. In about 1823 squatters first appeared at Rock Island and at once began to take possession of the Indians' cornfields without obtaining title from the government. Each year the squatters fenced in larger areas and at last most of the Sauk tribe under the leadership of their most important chief, Keokuk, abandoned their ancient home and emigrated into Iowa. A small band, however, under Black Hawk, a war chief now over sixty years of age, remained. In 1831 the whites ordered the last of the Indians to move out. The latter refused and threatened the settlers who fled in panic. Two months later a force of regulars and volunteers marched into Rock Island to find that the Indians had quietly withdrawn to Iowa the night before the troops arrived.

In the spring of 1832 Black Hawk and his followers peacefully crossed the Mississippi and began to ascend Rock River with the intention of joining friends in the Winnebago country. The military commandant at Fort Armstrong ordered him to return. He refused and excitement spread throughout Illinois. Regular troops and volunteers outnumbering the Indians ten to one took the field and there followed the tragic Black Hawk War which, four months later, culminated in the massacre of the Bad Ax in which Black Hawk's band was almost completely annihilated.

Fort Armstrong was abandoned in 1836.

000.7 Enter bridge over "Sylvan Water", the subsidiary channel of Mississippi River that separates Rock Island from the Illinois bank.

000.8 Enter City of Rock Island; population about 38,000.

The business and industrial sections of Rock Island, Moline, and East Moline are located chiefly on a terrace of Wisconsin outwash from one-quarter to 1 1/2 miles wide, bordering Mississippi River. To the south rises an abrupt hill 150 feet high upon which are situated the better residential neighborhoods. This hill is completely surrounded by alluvial and outwash areas:- to the north and northwest is Mississippi River; to the southwest, south and east is the Rock River Valley; and to the northeast is an outwash flat over a mile wide. The hill is composed largely of Pennsylvanian sandstone with some shale, and includes the horizon of the Rock Island Coal No. 1 of Illinois, resting upon an uneven basement of Cedar Valley and Wapsipinicon limestones that is exposed low down on both its north and south sides. Rock Island was formerly an important coal mining center. Production was obtained principally from the eastern end of the above mentioned hill and neighboring areas on the other side of Rock River. All of the more available coal has now been mined out and no shipping mines are now in operation, but several small country mines are still actively worked.

Black Hawk State Park is located on the southwestern part of the hill. It is situated at the top of a high bluff, long known as Black Hawk's Watch Tower, that commands a magnificent view of the Rock River Valley.

000.9 Junction with U. S. Route 67 and Illinois Routes 3 and 85 to right (west); continue straight ahead (south) on U. S. Routes 6 and 32 and Illinois Route 7.

001.0 Turn left (east); follow marked highway.

001.6 Rock Island Railroad depot on left.

002.0 Turn right (south); follow marked highway.

002.2 Turn left (east); follow marked highway. The campus of Augustana College is on the right.

Augustana College was founded by a group of Swedish Lutherans who settled in and around Andover, Illinois, about seventy-five years ago. In 1860 the present institution was organized by the consolidation of this college with a school for the instruction and extension of the Swedish language that had for some years been located at Paxton, Illinois, and their removal to Rock Island. Augustana College is coeducational and offers instruction in general college subjects leading to a liberal arts degree. It also has a well known school of music, a school of commerce, and a postgraduate theological seminary. At present about 800 students are enrolled.

002.7 Leave City of Rock Island, enter city of Moline; population about 32,000.

003.2 Turn right (south) and left (east); follow marked highway which winds along the foot of the bluff.

005.2 Small quarry to left (north), between cemetery and railroad; Wapsipinicon limestone.

005.5 Small quarry in hillside to right (south); same formation.

006.9 Leave Moline, enter city of East Moline; population about 10,000.

008.8 Leave U. S. 6; turn left (north) on Illinois Route 80. Caution - Cross main line of Chicago, Rock Island and Pacific Railroad--four tracks--a watchman is on duty here.

The route now crosses a gravel-filled outwash channel over a mile wide that connects the present Mississippi and Rock River valleys. The preglacial topography of this portion of Illinois and the neighboring part of Iowa is masked beneath a cover of Illinoian drift. It is known that very important displacements of drainage were accomplished both during and subsequent to the maximum advance of the Illinoian ice. During the Wisconsin epoch a large portion of the margin of the Lake Michigan lobe drained down the Rock River valley. The great quantities of water that filled the valley at that time may have opened preexisting channels dammed with Illinoian till and the outwash sands and gravels were deposited to form several levels of terraces.

009.1 Cross Chicago, Burlington and Quincy Railroad--one track.

010.1 Turn right (east) and left (north); follow marked highway.

The gravel-filled outwash channel has now been crossed. The upland area, whose base the highway follows from here to Cordova, a distance of thirteen miles, consists of bedrock overlain by Illinoian till and loess. In this part of Illinois there is a gentle regional dip to the south that was, to a considerable extent, accomplished by warping in pre-Pennsylvanian times. In Moline, Wapsipinicon limestone outcrops at the level of the highway. The next outcrop which will be seen a few miles ahead at Port Byron is uppermost Silurian. In this upland area the Devonian was probably entirely removed by pre-Pennsylvanian erosion and outliers of lower Pennsylvanian strata present, including Coal No. 1, which has been mined locally, and its characteristic cap limestone, are apparently preserved in depressions on the Silurian

surface. (Cross section 1)

010.9 Leave East Moline

011.4 Enter Hampton; population about 500.

At the beginning of the last century the principal village of the Fox Indians was located in this vicinity. Like the Sauks they were of Algonquin origin, had been driven westward by the Iroquois in the seventeenth century and had settled in central Wisconsin. They early became antagonistic to the French. The Fox War began in 1712 when a band of Foxes was slaughtered near Detroit by Indian enemies aided by the French commandant. The Fox chief, Kiala, succeeded in building up a strong confederacy among the discontented tribes which threatened to effectually separate the French colonies in Canada and in the Mississippi Valley. In 1718 the French finally formed a counter confederacy and fierce fighting ensued. In 1728 the Fox league crumbled. As the French were determined to exterminate them and refused to make peace, the Foxes decided in 1730 to settle among the Iroquois who had offered them shelter. On their way east, however, they were surrounded by an overwhelming force of French and allied Indians and less than one hundred escaped. After a time this remnant of the tribe settled near their former allies, the Sauks, on the Mississippi River.

015.5 Enter Rapid city; population about 200

Rapids existed at this locality before Mississippi River was dammed at Rock Island. Between here and Cordova, seven miles to the north, the river occupies a very narrow valley cut in bedrock (Silurian dolomite). Numerous rocky islands

are present in the midst of the stream. (Photo 1.)

016.8 Enter Port Byron; population about 600. In north side of hollow just to right (east) of highway is small bluff of Port Byron dolomite with beds dipping steeply to north.

017.5 Stop 1 - Park double. Port Byron dolomite.

Abandoned quarry on right (east) near center W. 1/2 sec. 25, T. 19 N., R. 1 E. (Rock Island County) in Port Byron dolomite with beds dipping steeply to southeast. This quarry is in the southern part of a reef or klint that may continue northward nearly to Cordova, a distance of about four miles. The party will not enter the quarry but only view the dipping beds from the road.

This is the type locality of the Port Byron dolomite, the uppermost Silurian formation of Savage's Illinois section. It is believed to be equivalent to the Gower (in part) of Iowa, the Bainbridge of southeastern Missouri, and the Guelph of western New York and Canada.

Just across Mississippi River from Port Byron is Leclaire, Iowa, the type locality of the Leclaire dolomite of older authors. This is thin- and evenly- bedded and contains a fauna somewhat different from that of the Port Byron. It is probable, however, that these two formations are of equivalent age and represent contemporaneous reef and non-reef deposition.

Between here and the next stop there are numerous outcrops of Port Byron dolomite by the roadside.

019.5 Leave Port Byron.

021.3 Entrance to quarry and plant of U. S. Gypsum Company. Plant consists of battery of kilns for burning lime for finishing

plaster and crusher for producing road metal.

021.5 Stop 2 - Park double. Port Byron dolomite.

Walk left (west) across railroad one-eighth of a mile to quarry in Port Byron dolomite in NE, 1/4 SW 1/4 sec. 1, T. 19 N., R. 1 E. (Rock Island County). The bedding here is very irregular to absent and is an excellent example of the structure existing in the central part of a Silurian reef or klint. Some parts of the dolomite here are very fossiliferous but the fossils are mainly casts.

Savage lists the following fossils from the Port Byron dolomite at its type locality:

Pycnostylus elegans
P. guelphensis
Conchidium multicostatum
Trimerella acuminata
Megalomus canadense
Monomorella noveboracum
Tremanotus alphaeus
T. chicagoense
Trochoceras desplainense
T. costatum

022.4 At the base of hill to right (east) is a small quarry in Port Byron dolomite with bedding dipping steeply to the northeast. This quarry is in the northern part of the klint. (Photo 2)

022.7 One-quarter mile to the west (left) and across the railroad is a small quarry which shows massive to irregularly bedded Port Byron dolomite overlying thin-bedded, argillaceous dolo-

mite. East of road (right) is an old abandoned lime kiln built of the local dolomite and lined with firebrick. Lime was formerly burned in several such kilns in this vicinity.

023.0 Cordova; population about 300.

Between this point and Albany the highway crosses Meredosia Slough, a wide, outwash-filled valley which contains no stream of any importance. It has frequently been cited as the preglacial valley of the Mississippi which is known to have left the present Mississippi valley somewhere in this vicinity and flowed eastward and southward approximately along the present valleys of Green River and Bureau Creek and joined the modern Illinois River valley at the right angle turn or "Big Bend" which the latter makes near Hennepin. This interpretation of the outwash-filled channel between Cordova and Albany, however, does not appear to be wholly satisfactory.

Four different phases of the Mississippi valley in this neighborhood are fairly apparent (Sketch-map 2); (1) the wide alluvium- and outwash- filled valley north of Fulton, (2) the wide valley between Fulton and a point a few miles below Albany containing shallow alluvium and outwash deposits, above which rise several large island-like bedrock hills, (3) a deep fill opposite Wapsipinicon River, and (4) the narrow valley between Cordova and Hampton in which the river is now flowing much of the way directly on bedrock.

It seems impossible that these four portions of the present valley are of the same age. The history of the drainage development as tentatively proposed by Leighton and Ekblaw is as follows: (1) In pre-Illinoian time (noth-

ing is known concerning the influence of Kansan and Nebraskan glaciation on the course of the Mississippi), Mississippi River flowed southward through its present valley nearly to Fulton where it swung off to the southeast and finally joined the modern Illinois valley which it formerly occupied south of Hennepin. (2a) The advancing Illinoian glacier, which extended for a short distance into Iowa, forced the Mississippi westward temporarily. (2b) With the retreat of the Illinoian ice the river found its way through a low col between Fulton and Albany and began cutting its present valley between these two points. Below Albany it entered the pre-Illinoian valley of Wapsipinicon River, flowed east to the present Rock River valley, then turned southwest and entered its present valley either above or below Rock Island, or both. The Mississippi valley west of Rock Island and the lower part of the Rock River valley appear to be the valley of a pre-Illinoian stream (or possibly two) that flowed eastward and joined either the pre-Illinoian Wapsipinicon or the pre-Illinoian Mississippi itself in southern Whiteside County. At this same time the Mississippi appears to have partially reopened its old valley southeast of Fulton. (3a) During the Wisconsin glacial stage Mississippi River was diverted to its present course between Cordova and Hampton either because at its maximum advance the Wisconsin glacier advanced to the highland area east of Port Byron and thus blocked the current channel of the river, forcing its waters to back up until they flowed through a low col in the vicinity of Port Byron, or because the glacial outwash filled both Mississippi

and Rock River valleys to such height that the river reached the level of the col and accepted it as a more direct course. (3b) Since the retreat of the Wisconsin ice the modern Mississippi and its tributaries have been engaged in clearing their valleys of outwash and deepening them by the erosion of bedrock where this occurs. (Sketch map 2.)

028.1 Highway ascends gentle slope to upper terrace level. Many small sand dunes are present on this upper terrace.

028.7 Highway descends to lower terrace.

029.5 Small gravel pit to right (east) showing character of Wisconsin outwash in this vicinity.

031.8 Northeast side of Meredosia Slough. Outcrops in this vicinity probably belong to the Racine dolomite.

031.9 Enter Albany; population about 450.

033.4 Leave Albany.

037.3 Cross Chicago, Burlington and Quincy Railroad--one track,

037.8 Caution. Cross main line of the Chicago and Northwestern Railroad, two tracks, electric signal.

039.6 Fulton, cross Lincoln Highway, U.S. Route 30, Illinois Route 6, continue straight ahead on Illinois Route 80. Cross Chicago and Northwestern Railroad, one track.

Good exposures of Racine dolomite may be seen in several quarries in the north edge of Fulton.

045.8 Cross Chicago, Milwaukee and St. Paul Railroad, one track.

046.5 Enter Thompson; population about 500.

047.8 Leave Thompson.

056.1 Enter Savanna; population about 5000.

Savanna lies at the southern tip of the driftless area

which occupies a considerable region in southwestern Wisconsin and smaller portions in the neighboring states of Minnesota, Iowa, and Illinois. This area was not overridden either by the Illinoian or Wisconsin glaciers from the northeast or the Iowan (Wisconsin) glacier from the northwest. (Sketch map 3.)

Strictly, all of this area is not entirely driftless. For example, near Hanover, which is located northwest of Savanna, remnants of a much weathered and eroded drift have been found. It is known in only a small area and may be of either Kansan or Nebraskan age.

056.6 Junction Illinois Route 27. Turn left (west) and follow Illinois Route 80. By roadside at right (north) is outcrop of Maquoketa shale, probably in middle part of formation. The beds exposed are argillaceous but hard and not well laminated. A zone containing numerous fragments of Isotelus occurs at about the level of the pavement.

057.8 Turn right (north) on Main Street; follow marked highway.

058.8 Suspension bridge (toll) over Mississippi River built in 1932. End of Route 27. Continue straight ahead on Route 80.

059.0 Enter Mississippi Palisades State Park.

060.0 Stop 3 - Turn around, park double. Waukesha, Joliet, Kankakee, Edgewood dolomites, Maquoketa shale.

Near center E. line, NE. 1/4 sec. 33, T. 25 N., R. 3 E. (Carroll County).

The Silurian section of northwestern Illinois as worked out by Savage is as follows:

Niagaran series

Lockport group

Port Byron - yellowish gray, massive to structureless dolomite deposited as reefs with beds dipping in various directions as much as 35°; 35 to 40 feet exposed at Port Byron.

Racine - brownish, thin bedded-dolomite; 50 feet exposed at Fulton.

Waukesha - brownish, thick-bedded dolomite with abundant Pentamerus oblongus in lower part; 45 feet exposed near Upstick.

Joliet - yellowish-brown dolomite weathering to thin beds; 38 feet exposed near Savanna

Clinton group - absent.

Alexandrian series

Kankakee - brownish- to yellowish-gray, thin-bedded, very cherty dolomite including zone of Stricklandinia pyriformis near top; 25 feet exposed near Savanna, (Brassfield in age).

Edgewood - quite variable in thickness and lithology; 75 feet of beds exposed at mouth of Johnson Creek are assigned to this formation by Savage, locally it may be entirely absent.

Although these formations differ somewhat from each other lithologically, with the exception of the very cherty Kankakee, they can be certainly recognized only by their fossils. Because these are not abundant in many layers and are generally preserved as casts it is often difficult to differentiate them.

Beds of Clinton age are apparently entirely missing in

the upper Mississippi valley and an important unconformity should separate the Joliet and Kankakee dolomites. In northeastern Illinois these formations are separated by a peculiar, somewhat pitted, but smooth and polished surface that has been traced for about 100 miles. Search for a similar surface at this horizon in northwestern Illinois has not been successful and at several localities no obvious unconformity or sharp break in the stratigraphic section has been recognized. In the south part of Palisades State Park, however, an inch or two of soft gray shale separates these formations.

In this same neighborhood an unconformity appears to separate the Edgewood and Kankakee dolomites. It is marked by a smooth and pitted surface similar in many ways to that at the top of the Kankakee in northeastern Illinois.

So far as is known the Joliet, Waukesha, Racine, and Port Byron dolomites of northwestern Illinois are entirely conformable with one another.

In Savage's section (Bull. Geol. Soc. Am., vol. 37 (1926), pp. 527-528) measured along the bluffs north of Savanna only three feet at the base of the Silurian is referred to the Edgewood and ten feet of overlying rather massive and non-cherty dolomite is placed in the Kankakee formation. The discovery of the smooth and pitted surface, which is probably a surface of unconformity, sharply separating beds of dissimilar lithology, the similarity of the massive beds formerly included in the basal Kankakee with the underlying recognized Edgewood and the absence of fossils from the upper portion of the strata under consideration all

rather strongly suggest that the Edgewood-Kankakee contact has previously been drawn too low at this locality.

In southwestern Illinois and southeastern Missouri the Girardeau limestone and Orchard Creek shale, attaining a combined thickness of 50 to 60 feet, occur between the Edgewood and Maquoketa but these formations are unknown elsewhere.

The Silurian section of northwestern Illinois is so similar to that in the northeast[ern] part of this State where it has been more carefully studied that the same formations and several of the fossil zones can be traced throughout both areas. In northwestern Illinois and northeastern Iowa the various Silurian formations, with the exception of the Edgewood, are fairly constant in lithology and thickness. (Phos. 3, 4, 5, 6.).

The entire Silurian section of northwestern Illinois has commonly been referred to the Niagaran. Savage, however, recognized the presence of Alexandrian strata here in 1914 (Am. Jour. Sci. vol. 38, pp. 28-37) and named two formations, the Winston and the Waucoma. More recently he has determined these to be equivalent to the Edgewood and Kankakee, first proposed in other areas, and these earlier names are now applied in this region. In 1924 Ulrich introduced the name Burroughs dolomite for the post-Richmond, pre-Clinton beds exposed in the lower part of the bluff at Savanna (Trans. Wis. Acad. Sci., vol. 21, pp. 71-107). Because it is equivalent to the Edgewood and Kankakee this name should be abandoned.

Savage has recorded the following fossils from the

Edgewood dolomite at this locality:

Zaphrentis sp.
Schuchertella curvistriata
Dalmanella edgewoodensis
Atrypa proemarginalis
A. pntilla
Whitfieldella ovoides
Pterinia elegans
Proetus channahonensis

From the Kankakee dolomite he obtained the following species:

Phoenopora ensiformis
P. sp.
Rhinopora verrucosa
Stricklandinia pyriformis
Strophonella daytonensis
Proetus cf. determinatus

Retrace Route 80 through Savanna.

063.4 Junction Illinois Routes 27 and 80. Go straight ahead on Route 27.

064.9 Leave Savanna.

065.1 Cross Plum River. Outcrop of Galena dolomite in river bank to left (north).

070.7 Outcrops of thin-bedded limestone and dolomite in Maquoketa along small hollow. A small quarry has been opened at the road corner.

A foot or two of glacial drift occurs at this locality showing

that the border of the driftless area lies to the west. This boundary between here and Stockton is not accurately located because the Illinoian glacier built no terminal moraine and the till feathers out to a thin edge that is very difficult to follow. In a general way, however, the highway from Mount Carroll north to Stockton corresponds to the southeastern margin of the driftless area.

070.9 Enter Mount Carroll; population about 1800.

An east-west anticline plunging to the west has long been known to pass through Mt. Carroll, but no detailed work has ever been done in this area and the exact nature of the structure has never been determined. The areal distribution of the formations as shown on the geological map of Illinois is not accurate in this vicinity. Galena dolomite is extensively exposed along Carroll Creek, which flows west through Mt. Carroll, and the stream has cut a canyon with vertical bluffs 60 feet or more high which is well shown in Smith's Park one mile west of town.

071.4 Junction Illinois Routes 40 and 78. Turn left (north); follow Route 27.

072.1 Junction Route 27 from east. Follow Routes 40 and 78 straight ahead (north).

072.7 Sharp turn left (west) and curve right (north).

073.1 Leave Mount Carroll. From here on for a short distance Galena dolomite outcrops along the hill slopes.

074.4 <u>Stop 4</u> - <u>Waukesha dolomite</u>.

Small quarry by roadside; NW. 1/4 NW. 1/4 sec. 25, T. 25 N., R. 4 E. (Carroll County); 25 feet of yellowish-

brown, very fossiliferous Waukesha dolomite. This outcrop is probably near the axis of the syncline which bounds the Carroll anticline on the north.

076.8 Cross East Plum Creek.

078.3 Outcrop of thin-bedded, silty dolomite in bank of creek just left (west) of road, probably Maquoketa.

080.0 Thin-bedded, very cherty Kankakee dolomite well shown in road cut. The road here descends into the valley of Plum River which is largely eroded in Maquoketa shale.

084.8 Stop 5 - Park double. Galena-Maquoketa contact.

Walk left (west) 1/8 mile down steep bank to valley of Plum River in SE. corner sec. 9, T. 26 N., R. 4 E. (Jo Daviess County). The top of the Galena dolomite and overlying basal pyritic layer of Maquoketa shale which contains abundant small molluscs and phosphatic pebble outcrops in bed of river. Succeeding shale with fragmentary graptolites is exposed in river bend.

This fossiliferous horizon is a widespread and characteristic feature of the basal beds of the Maquoketa throughout northwestern Illinois, southwestern Wisconsin, and northeastern Iowa. Its extreme range extends from the northern peninsula of Michigan to Arkansas and Ladd suggests that it is equivalent to a very similar zone at the top of the Arnheim, the lowest member of the Richmond in the Ohio valley (Ia. Geol. Surv. vol. 34, pp. 510-511, 1929). Other localities where it is well exposed are in the railroad cut just west of the station of Scales Mound in NE. 1/4 SW. 1/4 sec. 26, T. 29 N., R. 2 E., and in the bank of Apple River just below the Dam at

Hanover in SE. 1/4 SW. 1/4 sec. 9, T. 26 N., R. 2 E. At both of these localities a second fossiliferous horizon bearing the same fauna occurs a few feet above the base of the shale. A collection of over 500 specimens obtained at Hanover contained the following forms:

Climacograptus putillus (Hall)

Bryozoan? undet.

Dalmanella testudinaria (Dalman)

Brachiopod undet.

Ctenodonta fecunda (Hall)

Ctenodonta obliqua (Hall)

Clidophorus neglectus (Hall)

Cyrtolites conradi (Hall)

Cyrtolitina lirata (Hall)

Tetranota? sp.

Liospira micula (Hall)

Hyolithes parviusculus Hall

Coleolus iowensis James

Orthoceras sociale Hall

Trilobite pygidium

About four-fifths of the specimens belong to the three species Ctenodonta fecunda, Liospira micula, and Hyolithes parviusculus. (Photo 7.)

091.5 Enter Stockton; population about 1500.

Stockton is located on the eastern border of the driftless area. Reservoir Hill, just west of town, has not been glaciated but the lowland directly to the east is a portion of the Illinoian till plain.

091.9 Slow, bad dip in pavement. Cross bridge over railroad.

092.2 Turn left (west) leaving highway on High Avenue.

092.4 Stop 6 - Upper Maquoketa, Edgewood?

Stop at end of street, walk 1/4 mile west to quarry in upper calcareous beds of Maquoketa shale on Reservoir Hill in NW. 1/4 SE. 1/4 NW. 1/4 sec. 11, T. 27 N., R. 4 E. Many fossils. On western knob of hill 1/8 mile farther west a small quarry shows a few feet of very thin-bedded, brownish, silty dolomite, probably Edgewood. (Photo 8.)

The following fossils have been collected from the Upper Maquoketa at this place:

Sponge undet
Coral undet
Cornulites sterlingensis (Meek and Worthen)
Crinoid plates
Coeloclema alternatum (James)?
Coeloclema commune (Ulrich)?
Crepipora off. hemisphaerica Ulrich
Amplexopora aff. pustulosa Ulrich
Calloporella lens (Whitfield)?
Bryozoans 8 undet. sp.
Hebertella insculpta Hall
Hebertella occidentalis Hall
Platystrophia sp.
Plectorthis whitfieldi (Winchell)
Rafinesquina alternata (Emmons)
Rhynchotrema capax (Conrad)
Rhynchotrema perlamellosa (Whitfield)
Tentaculites oswegoensis Meek and Worthen
Orthoceras sociale Hall

Isotelus hypostome

Calymene gracilis Slocom

Ceraurus elginensis Slocom

Another good locality where fossils may be obtained from this same horizon is by the side of the gravel road one mile east of Wadhams Grove in NW. 1/4 sec. 19, T. 28 N., R. 6 E., (Stephenson County).

At Stockton the Maquoketa is about 200 feet thick but elsewhere various lesser thicknesses have been observed down to a minimum 108 feet at the Chicago Great Western Railroad tunnel, six miles southeast of Galena. This variation in thickness appears to have resulted principally from post-Richmond, pre-Alexandrian erosion because the basal fossiliferous horizon bearing the fauna listed under Stop 5 is extremely persistent but the uppermost calcareous and very fossiliferous beds are known only where the Maquoketa is thick, Also this was probably an uneven surface because the Edgewood formation is thickest where the Maquoketa is thin so that the interval between Galena and Kankakee remains nearly constant. (Diagram 1.)

Return to cars, turn right (north) then jog left and right on unpaved road.

092.7 Junction with U. S. Route 20, Illinois Route 5, turn left (west) on pavement.

094.8 Road (unpaved) leads right (north) to Apple River Canyon State Park 6 1/2 miles.

Apple River Canyon is an excellent example of drainage diversion resulting from glacial damming. In pre-Illinoian

time the upper portion of modern Apple River, which flows southeast to Millville, continued in this same direction through the valley of the stream now known as South Branch to a pre-glacial valley in about the position of the southeastward flowing present Yellow Creek of Stephenson County. With the advance of the Illinoian ice, however, this valley was dammed and a lake was formed in its upper part. This lake eventually rose to such a level that it overflowed through a col into ~~into~~ the headwaters of the pre-Illinoian Apple River. This new channel which leads off abruptly southwest at Millville was rapidly eroded by the large volume of water derived from the melting glacial front and Apple River obtained permanent possession of the upper part of the dammed stream. As the result of outwash-filling to the southeast and bedrock cutting to the northwest, the drainage of a portion of the old valley below Millville was reversed. (Map 4.)

Apple River canyon is cut principally in the upper massive non-cherty member of the Galena dolomite. (Photo 9.)

095.7-6.1 Outcrops of Galena dolomite, upper massive member.

097.7 Exposure of cherty, thin-bedded Kankakee dolomite.

099.8 Woodbine.

103.1 Exposure of cherty, thin-bedded Kankakee dolomite as highway ascends east end of Terrapin Ridge.

The mound- and-ridge topography characteristic of much of Jo Daviess County is the result of the mature dissection of a terrain composed of two resistant dolomite successions, the Galena and Silurian, separated by a considerable thick-

ness of weak, easily eroded strata, the Maquoketa shale, that has not subsequently been masked by thick deposits of glacial drift. Almost without exception the mounds and ridges of this region are capped by Silurian dolomite, and the steep slopes developed on the Maquoketa shale gradually flatten out toward the surface of the Galena dolomite below, in which the streams occupy more or less sharply intrenched valleys.

Regional physiographic observations, however, indicate that this is not the whole story. (1) The ridges such as Terrapin Ridge and Four Mile Ridge, which ~~are~~ is traversed by the highway five miles farther west, have comparatively level tops and lack irregular knobs, in spite of the fact that a considerable thickness of dolomite undoubtedly at one time overlay the highest beds now preserved. (2) There is a general correspondence in the height of the mounds and ridges and this height rather regularly decreases toward the south and southwest at an average rate of about 11 feet per mile. (3) Similar Silurian-capped mounds and ridges in the neighboring part of Iowa bear stream gravels on their summits. (4) Farther to the northwest corresponding mounds and ridges occur at comparable elevations but lower stratigraphic horizons down to the Platteville. There is little doubt therefore that these mounds and ridges are remnants of a widespread peneplain whose age has been variously estimated to be Cretaceous to late Tertiary.

A second level of erosion or partially developed peneplain follows more or less closely the top of the Galena dolomite and might easily be mistaken for a rock terrace produced

by this relatively resistant formation were it not for the fact that at some places it is distinctly preserved on a variable thickness of overlying Maquoketa shale. This erosion surface is believed to be late Tertiary or early Pleistocene in age. (Cross section 2.)

104.1 Exposures of cherty, thin-bedded Kankakee dolomite as highway descends west end of Terrapin Ridge.

104.8 Enter Elizabeth; population about 900.

Stop 7 - Park single. Kankakee and Edgewood dolomites, Maquoketa shale.

Climb nose of hill to small quarry just above road in SW. corner sec. 19, T. 27 N., R. 3 E. (Jo Daviess County). Excellent showing of thin-bedded, cherty Kankakee dolomite resting on more massive, non-cherty dolomite, probably Edgewood. (Photo 10.)

The strata most commonly exposed in road-cuts on the upper slopes of the mounds and ridges of Jo Daviess County are thin- and irregularly-bedded dolomite with abundant chert layers and nodules. This is the Kankakee dolomite, which attains a maximum thickness of about 35 feet and is well exposed with similar lithology in the lower part of the Mississippi River bluffs at Palisades State Park near Savanna. Above the cherty beds some of the mounds and ridges preserved a variable thickness of massive non-cherty dolomite that is probably referable to the Joliet although no sharp boundary has been observed nor have characteristic fossils been collected from it.

Below the cherty beds occurs another massive non-cherty

horizon that varies from a few feet to nearly 20 feet in thickness. In the absence of adequate fossil collections the age of these strata is not known but inasmuch as they are similar to strata assigned to the Edgewood near Savanna, it is probable that these beds in Jo Daviess County should likewise be referred to the Edgewood.

Commonly, as at Elizabeth, the last mentioned massive dolomite directly succeeds the Maquoketa, overlying fossiliferous beds comparable to those seen at Stockton. Elsewhere, however, the thickness of the Maquoketa is much reduced, apparently as the result of erosion of its upper surface, and a greater but variable thickness of strata assignable to the Edgewood formation intervene. About 80 feet of such strata are exposed at the eastern end of the Chicago Great Western Railroad tunnel six miles southeast of Galena and a comparable thickness is present in two knobs four miles east of Galena. Although the lithology differs at these two localities the strata at both of them are very argillaceous, thus differing greatly from the overlying Kankakee. East of Galena they are thin and irregular with abundant intervening seams of shale and a small amount of chert. At the tunnel they are evenly and somewhat thinly bedded, lack chert, but contain layers of fine-grained sandstone. At both localities fossils are scarce but adequate to identify these beds as Edgewood. (Photos 11, 12.)

105.6 Leave Elizabeth.

The highest point in Illinois, Charles Mound, situated just south of the Wisconsin state line, lies almost directly

north of this point. Its elevation is 1241 A.T. The highest point on U. S. 20 rises to about 1090 feet on Four Mile Ridge about seven miles to the northwest of Elizabeth.

107.1 Cross Apple River.

107.2-3 Outcrops of Galena dolomite.

107.9 Junction Illinois Route 80, keep to right (northwest). Good outcrops of Alexandrian dolomite on the end of Four Mile Ridge which the highway now ascends. The massive beds which are exposed on the end of the ridge and have slumped down the slope are probably Edgewood. The cherty, thin-bedded dolomite by the roadside farther on are Kankakee.

113.1 Excellent exposure of thin-bedded, cherty Kankakee dolomite as highway descends from Four Mile Ridge.

114.7 Galena dolomite outcrops for some distance along hillside to right (north).

115.6 Cross Smallpox Creek.

116.1 End of discontinuous Galena outcrops.

117.7 Horseshoe Mound capped by Silurian dolomite on left (south). (Photos 13, 14.)

119.4 Road leading to General U. S. Grant's home leads off to right (north).

In 1860, Grant, a West Pointer, who had served in the Mexican War, was living in obscurity in Galena as a clerk in his father's leather business. At the outbreak of the Civil War, however, he raised a volunteer company at Galena and accompanied it to Springfield. He was there made assistant quartermaster-general by the governor at a salary of two dollars a day. Soon after he was assigned to the command of

various cantonments and later appointed colonel of the twenty-first regiment. After two month's service in the field he was promoted to brigadier-general and after the capture of Fort Donelson he was commissioned major-general. Subsequently his rise to fame and popularity was rapid.

119.5 Enter Galena; population about 5000.

The French probably learned of the upper Mississippi Valley lead deposits from the Sioux as early as 1658 but the Indian mines were first seen by a white man in 1690. The Indians had little use for lead before the appearance of the French, who taught them better methods of mining and smelting and exchanged trade goods and firearms for the metal.

The first successful mining by Europeans began in 1788 when Julian Dubuque directed operations principally west of the Mississippi. After his death in 1810 the Indians destroyed all traces of civilization and legal action by Dubuque's heirs so clouded title to the property that prospective miners largely turned their attention to the area east of the river in the Galena district. The Indians, however, were hostile and it was not until about 1819 that miners were able to establish themselves here. Thereafter miners, merchants, speculators, and adventurers swarmed into this region and in 1827, when Jo Daviess County was organized, the miners numbered some 1600 and had come mainly from southern Illinois, Missouri, and Tennessee. In 1823 over 100 negro slaves were working in the mines.

In 1823 the Fever (now Galena) River mines produced 168 tons of lead and by 1829 production had increased to 6,672

tons. There followed a slump with minimum production of about 2,500 tons in 1832 but subsequently the output increased enormously to a maximum of about 27,250 tons in 1845 in which year the United States led the world in the production of this metal. Some of it was exported to England, although eight years previously 5,000 tons of British lead had been imported. The price of lead in St. Louis, through which most of the metal produced in the upper Mississippi Valley was shipped, varied between $3.60 per 100 pounds in 1843 and $7.00 in 1855. The maximum value of the output of the Galena district attained nearly $1,700,000 in 1853 and it has been estimated that lead valued at $40,000,000 was produced between 1821 and 1865. (Photo 15.)

Jo Daviess County continued to attract miners until the early 50's, when declining production and the development of mining in the Lake Superior and Rocky Mountain regions and California diverted interest elsewhere. At the present time no mines are in operation in Illinois, although the farmers are still engaged in prospecting and occasionally small pockets of ore are located. Very little zinc has ever been produced in Illinois.

Before the close of the Black Hawk War, agriculture had been unimportant in the lead district but between 1832 and 1860 many farmers, mainly from New England and New York, settled in the region. The population of Jo Daviess County reached a maximum of about 30,000 in 1870 and has since declined, as the subsequent influx of farmers did not compensate for the departure of those connected with the mining in-

dustry. In 1855 the population of Galena was nearly 10,000 but now its inhabitants have decreased to barely half that number.

119.6 Highway cut through Galena dolomite.

119.9 Cross Galena River, known in the early days as Fever River.

The Galena River was formerly navigable for a short distance above the city. The first shipment by steamboat was made from Galena in 1822 and in 1827 regular steamboat connections between this city and St. Louis were established. In 1828 there were 99 arrivals of steamboats and 74 of keel boats.

In 1855 the Galena and Chicago Union Railroad (now a part of the Illinois Central System) was completed. This was the first railroad to be built out of Chicago and the second in Illinois. It was immediately successful and paid dividends even before the line was completed.

120.7 Outcrops of Galena dolomite.

123.4 Junction Illinois Route 80, turn left following U. S. 20 and Illinois 5.

124.8-126.0 Outcrops of Galena dolomite.

125.1 Cross Sinsinawa Creek.

127.4-127.9 Outcrops of Galena dolomite.

128.0 Cross Little Menomine Creek.

129.5 Outcrop of Galena dolomite. The Mississippi River bluffs are just to the left (south). Their proximity is indicated by the thick loess deposits.

130.1 Cross Menomine River.

130.4 From here to East Dubuque the highway follows the foot of the bluffs and is mainly situated on a terrace remnant. There are many outcrops of Galena dolomite along the steep hillsides to the right (north).

130.9 Stop 8 - Stewartville and Prosser members of the Galena dolomite.

SE. 1/4 NW. 1/4 sec. 34, T. 29 N., R. 2 W. (Jo Daviess County).

Until recently the name Galena dolomite has been generally employed for all beds between the Platteville limestone and the Maquoketa shale, which interval maintains a fairly constant thickness of about 250 feet. In northwestern Illinois and the neighboring parts of Iowa and Wisconsin several members of the Galena have been distinguished as follows:

5. Uppermost thin-bedded member	30 feet
4. Upper massive non-cherty member	70 feet
3. Middle massive cherty member	100 feet
2. Lower massive non-cherty member	20-30 feet
1. Oil rock member	13-25 feet

The oil-rock member is now generally recognized as a formation distinct from either the underlying Platteville or overlying Galena and is known as the Decorah shale. Probably a part of the overlying lower massive non-cherty member, as indicated by its fossils, should be included in the Decorah rather than the Galena proper.

Likewise the fossils of the uppermost thin-bedded member suggest that these beds should be removed from the Galena because they appear to show distinct Richmond affinities. The

name Dubuque dolomite has been applied to them in Iowa.

In addition the Galena beds between the Dubuque and Decorah have been separated into two beds in Iowa where the upper massive non-cherty layers are known as the Stewartville dolomite and the middle cherty beds and the main part of the underlying massive non-cherty strata are termed Prosser dolomite.

The modern terminology for this part of the section, therefore, is as follows:

Dubuque dolomite	30 feet
Galena dolomite	
Stewartville member	70 feet
Prosser member	120 feet
Decorah shale	25 feet

Fossils are rare in the Galena at most places but two persistent horizons that may be recognized in many good exposures are characterized by abundant specimens of the "sunflower coral" Receptaculites oweni. The lower occurs at the top of the Prosser, and the upper is in about the middle of the Stewartville member.

The lowermost beds exposed at Stop 8 are the upper part of the cherty Prosser member and on the hillside above are abundant good outcrops of the Stewartville. The upper Receptaculites zone may be seen about 50 feet above the road, and behind the house and barn. (Photo 16.)

133.2 Enter East Dubuque.

133.8 Junction with Illinois Route 79; proceed straight ahead on

U. S. 20 and Illinois 5.

Caution - go slow, bad dip in pavement here.

134.3 Enter toll bridge over Mississippi River - Leave Illinois, enter Iowa. The beds exposed at the east abutment of the bridge are Galena dolomite at the same horizon as those seen at the last stop.

Gypsy Oil Company

Tulsa, Okla.

1107 Union National Bank Bldg.,
Wichita, Kansas,
January 18, 1935.

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

Dear Thwaites:

I have just received a letter from Trowbridge dated January 16, in which he incloses a copy of your letter to him under date of January 12.

I read with a great deal of interest the last paragraph of your letter to Trowbridge. The question of bringing the Minnesota Geological Survey into line relative to a standard Upper Mississippi Valley classification is probably the most important single problem which you and Trowbridge and myself have to consider, and attempt at all costs possible to bring to a successful conclusion. I think we should all of us expend every effort to convince them of the error in their ways.

Just recently, I received, through Trowbridge, a copy of Marvin Weller's road log for Illinois. This road log is in the form of a preliminary edition, and I understand that Weller expects to add a few things to it here and there, and also there are corrections to be made in this log in the vicinity of Dubuque, which will be put in by Marshall Kay and Trowbridge.

After reading over this log, it struck me that you would be as much interested in seeing a copy of it as I was, so I am, therefore, inclosing my copy, which I shall be very glad to have you retain in your files. I was particularly interested in the way that Weller has handled the information on historical facts in Northwestern Illinois, and you will observe that he has gone into considerable detail relative to the history of the Indian tribes. Should there be a similar history for the Indian tribes of Wisconsin, I think it might not be a bad idea if you would plan to include the same type of information if you have not already done so.

You will specifically understand that in transmitting a copy of the Illinois road log, I have no thought in holding it up to you as an example. Rather, it is transmitted simply with the thought that you will be personally interested in a collaborator's attempt.

With kindest personal regards,

Very truly yours,

Anthony Folger

AF/B
c. c. to Trowbridge.

Anthony Folger.

In connection with the police escourt, the fact that Wisconsin has no state police is going to call for some unusual action. I shall turn this over to Dean Kay, together with our recommendations as to what should be done in this case, and he will get in touch with Bean.

I wish to apologize for the fact that our instructions and directions issued under date of July 31, 1933, are not sufficiently clear relative to the exact manner in which the graphic sections should be prepared. This statement of instructions and suggestions was so long that we hesitated to go into even greater detail, but I am very glad that you have called this matter to my attention. If you will refer to your copy of the Guide Book of the Sixth Annual Field Conference, for 1932, and study the graphic section appearing on page 54, in the lower left hand column (under stop 43) you will get a fairly good idea of approximately the detail desired. This also should be supplemented by a study of the graphic section appearing on page 55. In other words, only the more important lithologic divisions should be described in writing on the graphic section. The details of the lithology of each bed should be clearly gone into in the typewritten sections, and the written description on the graphic section should be only in the form of a key index to convey the more important details at a glance.

Relative to the scale that should be used in drafting these graphic sections, let me emphasize that the scale should be sufficiently small so that the smallest lithologic division will stand out clearly after it is redrafted and reduced to a size suitable for inclusion in the Guide Book. Off hand, I would say that where the interbedding of lithologic units is quite complicated and the thickness of the units small, a graphic scale of say an inch to ten feet should be used. This would mean that a bed one foot thick could be illustrated quite clearly. On the other hand, where the lothology is more or less uniform, and the thickness of the beds greater, you might increase the graphic scale to an inch to 20 feet, or even an inch to 50 feet should the occasion demand. The graphic sections of each stop do not have to be all the same scale, but care should be taken to indicate the exact scale used on each graphic section. It is our thought that it would be preferable to draw all of these graphic sections on a large scale, so that there will be plenty of room for redrafting in final form, and then reduce each of these graphic sections to occupy the desired space in the Guide Book. I trust these remarks are sufficiently clear, and if they are not, please do not hesitate to come back again for more details.

I note that Mrs. Thwaites is preparing to type your final manuscript on the Wisconsin road log, and we are looking forward with a great deal of anticipation to a receipt of a copy of this log. If it is possible to do so, I shall be appreciative if you will transmit to Trowbridge an extra copy of this road log, which he, in turn, could forward to me, since we shall be anxious to read it over as well as Trowbridge. This road log manuscript should be double spaced instead of single spaced. I wish to suggest that you indicate quite clearly in this road log the exact point where illustrations and pictures, etc., are to be inserted.

With kindest personal regards,

Copy to Trowbridge.

Very truly yours,

Anthony Folger

AF/P

Anthony Folger.

Gypsy Oil Company

Tulsa, Okla.

1107 Union National Bank Bldg.,
Wichita, Kansas,

January 18, 1935.

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

Dear Thwaites:

I have at hand your letter of January 15, which was received this morning, and I wish to thank you for the thoroughness of your answers.

In regard to the strip route maps, it is my best judgment that the use of the inch to the mile, United States Post Office maps, where no topographic sheets are available, as a base would be the most satisfactory. It will, of course, be impossible to reporduce these strip maps on the Guide Book on the scale of an inch to a mile. However, I notice in the Guide Book of the Sixth Annual Field Conference for 1932, that these sectionalized base maps on which the route has been plotted, have been reduced to a scale of one inch to four miles, and I judge that this will be the approximate scale that will be used in the Guide Book. Therefore, if it is more convenient for you to prepare the original strip maps on a scale of an inch to four miles, this will be satisfactory. Conversely, if it is more satisfactory to prepare them on a scale of an inch to a mile, they can be reduced to the desired scale after redrafting.

In regard to placing formational contacts on these strip route maps, I will leave that to your best judgemtn. However, as I said before, wherever this information is available in satisfactory form, we shall appreciate the inclusion of contact lines on this map.

I wish to call your attention again to the desire of this Committee to have Number 22 (on the list of maps and reports to be included in the Guide Book--forwarded to you some time ago) namely the report on the Stratigraphy and Structure of the Baraboo Range treated as fully as possible. We shall be very glad to get Mr. Wannenmacher's map on the Baraboo district, and especially the structure sections which you mention will be prepared by Andrew Leith. It is our hope that these structure sections by Leigh emphasize very clearly the relationship of the structure of the pre-Cambrian rocks to the overlying sedimentaries.

Answering paragraphs 4 and 5 of your letter of January 15, I shall bring this matter to the attention of the Committee on Arrangements, and I shall let you know at some early date what can be done in this regard.

THE STATE UNIVERSITY OF IOWA
IOWA CITY

DEPARTMENT OF GEOLOGY

PLEASE ADDRESS
REPLY TO WRITER

January 23, 1935

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

Dear Fred:

Am sorry not to have replied more promptly to yours of January 12 which was accompanied by a tentative summarized schedule for Wisconsin. I am finding it simply impossible to keep up with conference matters, which are now coming through at a very rapid rate. I must hire someone to help me if a qualified person and the necessary money can be found.

Day 2--Every attempt will be made to so coordinate the Wisconsin and Iowa parts of Day 2 as to allow you the 145 minutes for the route from the Wisconsin end of the Black Hawk bridge to La Crosse, including the stop at Victory. When I have the details of what is to be seen and done on the route and at the stop, the Iowa log can probably be adjusted to fit.

Day 3--Stauffer has logged the route from the Wisconsin-Minnesota state line at the bridge at La Crosse to Dresbach and back to the state line. Will it be possible for you to prepare the log from the hotel at La Crosse to Grandfather's Bluff and back through La Crosse to the state line at the bridge, including stop 1 at Grandfather's Bluff? As you know from the general itinerary of February 1, 1934, a 40 minute stop is planned at the bluff. The remainder of your time table for this day seems O.K., except that you appear to be taking 60 minutes rather than 50 minutes for Stop 4 in the State Park at Trempealeau. It still seems to me that 50 minutes should be sufficient.

Day 4--Do I understand correctly that you have scheduled a 9.9 hour day, exclusive of a stop for lunch at Mineral Point, making an 11 hour day in all? As this day's route lies wholly in Wisconsin and you were given freedom of choice among the three alternatives of 2/1/34 or any combination or modification of these alternatives, I hope you will work up the log for this day as you see fit. However, I hope you

can manage to make the whole trip between 7:30 and 5:30, according to the general itinerary of 2/1/34, if this is possible. As you are not making a stop at Seneca, we will try to work in a stop at Iron Hill in Iowa, so as to see the Windrow. May I suggest that by staying on ~~Mineral~~ Military Ridge instead of going down to Mineral Point the trip might be shortened or the Farwell Point stop might be taken from the very full 5th Day and added to the 4th Day? I realize that Highway 18 was closed last summer and detoured through ~~Dodgeville~~ Mineral Point. Perhaps you know that this will be true next summer also.

Day 5--This day's trip also lies wholly in Wisconsin, and your judgment of details will be better than mine. However, a few comments from me may not be amiss. I agree that the Cahoon quarry-Skillets Falls stop will probably have to be omitted. As between stops at the quarry and falls and at Skillets Gorge, I would prefer the former. It would take less time. Also, the exposure in the gorge involves only the details of metamorphism and contributes little to the broad structural features of the region. But you are probably right that both these stops will have to be omitted. As you suggested, a description of both sections can be included in the guide book. If the trip around Lake Mendota and the stop at Farwell Point could be transferred to Day 4, might not one of these stops be included in Day 5? The two-hour stop at the Dells, including lunch, the boat trip, and car servicing, must remain in; this by confirmed agreement with the Wichita Committee. As indicated on page 11 of 2/1/34 and your letter of 1/12/35, the question of the night stop on Day 5 is difficult and is still open. Neither Black River Falls nor Sparta is really large enough to accommodate the party expected. You will recall that an early plan was to go back again to La Crosse for a third night; plan to be avoided if possible. I agree that we must reach Black River Falls even if an after-supper drive is necessary, providing accommodations can be found at Black River Falls.

Day 6--You are certainly right in thinking that it will push us to reach Minneapolis even from Black River Falls. The stop south of Waverly (Stop 5, page 12, 2/1/34) will have to be omitted or detailed by Clement who discovered it, or one or more of the rest of us will have to visit it and furnish the details. I have never seen it but will do so in the spring if possible. There are 58 miles of driving and two stops in Minnesota later in this day. We may have to reduce stops still farther or make this an 11-hour day. When both your log and Stauffer's have been received, we will have to see about the details of coordinating.

Day 8--I note that you have allowed 35 minutes for the stop at Hudson and 45 minutes for the stop at Osceola, whereas 20 minutes and 30 minutes respectively were assigned in the itinerary of 2/1/34. I do not know how this will work in with the Minnesota part of the route, but this too is a pretty long day. Will see what can be done when both logs are in hand.

The last paragraph of your letter pertains to the matter which is causing the most concern of all just now. I am at my wits end to know how to handle it. Your statement of the conflicting use of stratigraphic terms between Wisconsin and Minnesota expresses the trouble accurately. I have previously gone into every phase of this with Stauffer but seem to be getting just no where. Some additional means of getting at this matter will have to be devised and put into effect soon, but I do not know just what to do or how to do it. I have a copy of what Folger has written you in this regard.

You may be sure that the promptness and thoroughness with which you are carrying forward this work are greatly appreciated.

Cordially yours,

Trow.

A. C. Trowbridge

ACT:A
CC: Anthony Folger

Jan. 15, 1935

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

Dear Folger:

Yours of the 11th is at hand and much appreciated. I am glad that you are finding our efforts satisfactory and hope they will continue the same.

With regard to road maps there is no trouble about tracing the six mile to an inch old geological map and correcting the highways. This map shows the township lines only. We could also make maps on the scale of an inch to a mile using the U. S. Postoffice maps where there are no top. sheets. The set in the Survey office is supposed to show the state highways up to date. I have not as yet studied the Sixth Guidebook but there is a copy in the library which I will consult. However, I would appreciate a statment as to which you prefer. Neither map shows the present subdivisions of the Cambrian. Joe Wannenmacher's map of the Baraboo district is the only one so far available on which this is done with the exception of a few manuscript maps in western Wisconsin. Where there are top. sheets I can make a pretty good guess as to the base of the Franconia where the Galesville is well developed but in the Monomonie district that is not so easy. I do not like to make any definite statements as to little-known areas.

In respect to drafting I fully realise that pencil copies would be all right but after some bad experiences in sending out only copies I have made it a rule to send out nothing of which I do not have a copy for my files.

In reply to your fourth paragraph there does not seem to be any second page of the Jan. 4 letter to Trowbridge. Do you mean that of Nov. 21? If so the matter I had in mind was the unfortunate collision of an Illinois State car with a citizen of a small town near Fayetteville, Arkansas. Such cars carry no insurance as the state is not liable for damages. But the driver is and when in another state the trouble is worse. There is also the ever-present danger of accident to some member of the Conference while a passenger in someones car. Surely it would not be much of a burden to insist that every person bringing a car carry liability insurance and register the name of the company with your Committee. I always insist on this precaution on all field trips.

The matter of entry onto private property is also important. In visiting mines and quarries the owners will undoubtely want releases signed by every visitor. Would it not be a good idea to have a blanket release for all landowners and the Society (which also incurs a liability in case of accident) which would be signed by all persons who attend?

Possibly you may think I am ultra-cautious but ~~it~~ I feel strongly that it is best and cheapest to take such precautions before anything happens.

With regard to police escorts we have no state police of any kind in Wisconsin thanks to labor union opposition. The route passes through sixteen counties many of which have no motorcycle police. You can easily see the task that confronts us in this state. Besides this we will have to get in touch with city police in several towns.

I now have written sections of satisfactory quality for almost all the proposed stops and a few important places near to the route. Nothing has been done on the graphic sections because I did not know what scale or amount of detail to show in them. I have read over your directions several times recently but was left in doubt about that. Will send a sample soon. Also have a number of well logs which are interesting.

Bays is supposed to have a map of the St. Peter partly done and I have an old one of the Dresbach top which is to be revised. Raasch has furnished some sections and Andy Leith promises the material on Baraboo which he prepared for the Tri-States Conference plus a writeup of the pre-Cambrian.

The historical data was kindly supplied by Miss Nunns of the State Historical Society who was my fathers secretary. With the data at hand I can now start the final copy of the road log and accompanying geologic sections. Mrs. Thwaites hopes to be able to type this but with two boys to take care of both of whom often behave like the aborigines of this country did when on the warpath it is hard to tell when this will get done!

With best regards,

Sincerely,

F. T. Thwaites

Copy to A. C. Trowbridge

Gypsy Oil Company

Tulsa, Okla.
1107 Union National Bank Bldg.,
Wichita, Kansas,
January 11, 1935.

No carbon

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

Dear Thwaites:

I have a copy of your letter of January 4 to Trowbridge, and a copy of his answer to you dated January 8. I am glad to see that work on the Wisconsin road log is proceeding in such admirable fashion.

Relative to your question in regard to strip route maps, I can appreciate the problem which confronts you. I do share your feeling that it would be preferable to omit areal geologic contacts on these maps, since, for the most part, you do not have accurate information at your command. I feel, however, that should there be certain areas along the route of travel in Wisconsin where this information is available, that it would be beneficial to include it at these localities.

If you will refer to your copy of the Guide Book of the Sixth Annual Field Conference of the Kansas Geological Society for 1932, you will find two types of a strip route map without areal contacts. Namely, that on page 26, containing the land net, and that on pages 29 and 34 without any land net. I infer from your correspondence to Trowbridge that a good portion of the Wisconsin route maps will have to be similar to those on pages 29 and 34. This will be satisfactory provided it is the best that can be assembled, but if it is possible for you to procure from your State Highway Department the accurate or approximate location of its highways along the route of travel tied in to the land net, I wish you would make every effort to prepare a land net strip route map. You, of course, realize that these strip route maps do not have to be turned in elaborately drafted, since all these maps will be redrafted by our Society Draftsman, in Ponca City before they are printed in the Guide Book. It is our present plan to have this draftsman prepare all maps, charts, diagrams, graphic sections at stops, etc., appearing in the Guide Book in order that there will be a uniform type of drafting throughout the Guide Book.

Relative to your remarks in the first paragraph of page 2 of your letter of January 4 to Trowbridge, I remember that you brought this question up once before with Trowbridge, but I can not locate that copy at the present moment, and I do not believe I understand just what you have in mind. You, of course, know that Dean Kay will take up with all of the Associate State

Directors the question of a continuous police escourt throughout the Conference. I assume, however, that you have in mind something else, and I shall be appreciative if you will convey your ideas to me in this regard at your convenience.

There remains one thing which I wish to bring particularly to your attention. Namely, in regard to Typewritten Sections appearing at Item B-14, on page 8 of the "Suggestions and Instructions for the Preparation of the Road Log" issued by us July 31, 1933. Probably you understand just what we have in mind in this connection, but I desire to make absolutely certain that you wholely understand our ideas. Namely, that there will be a graphic section prepared by you for each stop in Wisconsin, which will contain only the most important lithologic descriptions in addition to the graphic representation of the lithology. Supplementing this, there should be prepared for each stop a typewritten section (and you will note on page 8 that I have given references of the kind we have in mind) which would include a detailed description of the lithology of the beds appearing at that stop, together with a list of their important and characteristic fossils. These typewritten sections will not be placed in the Guide Book in with the road log, but will be assembled at some other place in the Guide Book in the numerical order of the stops, and a page reference to each typewritten section can be given at the proper point in the road log. It is the feeling of this Committee that both a graphic section and a typewritten section is essential to a complete understanding of the detailed lithology at a stop, and that neither one nor the other should be dispensed with.

With kindest personal regards,

Very truly yours,

Anthony Folger

Anthony Folger.

AF/B

c. c. to A. C. Trowbridge.

Jan. 12, 1935

Dr. A. C. Trowbridge,
Dept. of Geology,
University of Iowa,
Iowa City, Iowa

Dear Trow:

Thank you for yours of the 8th.

Enclosed herewith is a copy of a tentative schedule based upon our field log of last June and later. Notes on it will make a number of things clear. If we are to get to the Twin Cities at the end of Day 6 we absolutely must pass the night at Black River Falls instead of Sparta even if this involves an evening run. And if we are to get to Black River Falls at the end of Day 5 that involves the omission of both the quartzite gorge on Skillet Creek where we were on the Tri-State conference and the very interesting base of the Madison in the Mendota railroad cut. I have included Liberty Pole Hill quarry in Day 4 by making a U-turn just south of it and returning to Highway 14 thus shortening the distance to Madison over that proposed. We will certainly have to cut out both the Cahoon quarry and Skillet Falls stops on Day 5 if we are to spend two hours at the Dells. It is that Dells stop plus the necessity of getting to Black River Falls which forces this. By the way, the Welch's wanted us to drive into the pasture at Skillet Falls instead of climbing over the fence as originally suggested. However, I will include the sections at Mendota cut and those localities in the guidebook.

We could cut the detour and stop at Point Bluff but do not like to do so because there are no other stops which duplicate this part of the section. The exposures around Skillet Falls are poor anyway and are interesting chiefly on account of the Devils-Lake-Mendota controversy which (I hope) is now closed.

A blueprint from Schwartz shows that the confusion in Minnesota is still worse than I had supposed. Our Franconia is part of his St. Lawrence. Our Galesville is his Franconia, our Eau Claire is his Dresbach, and our Mt. Simon is his Hinckley. All this despite the fact that I had sent him blueprint logs of the wells in question! I was prepared for the two last correlations, of course, but hardly for the others. All this makes me wonder if it would not be better to drop the names Franconia and Dresbach entirely and adopt new ones. Well drillers are familiar with Mazomanie as meaning the same as Franconia (our interpretation) and for the lower part of the sequence we would then have to get a new name. Twenhofel can not see the point but I will throw out the suggestion to you to get your reaction before it is too late. I certainly do not want to get up another controversy even if not so serious as that of 1913-1933!

Sincerely,

F. T. Thwaites

Tentative time table for Kansas Geological Society,
1935

Day 2

	Miles	Time, min.	Stop. min.
Blackhawk Bridge, Wisconsin side-Victory	8.2	20	55
Victory-LaCrosse	24.4	70	Night

Remarks. Hiway 35 is very rough and may be closed for construction in 1935. Would then have to detour up to 27.

Day 3

Route out to and back from Dresbach, Minnesota has not been logged

LaCrosse to Galesville	24.0	45	30
Galesville-Trempealeau	10.3	15	60
Trempealeau-State Line on Winona Bridge	16.7	30	

Day 4

LaCrosse-Liberty Pole Hill	46.8	70	20
Liberty Pole-Mineral Point city quarry	80.0	145	40
Lunch at Mineral Point			
Mineral Point-Brigham quarry at Blue Mound	31.6	60	20
Quarry to East Blue Mound	.8	5	25
East Blue Mound-Mazomanie	15.9	30	50
Mazomanie-Black Earth (note)	6.0	15	20
Black Earth-Madison quarry	17.8	30	30
Madison quarry-downtown (night stop)	3.1	15	Night

Remarks. Stop just east of Black Earth subject to change on account of probable construction on Highway 14

Totals	202.	390	205

Day 5

Madison-Farwell Point	7.2	20	25
Farwell Point-Devils Lake with detour to dam of Wis. Power and Lt. Co., at Prairie du Sac	38.7	65	45
Devils Lake-Ableman	13.8	35	60
Ableman-Dells	20.8	40	60 plus 60 for lunch
Dells-Point Bluff	24.2	40	30
Point Bluff-Goodenough Hill	10.4	25	30
Goodenough Hill-Tunnel No. 2 (substitute for Norwalk)	25.2	55	30
Tunnel No. 2-Sparta	18.1	35	possibly stop for supper
Sparta-Black River Falls	27.9	55	Night
Totals	186.3	370	280

Day 6

Black River Falls-Mt. Washington at Eau Claire	61.2	95	40
Mt. Washington-Mt. Simon	5.5	15	40
Mt. Simon-Irvine Park in Chippewa Falls	13.2	25	25

Day 6 cont.	Miles	Time, min	Stop, min.
Irvine Park-Menomonie	30.3	60	Lunch
Menomonie-Ellsworth (no data on exposure)	41.1	90	20
Ellsworth-Red Wing, Minn.	14.3	25	Out of state
Totals	165.6	310	125

Day 8			
Hudson-Stop on Second St.	0.0	—	35
Hudson-Stillwater	9.9	20	In Minn.
Stillwater bridgehead-Osceola	23.1	40	45
Osceola-Taylors Falls bridgehead	9.9	25	-----

All running times are very conservative as it takes longer for a procession than for one car. Extra time lost by stopping over schedule can probably be made up on the road. Routing subject to change because of 1935 construction which is not yet decided upon.

Sections are available for all stops except Ellsworth and the Ordovician part of the Trempealeau section. Sections for (a) Brigham quarry and (b) East Blue Mound are very poor; if not available will have to remeasure in spring.

Logging of exact route in some towns is not complete as hotels have not been decided upon and location of line-up will depend on police.

THE STATE UNIVERSITY OF IOWA
IOWA CITY

DEPARTMENT OF GEOLOGY

PLEASE ADDRESS
REPLY TO WRITER

January 8, 1935

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

Dear Fred:

I am glad to have received your letter of January 4, the attached copy of your letter to Workman, and the time schedule of the Tri-State Field Conference.

Although I am still willing to leave with you all questions pertaining to stops in Wisconsin, according to my letter of December 14, 1934, page 2, paragraph 4, I do share your feeling that the Baraboo district may be in danger of being slighted. Please note that a twenty-five minute stop at Cahoon quarry and Skillets Creek Falls was included in the itinerary of February 1, 1934, page 10. If you finally think it best to eliminate this stop, it could be replaced by a stop at Skillet Gorge (do you mean "Pewits Nest"?) or elsewhere in this district? In case the stop is to be made as originally planned, cars could be parked on the east-west road and the party could walk ~~work~~ south to the quarry and then north to the falls without shifting cars.

I will dig out and send to you as soon as possible locations and elevations of the top of the Dresbach in western Wisconsin.

Your proposal for strip maps in Wisconsin is being referred to Folger. I can see that regulation geological strip maps would be hard to get where there are no topographic maps or detailed geologic maps.

Am glad you are now free to use the illustrations of the new paper on the Cambrian of

Wisconsin in our Guide Book. It seems to me that this is perfectly right and proper.

Your paragraph concerning liability is also referred to Folger.

Cordially yours,

Trow

A. C. Trowbridge

ACT:A
CC: Anthony Folger

Jan. 4, 1935

Dr. A. C. Trowbridge, asst State Geologist,
University of Iowa,
Iowa City, Iowa

Dear Trow:

The Holidays have been so filled with odd jobs which jad to be out of the way before turning attention to the K. G. S. that I have not yet thanked you for yours of Dec. 14 which arrived just as I was mailing you a copy of my reply to a letter from Folger to Bean. Now the decks are clear and work has actually begun on the final road log.

I am glad that you will take care of the introductory statements and feel that you knowledge of the stratigraphy is such that we will not need to check them over before publication.

In regard to stops do you not think that we have treated the Baraboo district too slightly? Now that Andy Leith is on the list I feel that he would want to include the Skillet gorge stop. Could not we substitute this for the Skillet Falls-Cahoon quarry stop which we cut out (I think without regrets) on the Tri-State trip.

In re the Dresbach map I think the lists of elevations would be more useful to me if that is all right with you.

The strip maps give me most worry at present. We have no top. sheets for much of the route and anmy we do have do not show the present highways accurately. The same applies to the old Hotchkiss Geology and Road map. On the whole it seems to me that tracings from that without geology, which is largely unmapped with modern units and of little value in horizontal rocks anyway, would be best and not hard to prepare.

I am trying to convert the natives of the state to our northwest by sending them well records and cross sections. The results of these missionary efforts is yet to be determined. Twenhofel has agreed to let us use the illustrations for the forthcoming Cambrian paper in the K. G. S. guide book.

I am glad that the Wichita people have begun to see the light on legal questions. I suggest a form of release covering liability of both the Society and land owners to be signed by all participants.

Many thanks for getting me the job in Egypt. Last year this kind of work more than made up salary cuts.

You will get final copy of the log soon, also copies of sections and photographs. My K. G. S. main file is now an inch thick so you will see I have not neglected the matter entirely! Copy of letter to Workman enclosed. That file is also considerable.

Wishing you a Happy New Year,

Sincerely,

Gypsy Oil Company

Tulsa, Okla.

1107 Union National Bank Bldg.,
Wichita, Kansas,
December 27, 1934.

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

Dear Thwaites:

Your most interesting letter of December 17 has come to hand, and I must apologize for not answering earlier, but you will, of course, realize that the Christmas holidays are always a busy time.

I shall not have time to answer your letter in detail until after the first of the year, but you can look for a reply early in January. Just at this time, I wish to call your attention to the fact that Andrew Leith has been added as an Assistant State Leader for Wisconsin, and I am hopeful that he may be able to take over some of the Conference work with which you have been burdened. It is, of course, a well known fact that the Wisconsin Leadership has more details and more miles of road log to prepare than any of the other four states, and your work, therefore, is proportionately heavier. Let me assure you that Professor Trowbridge and the Committee on Arrangements sincerely appreciate the untiring efforts of Mrs. Thwaites and yourself in preparing the material for this Conference, and I feel quite certain that when the excellently prepared road log of Wisconsin appears in the Guide Book, you will both receive your just reward.

Wishing you both a very happy New Year, and with kindest personal regards,

Very cordially yours,

Anthony Folger

Anthony Folger.

AF/B
c. c. to A. C. Trowbridge.

1107 Union National Bank Bldg.,
Wichita, Kansas,
December 27, 1934.

Dr. Andrew Leith,
Department of Geology,
The University of Wisconsin,
Madison, Wisconsin.

Dear Dr. Leith:

I have your letter of December 13, in which you agree to act next fall in the capacity of an Assistant State Leader for Wisconsin during the forthcoming Conference of the Kansas Geological Society. The Committee on Arrangements desires to extend their grateful appreciation for your acceptance, and we are counting on your close co-operation with Professor Trowbridge and Mr. Thwaites.

Trusting you will have a happy and successful New Year, and with kindest personal regards,

Cordially yours,

Anthony Folger.

AF/B

c. c. to F. T. Thwaites.

Dec. 17, 1934

Mr. Anthony Folger,
Gypsy Oil Company,
Wichita, Kansas

Dear Mr. Folger:

Yours of the 4th to Mr. Bean was turned over to me for reply as it appears that at least 90 percent of the work for the forthcoming Conference will be. The only aid I have had so far is that Mr. Bean paid our expenses on the long trip last spring. Otherwise I have been helped only by Mrs. Thwaites and Mr. Bays who is one of the students here.

We welcome the inclusion of Messers Bretz, Mead, and Andy Leith in the list of assistant state leaders although it seems to me most unlikely that Mead will be present.

With regard to maps and sections in the Survey files there "just aint any sich animal." There are a few photographs which might be used but the Survey had always been interested only in pre-Cambrian and road material geology and the only work in the western part of the State was that of Edwards and Raasch which was primarily paleontology. However, I will make a more extended search.

I am glad that your were pleased with the copy of the field notes which Mrs. Thwaites typed every night while we were out. Work on the final copy will start as soon as I finish the illustrations for the paper on the Cambrian which we presented at Chicago a year ago.

The matter of historical notes etc will be taken care of with the aid of some of the staff of the Historical Library of which my late father was the head.

With regard to titles I would put mine "Lecturer in Geology, University of Wisconsin" as that accounts for most of my time. As a matter of fact my income from consulting work this year has been about twice my salary for the well record work! Other titles are correct, except that Andrew Leith is Assistant Professor, and Atwater is now on on the Iowa Survey, I think. Like wise on our staff.

Now for the list of maps, etc. We can furnish no data on the Devonian in Wisconsin for it is so limited in distribution. We know the total thickness of the Silurian in only one place.

In fact, I suggest the exclusion of eastern Wisconsin as the Conference will not go there. With regard to Nos. 7 and 8 I simply decline to attempt either. Those formations vary so rapidly on account of the marked unconformity between them that no map could give any fair idea. We might lump them together. I made several attempts at such maps some years ago but they will have to be brought up to date. We can give figures for the Trempealeau and Franconia for relatively few places. Bays is now working (or rather is hoping to work on) on a structure map of the top of the St. Peter. I have one in my files for eastern Wisconsin and he is completing this for the western part of the State which Is what you want most. Recently I made one with 500 ft. contours for Minnesota, Iowa, Illinois, and western Wisconsin to use in a report to the National Resources Baord. Can send a print of this if needed. No 13, the map of the Dresbach is in poor shape. I started one a few years ago and then had a student, Randall Wright, finish it. This needs checking and is particularly poor where there is the most information provided we had been able to get out in the field to get it! Will do my best. The pre-Cambrian map was also made up for the National Resources report and I can send a print. Although this report was confidential I reserved the right to use these maps if altered.

With regard to Baraboo Joe Wannemacher's areal map can be followed with slight modifications. Andy Leith can furnish some structure sections. I hope to make the Ableman map in the spring as a commercial venture for sales to students in our and other universities will soon pay for cost of publication but the date of completion is uncertain. I will (or rather hope to) be able to)finish a set of historical block diagrams of the district similar to those of Guy-Harold Smith which appeared in the Pan-American a couple of years ago.

I can give a better report on the structure section from Wisconsin to Missouri than on anything else. This is all done but unfortunately I tried to ink it in on the tracing paper profile sheet that I penciled it on. The result was disaster for the paper simply will not stand any erasures. It could easily be redrafed from my copy but I did want badly to send preliminary blueprints to the others who are working on the project to stir them up to finishing it and ashamed to send what I have. Possibly I can patch up the worst spots as I simply do not have the time to redraft the whole thing.

With regard to No. 25 I am now completing a large table showing comparative nomenclature of the Cambrian from Owen to the present. It is for use in the forthcoming paper on the Cambrian but as it is one of my personal contributions I think there will be no difficulty in giving you permission to use it. It is neatly drafted with Wrico lettering and will not have to be recopied. I can turn in a Vandyke positive suitable for direct reproduction.

I doubt seriously that either Twenhofel or Sshrock will be able to go on the conference as they expect to be in Newfoundland. I am trying to cheer up Ransch and Bays, who is specializing on the Ordovician to go.

Withbest wishes of the season,

Sincerely,

F. T. Thwaites

THE STATE UNIVERSITY OF IOWA
IOWA CITY

DEPARTMENT OF GEOLOGY

PLEASE ADDRESS
REPLY TO WRITER

December 14, 1934

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

Dear Thwaites:

In immediate reply to yours of December 13, please let me apologize for not having acknowledged receipt of your splendid letter of November 21 and the attached twenty-five page preliminary draft of the road log for Wisconsin. Your situation and mine are similar. You have your regular academic schedule, your field classes, highly important domestic privileges and responsibilities, occasional consulting jobs (I recommended you for the one mentioned in yours of December 13), the Penrose Fund project, the field conference, and perhaps other items; and I have my regular teaching schedule, the administration of this department, of the Geological Survey, of about one-fourth of the total program of the Iowa State Planning Board, and of the work of the NRC Committee on Sedimentation, frequent official trips out over the state, and the field conference. Like you, also I ~~would~~ like to devote some time to the enjoyments and obligations of family life. Both you and I have insufficient help, but both of us are to be congratulated in having the cooperation and assistance of our wives. Mrs. Thwaites has certainly been of great help to you and to all of us and will, of course, be given the credit due her.

When Folger was here, we went quite thoroughly into all matters pertaining to personnel, itinerary, road logs, material for the Guide Book, etc. for all four states. It was my intention to write each State Leader as soon as possible thereafter and have since then corresponded extensively with Marvin Weller and Marshall Kay and to some extent with Thiel. Partly because I knew from talking with you recently and could see from the materials already submitted that you had the several unsolved problems well in mind and the remaining work well in hand, I have left further correspondence with you until urgent matters in the other states could be taken care of. If this has inconvenienced you or delayed the progress of your work either on the Penrose project or on the field conference, I am truly sorry.

The immense amount of time and attention you have devoted and stand ready to continue to give to field conference matters until the job is done and the conference is a matter of history is greatly appreciated both here and in Wichita. I hope and believe it is also appreciated in Madison and Milwaukee.

The several items that should be considered further by you and me are listed below. The numerical order has little or no significance.

1. Folger and I have agreed that I should prepare a short preliminary statement for each day's trip (A). Most of the day's routes involve more than one state. If these statements are prepared by State Leaders, there might be gaps and useless repetition.

2. I am willing to leave to you the whole matter of stops in Wisconsin (B-1 to 14, July 31, 1933; my letter and itinerary of February 1, 1934; my letter of November 19, 1934; your letter of November 21, 1934). Unless your material on stops as finally submitted disagrees or duplicates too much stops to be made in other states, this material will be accepted as submitted. I know you will fulfill the provisions of B as well as you can.

3. (Your letter 11-21-34, paragraph 2, line 11)--I think I can furnish elevations of the top of the Dresbach at a considerable number of places in western Wisconsin. Shall I dig them out and send them to you or will you send me a tracing of your map for this part of the state on which I can place locations and elevations before returning the tracing to you?

4. It will be splendid if you can map the Ableman gorge in the spring.

5. We hope you will try to prepare strip route maps (D). Pencilled tracings for redrafting in Wichita will be satisfactory. Perhaps they could be taken from existing maps. If not, please write me again about this point before spending any further time or trouble on it.

6. I do not have anything specific in mind for Wisconsin on E. If there are places which we had hoped to visit but which have had to be eliminated for lack of time, maps, sections, or word descriptions might be inserted. I will leave this to you but may have suggestions to make later.

7. You have described accurately the status of G. If we can get Minnesota to accept the classification that has been agreed upon for Wisconsin, Illinois, and Iowa, this

item will be taken care of in fine shape; but so far no effective means have been found to accomplish this. Recent publications from Minnesota appear to leave us farther from agreement than ever. Considerable thought is being given to this, however, and success may yet crown our efforts.

8. (Your letter 11-21-34, paragraph 2, last two lines)--The matter of police escort should be taken care of by the STATE DIRECTOR. Permission to enter private lands and arrangements for hotels, garages, and lunch places can perhaps be taken care of later when all details of route, etc. have been settled. At your suggestion, I spoke to the people at Wisconsin Dells when I was there last June. G. M. Pike, Manager, and Gerald A. Smith, Passenger Agent, of Dells Boat Company, agreed to arrange any kind of boat trip we might want. We can have the steam boat at one dollar rate per round trip, a fifty ~~per~~ cent reduction under the regular rate; and they will serve lunch either on the boat or at one of the hotels at fifty cent or more or even less per meal. We can make one or two stops and be out one and one-half or two hours ~~if~~ as we wish.

9. (11-21-34, page 2, paragraph 1)--Your suggestions about liability insurance for cars and liability for accident at quarries, etc. were noted by Folger when he was here and will be considered by the Wichita Committee.

10. (11-21-34, page 2, paragraph 4)--Contents noted and leaving it all to you.

11. (11-21-34, page 2, paragraph 5)--Because I have written so fully above, it hardly seems necessary to return the preliminary copy of your log. You have a copy. However, I will spend additional time on it as soon as possible and then may reconsider and return the copy with notes.

12. We shall all be surprised and disappointed if Twenhofel and Shrock finally decide not to participate in the conference (next to last paragraph of 11-21-34).

Cordially yours,

Trow.

A. C. Trowbridge

ACT:A
CC: Mr. Folger

Surely we are now good enough friends to disregard titles, initials, etc?

Dec. 13, 1934

Dr. A. C. Trowbridge,
University Of Iowa,
Iowa City, Iowa

Dear Dr. Trowbridge:

As I have not yet had a reply to my letter of Nov. 21 to you I am at a loss as to whether or not to go ahead on the plan for the Knasas Society field conference. I had wanted to get this out before the Christmas recess but having had an outside job down in Egypt as well as some other delays it hardly looks as if this would be possible. If not I want to devote some of the holidays to it and get the matter out of the way in order to start on the report on my work in the north for which I had a Penrose Grant last summer.

I am now putting the finishing touches on the paper with Twenhofel and Raasch. One of them is a large chart of nomenclature of the Cambrian from 1852 to the present. If the others agree will soon have a blueprint for your criticism.

With best regards,

Sincerely,

F. T. Thwaites

write Eyer

Trevor Thwaites Road Stock

Gypsy Oil Company

Tulsa, Okla.

Wichita, Kansas,
December 4, 1934.

Mr. Ernest F. Bean,
Wisconsin Geological and Natural History Survey,
Madison, Wisconsin.

Dear Dr. Bean:

I wish to express my thanks for your letter of November 17 relative to the Wisconsin Leadership. I returned recently from Iowa City, where I had a most satisfactory conference with Dean Kay and Dr. Trowbridge.

I am now prepared to give you more concrete information relative to Bretz and Mead, since I have heard from both of these gentlemen direct since last addressing you on November 15. Dr. Bretz informs me that he will be glad to accept the position of Assistant State Leader for Wisconsin. Dr. Mead advises that he is "enthusiastically interested" in the coming field conference, and will attempt to be present; however, since his presence in British Columbia is demanded for the entire field season of 1935, he is not at all certain if he will be back in time, and for that reason, he believes it unwise for him to make a definite promise to attend. Based on his evident interest and on the fact that he does not say he will not be able to attend, I am writing Mead that we are retaining his name as Assistant State Leader for Wisconsin, and we shall entertain the hope that he will be able to be back in the United States in time to attend.

Dr. Trowbridge and myself both like your suggestion to include Andrew Leith as one of the Assistant State Leaders for Wisconsin. In fact, we believe that young Leith should be included in this Leadership list, even though it is deemed best to retain Mead's name. For this reason, I shall write Leith and invite him to participate in the Assistant State Leadership, and I trust this will meet with your entire approval.

One of the results of the Iowa City conference was the preparation by Trowbridge and myself of a "List of Maps, Reports, and Illustrations to Be Included as a Part of the Guide Book of the Ninth Annual Field Conference of the Kansas Geological Society." A copy of this list is being inclosed herewith, and I wish you would give it your careful attention and discuss it with such others of the Wisconsin Leadership as are available for conference at Madison. After you do this, will you be kind enough to transmit to me a detailed list of any local areal maps, structure sections, and illustrations contained in the files of your Survey (see paragraph 3, page 1, of the sixteen-page statement on "Suggestions and Instructions for the Preparation of the Road Log," prepared by myself and issued July 31, 1933). There are undoubtedly

Gypsy Oil Company

Tulsa, Okla.

in your Survey files a considerable number of illustrations which it would be desirable to reporduce in the Guide Book, giving due credit to the author, which would materially improve and add to the value of the Guide Book. Our committee believes that permission to reproduce such illustrations by your Survey will be a valuable contribution to this Kansas Geological Society project, and we trust you will accord us the privilege of so doing. Especially would I call your attention to Number 26 of the inclosed list, and ask if you will detail one of your staff to go through some of the published geologic literature of Central and Western Wisconsin and see if a number of pertinent illustrations can not be found for reproduction in the Guide Book.

It was with a great deal of pleasure that I read the preliminary copy of Thwaites road log for Wisconsin, and I am confident that after he composes this in finished form, it will be one of the high lights of the Guide Book. It appeared to me that Thwaites has done a most careful and excellent piece of work, and I wish you would convey to him the very great appreciation of the Committee on Arrangements.

One further request. Will you refer to the last paragraph on page 1 of the statement issued by me on July 31, 1933. The Committee believes that this is an especially important matter, and I am going to ask that you personally supervise the preparation of the statements on the cultural features along the route of travel, and that you will see to it that the proper authority in Wisconsin for the assembly of these historical facts is consulted and his aid requested.

Wishing you a very merry Christmas and happy New Year, and with kindest personal regards,

Very truly yours,

Anthony Folger

Anthony Folger.

AF/B

c. c. to A. C. Trowbridge.

I'm enclosing a semi-final leadership list, in which I know you will be interested. Will you check all titles of Wisconsin leadership & advise me any corrections no matter how small. Particularly please indicate if a man is a full, an associate, or an assistant Professor. - Anthony

Wichita, Kansas,
December 5, 1934.

Mr. Andrew Leith,
Department of Geology,
University of Wisconsin,
Madison, Wisconsin.

Dear Dr. Leith:

I am in receipt of a letter from Dr. Bean suggesting that your name be included as one of the Assistant State Leaders for Wisconsin on the Ninth Annual Field Conference of the Kansas Geological Society, to be held in the Upper Mississippi Valley during the fall of 1935. As Chairman of the Committee on Arrangements for this field conference, I wish to cordially invite you to participate in this conference, and to act as well as one of the Assistant State Leaders for Wisconsin. Your colleagues serving in like capacity are Atwater, Bretz, Mead, Raasch, and Shrock.

I probably do not have to advise you that the four State Surveys of Iowa, Illinois, Wisconsin, and Minnesota have all agreed to co-operate with the Society in holding this conference. Probably you already know that Dean George F. Kay is the Director, and that Professor Arthur C. Trowbridge is the Leader in charge of all four states for this conference. Dr. Bean is, of course, the Associate Director for Wisconsin.

Your acceptance will mean that you will so plan your 1935 summer itinerary as to include time to participate on this conference. Naturally your acceptance makes your Wisconsin attendance obligatory, but, I am assuming that you will wish,and will attempt, to attend the entire conference for its eight days in the field. The financial difficulty in agreeing to attend, in these trying times, is quite another matter, but we shall expect no more of you than we have from any of the others. All others have accepted with the provision that they will attend if the financial wherewithall is forthcoming at the time of the conference. Such a qualified acceptance is entirely satisfactory.

We are indeed anxious to have you participate in the Wisconsin Leadership, and I trust we may have your affirmative answer at your earliest possible convenience. This conference will be attended by geologists from almost every state in the Union; moreover, it appears that from 150 to 200 geologists will be in attendance, and it is imperative that we furnish for its leadership those men who are the most conversant with the area involved.

With kindest personal regards, and hoping to hear from you within a few days,

Cordially yours,

AF/B

Anthony Folger.

LEADERSHIP OF THE NINTH ANNUAL FIELD CONFERENCE - 1935 - LANSAS GEOLOGICAL SOCIETY

Director

George F. Kay - Dean, College of Liberal Arts; State University of Iowa.

Associate Directors

Illinois--- Morris M. Leighton - State Geologist; Illinois State Geological Survey.

Iowa -------Allen C. Tester - Assistant State Geologist; Iowa Geological Survey.

Minnesota - William H. Emmons - State Geologist; Minnesota Geological Survey.

Wisconsin - Ernest F. Bean - State Geologist; Wisconsin Geological & Natural History Survey.

Leader

Arthur C. Trowbridge - State Geologist; Iowa Geological Survey.

State Leaders

Illinois -- J. Marvin Weller - Geologist & Head Stratigraphy and Paleontology Division, Illinois State Geological Survey.

Iowa ------ G. Marshall Kay - Instructor in Geology; Columbia University.

Minnesota - Clinton R. Stauffer - Professor of Geology; University of Minnesota.

Wisconsin - Ira Edwards - Curator of Geology; Milwaukee Public Museum.

Fredrik T. Thwaites - Geologist in Charge of Well Records, Wisconsin Geological and Natural History Survey.

William H. Twenhofel - Professor of Geology; University of Wisconsin.

Assistant State Leaders

Illinois --- John R. Ball - Professor of Geology; Northwestern University.

Charles H. Behre Jr. - Acting Head, Department of Geology; Northwestern University.

George E. Ekblaw - Geologic Editor; Illinois State Geological Survey.

F. M. Fryxell - Professor of Geology; Augustanna College & Theological Seminary.

John N. Lamer - Geologist & Head Non-Fuels Division; Illinois State Geological Survey

A. B. Sutton - Assistant Professor of Geology; University of Illinois.

Lewis E. Workman - Associate Geologist, Subsurface Division; Illinois State Geological Survey.

Iowa ------- C. S. Gwynne - Professor of Geology; Iowa State College.

Harry S. Ladd - United States National Museum.

James H. Lees - Consulting Geologist; Iowa Geological Survey.

William H. Norton - Professor of Geology; Cornell College.

Merril A. Stainbrook - Professor of Geology; Texas Technological College.

S. W. Stookey - Dean Emeritus of Coe College.

Minnesota -- George M. Swartz - Assistant Professor of Geology; University of Minnesota.

Lewis H. Powell - Curator of the Museum of the St Paul Institute.

George A. Thiel - Assistant Professor of Geology; University of Minnesota.

Wisconsin -- Gordon I. Atwater - Department of Geology; University of Wisconsin.

J. Harlem Bretz - Professor of Geology; University of Chicago.

Andrew Leith - Instructor in Geology; University of Wisconsin.

Warren J. Mead - Head, Department of Geology; Massachusetts Institute of Technology.

Gilbert O. Raasch - Curator of Geological Museum; University of Wisconsin.

Robert R. Shrock - Assistant Professor of Geology; University of Wisconsin.

LIST OF MAPS, REPORTS, AND ILLUSTRATIONS TO BE INCLUDED AS A PART OF THE GUIDE BOOK OF THE NINTH ANNUAL FIELD CONFERENCE OF THE KANSAS GEOLOGICAL SOCIETY

1. Isopach map of the post-Kinderhook Mississippian, covering Iowa, Northern Illinois, Wisconsin, and Southern Minnesota.

2. Isopach map of the Kinderhook Group, covering the same area.

3. Isopach map of the Devonian, covering the same area.

4. Isopach map of the Silurian, covering the same area.

5. Isopach map of the Maquoketa, covering the same area.

6. Isopach map of the Galena-Platteville, covering the same area.

7. Isopach map of the St. Peter Sandstone, covering the same area.

8. Isopach map of the Prairie du Chien, covering the same area.

9. Isopach map of the Trempealeau and Franconia, covering the same area.

10. Isopach map of the Dresbach Formation (includes the Galesville-Eau Claire-Mt. Simon), covering the same area.

11. Structural contour map drawn on top of the St. Peter Sandstone, covering Minnesota, Iowa, Eastern Nebraska, Eastern Kansas, Missouri, Illinois, Wisconsin, and possibly parts of adjacent areas, by J. V. Howell and F. T. Thwaites.

12. Structural contour map drawn on top of the Jordan Sandstone, covering Iowa, Northern Illinois, Wisconsin, and Southern Minnesota, by A. C. Trowbridge.

13. Structural contour map drawn on top of the Dresbach Sandstone, covering the same area as Number 12, by F. T. Thwaites.

14. Structural contour map drawn on top of the pre-Cambrian, covering the same area as Number 11 above, by J. V. Howell and F. T. Thwaites.

15. Plane table map of the Hudson Anticline and the River Falls Syncline, by George E. Clement.

16. Structural contour map of the Afton Structure, by George M. Schwartz.

17. Structural map of the Twin City area drawn on top of the Jordan Sandstone by a Minneapolis engineer.

18. Exposure map of the Minnesota River Valley, together with an index of the outcrops shown on this map, by C. W. Couser.

19. Structure profile section from New Ulm to Ft. Snelling, by C. W. Couser.

20. Outcrop map of the Prairie du Chien Group, by Elliot Powers.

21. Report on the stratigraphy and structure of the Oregon Anticline, by Arthur Bevan, containing at least the following four maps:

    a. Columnar section.
    b. Areal geologic map.
    c. Structural contour map.
    d. Structure sections.

22. Report on the stratigraphy and structure of the Baraboo Range, by Thwaites and others, containing at least the following four maps:

    a. Areal geologic map.
    b. Structure sections.
    c. Ableman Gorge topographic map.
    d. Ver Wiebe-like evolutionary sketches (for illustration, see text book on "Historical Geology", by Walter A. ver Wiebe, see Figure 76, page 55, Generalized Diagrams to Show the Evolutionary History of the Sierra Nevada Mountains).

23. Report on the stratigraphy and structure of the Mississippi River Anticline, by J. V. Howell, containing at least the following two maps:

    a. Structure sections.
    b. Structural contour map.

24. Report on and sketch map of the lead and zinc area of Wisconsin and Illinois, by Charles H. Behre, Jr.

25. Columnar section showing the relationship between Owen's Upper Mississippi Valley section and the present upper Mississippi Valley section--interpreted by A. C. Trowbridge.

26. Longitudinal and restored sections of parts of the Mohawkian sediments of the Upper Mississippi Valley, by Marshall Kay, either using direct or redrawing Figures 8, page 657, and 12, page 671, Journal of Geology, Volume 37, Number 7, October, November, 1929.

27. Detailed structure section from the Lake Superior Highland, Wisconsin, through Illinois to the Ozark Mountains of Missouri, by F. T. Thwaites for Wisconsin, Lewis E. Workman for Illinois, Henry S. McQueen for Missouri.

28. Areal map on the Hinckley problem, by Atwater and Clement.

Nov. 21, 1934

Dr. A. C. Trowbridge,
University of Iowa,
Iowa City, Iowa

Dear Dr. Trowbridge:

Yours of the 19th is at hand. I think it was Kingsley who said that "Battles are fought as they can be and not as they ought to be". This applies to other things in life, I take it, and I regret to say that I have not been able to do as much on the Kansas Society Log as I would like to have done. The burden of this falls almost entirely on me. The only aid I have had was from Mrs. Thwaites and Mr. Bays. I will also add that Beam paid the expenses of the long trip in June. Bays and I logged into Madison a week ago and will complete the few miles through the city soon. Meantime I am enclosing carbon of our notes up to date. This is not all checked from the original and none of it has been edited and put in final shape. My Penrose grant work last summer, a job with the National Resources Board in September, field trips (with a class of "wild Indians"), the illness of my mother, and the cares of raising a family do not permit me to spend the time I would like to on this interesting job. I am now making a drive to complete the joint paper on the Cambrian with Twenhofel and Raasch from which I intend to draw stratigraphic sections and if possible some diagrams or tables like the one of comparative nomenclature which I am now drafting while answering questions in the laboratory. The Kansas Log is (I hope) to be finished before Christmass for the Recess is to be devoted to a big drive on the report for the Penrose project.

With regard to the items specified nothing has been done on A. The same applies to B2. Data are available but not collected for most of B4. Wherever possible photographs have been taken along the route (B6) but many sections do not lend themselves very well to photography. B7 and B8, the data are available for almost all places. B9 will be taken care of by the paper on the Cambrian. Nothing has been done on B10. Data is being collected for B13 and B14. Nothing has been done on C7. C8 has been taken care of. Nothing has been done for C10 or C11 but we may be able to use the small city map inserts on the state highway service map. Bays is working on a structure map of the St. Peter but we lack data for the Dresbach top in western Wisconsin. Could you cooperate on this? With regard to C15 I hope to survey a detailed map of the gorge at Ableman in the spring. I doubt that other local maps are needed unless at Eau Claire. C19 will be taken care of in editing the log. For C20 and C21 I can supply a number of well logs and local sections but unfortunately western Wisconsin is just where our subsurface data is least! Nothing has been done on D or E. With regard to G uniform nomenclature is assured except in Minnesota. Nothing has been done about police escorts, permission to enter private lands, hotels, garages, or lunch places.

Two matters occur to me which have been neglected in past Conferences. First would not it be well to insist as we do on field trips that all cars taken on the trip carry liability insurance. You will recall the accident near Fayetteville. Second, in order to enter some private properties it is necessary to waive liability for accident. This applies particularly to mines and quarries. I suggest that both points be given due consideration.

Nothing has yet been done about police escorts.

The cross section from Wisconsin to Missouri, that is my part of it, is now almost all inked in. I was unfortunate in the paper I used and am ashamed of the result but it will have to be redrafted anyway. I hope to stir up the others by sending them blueprints at an early date.

Please do not consider the preliminary logs sent you as final products. From them you can probably decide what stops are possible. I have already suggested the elimination of the stop at Norwalk and the substitution of another. Twenhofel and Rassch tell me they sectioned another locality near there but I have not checked up on that. I also suggest the elimination of the stops at Cahoon quarry and Skillet Falls. The side trip logged at Black River Falls will have to be cut out. Probably a stop at one of the Mt. Simon cuts on the highway might be substituted if it is thought necessary to supplement the type section at Eau Claire. I wish we had a better exposure of the granite contact than that in the Park at Chippewa Falls but it does not seem possible.

I think it would be well to make such notes as you see fit on the preliminary copy of the log and then return it to me for final editing. I will have some of the people at the Historical Library check over the log for points of historical interest.

Twenhofel and Shrock tell me thay will probably not attend. I am trying to talk Raasch into going, also Bays. Both of them can help very much on the Ordovician.

With regrets that there are only twentyfour hours in a day and that I have to spend many of them on other matters, I must close. (Somehow, I have a notion that maybe all others will not all have done as much after all!)

Sincerely,

F. T. Thwaites

THE STATE UNIVERSITY OF IOWA
IOWA CITY

DEPARTMENT OF GEOLOGY

PLEASE ADDRESS
REPLY TO WRITER

November 19, 1934

Dr. F. T. Thwaites
Science Hall
University of Wisconsin
Madison, Wisconsin

Dear Thwaites:

Having just now received telegraphic word from Folger that he and Kesler will come to Iowa City for a conference on November 24 and 25 rather than the following week, I am writing to ask if it will be possible for you to place the road log for Wisconsin in my hands by noon on Saturday of this week. You have told me that your work on this log has been nearing completion. I believe you said during the field conference in Wisconsin that there remained one more day of field work and perhaps certain other minor items. Even if you cannot get these items completed in time, I hope you will send to me what is now ready if you can, so that we may have it for consideration while Folger and Kesler are here.

Folger has asked me to check up especially on items A, B-2, B-4, B-6, B-7, B-8, B-9, B-10, B-13, B-14, C-7, C-8, C-10, C-11, C-14, C-15, C-19, C-20, C-21, D, E, and G of the sixteen-page statement dated July 31, 1933. If there are any maps, sections, or manuscripts which you think should be considered for inclusion in the Guide Book, I hope you will tell me about them, so that these also may be considered this coming week-end.

In other words, it will be greatly appreciated if you can let me know just what is the status of your work for the field conference in Wisconsin and let me have any materials which are ready at this time.

Cordially yours,

A. C. Trowbridge

ACT:A

A nothing done
B 2 nothing
B 4 data available for most
B 6 plaster taken but many not suitable
B 7 } data available
B 8 } on almost all
B 9 Cambrian paper will take care of this
B 10 –
B 13 data being collected
14 " " "
C 7 nothing done
C 8 Taken care of
C 10 nothing done can need state map?
C 11 – state map
C 14 Boys working on St Peter – doubt if other can be prepared
C 15 doubt if needed – will work up map at Ableman
C 19 see how can supply
C 20 can supply keys in some places
C 21 hope to supply
D nothing done
E " "
G will be taken care of except Minn.

Iowa Geology Field Camp,
Baraboo, Wisconsin.
June 20, 1934.

To Doctors Ira Edwards, G. Marshall Kay, Clinton R. Stauffer, F. T. Thwaites, W. H. Twenhofel, and Marvin Weller,

Gentlemen:

You will recall that on February 1, 1934 I sent you a new draft of the general itinerary for our K. G. S. Field Conference and a letter in which the hope was expressed that a semi-final draft of the itinerary could be drawn up, mimeographed and distributed to the whole DIRECTORSHIP and LEADERSHIP soon after that date. However, it was late in May before negotiations were completed with the LEADERS in all four states and I found it impossible to formulate the semi-final draft before leaving for this annual field course on June 6th. I had hoped I might be able to get it assembled in the field but my time here is almost fully occupied with routine and I have no clerical or stenographic help and find that I cannot do so.

Under the circumstances, I now propose that the itinerary of February 1, as revised for each state by agreements reached by correspondence since then, be considered as the semi-final draft and that you LEADERS in the four states proceed as you can to log the route, describe the stops, etc; in short, to prepare the final draft which should be ready for the Wichita Committee in the Winter or very early Spring. The actual logging should be done this summer if possible. Is it too much to hope that copy for the final draft for all four states may be in my hands by October 15th? This would allow for possible additional emergency field work before snow flies.

If you have graphic sections, maps, or other material for the guide book, which can be gotten ready in advance of the final itinerary, please send them to me at Iowa City, as soon as they are ready.

Perhaps some of the historical and cultural material can be added after October 15th when the precise routes and stops have been decided upon.

As you proceed, please feel free to confer with hotel and bridge companies about accomodations and rates. Arrangements for police escorts and all negotiations with city and state authorities should be attended to later and through the STATE DIRECTORS.

Thanking you for the valuable time you have already spent on these matters and in confidence of future cooperation and in hope of a successful Conference in the end, I am,

Faithfully yours,

A. C. Trowbridge

A. C. Trowbridge.

C/c to: Mr. Anthony Folger
Dean George F. Kay

THE STATE UNIVERSITY OF IOWA
IOWA CITY

DEPARTMENT OF GEOLOGY

PLEASE ADDRESS
REPLY TO WRITER

May 24, 1934

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

Dear Doctor Thwaites:

Many thanks for the promptness and thoroughness with which you replied to my letter of May 19th under date of May 22nd.

I am now free to go ahead with a semi-final draft of the general itinerary. As this work is taken up again, the several suggestions contained in your letters of May 15th and May 22nd will be given careful consideration. Of course, it is understood that still further changes will be possible later as the final draft is made up from the semi-final draft.

Very sincerely yours,

A. C. Trowbridge

A. C. Trowbridge

ACT:A

Wed Madison - Spooner
Th Spooner - Menomonie
Fr Menomonie - Superior
S Superior - Ironwood
Sun Ironwood - Wausau
Mon Wausau - Madison

May 22, 1934

Dr. A. C. Trowbridge,
Department of Geology,
University of Iowa,
Iowa City, Iowa

Dear Dr. Trowbridge:

Yours of the 19th is at hand. I am indeed sorry to have delayed matters.

We are essentially in agreement on the route but feel that certain changes will have to be worked out in the field. Certain stops will have to be eliminated or curtailed because of time and others because of difficulty in getting parking space, and so on. Knowing this I did not feel like copying over what you had already given as it seemed as if the proposed changes might easily be made in copying in your office.

I talked with Atwater about the matter of changes in the day going to Madison and he was much opposed to leaving out the Farwell Bluff stop to see one of the type sections of the Mendota. This stop would involve driving around Lake Mendota. All agree, however, to the elimination of both School Section Bluff at Mazomanie and Pheasant Branch quarry. If we went around the lake we would drive through the latter. However, this makes trouble in reaching the Madison quarries which is the type of the Madison, a name still retained.

Possibly one could be put into the next day.

With regard to the Fifth Day I suggest parking on East Sauk Road and walking to the top of West Bluff at Devils Lake. We did this on the International Congress trip and everyone liked it. I wish we could visit the Denzer country with the fine cliffs of Dresbach and Franconia, as well as Weidman Falls. Raasch suggests leaving out Reedsburg and making a stop in the town of Dellona to see the Eoorthis beds. I suppose that we will have to yield on the boat trip at the Dells despite our dislike of the overcommercialization of that locality. We may have to eliminate the side trip to Point Bluff. I will consider Roaring Creek when in the field but think that Silver Mound must be left out.

On the Sixth Day Raasch suggests possible stops at Elk Mound and Menomonie.

Does the Society secure written permission from land owners and furnish written waiviers for liability? We must do this in visiting any mines or quarries. I will see what we can do for police escorts but with our lack of any state police this will be difficult

I will look after the South Shore post-conference trip on my own but will appreciate it if you will go ahead with the program from the former draft and leave final changes towhen I get printout keyshed.

F. T. Thwaites

THE STATE UNIVERSITY OF IOWA
IOWA CITY

DEPARTMENT OF GEOLOGY

PLEASE ADDRESS
REPLY TO WRITER

May 19, 1934

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

Dear Professor Thwaites:

Yours of the 15th is greatly appreciated.

I want to thank you especially for your kind remarks about the Trowbridge-Atwater paper. We did try to present all points of view fairly and to keep away from personalities. You may have heard that a very long letter was received from Ulrich. Another from Resser, not nearly so long but almost as much to the point, arrived later.

While in Washington two or three weeks ago I had a long and fairly satisfactory conference with Ulrich and a shorter one with Resser. At least the differences of opinion between these men and some of us in the Mississippi Valley are now out in the open.

It is true, to some extent at least, that the work on the Field Conference itinerary has been held up because of the fact that no definite and complete report has been received from Wisconsin to my letter of April 1, which was accompanied by a new draft of the general itinerary. It was our hope that the leadership in all four states would make definite proposals for revision of that itinerary, so that these proposals could be considered and a semi-final draft could be drawn up, mimeographed, and distributed well in advance of the present field season. Agreements on all stops, routes, and time schedules were arrived at for the other three states, but the promised semi-final draft has not been prepared because Wisconsin has not been so far along.

Both Twenhofel and Edwards have sent in suggestions, with which you are doubtless familiar, but I think the three of you should reach general agreement before details are included in still another draft of the general itinerary. Does your letter of the 15th report such an agreement? If so, perhaps I can now incorporate these

suggestions in a new itinerary and get the semi-final draft ready for mimeographing before I start the field season on June 6th.

Your suggestion that Winona might replace LaCrosse for one of the night stops is well worth considering. I will see what can be done along this line.

I am sorry to learn that most of the burden of logging will fall on you. To be frank, however, I have thought from the beginning that this might be the outcome. Your fine spirit of cooperation is greatly admired and appreciated.

Sincerely,

A. C. Trowbridge

A. C. Trowbridge

ACT.L

May 15, 1934

Dr. A. C. Trowbridge,
Geology, Department, University of Iowa,
Iowa City, Iowa

Dear Dr. Trowbridge:

The completion of the field trip season finds me able to open again the already thick file of the K. G. S. trip of 1935. I have an uneasy feeling that I may have been holding up the procession although the letters there do not confirm that view.

First, I want to thank you for the separate of your paper on stratigraphic problems. It seems to me that just such a dispassionate review of the many inconsistent statements of a certain supposed authority was greatly needed and I was greatly pleased with the way in which you dodged any personalities. The paper marks a great step forward out of the state of confusion.

Turning to the itinerary, I find that I also agree with alternative No. 3 for the Fourth Day. I also approve cutting out the stops at Pheasant Branch and Mendota as well as School Section Bluff. We must, however, make at least one stop where the entire sequence from Upper Greensand to Oneota is exposed and the original Black Earth locality is not bad for that. Then we could also stop at one of the Madison quarries, the type of the Madison sandstone.

After discussing the matter of the LaCrosse stops for two or more nights it occured to us that Winona might be better for at least one night. There is a good hotel there which is much cheaper than the Stoddard at LaCrosse. In doing the logging are we empowere to talk rates with hotel managers? If we are some bargaining might be done in working these two places against one another.

Raasch informs me that he simply cannot do any of the logging if it involves any overnight stop out of Madison but that we may use any of his measured sections. Twenhofel does not seem to believe in logging according to K. G. S. standards. It is, therefore, apparent that the burden of this work will fall on me alone. I now have a grant from the Penrose fund to work in northern Wisconsin so will have to work in this personal logging trip either before or after my field work in the north. Mrs. Thwaites hopes to help me if she can manage to leave the youngsters at home safely. This work will take at least a week and will cost more than I like to think of. However, we will do our best.

With best regards,

Sincerely,

F. T. Thwaites

THE STATE UNIVERSITY OF IOWA
IOWA CITY

DEPARTMENT OF GEOLOGY

PLEASE ADDRESS
REPLY TO WRITER

March 24, 1934

Thanks I row for separate

Professor W. H. Twenhofel
Geology Department
University of Wisconsin
Madison, Wisconsin

Dear Professor Twenhofel:

In reply to your letter of March 20 regarding the Wisconsin part of the K.G.S. field conference itinerary:

Questions regarding the number and length of stops, the driving mileage and speed, and the hours to be spent in the field each day have been up for discussion from the very start between the state leaders and myself on the one hand, and between the Wichita committee on arrangements and myself on the other hand. As stated in my letter of February 1, paragraph 3, final agreement on all these questions was reached with the committee on January 18 and these agreements embodied in the draft of the itinerary sent out on February 1. Since then similar agreements have been arrived at with the state leaders of Minnesota, Illinois, and Iowa, and these agreements will appear in the forthcoming semi-final draft of the general itinerary. If you, Edwards, and Thwaites will agree on specific suggestions for stops to be omitted or routes to be shortened in Wisconsin these suggestions will be carefully considered and incorporated in the semi-final draft of the general itinerary if approved by the Wichita committee.

were

One of our greatest difficulties has been in connection with the night stops. I have been advised to go on the basis that two hundred persons will attend the conference. Obviously so large a group could hardly be accommodated over night at any place much smaller than La Crosse, or Dubuque. At one time or another MacGregor, Decorah, Waukon, Lansing, Prairie du Chien, Viroqua have all been considered for night stops. It has even been suggested that the party be divided for one night between MacGregor and Prairie du Chien or between Decorah and Waukon. Because of abundant dormitory space we think the party can be accommodated at Iowa City for the pre-conference night. Until almost the last minute the itinerary of February 1 called for three night stops at La Crosse, on the second, third, and fifth days, and Black River Falls was ~~stated~~ substituted for the fifth day only by special authorization from Wichita and

and with the understanding that we might have to go back to La Crosse after all if the group proves to be as large as is expected (see itinerary of February 1, page 11). Some of us have felt that there might be real advantages in spending two consecutive nights at La Crosse. One packing and unpacking for everybody and one busy day for those in charge of baggage transfer and room assignments ~~to~~ would be avoided. Laundering could be done. The K.G.S. men responsible for making detailed arrangments could participate in the conference itself for one day. Better hotel rates might be secured. However, if you three Wisconsin leaders agree that the night of the 3rd day should be spent at Sparta and will make suggestions for the rearrangement of the 3rd and 4th days accordingly, and if you see a way of accommodating so large a group at Sparta, these proposed changes also will be submitted to Wichita for decision.

Do I understand that you and Edwards are satisfied with alternative number three for the 4th day with stop six ~~and~~ at Mazomanie omitted? If so, does Thwaites concur?

May I still hope that definite proposals from Wisconsin will be received soon, so that the semi-final draft of the general itinerary promised in my letter of February 1, can be made up and sent out? This procedure need not cause you or the other Wisconsin leaders to write up finally the details of specific sections in advance of further work to be done this summer. Nor would it preclude the possibility of chaning the semi-final itinerary somewhat in the light of studies yet to be made. Such changes could represent the differences between the semi-final and final drafts of the itinerary.

Cordially yours,

A. C. Trowbridge

A. C. Trowbridge

ACT.L

March 20, 1934

Professor A. C. Trowbridge
University of Iowa
Iowa City, Iowa

Dear Professor Trowbridge:

My reactions to the proposed itinerary for the Kansas Geological Society are as follows:

I think that the speed that must be maintained for the trip is too great. It means that most of the time will have to be spent in driving. I think it would be much better if we could cut out some of the stops and spend more time at those that remain. For instance the time of forty minutes allotted to the study of Grandad's Bluff at La Crosse is too short. I am not altogether agreeable to spending two nights at La Crosse. Why can not we stop at Sparta and thus save that much duplication. I prefer alternative three for the fourth day and I see no need for stopping at Maromanie. The exposure is poor and it ought never to have been named as a type section.

I suppose it is expected that we should proceed with the preparation of the guide book but I do not wish to write a line on the ordovician until the close of the coming summer at which time I expect to have seem most of it as exposed in the Mississippi Valley.

Sincerely yours,

W. H. Twenhofel

WHT:DC

MILWAUKEE PUBLIC MUSEUM
MILWAUKEE, WISCONSIN
S. A. BARRETT, DIRECTOR

DEPARTMENT OF GEOLOGY
IRA EDWARDS, CURATOR

February
Twenty-six
1 9 3 4

Dr. W. H. Twenhofel,
Dept. of Geology,
University of Wisconsin,
Madison, Wisconsin.

Dear Dr. Twenhofel:

According to the suggestion of Dr. Trowbridge in his letter of the 24th, I am sending you a carbon copy of my letter to him suggesting certain points in connection with the trip of the Kansas Geological Society. There is also enclosed a carbon copy of his answer to me. If you think any of these suggestions have any merit I would be glad to have you and Thwaites endorse them. If not, it is all right with me, as I realize that the days which Trowbridge has proposed are already too full for comfort.

Am just beginning to recover from the effects of the Chicago convention. Have heard several comments on my Cambrian paper, the most important of which was a quite violent disagreement on all points coming from Resser. However, I am afraid that he will have to like it, for the fossils are certainly there even if inconvenient. Am looking forward to the publication of the paper of which you are co-author. It ought to clear up lots of troubles.

With best regards, I am,

Very truly yours,

Ira Edwards

Ira Edwards, Curator.

IE:B

February 24, 1934.

Dr. Ira Edwards,
Milwaukee Public Museum,
Milwaukee, Wisconsin.

Dear Dr. Edwards:

I am very glad to have received your letter of February 16th regarding the K.G.S. itinerary. It contains several items of importance which should be considered as the itinerary for Wisconsin goes into semi-final form. It was my hope, however, that you, Twenhofel, and Thwaites, as State Leaders, would get together and arriveat an itinerary for the Fourth Day and suggestions for revision of other Wisconsin routes, agreed upon among the three of you. Such suggestions have already been received from the other three states. No word has come so far from Twenhofel or Thwaites. If a conference to include you three State Leaders and any or all of the Assistant State Leaders cannot be held soon, either in Madison or Milwaukee, I suggest that you send a copy of your letter of the 16th and a copy of my reply to Twenhofel or Thwaites, so that they may have this material in making up the suggested changes for Wisconsin. To facilitate this, I am enclosing a carbon copy of this letter.

I note that you prefer my alternative No. 3 for the Fourth Day and that you are not strong for a stop at Mazomanie. Both these points are up to you Wisconsin men; whatever you and the others agree to recommend will be accepted and included in the forth-coming semi-final draft.

My reason for thinking that Ulrich includes the conglomerate in the Ableman Gorge in his Devils Lake formation is in his Wisconsin Academy paper, 1924, bottom of page 104 and top of page 105, quoted as follows: "This sandstone(The Devils Lake) attains a thickness of at least 100 feet and at many places includes - as in Parfrey Glen, east of Baraboo, and at the northern end of the gorge at Ableman - at its base and at various higher positions in the formations beds of almost perfectly rounded quartzite pebbles." If you know that Ulrich has changed his mind about this, we should of course not refer to these conglomerates as we do in the present draft of the itinerary. Personally I am convinced that this conglomerate is Franconia and believe Twenhofel, Thwaites, Raasch, and Wannamaker so consider it.

I have no objection to changing the Fifth Day so as to include a stop at the mouth of Roaring Creek, provided the change does not lengthen the day or cause the elimination of some other stop or route of greater or equal importance. You may recall that there is a somewhat similar Pleistocene situation, but on a larger scale, at Fulton, Ills., and at Durand and at Trempealeau, Wisc.

Your description of the Silver Bluff section is very interesting and I hope some way may be found of including it in the Sixth Day. However, similar lenses of quartzite occur in several

other localities and at other horizons in the Mt. Simon, Eau Claire and Galesville. For instance, they occur in the Mt. Simon-Eau Claire transition beds on Mt. Simon and in what I take to be Mt. Simon or possibly Eau Claire on the highway just north of Black River Falls.

I shall be glad if the case of piracy at Holtonburg schoolhouse can be worked into the Sixth Day without lengthening the trip too much or leaving out other important material.

As to the slab of Devonian limestone acrrying Atrypa hystrix, which you so kindly offer to send me for our museum, we shall certainly be glad to get it. If you will just ship it by freight collect to this department, attention Trowbridge, we will be greatly in your debt.

Please accept my apologies for the appearance of this letter. It is Saturday afternoon and I have had to pound it off myself.

Cordially yours,

A. C. Trowbridge.

P.S.- I want to thank you also for Ruedemann's paper on the Graptolitoidea which arrived some days ago. This is a valuable contribution on which both you and Ruedemann are to be congratulated.

February
Sixteen
1 9 3 4

Dr. A. C. Trowbridge,
University of Iowa,
Iowa City, Ia.

My dear Dr. Trowbridge:

Your letter of February 1st and the itinerary for the Geological Conference which was enclosed, has been read with much interest. I note particularly that you are now planning to go through the Black River Falls country and in that case, I would like to propose a slight change of route. I understand that we will be very hard-pressed for time and if you think these suggestions had best be omitted, I can assure you that there will be no hard feelings.

Suggestion 1 - Fourth Day.

I am rather inclined to believe that I would prefer alternative number three for this day's travel.. However, I do not think that the stop at Mazomanie is not particularly needed as the section there is none too good. Ulrich must have chosen that name because he was sure it would not be occupied, for almost any other exposures of the upper greensand would be better for a type section than the one at this village.

Suggestion 2.

In connection with stop 3 at the Abelman Gorge on the fifth day, I note that you term the conglomerate and sandstone overlying the pre-Cambrian as "Ulrich's Devils Lake Sandstone." I think those words should be stricken out of the finished itinerary. As I remember the case, when Dr. Ulrich and I worked over that section in 1920, we followed those beds westward along the railroad and came to the conclusion that the conglomerate in the Abelman gorge fitted in to some parts of the Franconia formation. Unless you know that he has changed his opinion since that time, I think we would be opening ourselves to criticism by him if we attempted to designate these beds as part of his Devils Lake.

Suggestion 3 - Fifth Day

I would suggest that instead of traveling from Sparta to Black River Falls over State Trunk Highway 27, that we make a slight detour, taking Highway 71 to Melrose and 54 into Black River Falls. By leaving the concrete for about two miles between Melrose and Irving, we would be able to visit the mouth of Roaring Creek. Here is one of the most interesting Mt. Simon exposures in that region

and a very interesting physiographic situation illustrative of stream action in the driftless area. In Pleistocene time, the valley of this stream, like all other draining into the Black River from the north, was filled with sand brought down from its headwaters. This filling accumulated to a depth of more than sixty feet. Apparently, the current of the Black River pushed the stream over to the south side of the valley and when the waters fell at the end of the ice age, the creek was compelled to cut a rock gorge, having been forced out of its old valley. The interesting thing is that the filled portion which the stream has vacated is scarcely a quarter of a mile in length, the whole thing can be seen in twenty minutes.

Suggestion 4 - Sixth Day.

On leaving Black River Falls I would suggest that we take Highway 27 to a corner south of Alma Center, then crossing on a gravel road to Highway 95 which we would follow to Alma Center and then north on county trunk F to join Highway 12 at Humbird. By so doing, we would be able to visit Silver Bluff and see the quartzite which composes it, a rock entirely unique in Wisconsin so far as I am aware. This quartzite is not produced by igneous or pressure metamorphism, being a lens inserted in the upper part of the Eau Claire formation. It is underlain by ordinary unchanged material and is now practically horizontal. Here they would be able to see the large gastropods Palaeacmea irgingi in its only known locality. The summit of the bluff is almost completely covered by pits dug by the Indians in extracting the quartzite for the manufacture of arrowheads and other implements. Hammer-stones are abundant. The whole thing would have to be presented as a geological puzzle, as there is no good explanation for the occurrence of this material so far as I know. This stop would take perhaps twenty minutes.

Suggestion 5.

On County Trunk F between Alma Center and Humbird we would pass a small gravel deposit at the Hontonburg schoolhouse. Here a stop of five minutes would enable us to explain the beheading of the Trempealeau River by Halls Creek, a branch of the Black, and Pleistocene course of the former stream. It is one of the most striking cases of stream piracy which occurs in Wisconsin and can be absolutely dated as post-Pleistocene.

If you find any of these suggestions worthwhile, I would be very glad to write up the description and make the drawings necessary to explain them to the group.

With kind personal regards, I remain,

Very truly yours,

Ira Edwards, Curator.

IE:B

DEPARTMENT OF GEOLOGY

GEORGE F. KAY
ARTHUR C. TROWBRIDGE
JOSEPH J. RUNNER
ALLEN C. TESTER
ARTHUR K. MILLER

THE STATE UNIVERSITY OF IOWA
IOWA CITY

February 1, 1934

Prof. F. T. Thwaites
Science Hall
University of Wisconsin
Madison, Wisconsin

Dear Thwaites:

Many thanks for your recent letter.

The reason for my delay in sending out this itinerary is that a preliminary copy that was sent to Wichita last November for consideration of the Committee on Arrangements was not returned until a few days ago. Since then I have had all I could do to get the revised draft ready to be sent out.

I do not have enough copies of the itinerary for both you and Twenhofel. Have sent a copy to Edwards, however. I hope that you and Twenhofel can use the same copy of the itinerary and the same covering letter.

Cordially yours,

Trowbridge

A. C. Trowbridge

ACT:A

Iowa City, Iowa
February 1, 1934

To the State Leaders of the
Ninth Annual Field Conference of the
Kansas Geological Society

Gentlemen:

The enclosed itinerary has been made up by complete revision of the mimeographed draft sent to the directors and leaders from Wichita under date of July 11, 1933, following considerable correspondence and conference with Dean Kay, Folger, and his committee, Stauffer, Thiel, Schwartz, Bean, Twenhofel, Thwaites, Edwards, Raasch, Leighton, Weller, Ekblaw, Workman, Lees, Tester, Marshall Kay, and others. Atwater and I went over most of the ground again in the field in July and August, 1933.

A "time table" of the Seventh Field Conference in the Ozarks prepared during this conference (one copy attached for each state), coupled with the fact that the average roads in the Ozarks are about equal to the slowest roads in the Upper Mississippi Valley, indicates that the trip for each day can be made according to the schedule as given in the itinerary. In case there are fifty cars or more in the procession these schedules may push us and special arrangements may have to be made with local police to speed us up in Minneapolis and St. Paul, and perhaps in Madison, Dubuque, Clinton, LaCrosse, etc. The time assigned to the average day's trip is considerably shorter than that for the average of previous field conferences.

The present itinerary has been approved by the Committee on Arrangements. Under date of January 18, 1934, Folger writes: "We have given it (the itinerary) our careful attention, and find that it conforms in every regard to our suggestions and agreements relative to number of hours, speed, length of stops, etc." It is hoped that it will be acceptable to the State Leaders essentially as it stands. Any changes that seem important to you should be referred to me promptly, and in any case by February 15th if possible.

Because practically every item in the itinerary for the FOURTH DAY, as given in the itinerary of July 11, 1933, has been questioned by one or another of the Wisconsin leaders and assistant leaders, three alternative schedules are now suggested for this day. It is hoped that the Wisconsin leaders will give this matter their immediate

attention and let me have, by February 15th if possible, a complete schedule for the FOURTH DAY. This schedule may consist of some one or some combination of the suggested alternatives or of a new schedule to be agreed upon by the Wisconsin leaders. Now that Ulrich has conceded, at least privately, that the Mendota is St. Lawrence, perhaps the trip around Lake Mendota can be eliminated.

Soon after February 15th when replies have been received from all four states, another draft of the general itinerary will be prepared. This should be the semi-final draft. The ~~semi-~~final draft, drawn up to include graphic sections and detailed statements concerning all stops, and with geological, historical, and cultural material added for the route between stops, will be the one to appear in the Guide Book. The semi-final draft of the itinerary will probably be mimeographed and sent to all associate directors, state leaders, and assistant state leaders. As soon as it becomes certain that a stop is to be made at a given place, pencilled copy for a graphic section at that place should be sent to me for reference to Wichita, if necessary data are in hand. If a given location has not already been sectioned, the place should be visited and the copy submitted as soon as possible.

It is expected that Dean Kay will soon propose a plan to the associate directors for gathering historical and cultural data, so that this work also may go forward as soon as the semi-final draft of the itinerary is ready.

A semi-final list of maps, profiles, etc. to be included in the Guide Book, and the names of the men to whom these projects have been assigned by the Committee on Arrangements, and a preliminary list of articles for the Guide Book will be sent out soon. Some of these projects are under way. Work on all of them should be pushed as rapidly as possible.

Hope is entertained that we are approaching agreement on uniform member and formation names for all four states. Most of you know of a classification tentatively proposed in a manuscript paper by Atwater and myself submitted for publication last spring. Another classification (for the Cambrian of Wisconsin) that differs somewhat from the Trowbridge-Atwater proposals, and with which we agree, was presented at Chicago by Twenhofel, Raasch, and Thwaites.

It is hoped that this or something near it will be acceptable in Minnesota and Illinois. Until these papers are published, however, (the Trowbridge-Atwater paper will appear in the February number of the G.S.A. Bulletin) we can hardly hope to reach complete agreement. In the present draft of the itinerary I have taken the liberty of using the Trowbridge-Atwater classification in the main. In the final draft, of course, such terms as are finally agreed upon will be used.

There is some reason for fear that postponement of our conference to 1935 may result in a general let-down now and a consequent rush near the end. One of the purposes for postponement was to give us more time, so that we could finally prepare a better conference than could have been held in 1934. If this purpose is to be fulfilled, we must keep moving steadily along with as little delay as possible.

Faithfully yours,

A. C. Trowbridge

A. C. Trowbridge

ACT:A
enc.

FIRST DAY

Iowa City to Dubuque - 200 miles

Length of stop		Miles
30 min.	Stop 1. - Iowa City - Upper part of Cedar Valley limestone overlain unconformably by Pennsylvanian sandstone and shale; drive through University campus	5
	Iowa City to Muscatine (Highways 6 paved and 38 gravel); Kansan drift, maturely eroded and covered with Peorian loess; Lake Calvin bottom and shoreline (Lake Calvin resulted from ponding of Mississippi, Cedar and Iowa rivers by the Illinoian glacier); Government Dam No. 16 probably under construction at Muscatine by 1934, footed on Pennsylvanian sandstone and shale and Cedar Valley limestone	42
	Muscatine to Linwood (Highway 61 paved); north bank of Mississippi River; pass State Fish Hatchery; pass Wyoming Hill and excellent road cuts in Pennsylvanian sandstone and shale; cross Sweetland Creek type locality of Sweetland Creek beds.	17
20 min.	Stop 2. - Linwood - Operating quarry and plant of U. S. Cement Co; middle and lower portions of Cedar Valley limestone.	
	Linwood to Davenport (Highway 61 paved); north bank of Mississippi River; exposures of Cedar Valley limestone.	11
15 min.	Stop 3. - Davenport - Pleistocene section to be detailed by Dean Kay	
	Davenport to Port Byron (Highway 80 paved); cross free bridge between lock and dam No 15; drive through Rock Island Arsenal grounds and city of Moline	11
10 min.	Stop 4. - south edge of Port Byron: old quarry, reef structure in Le Claire-Gower-Port Byron Silurian dolomite	
	Port Byron to Savanna (Highway 80 paved); leave late Pleistocene gorge of Mississippi River near Cordova; cross Meredosia Slough (early Pleistocene valley of Mississippi River?); on or near east bank of Mississippi River	37
20 min.	Stop 5. - Just north of Port Byron: Working quarry of U. S. Gypsum Co.; reef structure in Port Byron dolomite containing abundant and well preserved fossils chiefly corals.	

		Miles
20 min.	Stop 6. - Southeast edge of Savanna: Middle Maquoketa shale beds containing well preserved trilobites	
30 min.	Stop 7. - Mississippi Palisades State Park just north of Savanna: Maquoketa shale (Richmond), Edgewood cherty dolomite, Kankakee dolomite (Alexandrian), and Joliet dolomite and Waukesha dolomite (Niagaran) (See Savage)	4
	Savanna to Stockton (Highways 27 and 40 paved); drive into and out of Driftless Area?	32
20 min.	Stop 8. - about a mile south of Elmoville: Uppermost Galena (the Dubuque dolomite), "depauperate zone" at base of Maquoketa, and the lower portion of the Maquoketa shale.	
20 min.	Stop 9. - Resevoir Hill at Stockton: Old quarries in uppermost member of Maquoketa shale and dolomite (abundant and varied fossils), overlain by thin-bedded Alexandrian dolomite; view of west border of Illinoian drift sheet and east border of Driftless Area.	
	Stockton to Dubuque (Highway 20 paved); Typical Driftless Area country; deep road-cuts in Galena and Maquoketa formations	43
20 min.	Stop 10. - End of Terrapin Ridge in southeast edge of Elizabeth: interbedded dolomite and chert of Edgewood (Alexandrian) age in quarry, overlying upper beds of Maquoketa shale	
15 min.	Stop 11. - Point on Highway 20 near Galena yet to be selected; Type locality of Galena dolomite	
		202 miles

Time Table.

Start 7:00 A.M.	
*Driving time av. 33 mi. per hr.	6 hrs.
Lunch	1
11 stops average 20 min.	3 hrs. 40 min.
	10 hrs. 40 min.
Stop 5:40 P.M.	

*All excellent roads but some short jumps and some good-sized towns.

SECOND DAY

Dubuque to La Crosse - 160 miles

Winona

Length of stops		Miles
	Dubuque to Graff (Highways 20 paved and B dirt);	15
10 Min.	Stop 1 - West Dubuque: Type locality of the Dubuque dolomite.	
20 Min.	Stop 2 - Graff: Section of Lower Maquoketa containing large numbers of Orthoceras sociale.	
	Graff to Guttenberg (Highways B dirt and gravel and 55 paved); Rough country believed to have been covered by Nebraskan glacier but by no younger one; many exposures of Ordovician formations.	31
35 Min.	Stop 3 - Guttenberg: Type locality of the Guttenberg member of the Decorah shale; top of Platteville, all of Decorah, and lower beds of Galena; a long road cut.	
	Guttenberg to McGregor (Highways 55 paved and 18 paved); rough country; many roadside exposures.	31
20 Min.	Stop 4 - Drive to "McGregor Heights" for view of Mississippi and Wisconsin rivers.	2
	McGregor to Waukon (Highway 13 dirt and gravel); rough mature country; many roadside exposures.	30
	Waukon to Lansing (Highway 6 paved); mostly downhill	18
20 Min.	Stop 5 - Iron Hill just north of Waukon; Windrow gravel, Waukon iron ore and deserted iron smelter.	
30 Min.	Stop 6 - Near Church: Oneota, New Richmond, Shakopee, St. Peter, Platteville, Decorah and lower Galena along half a mile of road.	
20 Min.	Stop 7 - 6 miles west of Lansing: Diastem between Oneota and Shakopee with New Richmond sandstone in lenses and pockets between the two locally (Powers).	
30 Min.	Stop 8 - Firebell Hill in Lansing: Famous section including Franconia, St. Lawrence, Jordan, and Oneota.	

Length of stops		Miles
	Lansing to La Crosse (Highway 35 gravel); on east side of Mississippi River, mostly at foot of Wisconsin bluffs 500-600 feet high	31
55 Min.	Stop 9 - Victory: Ravine section of ~~Caledville~~?, Franconia, St. Lawrence, Jordan, and Oneota	
		158

Trempealeau

* Roads not so good as first day.

Time Table

Start at 7:30 A. M.	
*Driving time av. 32 mi. per hr.	5 hrs.
Lunch	1
9 stops av. 27 min. each	4
Stop at 5:30 P.M.	10 hrs.

Stop

Dresbach

Winona

THIRD DAY

La Crosse to La Crosse - 155 miles

Length of stop.		Miles
40 min.	Stop 1. Grandfather's Bluff in southeast edge of LaCrosse: Famous section in quarries and along quarry tramways of Galesville?, Franconia, Jordan and Oneota.	2
	La Crosse to Dresbach, Minn. (Highway 3 paved); Cross Mississippi River on free bridge; drive along foot of Minnesota bluffs 600 feet high.	9
30 min.	Stop 2. Dresbach: Type locality of Dresbach formation; section includes Eau Claire and Galesville? members of the Dresbach formation, the Franconia, St. Lawrence, Jordan, Oneota, and New Richmond formations or members; there is a zone of fossiliferous chert at the top of the Oneota.	
	Dresbach back to La Crosse (Highway 3 paved)	9
	La Crosse to Galesville (Highway 35 paved)	25
30 min.	Stop 3. Galesville, Wisc.: Type locality of the Galesville member; bluff section at mill includes Eau Claire sandstone and shale containing trilobite and brachiopod fauna, Galesville? sandstone, Ironton sandstone and the lower greensands of the Franconia.	
	Galesville to Trempealeau (Highways 35 and K gravel)	10
30 min.	Stop 4. State Park just north of Trempealeau: Type locality of the Trempealeau formation: bluff section includes Eau Claire, Galesville?, Ironton, Franconia, St. Lawrence, Jordan and Oneota; Trempealeau Mountain was cut off from the Minnesota side by Mississippi taking a course through a col in Late Wisconsin time, the pre-Wisconsin valley being east of the Mountain in Wisconsin. Government Dam No. 6 will be built across the post-Wisconsin gorge.	
	Trempealeau to Winona (Highways K gravel and 35 paved); road follows late Wisconsin terrace; some roadside exposures of Cambrian members; cross Mississippi on free bridge.	17
	Winona to Lewiston (Highway 7 paved)	14
30 min.	Stop 5. Stockton Hill: Wonderful roadside exposures of St. Lawrence, Jordan, and Oneota; Jordan filled with peculiar concretionary lenses of calcite; section to be detailed by Stauffer.	
	Lewiston to Lanesboro (County highways gravel); rough country, many good exposures.	28

Length of stop.		Miles
30 min.	Stop 6. Lanesboro: Excellent exposures of Jordan, Oneota, New Richmond (about 40 feet thick), and Shakopee.	
	Lanesboro to La Crosse (Highway 9 gravel and paved); mostly down valley of Root River.	43
30 min.	Stop 7. Hokah: Famous section in bluff of Root River, including Franconia, St. Lawrence, Jordan and Oneota.	

Duplication.

240 minutes 157 miles

Time Table

Start at 7:30 A.M.	
Driving time av. 31 m. per hr.	5 hrs.
Lunch	1 hr.
7 stops av. 34 min. each	4 hrs.
Stop at 5:30P.M.	10 hrs.

FOURTH DAY
La Crosse to Madison

Winona

Alternative No. 1: 186 miles.

Length of stop.		Miles
	La Crosse to Spring Green (Highway 11 gravel and paved); rough Driftless Area country; many Cambrian and Ordovician exposures.	100
20 min.	Stop 1. Liberty Pole: St. Peter, Glenwood, and Platteville; good collecting of Black River fossils in fresh quarry.	
20 min.	Stop 2. North of Richland Center: better exposure of same beds as occur at Mazomanie (Raasch)	

Specht's Ferry

Trempealeau, Madison, Oneota.

	Spring Green to Dodgeville (Highway 23 gravel); climb from Wisconsin River bottom to top of Military Ridge.	20
	Dodgeville to Mt. Horeby (Highway 18 gravel and paved); drive along Military Ridge, a cuesta that has figured in the problem of peneplanes; several exposures of Galena dolomite, on roadside.	21
10 min.	Stop 3. East of Dodgeville: Upper Receptaculites zone in "upper massive non-cherty member" of the Galena dolomite.	

Length of stop.		Miles
35 min.	Stop 4. West Blue Mound: drive almost to top of mound, a monadnock on the Dodgeville peneplane according to Trowbridge; see unusually chert blocks from Niagaran dolomite.	4
15 min.	Stop. 5. East Blue Mound: road cut showing Maquoketa shale and dolomite; view across Wisconsin valley to Barraboo ranges; quarry in Dubuque dolomite containing Lingula iowensis zone.	
	Mt. Horeb to Black Earth (Highway 78 gravel)	10
20 min.	Stop 6. Quarry about a mile northwest of Black Earth: Type locality of Black Earth dolomite; introduction to Mendota problem.	2
	Black Earth to Middleton (Highway 11 paved)	14
	From Middleton around north shore of Lake Mendota to Madison (Highways M and 113 paved but narrow and crooked)	15
omit 20 min.	Stop 7. Old quarry at Pheasant Branch: Mendota dolomite.	
20 min. omit	Stop 8. Railroad cut at Mendota: Type locality of Madison sandstone, also Mendota dolomite.	
20 min. omit.	Stop 9. Farwell Bluff, State Hospital or Maple Bluff: Type locality of Mendota dolomite, also upper Franconia beds.	

Quarries west of Madison; Madison type, Oneota

180 minutes - 3 hrs. 186 miles

Time Table

Start at 7:30 A.M.	
*Driving time av. 30 m. per hr.	6 hrs.
Lunch	1 hr.
9 stops av. 20 min each	3 hrs.
Stop at 5:30 P.M.	10 hrs.

*Roads not so bad; could probably average better time.

Alternative No. 2 - 210 miles.

	La Crosse to Viroqua (Highway 11 paved and gravel)	33
	Viroqua to Prairie du Chien (Highway 61 gravel); drive down the dip on ridge road that crosses from Prairie du Chien to Galena cuesta and has figured in the peneplan problem; exposures of Ordovician formations.	46
20 min.	Stop 1. Liberty Pole	
10 min.	Stop 2. Seneca: Best exposure in Wisconsin of Windrow gravel (Cretaceous? or Tertiary?)	

Length of stop.		Miles
	Prairie du Chien to Blue Mounds (Highway 18 gravel and paved); cross Wisconsin River at Bridgeport (see "Bridgeport terrace" and drift?), climb to Military Ridge, drive along Military Ridge through Dodgeville for which "Dodgeville peneplane" was named; exposures of formations including Jordan, Prairie du Chien (type locality), St. Peter, Glenwood, Platteville, and Galena.	75
	Blue Mounds to Mazomanie (Highways F gravel and 11 Black Top); from top of West Blue Mound at 1716' to Late Wisconsin terrace on Wisconsin River at about 700', crossing Silurian, Ordovician and Cambrian formations from Niagaran to Franconia.	17
30 min.	Stop 3. West Blue Mound:	3
20 min.	Stop 4. East Blue Mound:	
20 min.	Stop 5. Mazomanie: Type locality of Mazomanie sandstone (Ulrich), also St. Lawrence, Jordan, and Oneota.	
	Mazomanie to Middleton (Highway 11 paved); leave Driftless Area and enter Late Wisconsin outwash, terminal moraine and ground moraine.	21
20 min.	Stop 6. near Black Earth:	
	Middleton around Lake Mendota to Madison	15
20 min.	Stop 7. Pheasant Branch:	
20 min.	Stop 8. Mendota:	
20 min.	Stop 9. Farwell Bluff or etc.	
180 min. 3 hrs.		210 miles

Time Table

Start at 7:30 A.M.	
Driving time av. 35 m. per hr.	6 hrs.
Lunch	1 hr.
9 stops av. 20 min. ea.	3 hrs.
Stop at 5:30 P.M.	10 hrs.

Alternative No. 3 - 212 miles. WHT favors this adopted

	La Crosse to Viroqua via Coulee Lodge	33
	Viroqua to Seneca (Highway 61 gravel)	25
20 min.	Stop1. Liberty Pole	
10 min.	Stop 2. Seneca	

about Stop 1 - Coon valley Viroqua 56 Pole. Driftless ridge

Readstown

Boaz - CT & G Muscoda

Length of stop.		Miles
	Seneca to Fennimore via Mt. Sterling, Gays Mills, and Rolling Ground (County roads mostly gravel); cross Kickapoo and Wisconsin river valleys, get fine view of Kickapoo valley (important in connection with peneplane problems) from above Gays Mills; drive through largest orchard in Wisconsin (tower in middle of it gives fine view of orchard and of Driftless Area topography, if there is time to stop); many roadside rock exposures.	52
	Fennimore to Blue Mounds (Highway 18 gravel): Military Ridge through Dodgeville	45
10 min.	Stop 3. East of Montfort: Upper massive non-cherty member of Galena dolomite and Upper Receptaculites zone.	
30 min.	Stop 4. West Blue Mound:	4
	Blue Mounds to Mazomanie	17
10 min.	Stop 5. East Blue Mound:	
20 min.	Stop 6. Mazomanie:	
	Mazomanie to Middleton	21
20 min.	Stop 7. Black Earth	
	Middleton around Lake Mendota to Madison	15
20 min.	Stop 8. Pheasant Branch	
20 min.	Stop 9. Mendota:	
20 min.	Stop 10. Farwells Point or etc.	
	180 minutes 3 hrs.	213 miles

Time Table

Start at 7:30 A.M.	
Driving time av. 35 m. per hr.	6 hrs.
Lunch	1 hr.
10 stops av. 18 min. each	3 hrs.
Stop at 5:30 P.M.	10 hrs.

FIFTH DAY
Madison to Black River Falls - 173 miles.

Length of stop.		Miles.
	Madison to Devils Lake (Highway 12 paved); drive through University campus; enter Driftless Area; cross Wisconsin River at Sauk City; see Prairie du Sac power dam; see late Wisconsin outwash plain and terminal moraine both north and south of South Range; cross South Range.	42
25 min.	Stop 1. Woods (Cahoon) quarry and Skillets Creek Falls; Mendota dolomite and basal Franconia dolomite at falls.	
60 min.	Stop 2. North Shore Devils Lake: Climb trail to top of bluff; see Cambrian sandstone (type locality) of Devils Lake sandstone) lying unconformably on Baraboo quartzite (type locality); discuss origin and history of Devils Lake and of summit peneplane.	
	Devils Lake to Ableman, via Baraboo (Park road paved and highway 33 gravel); drive up synclinal valley of Baraboo River between north and south quartzite ranges; see bottom and shore of West Baraboo Glacial Lake.	10
60 min.	Stop 3. Ableman gorge; World famous gap through North Quartzite Rnage; sandstone and conglomerate of Franconia and Dresbach age (Ulrich's Devils Lake sandstone) lying almost horizontally on vertical quartzite; type locality of Ableman breccia; details of pre-Cambrian surface.	
	Ableman to Wisconsin Dells via Reedsburg (Highway 33 gravel and county roads gravel); bottom and shores of Glacial Lake Wisconsin; bluffs of Eau Claire sandstone, Galesville? sandstone, and Franconia sandstone.	21
120 min.	Stop 4. Wisconsin Dells: two-hour boat trip through Dells of the Wisconsin; lunch while on boats; service cars while on river; study origin and history of Dells, and systematically cross-bedded sandstone typical of the Eau Claire of eastern Wisconsin.	
	Wisconsin Dells to Mauston (Highway 12 paved); Glacial Lake Wisconsin; bluffs and castle-like hills of Eau Claire, Galesville? and Franconia.	24
25 min.	Stop 5. Point Bluff near Mauston: to be detailed by Raasch	
	Mauston to Sparta (Highway 71 gravel); rough topography; many exposures.	50
25 min.	Stop 6. Goodenough Hill: An excellent section of eastern facies of ~~Franconia and Mazomanie~~ and Trempealeau	
25 min.	Stop 7. Hill north of Norwalk: Type locality of Norwalk sandstone, also good exposures of Lodi and ~~Black Earth.~~	
	Sparta to Black River Falls (Highway 27 gravel)	28

340 minutes 5 hrs. 40 min. 173 miles

Time Table

Start at 7:00 A.M.	
Driving time average 30 m. per hr.	5 hrs. 20 min.
7 stops including lunch stop av. 49 min.	5 hrs. 40 min.
Stop at 6:00 P.M.	11 hrs.

Notes:

1. Should be able to make better time than this; if so, can increase length of some of the stops.

2. An 11-hour day but not a particularly hard one; it contains some rest and recreation and a small number of long stops.

3. If there is a large group it will be difficult and perhaps impossible to arrange for night accommodations at Black River Falls. The Committee on Arrangements in Wichita gave special attention to this point and advised that the itinerary be planned as it is. Other arrangements can be made at the last minute, if necessary.

SIXTH DAY

Black River Falls to Minneapolis – 222 miles

Or La Crosse if party is too large to stay overnight at Black River Falls.

~~Alternative No. 1 – 225 miles.~~

Length of stop.		Miles
	See Edwards.	
15 min.	Stop 1. Black River Falls: Pre-Cambrian crystalline rocks overlain by Mt. Simon and Eau Claire sandstone.	
	Black River Falls to Eau Claire (Highway 12 paved); "Wisconsin lowland" with abrupt erosion remnants standing above it; late Wisconsin terraces on Chippewa River.	65
25 min.	Stop 2. Mt. Washington in Eau Claire: Type locality of Eau Claire sandstone and shale; abundant fossils; old quarries.	2
20 min.	Stop 3. Mt. Simon in Eau Claire: Type locality of Mt. Simon sandstone (better exposures just across river from Mt. Simon and upstream from paper mill).	2
	Eau Claire to Chippewa Falls (Highway 53 paved)	10
20 min.	Stop 4. Chippewa Falls: Pre-Cambrian granite at power dam and Mt. Simon sandstone unconformable on weathered granite in city park.	
	Chippewa Falls to Menomonie (Highways 29 gravel and 12 paved).	27
	Menomonie to Ellsworth (Highways 25 and 72 gravel); rather rough country; many exposures, especially good one of unconformity within Franconia just south of Menomonie.	45
20 min.	Stop 5. a mile south of Waverly: Mt. Simon faulted against Franconia; beds vertical; siliceous pebbles in coarse Mt. Simon conglomerate breddiated.	
20 min.	Stop 6. Ellsworth: St. Peter, Glenwood, Platteville, Decorah; excellent Decorah section.	
	Ellsworth to Red Wing (Highway 46 gravel); cross Mississippi on free bridge at Red Wing.	15
30 min.	Stop 7. Red Wing: excellent section on railroad and steps up bluff, including Franconia, St. Lawrence, Jordan and Oneota, two or more beds of conglomerate; fault in valley between Barn Bluff and main bluff.	
	Red Wing to Minneapolis (Highway 3 paved); cross Mississippi on free bridge at Hastings; drive through St. Paul.	59
30 min.	Stop 8. Hastings: excellent exposure of Prairie du Chien dolomite in gorge of Vermillion River; Oneota-Shakopee contact or transition without New Richmond sandstone between; historic old mill and modern mill operating; State Insane Asylum	225 m.

180 min. 3 hrs.

Time Table

Start at 7:00 A.M.	
*Driving time average 34 m. per hr.	6½ hrs.
Lunch	1 hr.
8 stops average 22 min.	3 hrs.
Stop at 5:30 P.M.	10½ hrs.

Notes:
*Driving time estimated on basis of average of 35 miles per hour in general and 20 miles per hour through St. Paul and Minneapolis. Roads mostly very good.

SEVENTH DAY
Minneapolis to Minneapolis - 216 miles

Length of stop.		Miles
	Minneapolis to Shakopee (Highway 5 paved)	18
20 min.	Stop 1. Shakopee: Type locality of Shakopee dolomite; discussion of Shakopee problem.	
	Shakopee to Jordan (Highway 5 paved); southwest up valley of Minnesota River.	11
20 min.	Stop 2. Jordan: Type locality of Jordan sandstone, also Jordan-St. Lawrence contact in bed of Sand Creek.	
	Jordan to Old St. Lawrence (country road dirt)	3
20 min.	Stop 3. Old St. Lawrence: Type locality of St. Lawrence dolomite, also uppermost beds of Franconia? Lodi beds occur but are not exposed between St. Lawrence and Jordan.	
	Old St. Lawrence to Ottawa (Country road dirt, Highway 5 paved, and more country road dirt)	30
25 min.	Stop 4. Ottawa: Jordan "white rock", younger silt and clay, and basal Oneota.	
	Ottawa to Mankato (Country road dirt and Highway 5 paved); exposures on highway at St. Peter of silt and clay squeezed up into solution openings in Oneota dolomite.	14
25 min.	Stop 5. Kasota: working quarries and mills making interior decorating stone from Oneota dolomite, also upper part of Jordan sandstone.	
25 min.	Stop 6. Northeast edge of Mankato: working quarry exposing upper beds of Jordan, all of the Oneota, 2' of New Richmond and 5' of Shakopee dolomite.	
25 min.	Stop 7. On Highway 5 in west edge of Mankato: Recent road cut exposing pre-Oneota silt and clay squeezed up into solution crevices in Oneota dolomite; an excellent exposure.	?
	Mankato to New Ulm (Highway 14 gravel); old quarry in St. Lawrence dolomite at Judson and one exposure of the St. Lawrence-Franconia contact on roadside; Dresbach formation and Red Clastic series are overlapped or at least not exposed between Mankato and New Ulm.	28
50 min.	At and near New Ulm; Type locality of New Ulm quartzite, also pre-Cambrian granite and conglomerate and Cretaceous shale and sandstone.	5
	New Ulm to Minneapolis (Highways 15, 14, 22, 12 and 5 all paved); glaciated country, no stops.	107
210 min.	3½ hrs.	216 miles

Time Table

Start at 7:30 A. M.	
*Driving time average 39 mi. per hr.	5½ hrs.
Lunch	1 hr.
8 stops average 24 min.	3½ hrs.
Stop at 5:30 P. M.	10 hrs.

*Can probably average so much because roads are good and there is the one long continuous jump.

EIGHTH DAY
Minneapolis to Duluth - 230 miles

Length of stop		Miles
	Minneapolis to Fort Snelling (City streets and Highway 52 paved); Drive through University of Minnesota campus	7
20 min.	Stop 1. Fort Snelling: Type locality of St. Peter sandstone; section includes Prairie du Chien dolomite in footings of Mendota bridge, and St. Peter, Glenwood, and Platteville at both bridge ends.	
	Fort Snelling to West St. Paul (City streets mostly)	3
30 min.	Stop 2. West St. Paul: Platteville, Decorah, and Galena well exposed in working brick and tile plant; 90 feet of highly fossiliferous shale.	
	West St. Paul to Hudson (City streets and Highway 12 paved)	22
20 min.	Stop 3. Hudson: Section in South Hudson on highway and road to tourist park, including Galesville?, lower greensand member, middle fossiliferous sandstone member (Hudson trilobite bed? of Wooster) and upper greensand member of Franconia and lower beds of St. Lawrence; practically complete exposed section of Franconia.	
	Hudson to Stillwater (Highway 35 gravel); cross St. Croix river on free bridge.	10
30 min.	Stop 4. Stillwater: Famous section interpreted by Ulrich as follows:	

Upper Canadian	
Shakopee dolomite	50'
Upper Ozarkian	
Oneota dolomite	60'
Upper Cambrian	
Jordan sandstone	50'
Trempealeau formation	
Norwalk sandstone	50'
Lodi shale	

Clement and Trowbridge interpret the same section as follows:

Lower Ordovician	
Shakopee dolomite	10'
New Richmond dolomite	5'
Oneota dolomite	113'
Upper Cambrian	
Jordan sandstone	100'
Lodi shale	

There is also a famous old well here which has been variously interpreted.

Stillwater to Osceola (Highway 35 gravel); recross St. Croix River on new free bridge 25

30 min. Stop 5. Osceola: Famous section including Franconia, St. Lawrence, Jordan and Oneota; new road cut shows unconformable relations between Oneota and Jordan.

Osceola to Taylors Falls (Highway 35 gravel); working quarries in Keweenawan trap at Dresser. 12

30 min. Stop 6. Taylors Falls: Giant potholes, Keweenawan trap and overlying Dresbach and Franconia conglomerates and sandstone; excellent exposures on new scenic highway.

Taylors Falls to Franconia (Highway 46 paved and country road gravel) 5

20 min. Stop 7. Franconia: Type locality of Franconia formation; section includes Keweenawan trap, 5' of Galesville? sandstone, Franconia sandstone and glacial drift. Franconia here differs somewhat lithologically and faunally from Franconia elsewhere.

Franconia to Sandstone (Country road gravel and highways 46 and 1 paved); glaciated country almost flat. 77

?? Stop 8. ? ? ? Hinckley: Type locality of Hinckley sandstone; poor if any exposure; potholes?

30 min. Stop 8. Sandstone: Excellent exposures of Hinckley sandstone in working quarries; southeasterly dip.

Sandstone to Duluth: (Highway 1 paved); pre-Cambrian slates and igneous rocks overlain by Hinckley sandstone, mostly covered by glacial drift; almost flat except near Duluth. 68

30 min. Stop 9. Carlton: Type locality of Carlton slates; pre-Cambrian; complicated structure; correlation not entirely agreed upon.

240 min. = 4 hrs. 229 miles

Time Table

Start at 7:00 A. M.	
*Driving time av. 38 mi. per hr.	6 hrs.
Lunch	1 hr.
9 stops av. 26 min.	4 hrs.
Stop at 6:00 P. M.	11 hrs.

Notes:

Stops at Manitou and Amnicon Falls which have been under consideration are left for ALTERNATIVE POST-CONFERENCE DAY NO. 2 to be scheduled by Thwaites.

*Can probably drive so fast, mostly flat country, good roads, several long jumps.

POST-CONFERENCE DAY.

ALTERNATIVE NO. 1.
Duluth to Duluth

As given on Page 11 of mimeographed itinerary dated July 11, 1933 or as this itinerary is modified by Stauffer; see Mesabi and Vermilion Ranges, and North Shore of Lake Superior.

ALTERNATIVE NO. 2.
Duluth east as far as Montreal River

Itinerary to be prepared by Thwaites; see Gogebic Range and South Shore of Lake Superior; Thwaites should consider working in stops at Manitou Falls and Amnicon Falls omitted from EIGHTH DAY.

Note:
It would be understood that those who elect to stay for a POST-CONFERENCE DAY would have entire freedom of choice between these two alternatives.

TIME TABLE FOR SEVENTH FIELD CONFERENCE
OF THE KANSAS GEOLOGICAL SOCIETY
IN THE OZARK REGION OF MISSOURI, ARKANSAS AND OKLAHOMA

1ST DAY - TOTAL DISTANCE 240 miles

No.	Miles	Time	Rate	Roads - Condition	Length of stop	Nature of stop
0-1	6.75	20	20.2	Good but mostly in city		
1					12	8' of beds in one formation
1-2	5.25	12	26.25	Raining on wet pavement & wet gravel. Soft shoulders		
2					20	
2-3	10.90	21	31	"		
3					15	
3-4	1.60	2	48	"		
4					20	37' of beds in one formation
4-5	34.40	67	31	"		
5					31	30' exposure of 4 formations
5-6	4.10	10	24.6	"		
6					8	Small exposure of 1 formation
6-7	2.80	6	28	"		
7					7	8½' two formations
7-8	6.15	10	36.9	"		
8					7	Road cut - two formations
8-9	13.95	33	25.3	"		
9					60	Lunch
9-10	20.10	32	37.7	"		
10				Mostly after dark	18	60' bed of 1 formation. Type locality
10-11	0.85	3	17	"		
11					11	Small exposure on highway

No.	Miles	Time	Rate	Roads - Condition	Length of stop	Nature of stop
11-12-13-14	54.15	195		Muddy roads necessitating pushing of car	Three long stops	
12,13, 14	Data Missing					
14-15	79.75	135	35.4	Wet gravel and slick pavement. Heavy traffic	10 stops Driving Driving and 3 stops. Lunch	145 min. 347 " 196 " 60 "
				Average speed - 31 m. per hr. Average length of stops - 19 minutes	7:30-8:05	748
				Total stopping time - ? Total driving time - ?	TOTAL TIME:	12 hrs. 35 min.

2ND DAY - TOTAL DISTANCE 230.4 miles

No.	Miles	Time	Rate	Roads - Condition	Length of stop	Nature of stop
0-1	2.70	8	20	Mostly city streets Heavy traffic		
1					19 (5 stop & start)	Pine clay pit.
1-2	37.85	59	38.5	Rough gravel		
2					54	Cavern
2-3	38.15	60	38.1	Rather rough gravel		
3					13 (4 stop & start)	Fault zone
3-4	29.50	45	41.1	Loose rough gravel		
4					7	Abandoned open pit iron mine
4-5	10.30	16	38.6	Poor gravel and black top		
5					9	Small exposure
5-6	20.30	32	38.0	Rough, wet, narrow hilly, gravel		
6					60	Sink and lunch

No.	Miles	Time	Rate	Roads - Condition	Length of stop	Nature of stop
6-7	10.75	20	32.2	Rough, wet. narrow, hilly gravel		
7					29	General view discussion of peneplanes.
7-8	3.85	13	18.5	Crawl in mud part of way		
8					15	Old copper mine and Pre-Cambrian Paleozoic contact
8-9	3.10	11	16.9	Muddy roads		
9					54	Several exposures in hills and ravines in timber
9-10	3.80	15	15.2	Crawl in mud		
10					11	Pre-Cambrian contact
10-11	16.70	27	37.1	Good except at start		
11					20	Drinks
11-end	53.40	82	39.0	Fair, crooked, hilly, gravel		

Average speed on roads - 35.8 miles per hr.
Average length of stops - 26.5 minutes
7:17-6:35
Total driving time - 6 hrs. 26 minutes
Total time at stops - 4 hrs. 51 minutes
TOTAL TIME: 11 hrs. 18 min.

3RD DAY - TOTAL DISTANCE 158.5 miles

No.	Miles	Time	Rate	Roads - Condition	Length of stop	Nature of stop
6-1	51.9	81	38.4	Very bad		
1					25	400' of beds in a fault zone
1-2	1.7	4	25.5	Bad		
2					18	2 formations in road cut
2-3	4.4	16	16.5	Bad		

No.	Miles	Time	Rate	Roads - Condition	Length of stop	Nature of stop
3					9	Contact 2 formations
3-4	2.1	6	21.0	Bad		
4					11	Small exposure on road. 1 formation
4-5	1.2	3	24.0	Bad		
5					21	Road section 3 formations
5-6	.3	1	18.0	Bad		
6					7	Road cut 1 formation
6-ferry	6.8	16	25.5	Very bad		
Ferry					44	Ferry crossing
Ferry to lunch	6.4	18	21.2	Bad		
Lunch					75	Lunch stop
Lunch-7	17.2	49	21.4	Rough mountain gravel road		
7					26	Creek bed
7 to ferry	19.9	73	16.3	Very bad		
Ferry					55	Ferry crossing
Ferry to 8	1.4	7	12.0	Awful		
8					3	Small exposure
8-9	12.3	17	43.4	Better		
9					7	Small exposure
9 to night stop	32.9	66	29.9	Fair		

Average speed - 26.6 miles per hr.
Average stop - 14.1 minutes, not counting ferries and lunch
Total driving time - 357 minutes
Total stop time - 127 minutes
Ferries - 99 minutes
Lunch - 75 minutes

TOTAL TIME: 10 hrs. 58 min.

4TH DAY - TOTAL DISTANCE 161.0 miles

No.	Miles	Time	Rate	Roads - Condition	Length of stop	Nature of stop
0-1	6.2	10	37.2	Good		
1					17 (7 stop and start)	30' one formation
1-2	31.6	51	37.1	Rough gravel & black top		
2					12	Small exposure
2-3	10.0	29	20.7	Worked bad roads, stops because of mud, gear shifts		
3					15	Small exposure
3-4	3.5	10	21.0	Crooked, mountainous		
4					10	General view
4-5	45.7	74	37.0	Mountainous, crooked, men working in places, some good slab.		
5					45	
5-lunch	3.2	14	13.7	Crawl in traffic		
Lunch					63	
Lunch-6	11.9	25	28.5	Rough gravel		
6					20	
6-7	8.5	20	25.3	Rough, dusty gravel		
7					11	Road cut
Stop for water					8	
7-8	3.9	27	8.6	Very rough & narrow; several bad fords		
8					9	
8-9-10	6.1	12	30.5			
9					6	
10					20	

Average speed - 27.8 miles per hr.
Average stop - 16.5 minutes
Total driving time - 347 minutes
Total stop time - 165 minutes
Lunch - 63 minutes
Stop for water - 8 minutes
Total - 583

TOTAL TIME: 9 hrs. 43 min.
7:22-6:10

5TH DAY - TOTAL DISTANCE 146.4 miles

No.	Miles	Time	Rate	Roads - Condition	Length of stop	Nature of stop
0-1	49.9	86	34.8	Poor gravel, several bad spots		
Stop for flat tire on lead car					15	
1					45	Important contact
1-2	36.0	88	24.8	Hilly, crooked, narrow, gravel		
Ford					13	
2					16	
2-3	4.6	8	34.5	"		
3					15	50' bluff 2 formations
3-4	1.0	3	20	"		
4					20	70' bluff
4-lunch	37.4	44	81.0	"		
Lunch					115	
Flat tire					15	
Lunch-5	17.5	20	52.5	"		

Average speed - 35.3 miles per hr.
Average stop - 22 minutes
Total driving time - 249 minutes
Total scheduled stops 88
Lunch - 115
Forks - 13
Flat tires - 30
495 minutes

TOTAL TIME: 8 hrs. 15 min.

COPY

THE STATE UNIVERSITY OF IOWA
IOWA CITY

November 22, 1933

Mr. Ernest F. Bean
Geological and Natural History Survey
Madison, Wisconsin

My dear Bean:

The decision has been reached that the Upper Mississippi Valley Field Conference of the Kansas Geological Society should be held in 1935 instead of 1934. This judgment is based upon a deliberate and critical study of all important factors by the Field Conference Committee of the Society, by Professor Trowbridge, the Conference Leader, and by myself.

As you can well understand, we were influenced largely by the general uncertain economic conditions. We were fearful that after the leaders in each of the four states had fully completed all plans for the 1934 Conference the attendance might be disappointing. On the other hand, we were sure that all the leaders would welcome the additional time to prepare for the Conference in 1935. During this winter and spring regional maps and other material can be prepared, and the summer of 1934 can be used profitably in completing any field work essential to a successful conference in 1935. Your State Leaders will hear soon from Doctor Trowbridge regarding these matters.

Please furnish the information contained in this letter to all the conference leaders of your state. The list includes Twenhofel, Thwaites, Edwards, Raasch, Shrock, Bretz, and Atwater. Express to them the thanks of Folger, Trowbridge, and myself for the splendid work which they have already done.

Yours sincerely

(Signed) G.F. Kay

GFK LCA

DEPARTMENT OF GEOLOGY

GEORGE F. KAY
ARTHUR C. TROWBRIDGE
JOSEPH J. RUNNER
ALLEN C. TESTER
ARTHUR K. MILLER

THE STATE UNIVERSITY OF IOWA
IOWA CITY

September 9, 1933

Dr. F. T. Thwaites
University of Wisconsin
Madison, Wisconsin

Dear Thwaites:

The inclosed letter to the State Leaders is self-explanatory. I passed on to the committee your suggestion that the Conference be postponed, and this was considered very carefully. It was finally decided that postponement of the Conference for a year of two would be preferable to reducing the length of the trip or the length or content of the guidebook and that we would go ahead in expectation of having the Conference next year until after the returns from the first announcement are in in February or March next. The committee thinks they will have a basis for judgment at about that time concerning whether the trip should be postponed or not. On the whole they are quite optimistic and believe that the Conference can go ahead in 1934 about as planned.

I also told the committee that in case the Conference was to be held in 1934 and the guidebook was to be ambitious as originally planned, the Wisconsin log and possibly some of the other materials from Wisconson could hardly be gotten ready before July one. This was agreed to by them. They will let us know in February or March whether to go ahead or not. If we are to go ahead, it is understood that you Wisconsin people are to get in as much of the material as you can as early as you can, but that it will be all right if the final log is not submitted before July first. This will give you more time; at least it will not be necessary for the logging in Wisconsin to be done during the next two weeks.

Cordially yours,

Trowbridge

A. C. Trowbridge

ACT:A

September 9, 1933

State Leaders for the
Eighth Field Conference

Gentlemen:

Having just returned from the Seventh Field Conference and from an all-day conference with the Kansas Geological Society Committee on the Eighth Field Conference, I hasten to report on decisions of the greatest immediacy. A letter will follow covering items which are not of such immediate importance. The letter to follow will be accompanied by a new general itinerary, revised in the light of our conferences of this summer and of decisions of the committee.

The length and content of the guidebook and possibly the length of the trip itself will depend on the number of guidebooks that can with reasonable certainty be sold, the price of the guidebook, and the number of persons who can be counted upon to attend the Conference. All these things depend largely on the economic conditions of the coming year. Considering these things, the committee has authorized us to delay further actual logging of the route and actual preparation of material for the guidebook until sometime in the late winter after preliminary announcements have been sent out and there is some basis for judgment concerning the number of people who can be expected to be interested in the Conference. This means that if you have been planning to work on this Conference during the next two or three weeks before the universities open, it will be well not to do so. This delay may cause trouble next spring, but under all the circumstances it seems unwise for us to do work now that might ultimately not be required.

I have clocked the Seventh Conference completely and now am in better position to judge of mileages, stops, and time schedules of the several days of our Conference. The first day of the Seventh Conference included 244 miles of driving and 17 stops. It was scheduled for seven to six-thirty, but four stops had to be omitted and then we were on the road for twelve and one-half hours.

Cordially yours,

Trowbridge

A. C. Trowbridge

AKT:A

September 1, 1933

State Leaders for the
Eighth Field Conference

Gentlemen:

As most or all of you know, I had intended to get out still another draft of the general itinerary after having seen each of you this summer and to put this new draft into your hands about this time. I am sorry to say now that several questions have arisen concerning the time to be allotted to the different states, and that some of these questions will have to go to the Executive Committee of the Conference for decision. I expect to be in Wichita on the seventh and eighth of September and will present these questions for decision at that time. As soon as possible after my visit to Wichita I will send to each of you an itinerary revised according to your own suggestions, as given to me this summer, and according to decisions of the committee yet to be arrived at.

I am sorry that this matter has to be so delayed, for I realize that some of you are anxious to start logging the route and preparing material for the guide-book. I assure you that the delay will not be continued longer than absolutely necessary.

I feel that considerable progress has been made during the last few months, not only in the science of stratigraphy in the Upper Mississippi Valley, but also in the necessary preparatory work for the Field Conference. We seem to be agreed quite generally in regard to the facts and to be approaching agreement on the classification and nomenclature.

I know that each of you will understand that you have both authority and responsibility for deciding the route to be followed, the stops to be made, and the material to be included in the guidebook for your own state; and that the revised itinerary, when it reaches you, will merely give you information concerning the time to be devoted to your state and the time or times of entering and leaving the state, together with suggestions, most of which are your own, concerning the stops to be made.

Cordially yours,

A. C. Trowbridge

A. C. Trowbridge

ACT:A

SUGGESTIONS AND INSTRUCTIONS FOR THE PREPARATION OF THE ROAD LOG OF THE EIGHTH ANNUAL FIELD CONFERENCE OF THE KANSAS GEOLOGICAL SOCIETY

Prepared by Anthony Folger
with the help and suggestions of the
Committee on Arrangements

Wichita, Kansas

July 31, 1933

TABLE OF CONTENTS

SUGGESTIONS AND INSTRUCTIONS FOR THE PREPARATION OF THE ROAD LOG OF THE EIGHTH ANNUAL FIELD CONFERENCE of the KANSAS GEOLOGICAL SOCIETY

Since no one of you gentlemen comprising the Leadership of this Eighth Field Conference has prepared heretofore a road log for this Society, the Arrangements Committee takes the liberty of tramsmitting the following detailed statement relative to the material that should be included in the text. The following remarks are the result of a six year study. Each successive Guide Book has shown marked improvement over that proceeding. Your careful attention and close adherence to the suggestions contained herein will result in a Guide Book far superior to all others. Such, I think, should be our mutual desire.

In writing the text of a road log the guiding principles should be, first, that the participant knows nothing concerning the geology of the area; second, that it be (in all ways) readily understandable to a geologist - not a participant of this conference - but one following the itinerary alone at some subsequent date. It should be our aim that such a geologist may inspect the stratigraphic units of any stop and derive as much benefit therefrom through the reading of the text, as if he were an actual participant. To accomplish this, detailed description and detailed discussion, supplemented by graphic sections, diagrams and photographs, become essential prerequisites. Space is but small consideration.

The Leadership is requested to specialize on all types of illustrations, such as diagrams, sketches, local and regional cross sections, local contour maps, local areal geologic maps, and photographs - all of which may be reduced to page size or less than page size. Too many illustrations cannot be supplied. The system of lithoprinting used in the Guide Book makes it unusually convenient to reproduce published illustrations (with due acknowledgement) and unpublished material. A multitude of illustrations are undoubtly in the files of your State Surveys and we trust you will accord this Society the privilege of reproducing such of these as will add to the value of the Guide Book. Please remember that all illustrations, excepting the reproduction of plates and figures in printed publications, need be forwarded to Wichita either in clear penciled form, or roughly inked and lettered. All illustrations prepared by the Leadership will be drafted in final form by the Society draftsman.

Finally, we request that particular attention be paid to a full and interestingly prepared description of all historical and cultural points of interest along the conference route. Such descriptions lend local color to the Guide Book and are highly appreciated by the participants. Presumably it will not be much of a task for the Leadership to procure the necessary details permitting an adequate

description of cultural features, but the data for historical features may not be as easily available. It is suggested that the Leadership make a list of all such historical features along the conference route, dealing with the early history of your respective States, and hand this list to your Associate Director. He, in turn, should request some member of the Department of History at your State University, or some other well informed authority, to assemble in an interesting style, the facts relative to these historical features for incorporation in the text of the Road Log.

The material composing the Road Log of the four States should be standardized as far as possible. Much of the standardization in form and typographic details will be handled in Wichita by L. W. Kesler, Editor of the Guide Book. But the Leadership should attempt to furnish the same essential details for all stops and other points of geologic interest, should similar details be available. Moreover, it might be preferable that the data for each stop be assembled and written in similar consecutive order. Possibly an outline of desirable information to be obtained at each stop, with such data arranged in a logical and convenient order, could be prepared by Professor Trowbridge and transmitted to the State Leaders. In this regard it would be advantageous if each subject discussed, under the description of a stop, were prefaced by a short heading (written in capital letters, underlined) permitting the reader to find with rapidity the exact type of data desired on any stop.

A. INTRODUCTORY GEOLOGIC REMARKS FOR THE DAY :- Previously, it has been our custom for a certain part of each evening meeting to be given over to a discussion by the Leadership of the next day's problems and an outline of what will be observed. The Eighth Conference will omit this feature of the evening program because it requires too long a meeting, and, many of the important facts discussed are soon forgotten. In place of this, the Leadership is requested to prepare a detailed written resume of the important geologic features to be observed each day and the problems incident to each day's travel. This written text will be placed in the Guide Book at the beginning of each day's Road Log. It might well be supplemented with diagrams. This portion of the text may necessitate one to two pages, and may be as much longer as you deem necessary.

B. DESIRED INFORMATION AT EACH STOP

1. Numbering:- All stops are to be numbered consecutively starting with Stop 1. Do not start each day's itinerary with Stop 1, but begin each day with the next number following the number of the last Stop of the preceeding day.

2. Questionable Stops:- The Leadership of previous conferences have generally selected a number of Stops along the route of travel at which a Stop was made if time permitted. Such stops were unnumbered, and their position within the Road Log usually was not indicated. Frequently, this custom resulted in confusion in numbering samples, in locating the stop for future reference, and, because of the crowded text of the last two Guide Books, no space was available for inserting facts relative to the stratigraphy of such stops.

To prevent similar confusion this year, if the Leadership desires to include such tentative stops in the itinerary, kindly designate these stops with a LETTER (i.e. if it occurs between Stop 12 and Stop 13 - designate it as Stop 12A) and include the same detailed data as if it were a regularly scheduled stop.

It is preferable to insert these tentative stops in the itinerary, even if an actual stop at some of them is not made. It adds to the value of the Guide Book as a reference text, and also, this added information will be appreciated by those geologists using the Guide Book when visiting the area at some subsequent date.

3. Time of Arrival and Departure:- In the 2nd, 3rd, and 4th Annual Guide Books, the actual time of arrival and departure at each stop was included in the text, such as Stop 10 - Arrive 10:54 - Depart 11:24 (allowing 10 minutes for the cars to come up into line and 20 minutes for the discussion and inspection of that stop). On the 5th Conference only the length of time at a stop was given; i.e., Stop 10 - 15 minutes. No time factor at all was used on the Sixth Conference. The time factor was employed most successfully on the Third Conference by Runner and Coffin. Despite the added burden to the Leadership by including detailed time information, past experience has shown that the careful working out and successful maintenance of a timed schedule raises the morale of the participants who soon appreciate and enjoy the fact that the conference is being run according to a strict time schedule. Car drivers soon become anxious to bring their cars in to a stop on time, and the passenger-participants check up on the printed time schedule with interest.

Therefore, on this Conference the Leadership is requested to include a detailed time schedule as follows:-

A. Stop 10 - Arrive 9:39 (The time designated is the time of arrival of the Lead car only.)

B. - Depart 10:02 (Based on 10 minutes for stopping time, plus a 13 minute stop. For time of departure at any stop, add 10 minutes to the actual length of that stop.)

C. Intermediate Time Schedule - When a considerable number of miles separate two scheduled stops, it will be desirable to insert the time at which a number of indermediate points are reached. This is especially valuable in helping the Lead car to maintain its schedule. For instance, should there be no scheduled stop between LaCrosse and Chippewa Falls (not a true fact; simply an illustration) show time as follows:-

Stop 10. 0.0 LaCrosse - Depart 9:30
25.0 Sparta - Arrive city limits - 10:06
50.0 Black River Falls - Arrive city limits - 10:45
75.0 Fairchild - Arrive city limits - 11:45
105.0 Eau Claire - " " " - 12:00
Stop 11. 115.0 Chippewa Falls - Arrive 12:14

Intermediate time schedules need not necessarily be inserted only at towns. A prominent and easily recognizable cultural feature, such as a long highway bridge, the junction of two important highways, etc. serve admirably for this purpose. As many time notations as the Leadership desires, may be included. Especially important is a time notation placed 15 minutes before the next scheduled stop to aid the Lead car to arrive on time.

Remember that time notations refer only to the Lead Car

4. Location of Stop

A. Give the exact location of a stop by Section, Township and Range. Thus, Stop 10 - SW¼ S.25; T.30N; R.25E; or preferably in such detail as SE corner SW¼ S.25; T.30N; R.25E; This data is requested so that whem samples collected at a stop are studied and described in the laboratory, after the conference, the exact location of such collections will be known.

B. Should a stop be 1/4 to 1/2 mile or more off the highway, give both the location of the car stop and the actual stop, as follows:-

Stop 10 - Highway stop SEc SW¼ S.25; T.30N; R25E; - Walk 1/2 mile west to stop 10 at SW cor S.25; T.30N; R.25E.

C. When a highway stop includes the inspection of outcrops scattered along the highway for 1/2 mile to a mile, give the enclosing limits of this series of outcrops, such as:-

Stop 10 - Outcrops extending 3/4 of a mile along the highway and situated in the NE¼ and N½ SE¼ of S.25; T.30N; R.25E.

D. When a stop involves features like 4-C give mileage at beginning and end of stop,as -

Stop 10 - 135.5 miles - beginning of stop.
136.25 miles - end of stop.

E. Where a stop includes a single highway exposure, be careful to record the mileage at that point on the highway where the outcrop may be observed to best advantage. This will help geologists following the itinerary at some subsequent time.

5. Sketch Maps of Stops:- At least two types of stops call for sketch maps, Thus:-

map at Eau Claire Athenaeum

A. Where the outcrop is located within a town, include a sketch similar to that prepared by R. C. Moore at Stop 37 (Lawrence, Kansas) top half of page 50, Guide Book, Sixth Conference, or, for Stops 29 and 30, page 42, same reference.

B. Where the highway outcrop covers a 1/2 to 1 mile of area, like 4-C, include a sketch (large scale) showing the relationship of the highway to section, township, and range lines and the details of the stratigraphic units as they intersect the plane of the highway, together with the names of these units so that the sample collectors may readily identify from the sketch map, the unit from which he collects and its exact location.

C. Sketch maps illustrating the complexities of any stop will be welcome. For example, see sketch of Stop 17, Page 31, Guide Book, Sixth Conference.

6. Photographs:- While too many sketches, such as 5-C, cannot be drawn, it appeals to us that a new type of illustration might well be added to the Guide Book. This new feature consists of carefully taken photographs of certain (or all) stops and has a threefold usefulness; i.e., (1) it adds to the attractiveness of the Guide Book (2) refreshes the memory of participants in later years, and (3) serves as an unusual aid to geologists, using the Guide Book later on, in the correct interpretation of the stratigraphy at a stop.

The litho-printing used in the Guide Book successfully reproduces photographs. See page 37 - Sixth Annual Guide Book.

There are four main types of photographs depicting outcrops:

A. Contact lines inked clear across the photograph. See:- Bull. Amer. Assoc. Petro. Geol. Vol.17 - No. 4 - April 1933. Page 384. Fig.4; Page 386, Fig.5; Page 389, Fig.7.

B. Contact lines inked inward a short distance from edge of the photograph. See:- Miss. Bur. Geol. and Mines - Vol 21 - 2nd Series - 1928 (R.C. Moore - "Early Mississippian Formations in Missouri." Fig.A. opposite Page 77; Fig. A. opposite page 104.)

C. Contact lines inked in at irregular places in the photograph. See:- Miss. Bur. Geol. and Mines - Vol 21 - Fig B. opposite Page 49, and Plate I, Page 6; Bull A.A.P.G. Vol 17, No.4 - Page 382, Fig 3.

D. Contact lines not inked in at all. See:- Bull. A.A. P. G. Vol.17, No.4 Page 379, Fig 2; Page 388, Fig.6.

Personally, we incline to type (A) where the plane of contact is highly irregular or steeply dipping, otherwise type (B) or (C) may be preferable. But we think the Leadership will agree that photographs of stops, especially where the stop involves more than a single stratigraphic unit, would be a valuable addition to the Guide Book. Even photographs of a single stratigraphic unit have a definite value. See:- Miss. Bur. Geol. and Mines. Vol.21, Figures A & B opposite Page 42. You are requested therefore, to include photographs of stops if such procedure is convenient.

7. Listing of Stratigraphic Units at a Stop:- Immediately following the location of a stop it will be desirable to list in detail, all of the stratigraphic units to be seen at that stop. Thus:

Stop 10 - SEc SW¼ S.25; T.30N; R.25E.

St. Peter sandstone, Shakopee dolomite, New Richmond sandstone and Oneota dolomite.

Stop 10 - SEc SW¼ S.25; T.25N; R.30E.

Type Section of Guttenburg member of Decorah Shale

Stop includes lower beds of Galena, all of the Decorah and top of Platteville.

8. Description of Local Stratigraphy and Structure at a Stop:- In the majority of cases, past Guide Books have incorporated too brief a discussion of the geology of a stop. A full discussion is requested because (1) after a participant returns home many important statements and facts relative to a particular outcrop are forgotten (2) the Leader must speak too rapidly for satisfactory note taking, and moreover, the manner in which the text is printed leaves no space for note taking (3) a full written discussion somewhat shortens the length of time the Leader need speak in the field, and (4) this feature permits geologists following the itinerary at a later date to have the benefit of the Leader's ideas relative to a stop.

It is thus our desire that you include a thorough and carefully prepared written discussion of the local geology of each stop, even if adequate discussion necessitates a number of pages.

This is the most important single feature in the Guide Book. Thoroughness in preparation is essential.

9. Past Stratigraphic History of a Stop:- In the event a stop is made at a famous section, especially a famous contraversial section, it will be beneficial to discuss briefly the past evolution in the nomenclature of the stratigraphic units at such a stop by pointing out by what names the principal successive investigators have called the exposed stratigraphic units. The name of the investigator, the date, and probably the reference to the published statement and his reasons should be included.

10. Relation of Stop to the Regional Problems Being Studied by the Conference:- Should a stop bear a definite relation to one or more of the regional problems being studied, such relationship should be discussed. Thus if the lithology of silimar stratigraphic units have changed rapidly between stops, or if the lithology is different from all other stops involving similar stratigraphic units, the reasons for these changes and variations should be given. The regional relationship of stops to our major problems should be emphasized constantly.

11. Stratigraphic Diagrams:- In the consideration of No.10 above (Regional relation of stops) it may be beneficial to employ the use of diagrams illustrating the regional or local variation in the stratigraphy. We have in mind particularly such sketches as shown in Journal of Geology - Vol.27. No.7, Oct.-Nov. 1929 - Fig 8, Page 657; Fig.11, Page 669; and Fig.12, Page 671. Also as shown in the Sixth Guide Book, Figures 2, 3 and 4, Pages 85, 86 and 87. Not only this, but rough diagramatic cross sections showing where and how variations in stratigraphy take place between stops or between a number of stops will be an exceedlingly valuable addition to the Guide Book.

12. Fauna of a Stop:- If the stratigraphic units at a stop contain an important assemblage of fossils it will be important to discuss this fauna. In most cases space will probably prevent the incorporation of complete faunal lists, but the important and characteristic species should be listed. This feature was used in more or less detail throughout the Guide Book of the Fifth Conference. (See page 17 last paragraph; Page 19, second paragraph; and page 52, first paragraph) In addition to this, photographs of characteristic fossils may well be included, especially of the micro-fauna. (see Fifth Guide Book - two plates between pages 26-27 and plate opposite page 52.)

13. Graphic Sections:- You are requested to supply a detailed measured graphic section of the beds exposed at each stop. This feature was first used by us throughout the Sixth Guide Book. (For more or less ideal sections, illustrating this feature, see Sixth Guide Book; Page 16, left hand section - page 26, section for Stop 11 - and Page 46, section for Stop 33). These are good examples except that the group, series and system should be shown on every

graphic section, similar to page 38, section for stop 25, and page 64 of the Sixth Guide Book - A clear penciled sketch is all that is requested of the Leadership, drawn to scale with the scale indicated. These graphic sections need include only the major lithologic descriptions. They will all be re-drawn by the Society draftsman. The Leadership should decide on standard symbols for the representation of lithology. Your attention is called to the symbols used by Norman D. Newell in Circular No.4 of the State Geol. Survey of Kansas, last plate entitled, "Stratigraphic Sections in Wyandotte County". Newell's representation of cross bebbed limestone and cross bedded sandstone is good.

14. Typewritten Sections:- In addition to the graphic sections, we shall appreciate a complete detailed typewritten description of each measured section. Each individual bed should be numbered, starting with Bed No.1 at the bottom of the exposed section.

For good examples of the type of write-up desired, you are referred to the Badger Creek Section (Guide Book Fourth Conference, Pages 75 to 83) and of the Lost Lake Section with attached faunal lists(same reference, Pages 99 to 105). Further good illustrations are the Williams Canyon and Beulah sections(Bull. A.A.P.G. Vol.17 - No.4, Pages 381 and 390). These typewritten sections of each Stop will not be placed with the Road Log, but will be assembled in numerical order, as a separate unit of the Guide Book with a page reference to each section at the corresponding stop in the Road Log.

15. Culture at Stop:- Should a stop be made at a dam, a lake, a spring, or any other important cultural feature, complete details of that culture should be given in the Road Log. Information at a dam, for instance, should include date of completion, year work begun, cost, height, size of imponded body of water and many other interesting technical details.

C. ROAD LOG BETWEEN STOPS:- Because of the speed with which the conference must necessarily travel, and our consequent inability to make many desirable stops, even though important the road log between stops assumes major importance.

We respectfully suggest that the Leadership acquaint themselves thoroughly with the manner in which inter-stop descriptions have been written in the past Guide Books of this Society. Especially do we call your attention to the Second and Fifth Guide Books and the Wyoming-Colorado Road Log in the Third Guide Book (pages 44 to 70).

Minor improvements in the text of past Guide Books, as well as important points to keep in mind while writing the text of the inter-stop Road Log are -

1. Change in Direction of Conference Route:-

Do not record -"Turn right", but instead, "Turn right (East)" or whatever be the correct direction.

Do not record -"Turn right off of Highway", but instead, "Turn right (East) off of pavement onto gravel road."

Do not record -"Keep straight ahead on main road", but instead,"Keep straight ahead (north) on main road."

2. Hazardous Points:- Care should be taken to call attention in the text to all hazardous points along the highway. An unusually sharp curve, a right angled turn off from a main highway onto a secondary road, a rough stretch of road where speed must be reduced for safety, and a narrow one-way bridge, all are examples. But a most essential feature is to record the crossing, by our cars, over a main line, high speed, Railroad Crossing with frequent trains. A branch line with "one train a day" need not concern us, as much, but main line railroad crossings are dangerous since our drivers seeing cars ahead cross successfully take it for granted that the track is clear.

3. Close up line of cars:- The Editors of past Guide Books have followed the custom of placing arbitrarily at a point in the Road Log, five miles before the next stop, the notation:- "You are five miles from the next stop-close up line," the object being to bring the cars into a stop in a close position thus saving much time in arrival. While this is satisfactory, it sometimes occured that an arbitrary point of five miles came at an awkward place on the highway. Thus:-

A. - It might occur on a slow speed secondary road, one mile before a main highway was reached.

B. - Conversely, it might occur on pavement one mile after a slow speed secondary road had been left.

C. - The first mile or two of this five mile stretch might call for slow speed with the last three miles capable of high speed. Thus the closing of the line would take place only in the last three miles.

D. - The last two miles before a stop might call for slow travel, but the preceding three to five miles, capable of high speed (in which case the cars would already have closed up, had they been properly directed and could maintain their close position for the remaining distance of slow travel.

Since the person making the road log in the field is the only one conversant with these details, the Leadership is requested to insert the notation of, "You are _____ miles from the next stop; close up line", at the most adaptable point. The notation however, if possible, should not be more than 7 miles nor less than 3 miles from a stop. In a case like 5-D the notation should be written - "You are ____ miles from the next stop; close up line. The first____ miles of this distance is capable of high speed travel, so close up the line in the first ____ miles of this distance and maintain a close position during the last_____ miles of slow travel."

4. Setting of 0.00 Mileage:- At the beginning of a day the exact place to set the speedometers to 0.00 is most important. It should be at some readily recognizable and clearly understandable point. But usually it cannot be opposite the headquarter hotel, since the Lead Car is placed some two blocks or more ahead of the hotel so that the middle of the line of cars will be opposite the hotel. The first 20 to 30 cars then would start off with incorrect mileage. Choose a 0.00 setting that everyone will recognize and describe its location in the text. Should the head car be placed at a prominent corner, that street intersection itself is a satisfactory 0.00 mile point.

5. Check Points for Mileage Reading:- Outstanding and easily recognized points along the route of travel, may be noted in the Road Log under their correct mileage with the instruction,"Correct your speedometer."

6. Morning Line up of Cars:- At the beginning of a day, cars should not be lined up on a street containing a car track. In towns of normal size (under 100,000) authority is obtained to line up the cars in the center of the street. If possible it should not be more than 3 blocks from the hotel to the Lead Car; 2 blocks are preferable. The Lead car should be headed in the direction the party will start out. Wide streets for line up are preferable but not essential. Stop lights and stop signs at intersections for a number of blocks along the route of travel after the line of cars first start out should not concern the Leadership since the Conference will be under police escort.

7. Ramp Garages :- In very large cities it has been found convenient to make use of a ramp garage, or a single floor very large garage, if such are closely adjacent to the headquarter hotel. If a ramp garage is used, one or more floors are set aside for our sole usage. During the night the garage employes place the cars in their proper order for

the following day (the order of cars is supplied by the committee) and in the morning the participants get into the cars in the garage and the cars come out of the garage in their proper order for that day. The exact car order is maintained throughout the day at all times. Absolutely no departure from this inviolate principle is permitted by the committee. If the cars are to be lined up in a garage, notation should be made in the Guide Book(See Sixth Guide Book; Page 43, 131.9 miles, and page 44, 0.0 miles, for the proper type of notation.)

8. Retracing of Conference Route After a Stop:- If the line of cars is to be turned around and the route of travel retraced after a stop has been made, proper notation and instructions for turning around should be made in the Guide Book in order that the order of cars may be maintained. There are three examples of this procedure:-

A. - The stop may be in a broad field or some suitable open space, in which case the cars are parked (before the participants get out of the cars) in a wide circle or semi-circle (concentric circles for parking have been used very successfully) and no problem presents itself in starting out.

B. - The stop may be at the end of a road which may loop. In this case the loop is made before getting out of the cars and the cars come back and stop at the proper place. Likewise no problem in starting out exists here. - A and B are preferable examples.

C. - The stop at a highway outcrop may be where the route must be retraced even though the highway goes on. Difficulties exist here for the car order must be maintained and no error in mileage occur due to making a U-turn. In this case the line of cars are not turned around until after the stop has been completed. On starting out the Lead Car proceeds ahead to a suitable place for turning around (this may be at the place the Lead car parks, or a ¼ to ½ mile or more further on) and turns around. Subseq uent cars follow and turn around, one by one, in the same place as the Lead car turned. In this manner the

order of cars and correct mileage readings are maintained. Allow 5 minutes additional time for this procedure.

Be sure and place in the text whether example A.B. or C is to be employed.

9. Double Highway Parking at a Stop:- A great time saver at a stop in the field is to employ double parking, i.e. where the highway is wide the cars may be parked on both sides of the road. In this way the middle car parks opposite the Lead car, but on the other side of the road, and the participants have only half of the distance to walk to the location of the speaker at the outcrop. This system has been used often in the past and saves much time. This year, with continous police escort, double parking should be simplified and you are urged to make frequent use of this feature. Make a notation in the text at the stops where double parking will be used.

10. City Maps of Night Stops:- A desirable new feature to be placed in this Guide Book is the inclusion of a City map (specially prepared) when the night stop is made in a large city or a city with complex street system. Such a map should be a combination of R.C.Moore's map of the town of Lawrence (Sixth Guide Book, page 50) and the excellent maps of cities published in the Highway Atlas of the Gallup Map Company (See "Gallups Highway Atlas of the United States and Canada" for 1933, page 73 for the cities of Minneapolis and St. Paul). This city map should contain a heavy black line(the only heavy line used) showing the conference route into town at night and out of town the following morning, together with the location of the Headquarter Hotel, the garage in which car drivers are to park their cars all night, the names of streets the route travels and the names of principal intersecting streets, and any important cultural features such as bridges, viaducts, parks, etc. Too much detail should not appear on this City map. Moore's map is too brief; Gallup's map too detailed.

11. City Maps Enroute During Day:- City maps should be inserted of large towns or cities through which the conference may pass during the day. Such maps should show clearly the conference route together with principal intersecting streets. The Leadership need not route the conference through a town on little used streets since a police escort will be maintained and our right of way

assured at all times. The line of cars does not stop for stop lights and stop signs, even in large cities.

12. Night Parking:- If all night parking on the street is not allowed at a night stop town, make such notation in the text.

13. Route Through Campus of Universities :- If possible, and it does not mean too much lost time, the conference route should be purposely routed through the campus of the Universities of Iowa, Wisconsin and Minnesota.

14. Structural Contour Maps:- As many structural contour maps (See Sixth Guide Book, page 13, and Fifth Guide Book, plate opposite page 48, for examples) should be included in the text as available. Published contour maps can be reproduced and unpublished maps can be reduced to page size and lithoprinted as a page in the Guide Book.

15. Local Areal Geologic Maps:- As many local areal geologic maps should be forwarded for reproduction as possible. (See Fifth Guide Book, plates opposite Pages 22,23, and 39, for examples). Actual reference in the text should be made to C.14 and C.15 so that these may be placed on the proper page in the Guide Book.

16. Descriptions of Mines:- Illustrations of all mines on the Post-Conference Day should be used (See Fifth Guide Book Plates between pages 53 and 54 for example) and the geology and History and production of these Post-Conference Day mines described. All Lead and Zinc mines along the route of travel should be discussed and illustrated with mine sketches. At some convenient place in the text, a fairly detailed discussion of the Lead and Zinc area should be included relative to its geology, method of mining, value of deposits, total tonnage mined throughout area, etc. An index sketch map of the Lead and Zinc Area (such as Bull. No. 26. Illinois Geol. Sur. Fig. 42, page 174, 1916) should be reproduced.

17. Important Highway Outcrops Where no Stop is Made:- Because we cannot stop as frequently as may be desirable, many highway outcrops of importance will have to be passed by. Kindly insert in the Road Log the essential features relative to these outcrops, (we refer here only to those outcrops at which a stop would be made if ample time were available) their relation to outcrops observed and to be observed in order that the participants may

grasp the important facts while the cars are in motion. If desirable, the speed of cars may be decreased while passing this type of outcrop, but be sure and make such a notation in the text. Photographs of this type of outcrops are desirable, and probably essential, to a rapid understanding of what the text describes.

18. Physiographic Features:- Great care should be taken to describe all physiographic and glacial features to be observed along the route of travel. (either on the highway or in the distance) Photographs of distant physiographic features will be a welcome and appreciated addition to the text.

19. Cultural Features:- All cultural features along the route of travel and all historical points of interest, should be interestingly described. A handsome commercial municipal or state building, an unusual park, a historic building, church, fort, or place, the products of an important farming or manufacturing community, a University or college campus and its buildings, a famous river, a long and handsome highway bridge (give date built and cost),a dam (give minute details both technical and popular), a large lake, etc. are all things which should be described interestingly. Participants enjoy having their mind taken off of geology and are keenly interested in all culture along the route of travel. Please make a specialty of cultural descriptions.

20. Subsurface Features:- Participants are keenly interested in all subsurface features along the conference route. If the log of a well, en route, reveals important subsurface facts (especially if different from the outcrop lithology observed) give the log of the well in the text, provided it contains detailed correlations of the stratigraphic units penetrated. A well log, uncorrelated, is useless conference material.

21. Local Cross Sections:- Even of greater importance is the inclusion of local cross sections. Three or more well logs are desirable for such a sketch, one either along or adjacent to the conference route and one or more on either side (for a distance of 10 to 20 miles or more) of our route. Such subsurface data, especially if they reveal unusual conditions, will provoke great interest. See Fifth Conference Guide Book, plate opposite Page 27 and plates between pages 49 and 50 and between pages 51 and 52, for examples. Also refer to Bull. No.13, State Geological Survey of Illinois, Plate 2 (in pocket) 1927 for excellent example of

a cross section, slightly more regional in mature, but illustrating exactly the type desired through interesting areas.

D. STRIP ROUTE MAPS:- Throughout the Sixth Guide Book you will find employed the use of Strip Route Maps. This Society regards these maps not only a desirable, but an essential feature, of its annual Guide Book.

In the Sixth Guide Book you will find two types of route maps:-

1. Route maps on pages 15, 21 and 25.
2. Route maps on pages 30, 34, 37, 39 and 61.

The Arrangements Committee feels that type D-1 is very good, whereas type D-2 is unsatisfactory. Type D-1 takes time and effort (and the co-operation of your State Highway Departments in furnishing detailed maps) to prepare, whereas type C-2 is speedily drawn. Unless the necessary information be not available, we desire that Type D-1 be used throughout this Guide Book.

Formational contact lines need not be included on these maps if this data is not at hand, but it is desirable to tie the route of travel to section, township and range lines.

E. LOCALITIES ON AND OFF OF ROUTE AT WHICH STOP IS NOT MADE:- There will undoubtly exist, a considerable number of localities, both along the route of travel and at points distant from the conference route, an adequate knowledge of which will be prerequisite to a complete understanding of the problems of the conference. It appeals to this committee that space should be provided in the Guide Book for a complete description and discussion of such localities, together with the usual graphic sections (B-13), typewritten sections (B-14) and photographs (B-6). Data on such localities will be assembled as a unit at some convenient place in the Guide Book. Should you desire to refer to such localities in the text of the Road Log, a page reference may be given. At the beginning of this unit, or chapter, of the Guide Book an index map will be inserted showing the relation of these localities to the route of travel. They should be referred to as Localities; i.e. Locality A. etc.

We trust the Leadership will see fit to include data on a considerable number of important localities where a stop is not made.

F. CONFLICTING OPINIONS OF LEADERSHIP:- On some of our past conferences the leaders failed to confer on adjacent mutual field problems, resulting in conflicting statements in the Guide Book and conflicting verbal statements in the field

during the conference. Usually these leaders reached entire agreement while on the conference itself and the problem was generally one that could have been settled easily in advance.

Admittedly, the Leadership of any conference will maintain some conflicting opinions which can never be settled or compromised. But since many of them can be settled through conferences between the leaders themselves, and a willingness to consider both viewpoints, we request that as many conflicting opinions as possible be settled by the Leadership prior to writing the text of the Guide Book to avoid conflicting statements. But there is no point in asking you to agree, if, after a discussion of the problem in question among yourselves, conflict still exists. In that case it will be highly desirable to give both sets of conflicting opinions in the Guide Book.

G. STANDARD NOMENCLATURE:- As far as it is possible to do so, it is our earnest desire that the Leadership agree on a standard system of geologic nomenclature for the entire Upper Mississippi Valley Area and use this uniformly throughout the Guide Book. To call the same formation by one name in Minnesota, another in Wisconsin, and possibly still another in Iowa, is most certainly to be avoided. Granted that such a deplorable system is bad geologic practice, it nevertheless is a universal condition in geologic literature today. It appeals to us that this conference may serve as an incentive for your four Geological Surveys to confer on this problem, and that one of the real benefits to science, and to the geological fraternity, which should result from this Eighth Field Conference, would be the establishment by your Surveys of a standard system of stratigraphic nomenclature for the Mississippi Valley Area.

COMMITTEE ON ARRANGEMENTS
EIGHTH ANNUAL FIELD CONFERENCE

Anthony Folger - Chairman
L. W. Kosler
E. C. Moncreif
E. A. Wyman

Issued July 31, 1933

KANSAS GEOLOGICAL SOCIETY

WICHITA, KANSAS

July 31, 1933.

1107 Union Nat. Bank Bldg;
Wichita - Kansas.

Gordon I. Atwater, Madison
Ernest F. Bea n, Madison
Ira Edwards, Milwaukee
William H. Emmons, Minneapolis
George F. Kay, Iowa City
G. Marshall Kay, New York City
James H. Lees, Iowa City
Morris M. Leighton, Urbana
Gilbert O. Raasch, Madison
Clinton R. Stauffer, Minneapolis
Allen C. Tester, Iowa City
George A. Thiel, Minneapolis
Fredick T. Thwaites, Madison
Arthur C. Trowbridge, Iowa City
William H. Twenhofel, Madison
J. Marvin Weller, Urbana

Gentlemen:-

Transmitted herewith are suggestions and instructions relative to the preparation of the Road Log for the Eighth Annual Field Conferenceof the Kansas Geological Society in 1934. You will find that this information has been assembled in considerable detail. A cursory inspection of the enclosed may have a discouraging effect, but closer examination will reveal that much of the data are elementary and have been included simply for your convenience and guidance.

Your very close a dherence to these suggestions and instructions is most earnestly solicited. Complete fullfilment will result in a Guide Book of which this Society and the entire Leadership will be justly proud. We recognize that some of these requests will necessitate much thought, time, and labor. Please feel assured that your effort in our behalf will be fully appreciated.

The Committee on Arrangements wishes to emphasize the importance of the following items, namely:- A, B-4, B-6, B-8, B-13, B-14, C-10, C-18, C-19, C-20, D, E, F, and G. The attention of the ASSOCIATE DIRECTORS is called to page 2, lines 2 to 7 inclusive.

We shall appreciate acknowledgment of the enclosed so that we may be assured of its receipt. Should anyone find it difficult to interpret a specific item, do not hesitate to request additional explanation of this committee.

Very truly yours,

ANTHONY FOLGER

Chairman, Committee on Arrangements.

Copy to:- L. W. Kesler, Wichita
(Editor of Guide Book)

DEPARTMENT OF GEOLOGY

GEORGE F. KAY
ARTHUR C. TROWBRIDGE
JOSEPH J. RUNNER
ALLEN C. TESTER
ARTHUR K. MILLER

THE STATE UNIVERSITY OF IOWA
IOWA CITY

July 24, 1933

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

Dear Thwaites:

I am very glad to have received this morning your letter of July 22nd and the copy of the letter from Raasch to you dated July 21st.

I hope and believe that both you and Raasch and the others in Wisconsin who are interested understand that I did my level best to avoid taking the general leadership of the 1934 Field Conference, that I am doing my best to arrange an itinerary which will be a series of compromises among the many suggestions that have been received, and that the final itinerary will be agreed upon among all of us after continuous correspondence and conference. I am leaving tomorrow morning for five weeks of additional field work in the Upper Mississippi Valley and expect to visit first Minneapolis for conference with the Minnesota geologists, then Madison for further conference with you folks, then Illinois for field work and conference with the Illinois stratigraphers. Of course, I am already in touch with Lees and Marshall Kay and will meet Marshall in the field also. Although, as stated above, I do not presume to criticize or correct the conclusions of those who have been working so long and so intelligently in the several states, it is true that I did my first stratigraphic work in the Upper Mississippi Valley in 1905 and have been at it off and on in a rather serious way since 1907. It is also true that I have travelled practically ever road and made studies at practically every stop in all four states as listed in the current edition of the itinerary. Raasch is, of course, right in believing that each geologist in each of the four states, or any group of geologists in any one state has the right to use stratigraphic terms as he or they think best. On the other hand, it will be too bad if the geologists from the oil companies in Kansas and elsewhere and others coming to our Field Conference from other states should find that the Dresbach sandstone or the Jordan sandstone or the Norwalk sandstone has a very different meaning

if it appears in the Wisconsin part of the guidebook than if it appears in the Minnesota part of the guidebook. I think the real purpose that Mr. Folger's committee had in getting this work started so early was so that some of these things on which we are now not agreed could be compromised or at least tentatively agreed upon before the guidebook has to be written. Atwater and I have not attempted to set up a new classification with new names in our paper which was submitted to the G.S.A. Everything in our classification is admitted tentatively. If Raasch and others in Wisconsin and Stauffer and others in Minnesota had had an opportunity to read the manuscript of this paper, they would realize that what I have said about it is true. We do not have a single thing for which to fight. We merely wish to bring out the several problems of stratigraphy and nomenclature so that greater progress might be made toward their solution. If it seems best to all concerned to depart from our tentative classification, we shall be entirely content. In short, I feel confident that the many points of disagreement, which are not entirely between Atwater and myself on the one hand and you Wisconsin men on the other, but between Minnesota and Iowa, Minnesota and Wisconsin, or Trowbridge and Atwater and Minnesota or Iowa can be ironed out once we get together in a common spirit of cooperation and understanding. This we should try to do this summer.

There are many suggestions for the improvement of the itinerary in the letters which I have received from you and Raasch. Each and everyone of them will be give the most careful consideration, and their use will be settled only after conference with you. I suppose that Twenhofel will also have suggestions to make when he returns to Wisconsin. His suggestions also will be discussed, considered, and adopted only after most careful study. This is also true of the suggestions that have come in from Illinois and Iowa. In the rush of getting away tomorrow I can not answer these two letters specifically at this time, but will wait until I can come to Madison and can go into all of them thoroughly with all of you.

Please be assured that Dean Kay, Mr. Folger, and his committee, and I greatly appreciate the time and effort you, Raasch, and others have put on this work. By continued cooperative effort we should be able to prepare an itinerary, a guidebook, and a piece of investigation which will be scientific ~~rather than personal~~, and an advance over previous efforts of this sort.

I will try to get in touch with you as soon as possible so that we may arrange a time for meeting which can be attended by all those interested in the stratigraphy of the Upper Mississippi Valley in general and of Wisconsin in particular.

Cordially yours,

A. C. Trowbridge

CC: Dean Kay
Anthony Folger G.O.Raasch
Marshall Kay E.F.Bean

ACT:A

July 22, 1933

Dr. A. C. Trowbridge,
Department of Geology,
University of Iowa,
Iowa City, Iowa

Dear Dr. Trowbridge:

Enclosed please find my comments on the tentative itinerary of the 1934 excursion of the Kansas Geological Society together with copy of letter from Mr. Rausch on the same subject. The latter was retyped by me with a few changes.

My major comment is that you have overestimated the speed which can be made on roads in the Driftless Area. To maintain an average of 40 miles an hour including the delays incident to stopping requires a maximum of 65 miles an hour on good stretches. I have talked this matter over with Mr. Bean who has had years of experience on roads in western Wisconsin and he agrees with me. Do not be misled because the present Highway Commission has marked many roads in that section as "paved". They are not concrete for the most part but are the so-called "black top". They have poor shoulders and many soft spots. To try 65 miles an hour on them around curves and down long grades would lead to somebody getting hurt. We do not want to be responsible. I enclose a clipping showing what the inhabitants think of what shows on the map as a paved road.

A second vital point is that many of the sections to be visited are in bluffs and not along highways. The time taken to climb and descend through such rough country must have serious attention. I do not think that a large group can be taken up Trempealeau Mountain for instance in much less than 30 minutes.

I will offer no suggestions on the first three days.

For the Fourth Day I endorse Mr. Rausch's proposed change in route. I will greatly enjoy a field discussion of the peneplain question!!

For the Fifth Day I still strongly object from the scentific standpoint to the boat trip up the Dells. Suffice it to say that we no longer take classes to the Dells except (I think) during Summer School. The Dells are intensively commercialized and one must pay high admission everywhere. Doubtless they are interesting from the scenic standpoint but they appeal mostly to inhabitants of the plains who have never seen any rocks. Of course, it is up to the Society committee as to whether or not they want this bit of sightseeing but I cannot promise any important geology or physiography on the boat trip. I strongly feel that this would be better served by an ascent of Point Bluff at Baraboo.

I will offer no further suggestions on the Sixth and Seventh Days.

All of us, (Bean, Rausch and I) are agreed that the alternative Eighth Day is the better although we think that a better route could be arranged possibly including the Manitou Falls. Personally I feel that the age and stratigraphic relations of the Red Clastics are better known

than in Minnesota where the drift obscures everything. I greatly regret the omission of the south shore of Lake Superior where I worked so long ago. I would be greatly interested to see how my conclusions when so inexperienced check up with the vastly greater knowledge of sediments of 1934. I also feel that geologist who have worked in the Gunflint would be greatly interested in the exposure of the thrust (possibly an underthrust) fault. How about an alternative post conference day to the south shore as far east as Ontonagon River? Or possibly the Society hopes to make this trip later.

I do not know just how you could shorten the days when stops are so few apart but some rerouting is still possible in Wisconsin.

Very truly yours,

F. F. Thwaites

COPY

July 21, 1933

Mr. F. T. Thwaites,
R.4, Madison, Wis.

Dear Mr. Thwaites:

I herewith offer some suggestions in regard to the proposed route of the Kansas Geological Society trip in 1934 of which you recently lent me the tentative draft.

Despite my great interest in the exposures ommitted in the revised itinerary, I favored their ommission because I felt previously that the trip was too thinly spread over an area too great and a stratigraphic section too complex for the time available. Eastern Wisconsin and the pre-Cambrian area of Michigan and northern Wisconsin belong properly to the Great Lakes rather than to the Upper Mississippi district and a future trip might profitably be spent there.

I do not think, however, that the revision as worked out is any improvement over the older itinerary. Instead of markedly shortening the field day and the mileage, most of the time orginally to have been occuppied in eastern Wisconsin and northern Michigan has now been allocated to the Ordovician of Iowa and Minnesota. There seems to me to be now too much reptition of the section between the Oneota and the Galena. This frequent duplication would undoubtely proveboring and even confusing. A thorough examination of this part of the section in the two classic areas, about Dubuque and Decorah, and in the vicinity of the Twin Cities should be sufficient for so short an excursion. We are omiting all Wisconsin Ordovician sections because we feel that these rocks have been, if anything, overstressed west of the River.

On the other hand, Niagaran, Devonian, and Upper Cambrian have, I believe, been slighted. I do not know whether it is the intention of the Society to examine the Silurian and Devonian more than incidentally but I did gather that you were anxious to go over the Upper Cambrain as thoroughly as possible. The type area for that section is in Wisconsin. In working out the Cambrian part of the itinerary in conjunction with Messers Bean and Thwaites I tried to select a few long sections in representative areas. If we attempted to route the trip to each local facies or faunal horizon (as I feel has been done for the Ordovician) the entire eight days would have to be devoted to the Cambrian alone.

Messers. Bean, Thwaites, Edwards, and myself are strongly opposed to the use of Trowbridge and Atwater's terminology for the Upper Cambrian in Wisconsin. Since 1913 when Ulrich first opened up the problem this state has been the scene of intensive study by both local and federal invesigators. A vast amount of data has been brought together which is only now, after 20 years, sufficiently well understood to permit publishing of reports with a reasonable degree of stability and permanence. Reams of section, including detailed surveys of seven quadrangles and thousands of carefully collected fossils running into hundreds of species will lie back of these reports. The paper on the stratigraphy of the Baraboo region is now in page proof, and Dr. Edwards and the writer are preparing a summary of the Cambrain for the subcommittee of the National Research Council. It is true that there has been confusion of nomenclature in the past but redefinitions of names will straighten this out without the introduction of new names some of them based on incomplete study. We feel that we have the right to use our own terms in the region under our jurisdiction.

First Day. Sounds like a very interesting day, though rather too long for comfort. Galena, Illinois, is NOT the type locality of the Galena formation despite the statement in the Galena-Elizabeth folio. The Galena was named for the lead sulphide it contains and not for the city. No definite type locality has ever been assigned. The term Dubuque dolomite apparently applies to the massive dolomitefacies which dominates the formation in the Lead Region. Dubuque might therefore be selected as the type locality of the formation as a whole. No two individuals can agree on the location of the base of the Galena dolomite.

Second Day. A good day but by its close all important members of the post-Shakopee Ordovician will have been seen and the Decorah in three different places within a limited area. The two stops after Stop 5 should certainly be discouraged in my opinion.

Third Day. Stop 1. An ascent of the bluffs above the top of the Ironton horizon would be futile as exposures are very poor. The morning of the Third Day might well be devoted to Oneota and Shakopee. If the exposures are as good as claimed, the day should dispose of these formations and they need not receive much attention in Wisconsin or elsewhere thereafter. I favor omitting stops 3 and 5, and certainly 7, 8, and 9 as repetitions. The time saved bythese omissions might well be spent partly in shortening a very long day and partly in going over several excellent exposures of Upper Cambrian in the Stoddard Quadrangle. Stop 10 is a splendid and possibly will become a classic section. After stop 10 much mileage could be saved by going directly to either Viroqua or Richland Center (both have good hotels if party is not too large) rather than by returning to LaCrosse.

Fourth Day. Stops 1 and 2 might be put into the preceding day under the schedule suggested by me for they are both very short stops. If the preceding exposures in Minnesota and Iowa have already shown these horizons they might well bepmitted. The location mentioned is simply Liberty Pole (Liberty Pole Hill is elsewhere). From stop 2 to stop 4 the trip goes scores of miles out of the way througha region where the exposures of the Ordovician are just like those previously seen. I suggest rerouting via Highway 11 to Mazomanie, thence County F to East Blue Mound, thence U. S. 18, and County Highways S and M to Middleton, thence around Lake Mendota as planned. An interesting side trip made possible by this change would be the good exposuresof Trempealeau on Highway 23 a short distance north of Spring Green. These exposures are better in some respects than those at Mazomanie.

Fifth Day. I suggestthat although the route through the Baraboo district is in general very satisfactory we go back from Leland east to Devils Lake, thence west to Reedsburg through Ableman. thence through Dellona township to Kilbourn (Wisconsin Dells). This would take in some good exposures which I have studied recently. I am strongly opposed to the boat ride at the Dells as a waste of time so far as geology is concerned. If the Dells are visited at all the stops previously proposed are preferable The section up Reeds Glen to top of Elephant Back is a famous one described by Irving. I can see no diastems in the Dells but regard it as all rapidly deposited sandstone. Instead of devoting so much time to a tourist locality I suggest that Point Bluff just north of Maiston be visited to see the Eau Claire and Ironton as developed in central Wisconsin as well as a fine view of the physiography. Ample time should be allowed for stops 6 and 7.

Sixth Day. Stop 2. The type locality of Trowbridge and Atwater's Galesville formation, a term to replace Dresbach as used by Ulrich, unfortunately contains a considerable part of the Ironton basal member of the overlying

Franconia formation. Thus the new terminology not only does vilence to long established use of the word Dresbach as redefined by Ulrich in 1913 but would involve changing a term now in common use by well drillers and engineers. Furthermore, the type of the new name would be involved in controversy. Between stops 2 and 3 there are many fine sections, most of them not well known at present except for a good one two miles north of Whitehall (Eau Claire to Franconia.) Stop 3. Eau Claire as a type locality is to be refferred to Wooster 1877 and not to Ulrich 1913. Woosters exact type locality has not been identified but Ulrichs type for the Eau Claire is Mount Washington. Stop 7 No Dresbach is present at Hudson for it is completly replaced by Ironton.

Seventh Day. This trip is outside our state.
Eighth Day. I agree with suggestions of Thwaites and Bean.

Very truly yours,

(Signed) Gilbert O. Raasch

Curator of Geological Museum,
University of Wisconsin

Comments on K. G. Soc. itinerary, 1934.

Despite my great interest in the exposures ommitted in the revised itinerary, I favor their ommission because I felt ~~that~~ previously that the trip was too thinly spread over an area too great and a stratigraphic section too complex for the short duration of the trip. Eastern Wisconsin and the pre-Cambrian area of Michigan and Wisconsin belong properly to the Great Lakes rather than to the Upper Mississippi district and a ~~further~~ future trip might profitably be spent here.

I do not think, however, that the revision as worked out is any improvement over the older itinerary. Instead of markedly shorting the field day and the mileage, most of the time originally to have been occupied by eastern Wisconsin and northern Michigan ~~is~~ has now been allocated to the Ordovician of Iowa and Minnesota. There is far too much repetition of the section between the Oneota and the Galena. Too frequent repetition of the same horizon on a trip of this kind proves boring and even confusing. A thorough examination of this part of the section in the two classic areas, about Dubuque and Decorah, and in the vicinity of the Twin Cities should be sufficient for so short an excursion. We are omitting all Wisconsin Ordovician sections because we feel that these rocks have been, if anything, overstressed west of the river.

On the other hand, Niagaran, Devonian, and Upper Cambrian have, I believe, been slighted. I do not know whether it is the intention of the society to examine the Silurian and Devonian more than just incidentally but I did gather that you were anxious to go over, ~~see~~ as thoroughly as possible, the Upper Cambrian, which being the type area for that system, well merits close attention. In working out the Cambrian section of the itinerary in conjunction with Mr. Bean and Mr. Thwaites

I tried to select a few long sections in representative areas. If we attempted to route the trip to each local facies or faunal horizon, as I feel has been done for the Ordovician, the entire eight days and more would have to be devoted to the Cambrian alone.

Messrs. Bean, Thwaites, Edwards, and myself, ~~~~ are strongly opposed to the use of Trowbridge and Atwater's terminology for the Upper Cambrian in Wisconsin. Since 1913, when Ulrich first opened up the problem, this state has been the scene of intensive study by local and federal investigators. A vast amount of data has been brought together which is only, now after more than twenty years, sufficiently well understood to permit publishing of reports that might have even a moderate degree of stability and permanence. Reams of sections, including detailed surveys of seven quadrangles and thousands of carefully collected fossils running into hundreds of species will be back of these reports. The paper on the stratigraphy of the Baraboo region is already in page proof, while Mr. Edwards and the writer are busily preparing a resume' of the Cambrian of this area to be submitted to the Cambrian subcommittee of the National Research Council. In view of all this, we feel we have the right to use our own terms in the region under our jurisdiction.

Detailed comments.

First Day. Sounds like a very interesting day, though too long for comfort.

Galena, Illinois, is not the type locality of the Galena formation (despite statement to contrary in the Galena-Elizabeth folio). The Galena was named for the lead sulphide it contains and not for the city of that name. No definate type locality has ever been assigned. The term Dubuque dolomite apparently applies to the massive dolomite

facies which dominates the formation as developed in the Lead Region. Dubuque might well be selected as the type locality of the formation as a whole, once more than two individuals can agree as to the location of the base of the formation.

Second Day. A good day. Note all important members of the post-Shakopee Ordovician have been seen by close of this day. The Decorah has already been seen in three different outcrops within a local area.

The two stops after stop five should certainly be discouraged.

Third Day. Stop 1. An ascent of the bluffs above the top of the Cronton horizon would be futile as exposures are very poor.

The morning of the third day might well be devoted to Oneota and Shakopee. If the exposures are as good as claimed this day should dispose of these members forthwith and they need not receive further special study in Wisconsin or elsewhere. Winona and Lanesboro sound like very good stops. Favor omitting stops 3 and 5, and certainly 7, 8, and 9, all repetition.

Time saved by these omissions might well be spent ~~part~~ partly in shortening a very long day and partly in going over several excellent exposures of Upper Cambrian on the Stoddard Quadrangle including stop 10 which is a splendid, and will certainly become a classic, section.

After stop 10 much mileage will be saved by proceeding directly to Viroqua or Richland Center (both with good hotels) rather than returning to La Crosse.

Fourth Day. Stops 1 and 2 might be put into the preceding day under the revised schedule, since they are very short stops. If the preceding exposures in Minnesota

and Iowa have already amply shown these horizons they might well be ommitted.

Stop 2. Liberty Pole Hill is in Green County. The present location should be referred to as Liberty Pole.

Note !!!. From stop 2 to stop 4, the trip goes scores of miles out of the way, through ~~many~~ miles of Ordovician country ~~already~~ such as the excursion has already been traversing for 3 and one half days, all this for the sake of one insignificant exposure of the Galena horizon. I suggest rerouting by way of Richland Center, Spring Green and Mazomanie, then Highway F to Blue Mounds. Thus Stops 5 and 6 would precede stop 4. A stop should also be included to show the ~~the~~ lower Wisconsin river facies of the Trempealeau including the Dikelocephalus beds of the Lodi Shale. Fine exposure on main road north of Spring Green, which would only be one half mile off the regular run.

From Blue Mounds ~~return~~ to Madison by U.S. 18 direct, or on good county road from Mt. Horeb via Pine Bluff to Cross Plains. Fine views and topography, passing many exposures from Franconia to Galena.

Stops 7, 8, and 9 O.K.

~~Fifth~~ day. Leland ~~are~~ O.K. but important exposures about Reedsburg should be included. Suggested itinerary is to go from Prairie du Sac to Leland (H. 136) back through Denzer to ~~Baraboo~~ Highway 12-13, thence Devils Lake, Woods Quarry, Alderman, Reedsburg, thence thru Dellona Township for fine Lake Wisconsin deposits, to Kilbourn.

Strongly opposed to boat ride at Dells as waste of time geologically. Much better to ascend on

foot one of the canyons thence up the Elephant's Back. Section from Mt. Simon to high in the Franconia, also fine view of Central Plain and outliers.

Time saved by ommitting boat trip could be very profitably spent on central Wisconsin facies of Eau Claire and Trenton. Point Bluff and Mile Bluff ~~tonight~~ should be visited.

Note: No diastems in Dells; all is very rapidly deposited Mt. Simon sandstone, with varying forsets.

Stops 6 and 7 very good. Allow ample time.

Stop 7. Sodi and Black Earth practically or entirely absent. A few feet of rock with Sodi lithology is really in the top of the Franconia. Section is excellent for Franconia exposures.

Sixth day. Stop 2. The type locality of Trowbridge and Atwater's Dalesville formation, supposed to be the upper member of their Dresbach formation (= Eau Claire Formation of Twenhofel, Raasch, and Wisconsin survey). This upper member is what well drillers and ~~others~~ several geological surveys as well as the U.S.G.S., have for many years been calling Dresbach. This term Trowbridge and Atwater now propose to replace with a new name, Dalesville. Unfortunately as I explained to Mr. Atwater, at their type locality only the lower third of the cited type section is Dresbach and the upper two thirds is the basal member of the succeeding Franconia formation. Thus the new terminology not only does violence to long established usage by both economic and scientific workers but is based upon a type section the interpretation of which is, to the least, a subject of controversy.

Between stop 2 and stop 3 are many fine sections, most of them not well known at this writing. But one familiar to writer is ~~a~~ two miles north of Whitehall and runs from Crepicephalus beds of Eau Claire into the Conaspis beds of the Franconia.

Stop 3. ~~It~~ Eau Claire as a type locality is to be appealed to Wooster 1877 and not to Ulrich 1913. There Mt. Washington is not the type, which has not be accurately located but which as given by Wooster, is mostly in beds below those of the Mt. Washington quarries. This should be further investigated in preparing final itinerary.

Stop 7. No Deerbach is present at Hudson, it having been completely replaced by Ironton.

F. T. THWAITES

KANSAS GEOLOGICAL SOCIETY

WICHITA, KANSAS

July 11, 1933

Gypsy Oil Company
1107 Union National Bank Bldg.
Wichita - Kansas

E. F. Bean - Madison
Ira Edwards - Milwaukee
W. H. Emmons - Minneapolis
J. H. Lees - Des Moines
George F. Kay - Iowa City
G. Marshall Kay - New York
M. M. Leighton - Urbana
C. R. Stauffer - Minneapolis
F. T. Thwaites - Madison
A. C. Trowbridge - Iowa City
W. H. Twenhofel - Madison
J. M. Weller - Urbana

separate copy

Gentlemen:

Transmitted herewith is a tentative draft of the itinerary for the Eighth Annual Field Conference of the Kansas Geological Society in 1934. It was prepared, at my request, by Professor Trowbridge with the assistance and suggestions of a number of the leadership of this conference. The itinerary, as written, is by no means final.

May I request each of you gentlemen to acknowledge receipt of this itinerary in a letter to Trowbridge addressed to Iowa City so that it will arrive there before July 24th, forwarding me a carbon copy. In that letter we desire that you offer constructive criticism and suggestions. The purpose of this tentative draft is to lay before you some definite plan which may be studied and discussed in order that difference of opinion may be settled.

Cordially yours,

Anthony Folger.

Anthony Folger.

Speed 25% too high at 30 mph in Dupties Area many "paved" roads are plank top.

TENTATIVE ITINERARY

Eighth Annual Field Conference of the Kansas Geological Society

IOWA, ILLINOIS, WISCONSIN, AND MINNESOTA

Sunday, August 26, 1934 to Sunday, September 2, 1934 inclusive

Post-Conference Day - Labor Day, Monday, September 3, 1934

July 11, 33

Prepared By

Arthur C. Trowbridge - LEADER

The following schedule must be considered entirely tentative, but it approximates final form. Alterations and improvements will be made after the necessary field work has been accomplished. The SECOND TO SEVENTH DAYS inclusive approach the "ideal day" as outlined by the Committee on Arrangements of the Kansas Geological Society, but most of the leadership feel they are still too long. The FIRST AND EIGHTH DAYS are still too long.

The following itinerary has been drawn up by Trowbridge with the advise and suggestions of Dean Kay, Marshall Kay, Bean, Thwaites, Atwater, Raasch, Shrock, Stauffer and Folger.

It should be borne in mind that this itinerary represents the best compromise it was possible to make among a very large number of suggestions from a large number of people, many of them conflicting.

FIRST DAY

Iowa City to Dubuque -- 213 miles

Stop 1 - In Iowa City: Pennsylvania sandstone and shale of Des Moines series lying unconformably on Devonian Cedar Valley limestone, 2 miles.

Iowa City to Muscatine (Highways 6 paved & 38 gravel); Kansan drift, maturely eroded and covered with Iowan loess, also Lake Calvin bottom and shoreline. Lake Calvin resulted from ponding of Mississippi River and its tributaries by the Illinoisan glacier; 42 miles.

Stop 2 - At Muscatine: Government dam No.16 will probably be under construction by 1934. Foundation on Pennsylvania sandstone and shale and Cedar Valley limestone. Also Pleistocene section including Nebraskan drift, Aftonian gravel, Kansan drift, Illinoisan drift and Iowan loess (Kay)

Muscatine to Davenport (Highway 61 paved). Along north bank of Mississippi River; 28 miles.

Stop 3 - At Buffalo: Operating quarry and plant of U.S. Cement Co. Devonian Cedar Valley and Wapsipinicon (Upper Davenport) limestone.

Davenport Lock and dam No.15, footed on Wapsipinicon limestone (probably finished by 1934), no stop

Davenport to Clinton (Highway 55 paved) on east bank of Mississippi River, cross upper and Lower Davenport beds (Type Locality) and Otis; 38 miles.

Stop 4 - At Le Claire -- reef structure in Silurian LeClaire (Gower) limestone, Type Locality.

Stop 5 - At Princeton - Highway cut in Gower reef.

Clinton, Iowa to Fulton, Illinois; 4 miles, paved.

Stop 6 - At Iyons in large quarry in Hopkinton, Pentamerus and other fossils.

Fulton to Savanna (Highway 80 gravel); 18 miles

Stop 7 - At Savanna: Savanna-Sabula anticline--Hopkinton limestone and Maquoketa shale.

Savanna to Mt. Carroll (Highway 27 paved). Enter Driftless

Area near Savanna; 11 miles. Mt. Carroll to Stockton (Highway 40 paved); 21 miles.

Stop 8 - At Elmoville; basal Maquoketa with depauperate fauna, over Galena (Dubuque) dolomite.

Stop 9 - At Stockton: dolomitic uppermost Maquoketa in quarry on Reservoir Hill; edge of Illinoisan drift.

Stockton to Elizabeth (Highway 20 paved); 13 miles

Stop 10- Elizabeth: quarry showing lower thinbedded member (Alexandrian?) overlain by Niagaran dolomite.

Elizabeth to Galena (Highway 20 paved): 22 miles.

Stop 11- At Winston station (off of Highway 20 dirt road) Type Section Winston formation (Alexandrian?) underlain by Maquoketa shale and overlain by Niagaran dolomite.

Back to Highway 20.

Galena, Illinois, Highway through road cuts in Galena dolomite, Type Locality.

Galena, Illinois to Dubuque, Iowa (Highway 20 paved); 15 miles

Time Table

Start 7:00 A. M.	
Driving time 213 miles	5 hrs.
Starting and stopping 11 stops	2 hrs.
11 stops average 16 minutes	3 hrs.
Lunch stop	1 hr.
Stop 6:00 P. M.	11 hrs

SECOND DAY

Dubuque to LaCrosse - 200 miles

Dubuque to Graff (Highways 20 paved and B. dirt); 15 miles

Stop 1 - West Dubuque: Type Locality Dubuque dolomite.

Stop 2 - At Graff: Section of lower Maquoketa and exposure of depauperate zone ½ mile away on Twin Srpings road.

Graff to Luxemburg (Highways B dirt & gravel and 55 paved) 18 miles.

Luxemburg to Guttenburg (Highway 55 paved); rough country many exposures; 13 miles.

Stop 3 - At Guttenburg: Type Locality Guttenburg member Decorah shale; top of Platteville, all of Decorah, and lower beds of Galena.

Guttenburg to McGregor (Highways 55 paved and 18 paved); 31 miles.

McGregor to Decorah (Highways 18 & 55 paved); rough country, many roadside exposures; 55 miles.

Stop 4 - Cross Jordan, Prairie du Chien, St.Peter, Platteville, Decorah and lower Galena on highway west of McGregor.

Stop 5 - At Decorah: Type locality of Decorah shale.

Decorah to La Crosse, via Prosper, Minn. (Highways 55 paved and 44 paved?); rough country, many exposures of Galena, Decorah, Platteville, St. Peter, Prairie du Chien, Jordan, St.Lawrence, Franconia and Dresbach formations; probably two stops to be arranged later by Marshall Kay and Stauffer; 65 miles.

Time Table

Start 7:30 A. M.	
200 miles driving	5 hrs.
Starting and stopping 7 stops	1¼ hrs.
7 stops, average 25 min. each	3 hrs.
Lunch	¾ hr.
Stop 5:30 P. M.	10 hrs

THIRD DAY

La Crosse to La Crosse - 200 miles

LaCrosse to Winona (Highway 3 paved); along foot of Mississippi River bluffs 600 feet high; 29 miles.

Stop 1 - At Dresbach: Type Locality of Dresbach formation, section includes Eau Claire and Galesville? members of the Dresbach formation, the Franconia, St. Lawrence, Jordan, Oneota and New Richmond, a zone of gastropods and cephalopods at top of Oneota.

? Stop 2 - At Winona: details to be furnished by Stauffer.

Winona to Lewiston (Highway 7 paved) ; 14 miles.

? Stop 3 - Stockton Hill: Stauffer to furnish details.

Lewiston to Rushford (Highway 43 gravel) ; 20 miles.

Rushford to Lanesboro (Highway 9 paved ?); 23 miles.

Stop 4 - At Lanesboro: Best exposed section known of Oneota, New Richmond and Shakopee, also Jordan.

Lanesboro to Preston (Highway 9 Paved?); 8 miles.

Stop 5 - At Preston: Another Oneota, New Richmond, Shakopee section but different from one at Lanesboro, (both Lanesboro and Preston sections already detailed by Powell and petrographic studies completed by Couser).

Preston to Decorah (Highways 20 gravel and 55 paved); 35 miles.

Decorah to Waukon (Highway 6 gravel and paved); 20 miles.

Waukon to Lansing (Highway 6 paved); 18 miles.

Stop 6 - At Iron Hill just north of Waukon: Windrow gravel and Waukon iron ore.

Stop 7 - Near Church: Sections of Oneota, New Richmond, Shakopee, St. Peter, Platteville, Decorah and lower Galena along half a mile of road.

Stop 8 - 6 miles west of Lansing; Diastem between Oneota and Shakopee with New Richmond sandstone in lenses and pockets between the two locally(Powers) .

Stop 9 - Fireball Hill in Lansing: Famous section including Franconia, St. Lawrence, Jordan and Prairie du Chien.

Lansing to La Crosse (Highway 35 gravel and Paved); along foot of Mississippi River bluff on Wisconsin side; 31 miles.

Stop 10- At Victory: Ravine section of ~~Dresbach (Galesville?)~~, Franconia, ~~St. Lawrence, Jordan~~ and Oneota(Thwaites).

Time Table

Start 7:00 A. M.	
200 miles driving	5 hrs.
Starting and stopping 10 stops.....	$1\frac{3}{4}$ hrs.
10 stops, average 21 minutes.....	$3\frac{1}{2}$ hrs.
Lunch.....	$\frac{3}{4}$ hr
Stop 6 P. M.	11 hrs.

FOURTH DAY

LaCrosse to Madison - 185 miles

LaCrosse to Viroqua (Highway 11 paved); Exposures of Dresbach (Eau Claire & Galesville?), Franconia, St. Lawrence, Jordan and Oneota along road, no stops; 33 miles.

Stop 1 - At Viroqua City Park: St. Peter sandstone

Stop 2 - Liberty Pole Hill: St. Peter, Glenwood and Platteville

Viroqua to Fennemore (Highways 11 & 27 gravel); exposures of Franconia, St. Lawrence, Jordan, Prairie du Chien, St. Peter, Platteville, Decorah and Galena along road, stops if any to be detailed by Thwaites; 58 miles.

Fennemore to Blue Mounds, through Dodgeville (Highway 18 gravel and paving); upland road on "Dodgeville peneplane" (Trowbridge) cuesta; 43 miles.

Stop 3 - ½ mile east of Montfort: Upper Receptaculites zone of Galena dolomite in quarry.

Blue Mounds to Mazomanie (County road F gravel and Highway 11 paved); West Blue Mound stands at 1716' elevation and Wisconsin terrace at Mazomanie at about 700', exposures of Maquoketa, Galena, Platteville, St. Peter, Prairie du Chien, Jordan, St. Lawrence and Franconia (Mazomanie); 15 miles.

Stop 4 - On East Blue Mound: road cut showing Maquoketa shale and dolomite, discussion of peneplane problem (Trowbridge , Thwaites et al).

Stop 5 - At Mazomanie: Type Locality of Mazomanie sandstone, also St. Lawrence, Jordan and Oneota.

Mazomanie to Middleton (Highway 11 paved); 21 miles.

Stop 6 - Quarry about a mile northwest of Black Earth: Type Locality of Black Earth dolomite, first introduction to Mendota problem (Ulrich vs. others)

From Middleton around north shore of Lake Mendota to Madison (Highways M and 113 paved but narrow and crooked); 15 miles.

Stop 7 - At old Quarry at Pheasant Branch: Mendota dolomite, further discussion of Mendota problem.

Stop 8 - C. and N.W.R.R. cut at Mendota: Type locality of Madison sandstone, also underlying beds, further discussion of Mendota problem.

Stop 9 - At Farwell Bluff or State Hospital grounds or Maple Bluff (private): Type locality of Mendota dolomite, also upper beds of Mazomanie.

Time Table

Start 7:00 A. M.

185 miles driving	4¾ hrs.
Starting and stopping 9 stops	1½ hrs.
9 stops average 21 minutes	3¼ hrs.
Lunch	1 hr.
Stop 5:30 P. M.	10½ hrs.

FIFTH DAY

Madison to La Crosse - 180 miles

Madison to Leland (Highways 12 paved and 136 gravel); cross late Wisconsin terminal moraine to Driftless Area; 40 miles.

Leland to Ableman (Highways 136 and D gravel); cross South Range of pre-Cambrian quartzite, Weidmans Falls show an early stage of superimposition of drainage upon buried quartzite, from upland a good view of quartzite range with supposed wave-cut terrace on its flanks; 15 miles.

Stop 1 - Near Leland: Striking Franconia (Mazomanie) - Dresbach ~~(Galesville~~ contact). Eauclaire (Dresbach)

Stop 2 - In Ableman gorge: World famous gap through North quartzite Range, sandstone and conglomerate of Franconia and Dresbach age ~~(Ulrich's Devils Lake sandstone~~) lying almost horizontally on vertical quartzite, Ableman breccia.

Ableman to North Shore of Devils Lake (Highways and town roads gravel); Bottom and shore of West Baraboo Lake (Salisbury and Atwood), and classic outwash plain and terminal moraine; 10 miles.

Stop 3 - At Woods (Cahoon) quarry and Skillets Falls: Mendota dolomite in quarry and basal Franconia dolomite at falls, last exposure of Mendota.

Stop 4 - At Devils Lake: Climb trail to top of bluff, see Cambrian sandstone (type locality Devils Lake sandstone) lying unconformably on Baraboo quartzite (type locality), Devils Lake confined in gap through South Range between two arms of a late Wisconsin terminal moraine, also see summit peneplane.

Devils Lake to Wisconsin Dells (Highway 12 paved); pass through Baraboo, see more of terminal moraine and outwash plain; 13 miles

Stop 5 - At Wisconsin Dells: Two hour boat trip through Dells of Wisconsin River, discuss origin and history of the Dells and glacial Lake Wisconsin, in Dells Eau Clair sandstone containing numerous ?striking? diastems is exposed. (NOTE: The boat trip would take no longer than Thwaites stops 8 and 9 and by lunching and having cars serviced while on the trip it would take less time. About the same things could be studied and rest and relaxation would be afforded).

object to river trip - substitute climb of a bluff - Point Bluff or best

Wisconsin Dells to Mauston (Highway 12 paved); Good exposures of Eau Claire sandstone, with ~~Dresbach(Galesville?~~ Cliffs); 22 Miles. Eauclaire Ont. Limn ~~Dresbach~~

Mauston to Sparta (Highway 71 gravel); Bottom of Glacial Lake Wisconsin and castle-like hills of sandstone; 50 miles.

Stop 6 - At Goodenough Hill: An excellent section of eastern facies of Franconia and Mazomanie (Thwaites).

Stop 7 - Hill north of Norwalk: Type locality of Norwalk sandstone, also good exposures of Lodi and Black Earth.

Sparta to La Crosse (Highway 16 paved); 30 miles.

Time Table

Start 7:00 A. M.

180 miles driving	$4\frac{1}{2}$ hrs.
Ableman stop	1 hr.
Devils Lake stop	1 hr.
Wisconsin Dells stop	2 hrs.
4 other stops, stopping and starting	$\frac{3}{4}$ hr .
4 other stops average 18 minutes	$1\frac{1}{2}$ hrs.
Lunch(eat and have cars serviced during boat trip)	0 hrs.
Stop 5:30 P.M.	$10\frac{3}{4}$ hrs

SIXTH DAY

La Crosse to Minneapolis - 215 miles

La Cross to Trempealeau (Highways 35 paved and 167 gravel); 25 miles

Stop 1 - At Trempealeau: Type locality of Trempealeau formation (Ulrich), bluff section includes ~~Eau Claire, Galesville?~~ Eau Claire Franconia, ~~St. Lawrence, Jordan~~ Trempealeau Madison and Oneota of tentative section of Trowbridge and Atwater.

Trempealeau to Eau Claire (Highways K. 35 and 53 gravel and paving); rough country, many exposures; 80 miles.

Stop 2 - At Galesville: Type locality of Galesville? member of Dresbach formation(Trowbridge & Atwater), section at old mill includes fossiliferous sandstone and shale of the Eau Claire, 90 feet of Galesville? sandstone, and the lower beds of the Franconia.

Stop 3 - At Mount Washington in Eau Claire: Type locality of Eau Claire in old quarries (Ulrich 1913).

Stop 4 - At Mount Simon in Eau Calire: Type locality of Mt. Simon sandstone.

Eau Claire to Chippewa Falls (Highway 53 paved); 10 miles.

Stop 5 - At Chippewa Falls: preCambrian granite at power dam and Mt. Simon sandstone unconformable on weathered pre-Cambrian granite in city park.

Chippewa Falls to Hudson (Highways 29 gravel and 12 paved); several good exposures on roadside, chiefly of St. Lawrence, Jordan and Prairie di Chien, drive across syncline and axis of Hudson-Afton anticline(Clement and Powers) (Interpreted by Weidmand and Schultz, Trowbridge and Atwater 1930, Karges, and Thwaites 1931 as being due to faulting; 73 miles.

Stop 6 - At Menomonie: Fossiliferous Eau Claire shale at crossing of Red Cedar River and Franconia near by.

Stop 7 - At Hudson: Famous section of Franconia now well exposed in new roadways, also upper beds of Dresbach (Galesville?).

Hudson to Minneapolis (Highway 12 paved); 27 miles.

Time Table

Start 7:30 A.M.	
215 miles driving	5½ hrs.
Starting and stopping 7 stops	1½ hrs.
7 stops average 19 minutes	2¼ hrs.
Lunch	1 hr.
Stop 5:30 P. M.	10 hrs.

SEVENTH DAY

Minneapolis to Minneapolis -- 230 miles

Minneapolis to Fort Snelling (Highway 52 paved); 7 miles.

Stop 1 - At Fort Snelling: Type Locality of St. Peter sandstone Prairie du chien in footings of Mendota bridge, St. Peter, Glenwood, and basal beds of Platteville exposed at both ends of this new bridge.

Fort Snelling to South Saint Paul (City streets mostly); 3 miles.

Stop 2 - At South Saint Paul: Platteville, Decorah and lower Galena well exposed in working brick and tile plant. 90 feet of shale, very fossiliferous.

South Saint Paul to Shakopee, via Fort Snelling (city streets and highway 5 paved); 24 miles.

Stop 3 - At Shakopee: Type locality of Shakopee dolomite, discussion of Shakopee problem, here it lies on Jordan sandstone.

Shakopee to Jordan (Highway 5 paved); Merriam Junction and Van Oser Creek sections near road, no stops; 11 miles.

Stop 4 - At Jordan: Type locality of Jordan sandstone, also Jordan-St. Lawrence contact in bed of Sand Creek.

Jordan to Old St. Lawrence (country road dirt); 3 miles.

Stop 5 - At Old St. Lawrence: Type Locality of St. Lawrence formation, also uppermost beds of Franconia?

Old St. Lawrence to Ottawa (Country road dirt, Highway 5 paved and more country road dirt); 30 miles.

Stop 6 - At Ottawa: Jordan "white rock" younger silt and clay and basal Oneota.

Ottawa to Mankato (Country road dirt and highway 5 paved); 14 miles.

Stop 7 - North edge of Mankato: Working quarry exposing upper beds of Jordan, 60' of Oneota, 2' of New Richmond, and 5' of Shakopee dolomite.

Stop 8 - Excellent exposure of pre-Oneota silt and clay squeezed up into solution crevices in Oneota.

Mankato to New Ulm (Highway 14 gravel); old quarry in St. Lawrence dolomite at Judson and one exposure of St. Lawrence-Franconia contact on roadside, no stops: 28 miles.

Stop 9 - At and near New Ulm: Type locality of New Ulm quartzite also Pre-Cambrian granite and conglomerate and Cretaceous shale and sandstone; 5 miles.

New Ulm to Minneapolis(Highways 15, 14, 22, 51 and 5 all paved); glaciated country, no stops; 107 miles.

Time Table

Start 7:00 A.M.

230 Miles driving	6 hrs.
Stopping and starting 9 stops	1½ hrs.
9 stops average 16 minutes	2½ hrs.
Lunch	1 hr.
Stop 6:00 P.M.	11 hrs.

EIGHTH DAY

Minnespolis to Duluth - 220 miles

Minneapolis to Stillwater (Highway 45 paved); 26 miles.

Stop 1 - At Stillwater: Famous section interpreted by Ulrich as 50' of Upper Canadian Shakopee dolomite, over 60' of Upper Ozarkian Oneota dolomite with a systemic break between, over about 40' of Jordan sandstone, over Trempealeau sandstone (Norwalk) and shale (Lodi); but considered by Clement and Trowbridge to be about 10' of Shakopee dolomite, over 5' of New Richmond dolomite containing minerals characteristic of New Richmond sandstone, over 113 feet of Oneota dolomite, over 100' of Jordan sandstone, over Lodi shale.

Stillwater to Osceola (Highway 35 gravel); 25 miles.

Stop 2 - At Osceola: Famous section including Franconia, ~~St. Lawrence, Jordan~~ Trempealeau, and Oneota, new road cut shows bed of pre-New Richmond sandstone in Oneota dolomite.

Osceola to Taylors Falls (Highway 35 gravel); 12 miles.

Stop 3 - In Interstate Park: Giant potholes, Keweenawan trap rocks and overlying Dresbach and Franconia conglomerates and sandstones.

Taylors Falls to Franconia (Country road gravel); 5 miles.

Stop 4 - At Franconia: Type locality of Franconia formation, over 5' Dresbach, over Keweenawan trap, Franconia here differs lithologically and faunally from Franconia elsewhere ~~Dodd~~

Franconia to Hinckley (Country road gravel 5 miles and Highways 46 and 1 paved); glaciated country, few exposures; 70 miles.

Stop 5 - At Hinckley: Type locality of Hinckley sandstone, more will be known about this locality later in the summer, a new quarry reported at Sandstone.

Hinckley to Duluth (Highway 1 paved); nearly flat glaciated country, few exposures; 84 miles.

Stop 6 - On Kettle River or near Fond du Lac on St. Louis River: to study Hinckley problem further, location and details to be worked out later this summer.

Time Table

Start 7:30 A. M.	
220 miles driving	5½ hrs.
Stopping and starting 6 stops	1 hr.
6 stops average 25 minutes	2½ hrs.
Lunch	1 hr.
Stop 5:30 P.M.	10 hrs.

ALTERNATIVE EIGHTH DAY

Minneapolis to Duluth - 260 miles

Same as EIGHTH DAY scheduled above up to and including Stop 5; 138 miles.

Hinckley to Danbury, Wisc. east (Country road dirt); 30 miles

Danbury to Amnicon Falls (Highway 35 gravel, county road M. "improved", highway 53 gravel); Nearly flat glaciated country, few if any exposures; 70 miles.

Stop 6 - At Amnicon Falls: Interesting gorge and falls, Middle Keweenawan thrust faulted over Upper Keweenawan.

Amnicon Falls to Duluth (Highway 2 paved); drive through Superior, Wisconsin and across Superior-Duluth harbor on bridge; 19 miles.

Time Table

Start 7:00 A. M.	
260 miles driving	6½ hrs.
Starting and stopping 6 stops	1 hr.
6 stops average 25 minutes	2½ hrs.
Lunch	1 hr.
Stop 6:00 P.M.	11 hrs.

Favor this rather than other plans FTT

POST CONFERENCE DAY

Duluth to Duluth - - - 310 miles

Stop 1 - In and on way out of Duluth: Duluth gabbro (type locality) and Keweenawan lava flows (Schwartz, Minn. Geol. Surv. Bull. 20, pp 64-68) wonderful view of Lake Superior from top of bluff.

Duluth to Virginia (Highway 11 paved); Cross Cloquet, Whiteface and St. Louis rivers, sparsely populated region, Adams and Fayal mines at Eveleth, no stops; 63 miles.

Stop 2 - Mesabi Mountain mine at Virginia: Trough ore bodies, subdivisions of the Biwabic formation well shown(Gruner, Minn. Geol. Surv. Bull. 19 p 17)

Virginia to Hibbing (Highway 35 paved); Mountain Iron mine at Mountain Iron, Grant and Sharon mines at Buhl, White Iron, Chisholm and Monroe mines at Chisholm; 26 miles.

Stop 3 - At Hibbing: Hull-Rust-Mahoning-Susquehanna pit, largest open pit mine in the world, deepest part 375 feet, largest ore concentration known, Biwabik formation.

Stop at Androy Hotel in Hibbing for lunch.

Hibbing to Ely (Highway 35 paved and good gravel); Gilbert mine at Gilbert, Biwabik mine at Biwabik (type locality of the Biwabik formation) St. James and Miller mines at Aurora, Lake Vermillion at Tower; 88 miles.

Stop 4 - At Soudan: Soudan mine, underground workings, crystalline hematite ore, Soudan formation (type locality) underlain by Ely greenstone and overlain by Knife Lake slate.

Stop 5 - At Ely: Type Locality Ely greenstone, Pioneer and Chandler mines, Ely ore trough.

Ely to Little Marais, via Isabella (narrow crooked road light gravel); 63 miles.

Little Marais to Duluth (Highway 1, gravel and paved); beautiful drive along shore of Lake Superior, can be logged from Minn. Geol. Surv. Bull. 20 if desired, may be dark before arrive at Duluth. 64 miles.

Time Table

Start 6:00 A. M.	
310 miles of driving (slow roads)	9 hrs.
Stopping and starting 5 stops	1 hr.
5 stops average 24 minutes	2 hrs.
Lunch	1 hr.
Stop 7:00 P. M.	13 hrs.

1107 Union National Bank Bldg;
Wichita - Kansas.
June 9, 1933.

Mr. Ira Edwards,
Curator of Geology,
Milwaukee Public Museum,
Milwaukee - Wisconsin.

Dear Mr. Edwards;

The Kansas Geological Society will hold its Eighth Annual Field Conference in the upper Mississippi Valley covering an eight day period in the fall of 1934. The conference will convene at Iowa City and end at Duluth. The State Geological Surveys of Iowa, Illinois, Wisconsin and Minnesota have agreed to cooperate with this Society in sponcering this conference. It is anticipated that the attendance will approximate between 150 and 200 geologists representing oil companies, Universities and Colleges, and State Surveys from almost every state in the Union.

Dean George F. Kay has accepted the appointment of DIRECTOR of this conference, and Professor Arthur C. Trowbridge has accepted the position of LEADER in charge of all four states. The ASSOCIATE DIRECTORS are Ernest F. Bean for Wisconsin, William H. Emmons for Minnesota, and Morris M. Leighton for Illinois.

As chairman of the Committee on Arrangements for this Eighth Field Conference I wish to invite you to act as one of the STATE LEADERS for Wisconsin during this conference. The remaining STATE LEADERS for Wisconsin, Fredrik T. Thwaites and William H. Twenhofel, have already accepted our invitation to act in that capacity. It will interest you to know, I am sure, that the ASSISTANT STATE LEADERS for Wisconsin are Gordon I. Atwater, Gilbert O. Raasch and Robert H. Shrock.

Your acceptance will mean that you will so plan your 1934 summer itinerary as to include time to participate either in the entire conference or at least the Wisconsin portion of this conference. We sincerely trust it will be your decision to attend for the full eight days. However, after Wisconsin is entered, the conference itinerary calls for crossing back and forth between Wisconsin and Minnesota so constantly, that it would be difficult to attend just that portion in Wisconsin alone. The first two days will be spent entirely in Iowa and Illinois.

The financial difficulty in agreeing to attend, in these trying times, is quite another matter. But we will expect no more of you than we have from any of the others. They, have accepted and will save the time to attend, provided the necessary financies are forthcoming at the time of the conference. Such a qualified acceptance is entirely satisfactory; in fact we could not rightfully request more with world conditions such as they are today.

A circular letter is enclosed herewith which was forwarded to the State Surveys of Iowa, Illinois, Minnesota and Wisconsin inviting them to participate in this conference, which will explain in detail the purpose and reason for this field conference.

Travel during the conference is by automobile. These are supplied by the oil companies who have representatives attending, and by the majority of the State Geological Surveys whose representatives participate. A few individuals bring cars as well. For those attending who do not bring cars (and this generally includes two-thirds of the participants) transportation during the conference is furnished free of charge. Thus if you attend and do not bring a car your only item of expense will be hotels and meals. For both of these items rates are usually obtained so that ones personal expense will approximate from $3. to $4. per day.

We are indeed very anxious to have you participate in the Wisconsin leadership of this conference, and I trust we may have your affirmative answer at your earliest possible convenience. We have not been fortunate in having you as one of our annual participants in the past, so that, unless you are familiar with Kansas Geological Society Field Conferences through their growing reputation, you will not realize that they are annually attended by the foremost geologists of the area they cover and by an increasing number of outstanding geologists all over the United States. It is imperative, therefore, that we obtain for the leadership of this Eighth Field Conference those men who are the most conversant with the area involved. As an authority on the Cambrian of Wisconsin, your services are thus being commandeered. Please do not fail us.

Should you wish any further information I am sure that either Dean Kay, Thwaites, or myself, will be only too glad to furnish you with what data you may desire. With kindest personal regards.

Very cordially yours,

Anthony Folger.

Copies to:- George F. Kay
Arthur C. Trowbridge
Ernest F. Dean
Fredrik T. Thwaites

PROPOSED ITINERARY OF KANSAS GEOLOGICAL SOCIETY FIELD CONFERENCE IN WISCONSIN, AUGUST, 1934

Prepared by F. T. Thwaites, G. O. Raasch, E. F. Bean, Gordon Atwater, R. R. Shrock
June 1, 1933

THIRD DAY

Decorah, Iowa to Madison, Wisconsin, about 200 miles

STOP 1 In Decorah: type section of Decorah shale,
Decorah to Waukon via highway 6, 20 miles.
STOP 2 Quarry in Platteville limestone at Waukon.
STOP 3 Iron Hill northeast of Waukon to see Windrow gravel and iron ore.
Waukon to Lansing via highway 6, 18 miles
STOP 4 6 miles west of Lansing: disaster between Oneota and Shakopee with New Richmond sandstone in lenses and pockets between roofs.
(Omit original stop 4 one mile south of Lansing as same things will be better seen across the river.)
Cross Mississippi River on toll bridge. Arrange if possible for paying lump sum for all cars at once to save time.
Go north about 6 miles to Victory. (highway 35)
STOP 5 Ravine section at Victory continuous exposure Dresbach of Ulrich to Oneota.
(Omit Nelson Dewey Park and Prairie du Chien as better exposures and same scenery can be seen on previous day at Painted Rock Park.)
Backtrack on 35 and follow 35 and M to Wauzeka, 60 to Boscobel, old 27 to Fennimore. Several good exposures along these routes but no information on where stops are desirable. Continue on highway 18 east to East Blue Mound. (Omit detour to Highland as mines are closed and other quarries are now open along this route if stops are needed).
Turn north on highway F.
STOP 6 Road cut on highway F showing shale and dolomite of Maquoketa. Discussion of the peneplain controversy (Trowbridge vs Thwaites et al.)
Continue on F to highway 11, turn west and make
STOP 7 School Section Bluff, Mazomanie, type section of Mazomanie sandstone, also good exposures up to Oneota.
Detour on town roads to east making
STOP 8 Type locality of Black Earth dolomite in quarry about a mile northwest of Black Earth. First introduction into the Mendota controversy (Ulrich vs. others).
Continue on 11 and 12 to Madison, Night stop.

FOURTH DAY

Madison to LaCrosse, about 200 miles.

Leave Madison on highway 113.
STOP 1 at either Farwell Bluff on State Hospital grounds or Maple Bluff (private) to see type of Mendota dolomite and further discussion of controversy.
Continue on 113 and M
STOP 2 C. and N. W. R. R. cut at Mendota, Exposure of Madison sandstone and underlying beds.
Follow 113 and M around Lake Mendota to
STOP 3 old quarry at Pheasant Branch. Last discussion of Mendota controversy. This is easternmost exposure of Black Earth dolomite.

Highways 12, 78, and park road to Devils Lake, entering from east.

STOP 4 Top of West Bluff, Half mile walk to top along old trail. History of Baraboo range, summit peneplain, glacial features, etc. etc.
Town roads west across terminal moraine to

STOP 5 Woods (Cahoons) quarry in Mendota dolomite and exposures to north at Skillet Falls of lower strata including basal Franconia dolomite.
Miles from Madison to here roughly 65.
Continue west on T to 136. Follow that past old iron mines across west end of quartzite range to

STOP 6 Mazomanie-Dresbach (Ulrich) contact in striking cliff near Leland. The Natural Bridge near Leland is interesting but exposures are not as good as elsewhere. Waldemma Falls northwest on road to Ablemma is also interesting as it shows an early stage in superposition of drainage upon the buried quartzite range. Paleozoics are poorly exposed there.
Continue on 136 (back track) and D to Ablemma. From the upland there is a good view of the quartzite range with supposed wave cut terraces on its flanks. Also crossed one of those on 136 going south to Leland.

STOP 7 Ablemma gorge. This world-famous locality demands considerable time. Vertical quartzite beds locally brecciated are truncated by Franconia conglomerate. Very interesting problems in sedimentation.
Highway 33 and 23 to Wisconsin Dells. No time for a boat trip. Go north a few miles on 13 and make

STOP 8 Near Cold Water Canyon to walk down to river through postglacial gorge in Eau Claire sandstone. Then go north about a mile and turn into a town road for

STOP 9 Climb Elephants Back Bluff, of Dresbach (Ulrich), Franconia and Mazomanie formations. Fine view of great central plain of Wisconsin. Discussion of its origin, Glacial Lake Wisconsin, origin of Dells, physiography of the Cambrian formations, etc.
Return to Wisconsin Dells and follow highway 12 northwest to Mauston. Part of this highway has been relocated and should show good exposures of the Eau Claire sandstone. Good views of Dresbach cliffs to left. (Omit stop at cave because of lack of time). At Mauston turn left on highway 71 and in a few miles make

STOP 10 Goodenough Hill, an excellent section of eastern facies of Franconia and Mazomanie.
Continue on 71 through very rough country to

STOP 11 Hill north of Norwalk, type of Norwalk sandstone, also good exposures below that.
Follow 71 to Sparta and 16 to LaCrosse. Night stop.

FIFTH DAY

LaCrosse to ~~Eau Claire~~ Minneapolis, Minn. about 210 miles
Cross Mississippi River on free bridge. Highway 61 to Dresbach.

STOP 1 Type locality of Dresbach formation. Discussion of proper use of term Dresbach. Other exposures are poor compared to other side of river.
Continue on 61 to Winona.

STOP 2 Winona quarry (have no information on this) 31 miles to here.
Cross on free bridge. Highways 54 and K. 18 miles to Trempealeau Mountain in Perrot State Park, Wisconsin.

STOP 3 Climb bluff for good section from Dresbach to Oneota including type of Trempealeau formation.
North on K and 93 to Eau Claire about 70 miles of rough country.

STOP 4 Mt. Washington, Eau Claire, type section of Eau Claire formation.(Ulrich 1913)

STOP 5 Mt. Simon, type section of Mt. Simon formation.
Continue on highway 53 a few miles to Chippewa Falls.

STOP 6 In city park to see contact of Mt. Simon with underlying weathered pre-Cambrian granite.
To Minneapolis about 100 miles via highways 29 and 12 with probably no time for stops although there are good exposures at Colfax (detour), Menomonie, Knapp, and Hudson.
Minneapolis night stop.

SIXTH DAY

All of route outside of Wisconsin.

SEVENTH DAY

Minneapolis, Minnesota to Ironwood, Michigan about 260 miles.

Highway 45 to Stillwater.

STOP 1 Section at Stillwater Trempealeau, Jordan, Oneota
North on a Minnesota county highway west of the river to

STOP 2 Type section of Franconia formation at Franconia, Minn.
Highway 8 to Taylors Falls about 2 miles.

STOP 3 In Interstate Park to see potholes made by glacial river, trap rocks of Keweenawan and overlying sandstones. Miles to here about 66
Continue on highways 8, 24, 77, and 2 to Ironwood Michigan. As far as Mellen little but glacial deposit is seen. From Mellen to Ironwood the route follows a strike valley on Huronian slate between hills of gabbro to the north and lean iron formation to the south. Several good exposures but doubt if time will permit stops. Abandoned Berkshire open pit mine, Potato River gap exposures, etc.
Ironwood, Michigan, night stop.

EIGHTH DAY

Ironwood, Michigan to Duluth, Minnesota about 190 miles.

East on highway 2.

STOP 1 Openpit mine at Bessemer.
North on county highway to Lake Superior down Black River. Famous section but parts are hard to see without walking though brush. Cannot estimate number of stops exactly but allow 4. Keweenawan traps and overlying conglomerates and sandstones.
Return to Bessemer and follow 2 west to Hurley and Ashalnd. Abandoned beaches of Lake Superior.
At Ashalnd Junction(about 45 miles from Ironwood without counting the Black River trip) make

STOP 6 Outcrops of tilted Upper Keweenawan sandstones on Fish Creek which grade upward into sandstone formerly called Cambrian.
Continue north on highways 112 and 13 to

STOP 7 Abandoned quarry in Bayfield sandstone at Salmo.

Continue on 13 to

STOP 8 Cliffs of Squaw Bay with sea caves. This is the Devils Island sandstone of Thwaites. Interesting problems in sedimentation raised by these non-fossiliferous deposits.

Follow 13 to Port Wing, thence south on A to highway 2. West on 2 to

STOP 9 Falls of Amnicon River exposing thrust fault between Middle Keweenawan traps and Upper Keweenawan sandstone formerly called Cambrian. Years ago there were also good exposures on Middle River not far from here which showed the Upper Keweenawan overturned by the thrust fault. over 3000 feet of strata showed a gradation upward into the Bayfield sandstone. When last visited in 1925 these exposures had been grown over. Continue on 2 to Duluth, end of trip.

Should stop at Fish Creek prove impracticable either the Middle River or St. Louis River sections could be substituted at expense of a little more distance.

June 1, 1933

Dr. A. C. Trowbridge,
Department of Geology,
University of Iowa,
Iowa City, Iowa

Dear Dr. Trowbridge:

In reply to yours of the 26th I greatly regret the delay in finishing the proposed itinerary for the 1934 trip of the Kansas Geological Society. When this material came early in May I was just leaving for a field trip which had been delayed by bad weather. I turned the matter over to Raasch who, however, was moving the exhibits in the museum and did nothing on it until after my return. With present and prospective cuts in salary it is now necessary to do more work at home which I used to be able to afford to hire someone to do hence further delay. However, yesterday I arranged a conference of Messers Beam, Raasch, Atwater, Shrock and myself to determine what seems best. We all agreed that to see anything at all of the south shore of Lake Superior it is necessary to cut out the eastern Wisconsin day. We laid out a schedule for that with a trip from Madison to Beaver Dam. However, this resulted in curtailment of other days to such an extent as to wreck the full day alloted to the Minnesota valley to say nothing of the entire elimination of the day on the south shore. It was our feeling that if the Conference visits Lake Superior at all that long journey must be made worth while. They could hardly get up a trip to Lake Superior alone at a later date but might much more easily plan one to go around Lake Michigan visiting the Devonian and younger strata of that state, the oil fields, etc. Eastern Wisconsin would fit in much better in such a trip.

With these facts in mind we suggest that you check the eastern Iowa stops to see if as much as possible of the Niagaran reefs is included.

I still feel that nearly every day is too long. The Kansas men probably do not realize the topography of the Driftless Area and its effect in reducing speed. I did not attempt to compute the number of miles between stops as my experience is that such map estimates are generally much too low. I hope that the estimates of each day's run is not far off. When travelling with students I have found that everyone gets too tired if a 200 mile trip is made. I try to hold down the days to not over 150 miles and then not to make more than a two day trip at a time. However, the men who will go on the proposed conference are not only experienced geologists who get more out of a short stop than do students but they are used to driving and life outdoors and so will not tire as easily as those who have been working indoors.

If you are bringing a class to Baraboo this Summer possibly we can arrange for another conference in which you will be included.

Raasch and I have hopes that we can induce students to go over the route and write up results for theses. This might solve the expense problem for there are no public funds available for logging.

Very truly yours,

DEPARTMENT OF GEOLOGY

GEORGE F. KAY
ARTHUR C. TROWBRIDGE
JOSEPH J. RUNNER
ALLEN C. TESTER
ARTHUR K. MILLER

THE STATE UNIVERSITY OF IOWA
IOWA CITY

May 26, 1933

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

Dear Thwaites:

I realize that you are even more busy than usual at this time of the year and do not want to hurry or otherwise inconvenience you, but feel that I should put before you a situation regarding Folger's letter to you, dated May one. Folger is expecting me to complete and submit to him a third, but still tentative, itinerary for the eight days of the conference and one Post-Conference Day before I leave for the field work of the summer on or about June eighth. I too am busy and must do this work as I can along with numerous other tasks. Several important suggestions concerning the time to be spent in Minnesota have been received from Stauffer. Folger has suggested several changes. Kay and Tester here and R. C. Moore and Hugh Miser, whom I saw in Washington last month, have also made suggestions. It is going to be quite a job to harmonize all these suggestions and to prepare the next draft of the general itinerary. Under the circumstances, I hope you can soon finish the work outlined in Folger's letter and send the results to Folger and to me.

Sincerely yours,

Trowbridge

A. C. Trowbridge

ACT:A

Gypsy Oil Company

Tulsa, Okla.

1107 Union Nat. Bank Bldg;
Wichita - Kansas.
May 1, 1933.

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

My dear Thwaites;

Transmitted herewith is a tentative outline, with attached correspondence, of the itinerary of the 1934 Field Conference. Professor Trowbridge prepared this at my request. I am retaining the original draft of the itinerary here so you may keep the enclosed copy. The attached correspondence will indicate that the Committee on Arrangements has decided definitely (at least for the time being) against an Eastern Wisconsin Day.

Two very important questions remains to be solved. First, does the tentative itinerary attempt too much; i.e., is the mileage and number of stops for each day too great?. Granted that the mileage is somewhat excessive, where may mileage be saved and yet accomplish the purpose of the conference?. We feel strongly that, in general, too many stops have not ~~be~~ been scheduled. Secondly, with the Eastern Wisconsin Day omitted, should that days time be distributed among the remaining days and proceed direct from Minneapolis to Duluth, or, should these days be shortened if possible each by itself, and the extra day available be spent in a study of the Cambrian and Pre-Cambrian between Ironwood and Duluth?. The Committee inclines to the latter solution, believing that a day spent on the south shore of Lake Superior would have a real economic bearing to some of our problems and would also have a great deal of popular interest.

At your very early convenience will you be kind enough to prepare a tentative itinerary, patterned after the enclosed, which will include the following days. (1) From ~~Duluth~~ Minneapolis to Ironwood (2) From Ironwood to Duluth, and (3) From Minneapolis direct to Duluth omitting Ironwood. When completed, will you forward these to Trowbridge (sending a carbon copy to me) together with any further remarks you may have, or suggestions you may have, relative to the remaining portions of the enclosed itinerary. May I repeat that our Committee is very anxious to go by way of (1) and (2), instead of by (3) if it is humanly possible to accomplish this schedule.

Our thought in preparing a tentative itinerary in advance of field investigation is that it will give the Leaders a concrete program to work from which considers the whole schedule as a unit of interstate study, whereas without an advance itinerary each Leader might tend to think of his problem of selecting stops

within his own State from a local state viewpoint instead of an interstate point of view. Naturally when actual field investigations begin the details of the advance itinerary may require alteration, but most of the major features will stand. Thus I wish you would give Trowbridge's entire Wisconsin itinerary very close study and feel free to make suggestions to him. With the Eastern Wisconsin Day omitted I presume the plan will be to proceed from Madison northward to Baraboo and Wisconsin Dells and thence northwestward, so that the whole itinerary (as enclosed) between Madison and Minneapolis will have to be rearranged.

I am hopeful that time will permit you to get your suggestions, and the three days of itinerary, into the hands of Dr. Trowbridge by May 15th at the latest. Please remember to forward me a carbon copy of all that you transmit him.

It appeals to me that we have made an excellent start relative to the fundamental problems of this conference. With the preliminary details worked out to the satisfaction of a few men in the upper Mississippi valley area, and to the satisfaction of the Committee on Arrangements in Wichita, so far in advance we cannot go far wrong.

Our own reaction relative to the number of miles to be averaged per day is that 200 miles, or a little more or less, can be easily made. But in order to hold it to 200-225 miles per day, unusual attention must be given to the location of the stops, their availability, and the fact must be kept in mind that nothing of real importance must be left out. Better to start one or two days at 6 A.M., gaining an extra hours time, than to leave out a stop or two of vital importance. I am going to relie on you and Trowbridge to get Wisconsin worked out to your entire satisfaction. If you cannot, let me know, and I may have some suggestions.

With kindest personal regards.

Cordially yours,

Anthony Folger

Anthony Folger.

Copy to A. C. Trowbridge.

Gypsy Oil Company

Tulsa, Okla.

1107 Union Nat. Bank Bldg;
Wichita - Kansas.
May 1, 1933.

Professor A. C. Trowbridge,
Department of Geology,
University of Iowa,
Iowa City - Iowa.

Dear Trowbridge;

Your letter of April 27th has just come to hand this morning. Today, I am forwarding your tentative itinerary to Thwaites requesting him to prepare a number of detailed days itineraries and forward them direct to you together with any other suggections he may have for the remaining days. I trust he shall be able to accomplish this by the 15th of May.

Our Committee feels that from 100 to 150 miles per day is too small a days travel, and that 250 miles per day is probably too great. We think an ideal day would be in the neighborhood of 200 miles, since most of the highways which will be traveled will be high-speed roads. In general we do not think you have too many stops.

As you will see by my letter to Thwaites we still feel that the day from Ironwood to Minneapolis should be included if it is possible to so adjust the remaining itinerary that nothing of vital importance is omitted. I wish you would attempt to so work out the schedule and see how it comesxout. Naturally if it cant be done we must per force omit it. I think we would rather leave out an inspection of the members of the Maquoketa formation in the northwest area around Fort Atkinson, that to omit the south shore of Lake Superior.

Thank you for writing to Emmons. I shall try and forward Atwater's copy of your manuscript to him sometime the latter part of this week. Within the next two weeks please be sure and get in touch with Marshall Kay relative to the Fort Atkinson-Clermont problem.

Cordially yours,

A.F.

Anthony Folger

Copy:- Fred T. Thwaites.

THE STATE UNIVERSITY OF IOWA
Iowa City

April 27, 1933

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

Dear Mr. Folger:-

Having recently returned to the office to find myself badly swamped with work, I have not until now had opportunity to reply to your letters of April 22nd and April 24th.

Many thanks for the kind regards about my work on the itinerary and the paper by Trowbridge and Atwater, contained in yours of April 22nd.

While in Washington I talked with R. C. Moore and Hugh Miser in regard to these field conferences, and both these men agree with Dean Kay, Allen Tester, and myself in thinking that the itinerary as it stands today, contains too many stops, too many miles, and too many hours of travel per day. Moore and Miser seem to think that the daily trip should be kept between 100 and 150 miles. Thwaites appears to have the same idea. It is my belief, therefore, that the itinerary should be gone over again with a view to reducing the number of stops and the mileage. It seems to me that the time saved by the elimination of the day in eastern Wisconsin should be distributed over the other days rather than to put in in its place the day south of Lake Superior. Of course, you and your committee know much more about this than I do, and whatever you say I will try to work out.

I am so badly rushed right now that I shall probably not be able to do anything more on this job for a week or two.

It is possible that certain changes can be made which would per mit us to stay overnight at La Crosse rather than DeCorah. I will see what can be done about this and will let you know.

I have no objections to your sending a copy of my Itinerary to Thwaites with the suggestion that he arrange tentatively for a day's work on the south shore of Lake Superior. I will write to Emmons and ask him to arrange a preliminerary itinerary for the post-conference day as you suggest. By the time these two men have been heard from, I will be ready to go to work again and will let you have a substitute itinerary as soon as possible thereafter. All the suggestions contained in your two letters will be kept in mind as this new itinerary is prepared.

A.F. 4-27-33

I am sorry to say that I do not have an extra copy of the paper by Trowbridge and Atwater. Of Course, you may make copies of parts of it if you wish. The copy I sent you should be mailed to Atwater at your convenience.

Cordially yours.

A. C. Trowbridge.

ACT*A

1107 Union National Bank Bldg.
Wichita - Kansas
April 24, 1933

Dr. Arthur C. Trowbridge.
Department of Geology.
University of Iowa.
Iowa City, Iowa.

Dear Dr. Trowbridge:-

After going over your tentative itinerary again during the week-end I find one thing I would like to call to your attention in light of our change in plans by cutting out the eastern Wisconsin day. Namely, that beds of Siluro-Devonian age will have to be seen in Iowa and Illinois - and - have we given them sufficient attention in the present schedule.

It appeals to me that the Devonian is perhaps well taken of, but not the Silurian. As specifically mentioned, there is but one stop for the Gower and no stop for the Hopkinton, although presumbly your steps listed as Niagaran may cover one or both. Thus stops 8 and 9, of the First Day may cover the Hopkinton.

On the First Annual Field Conference we only saw the Hopkinton in one of the Hurtsville quarries just north of the town of Maquoketa. Possibly we could come down there again from Bellevue before returning to Dubuque. I also notice you do not mention the Alamosa and Eclir members of the Gower. Are these members anywhere in reach of the present Itinerary?

All this sums up in say that we think a thorough examination of the Gower and Hopkinton should be made from top of bottom provided localities are at all accessible to the line of travel. This you knew in the first place, and probably kept it in mind, but I just wanted to emphasize it again and make sure that this has been accomplished.

I notice at the bottom of page 3 of your Itinerary you say that a stop could be made at Elgin to see the Elgin member of the Maquoketa. If Clermont and Fort Atkinson are included in the Intinerary, we certainly should stop at Elgin. Furthermore, if we go into this area, we should see either the type (or a good section) section of the Brainard - this is not mentioned in your Intinerary. Since the Maquoketa of Iowa is divided into these four members, and since the Maquoketa problem is of much importance to us, it certainly seems that if we should see each of these four members if it is at all possible to do so.

Cordially yours

1107 Union National Bank Bldg.
Wichita - Kansas
April 22, 1933

Dr. Arthur C. Trowbridge.
Department of Geology.
University of Iowa.
Iowa City, Iowa.

Dear Dr. Trowbridge:-

For your letter of April 12th, together with its enclosed intinerary and highway maps, we are sincerely grateful. Since you will not return to Iowa City until the 24th from your trip to Mississippi and Washington, I have taken my time in answering. It has given us time to revolve in our minds the many points to be considered; this our committee has done on several occasions during the past week.

First of all I wish to personally stress my appreciation of the great amount of time and thought you put into the tentative draft of the intinerary. and Secondly, the members of my committee desire that I express with equal force their respective appreciation. For six years I have been intimately acquainted with the manner in which the preliminary details of our conferences have been handled. It is with much satisfaction that I convey the assurance that you have taken hold of these details with a far broader perspective, and in a more satisfying manner, than any of your predecessors.

Consideration of your itinerary shows a total mileage of 1958 miles with 70 stops. Daily mileage varies from 213 to 268 miles and the stops from 6 to 12. The average daily mileage therefore is approximately 250 miles, and the average number of stops 9. Admittedly this schedule is about 50 miles per day too great. Assuming that we start each day at 7 A.M. and reach the night stop at 5 P.M. we have a total of 11 daily hours. The average driving conference time for 250 miles will be close to 7 hours, and, with 1 hour for lunch, there is left but 3 hours. The stopping and starting time for 9 stops is 90 minutes for 1½ hours, leaving but 90 minutes for 9 stops or 10 minutes per stop. Naturally these averages estimates will vary for the better or worse, but they analysize fairly well that we are up against.

On the other hand it must be considered that within the area to be covered, there are only certain towns capable of fulfilling the requirements of a night stop. Forinstance, between Decorah and Madison there probably is no town with hotel accomodations capable of filling our needs. It seems essential therefore that a certain daily distance be made, and that this average daily distance is well over the ideal 200 mile average length. Again, the ideal day is from 8 A.M. to 5 P.M. Just how all of these ideal facts can be adjusted to the necessary facts cannot be determined at this end. Our opinion is that very probably an 11 hour day will

generally be necessary, that high speed grads between stops will have to be chosen to try and cut the driving time from 7 to 6 hours, and that 15 minutes may have to be cut from the lunch hour (however it takes about an hour to eat lunch, service the cars with gas and oil, and reform the line) in order to give more time at each stop. Some long days may have to start at 6:30 A.M., or even at 6 A.M., in order to get back at 6 P.M., but this should be avoided when possible.

It is our conclusion that the day in eastern Wisconsin should be entirely omitted. In the event that after more careful field investigation you find yourself avle to put it in again - well and good - otherwise forget it.

On the other hand it is also our conclusion that despite the heavy daily schedule already proposed, the eastern Wisconsin day should be substituted for a day along the south shore of Lake Superior between Ironwood and Duluth. Such a day, besides its scientific value, would have very great popular interest. The opinion of a goodly number of commercial men has been requested and we find their reaction unanimous for the Lake Superior Day over the eastern Wisconsin Day.

It is suggested, however, that instead of proceeding from Minneapolis to Duluth on the seventh day, with the eighth day from Duluth eastward and return, that we go from Minneapolis direct to Ironwood, Michigan, on the seventh day, with the eighth day from Ironwood to Duluth. The mileage of your tentative eighth day (now the seventh day on this new suggested schedule) may be increased slightly, but presumably there will be no stops during the latter part of this day. I think it important from a company mans standpoint that we spend the night of the seventh day in Ironwood and not in Duluth. It will hold a greater number of participants on the trip for the last day. Oil company executives, who pass on the expenditures of their men for these trips, will not know the location (except a few of them) of Ironwood without looking it up on the map. It will mean nothing to them other than one of the night stops on the trip. But if we stay in Duluth, all of them know its geographic location, its position far northward in Minnesota, its popular association with Pre-Cambrian, and they might suggest that their men do not stay for the last day.

Despite the fact that a Lake Superior Day has been substituted for an eastern Wisconsin Day, the cange in Itinerary will give you the opportunity to rearrange your stops and Baraboo and Wisconsin Dells - probably for the better. I think two hours in none too much at these stops, and I am even wondering if 2 hours is sufficient at Baraboo? Also, your itinerary calls for a night stop at Black River Falls, but at the heading of that day it is described as LaCrosse. Do you not think LaCrosse would be preferable?

I have summarized the stratigraphy of your stops, and am enclosing a tabular anaylsis which may be of interest. I think you have stressed the correct formations, with the exception that the Dubuque members of the Galena should be given more consideration if possible.

With the change in schedule necessitated by the omission of the Eastern Wisconsin Day and the inclision of a Lake Superior Day between Ironwood and Duluth, may I make this suggestion. Would there be an objection on your part if I forward a copy of your itinerary to Thwaites, asking him to check it over very carefully, and forward to you any ideas he may have relative to the stops chosen and the revised arrangement of the Itinerary. Also would it not be well to request him to

prepare in detail, just as you have done, his conception of an itinerary for the Eighth Day between Ironwood and Duluth, forwarding this to you in order to lighten your burden. And similarly, would you request Emmons (or whoever else you wish) to prepare in equal detail an itinerary for the Post-conference Day into the Mesabi and Vermillion Iron Ranges, advising them of our own tentative ideas, and forward this to you. Then, when you are in possession of this material, would it place too great a burden upon you to prepare another complete draft of the proposed intinerary and forward it to me? With the changes that have been made, I think this plan is advisable and essential, and I trust it will meet with your own approval.

Also I am hoping that you will be able to get an answer from Marshall relative to the value of including stops at Clermont and Fort Atkinson. If these should not be omitted, we might even omit the stop at Decorah, which would materially shorten our mileage, although I am at a loss to know where we might stay over night between Dubuque and Madison - certainly not at McGregor !!!. Ask Kay about the " Battle of McGregor" seven years ago. Possibly he remembers the cook coming out after his participants with his carvingknife? Again, if we were to stop over night between Dubuque and Madison, we might stop next night at Wisconsin Dells, getting in both the Madison and Baraboo stops during the afternoon - although it would be nicer to spend the night at Madison since it is the home of the University and the State Survey. You have a great many things to consider and I do not relish your "job", but, if we can arrive at a satisfactory tentative itinerary before field investigation begins, I think we will have a far better balanced scheduled program.

Your manuscript on the upper Mississippi Valley stratigraphy has been received and read three times. I shall forward it to Atwater next week. Have you an extra copy which I might keep. If you do not have, I am inclined to have at least portions of it copied here, since it is essential for us to have your analysis of the stratigraphy at hand in order to be able to pass on suggestions from the different state surveys relative to the forthcoming trip. The first of the week, I shall write you relative to this manuscript. Let it suffice here to say that you have taken a wonderful step forward.

Now I must stop. I trust you had a most enjoyable trip east and that you will let me know at once your reactions relative to paragraph one, Page 3, on this letter. If the suggestions made meet with your entire approval I shall write Thwaites at once. With kindest personal regards, and again many many thanks for the labor and thought you have expended in our behalf.

Very cordially yours.

Anthony Folger.

DAY	MILEAGE	NO. OF STOPS	NIGHT STOPS
First	213	9	Dubuque, Iowa
Second	231	8	Decorah, Iowa
Third	257	11	Madison, Wisconsin
Fourth	268	9	Baraboo, Wisconsin
Fifth	261	9	Black River Falls, Wis.
Sixth	231	6	Minneapolis, Minnesota
Seventh	234	12	Minneapolis, Minnesota
Eighth	263	6	Duluth, Minnesota
Totals	1958	70	

Thwaites I prepared this
Folger

Tabular Analysis of Tentative Itinerary of Eighth Annual Field Conference showing the number of times individual stratigraphic horizons will be studied during the conference **

DEVONIAN		6
Devonian	2	
Cedar Valley	3	
Wapsipinicon	1	
SILURIAN		11
Gower	1	
Niagaran	7	
Alexanderian	2	
Mayville	1	
ORDOVICIAN		68
Neda	1	
Maquoketa	8	
Dubuque	1	
Galena	7	
Decorah	6	
Black River limestone	1	
Platteville	7	
Glenwood	3	
St. Peter	5	
Prairie du Chien	2	
Shakopee-Willow River	7	
New Richmond	5	
Oneota	15	
CAMBRIAN		58
Jordan-Norwalk-Madison	16	
Ledi	1	
St. Lawrence-Black Earth-Mendota	10	
Mazomanie	2	
Franconia	11	
Dresbach	5	
Galesville	4	
Eau Claire	5	
Mt. Simon	3	
Hinckley	1	
PRE-CAMBRIAN		8
Keweenawan	2	
Huronian and Barabee Quartzites	3	
Pre-Cambrian	3	

**

This analysis does not include the post-Conference Day into the Mesabi and Vermillion Iron Ranges.

Nor does it include the stratigraphic horizons at Winona (Stop 7; Fifth Day) and at Minnehaha Falls (Stop 1; Seventh Day) since a statement of what beds were exposed at these localities is not contained in the Tentative Itinerary.

TYPE SECTIONS

The following TYPE SECTIONS are mentioned in the Tentative Itinerary. Others may be present, but are not specifically designated as such, since I presume the stops at Ft. Atkinson and Clermont (etc) were chosen at the type localities of these members.

1. Winston (Aleranderian)
2. Decorah
3. Guttenberg members of Decorah
4. St. Peter
5. Shakopee
6. Jordan
7. Norwalk
8. St. Lawrence
9. Mazomanie
10. Eau Claire
11. Mt. Simon
12. Hinckley

April 20,1933

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

Dear Sir:

In reply to your letter of April 8, I can assure you that both this Survey and the Department of Geology are anxious to do all possible to make the Eighth Annual Field Conference a success. Unfortunately, I see no way for us to guarantee at this time that Wisconsin will log the trip. This is a project that should be done a short time before the trip. The expense, therefore, would be incurred in 1934. It is possible that at that time we might secure a grant from the Chamber of Commerce. I believe that a letter from you indicating the number of men who have signified their intention of taking the trip that such a grant could be secured. I am inclined to think that there is already sufficient data available in the office to take care of many of your requirements.

Wisconsin will, of course, give official recognition and official support to the conference. If possible, we shall aid in logging the Wisconsin portion of the trip and will furnish leadership thereon. We cannot guarantee this expenditure at the present time.

Very truly yours

WISCONSIN GEOLOGICAL SURVEY
By E F Bean
State Geologist

EFB LMV

THE STATE UNIVERSITY OF IOWA
Iowa City

April 12, 1933

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

Dear Folger:-

I have completed a new edition of the itinerary and am sending it along to you herewith. I am not satisfied with it, but it represents about the best I can do at this time.

I have not tried to designate the time limits on the various stops but believe they will work in on the average with the stops of previous trips. Many of them can be ten or fifteen minutes in length; others will take longer.

On the whole, I think we are still trying to do too much. I still believe the fourth day should be eliminated. I notice that Thwaites thinks 150 miles a day is enough or more than enough. Dean Kay seems to think that we should not crowd the schedules too much. Tester, I think agrees. If we could eliminate the work of the Fourth day east of Madison, we could perhaps shorten all the other days somewhat; or if you think we could carry out the schedules of the other days, we would eliminate the fourth day and go from Minneapolis to Duluth via Hudson, Stillwater, Osceola, Taylor's Falls, Franconia, Kinckley, Kettle River, St. Louis River in one day and then in an eighth day go from Duluth east and back to Duluth via Amnicon Falls, Ashland, Wakefield, Lake Superior, Bayfield, etc, and thus take in everything that Thwaites has outlined for the south shore of Lake Superior.

I am off for Laurel, Mississippi, and Washington D. C. tonight and will return to Iowa City on April 24th. Can be reached by mail or wire. In care of Eastman, Gardiner and Co, Laurel, Mississippi on the 14th, 15th, 16th, 17th and 18th and in care of W. H. Twenhofel, National Research Council, 1101 Constitution Avenue, Washington, D. C. on the 20th, 21st, and 22nd.

When I return home I shall be glad to do anything I can with revision of the itinerary as it now stands.

Cordially yours.

A. C. Trowbridge.

FIRST DAY

Iowa City to Dubuque ------- 213 Miles

Mileage

0 - 2 **Stop 1** - In Iowa City: Pennsylvanian Sandstone and shale of DesMoines series lying unconformably on Upper Devonian Cedar Valley limestone.

Iowa City to Muscatine (Highways 6 & 38); 42 miles

Kansan drift, maturely eroded and covered with Iowan loess. Also Lake Calvin bottom and shoreline. Lake Calvin resulted from ponding of Mississippi River and its tributaries by the Illinoisian glacier.

44 **Stop 2** - At Muscatine: Government dam No. 16 will probably be under construction by 1934. Foundation on Pennsylvanian sandstone and shale and Cedar Valley Limestone.

Muscatine to Davenport (Highway 61); 28 miles, on north bank of Mississippi River.

61 **Stop 3** - At Buffalo: operating quarry and plant of U.S. Cement Co. Upper Devonian Cedar Valley and Waysipinicon limestone.

75 Davenport Lock and dam No. 15, footed on Wapsipinicon limestone. (probably finished by 1934)

Davenport to Clinton (Highway 53); 38 miles on east bank of Mississippi River.

88 **Stop 4** - At LeClaire --- reef structure in Middle Silurian Le Claire (Gower) limestone.

99 Cross Wapsipinicon River

113 Clinton (Lunch stop ?)

Clinton, Iowa to Fulton, Illinois; 4 miles. Fulton to Savanna (Highway 80); 18 miles.

131 **Stop 5** - At Savanna: Savanna --- Sabula--anticline---Niagaran limestone and Maquoketa shale.

Savanna to Mt. Carroll (Highway 27); 11 miles.
Mt. Carroll to Stockton (Highway 40) ; 21 miles.
Enter Driftless Area.

153 Stop 6 - At Elmoville: basal Maquoketa with depauperate fauna, over Galena dolomite.

163 Stop 7 - At. Stockton: Dolomitic uppermost Maquoketa in quarry on Reservoir Hill: edge of Illinoisian drift.

Stockton to Elizabeth (Highway 20) ; 13 Miles.

176 Stop 8 - Elizabeth -- quarry showing lower thin bedded member (Alexandrian?) overlain by Niagaran dolomite.

Elizabeth to Galena (Highway 20); 22 miles.

180 Stop 9 - Winston station (off of Highway 20 on dirt road) Type section Winston formation. (Alexandrian?) underlain by Maquoketa shale and overlain by Niagaran dolomite.

Back to Highway 20.

198 Galena, Illimois. Highway through road cuts in Galena dolomite. Galena, Illinois to Dubuque, Iowa (Highway 20); 15 miles.

213 Dubuque, Iowa - end of day.

NOTES

Proposes rearranging first and second days, so that what we had in first part of second day in Illinois and Wisconsin comes here in second part of first day. Saves mileage.

What we would have seen at Hanover is duplicated in

Stop 6

Eliminates Millbrig, Spring Green, Platteville trips. Sections to be seen at these locations better seen at McGregor, Highland and elsewhere on later days.

SECOND DAY

Dubuque to Decorah ----- 231 miles.

1 Stop 1 - In Dubuque: Drive 3 miles; See Galena dolomite."Upper Receptacultes zone" Dubuque dolomite etc.

Dubuque to Bellevue (Highways 61 & 55); 24 miles.

27 Stop 2 - At Bellvue: fine exposure of Maquoketa shale.

Bellevue to Dubuque (Highways 246 & 61) 36 miles.
Dubuque to Graff (Highways 20 and B.) 15 miles.

78 Stop 3 - At Graff: see Orthoceras sociale bed in Maquoketa.

Graff to Luxemburg (Highways B & 55) 18 miles.
Luxemburg to Guttenberg (Highway 55) 13 miles.

109 Stop 4 - At Guttenberg: long road cut; Galena dolomite. Decorah shale. Type locality Guttenberg member of Decorah shale.

Guttenberg to McGregor (Highways 55 & 18); 31 miles.

143 Stop 5 - At Painted Rock Park: section including top of Jordan, Prairie du Chien, St. Peter, Glenwood, Platteville, Decorah, and lower Galena.

146 Stop 6 - At McGregor: Jordan, Oneota, New Richmond, Shakopee.

McGregor to Clermont (Highway 18) 34 miles.

180 Stop 7 - At Clermont: Clermont member of Maquoketa. overlain by basal beds of Fort Atkinson member.

Clermont to Fort Atkinson (Highways 18, 55, 24) 33 miles.

213 Stop 8 - At Fort Atkinson: Fort Atkinson member of Maquoketa shale.

Fort Atkinson to Decorah (Highways 24 & 55) 18 miles.

231 Decorah --- end of day.

NOTES

Have had no reply from Marshall Kay about omitting Clermont and Fort Atkinson stops.

Could stop at Elgin and see Elgin member of Maquoketa.

If there is a large party, will have trouble getting overnight accommodations at Decorah.

THIRD DAY

Decorah to Madison ---- 257 miles.

0 Stop 1 - In Decorah: type section of Decorah shale

Decorah to Waukon (Highway 6) 20 miles.

20 Stop 2 - At Waukon: Quarry in Plattsville limestone.

Waukon to Lansing (Highway 6) 18 miles.

32 Stop 3 - 6 miles west of Lansing: Diastem between Oneota and Shakopee with New Richmond sandstone in lenses and pockets between reefs.

40 Stop 4 - 1 mile below Lansing: River bluff, Franconia, St. Lawrence, Jordan, and Prairie du Chein. Siliceous concretions in upper part of Jordan.

Lansing to Prairie du Chien (Highway 35) 44 miles.

Stop 5 - At same place near Lynxville to see Platteville, Decorah and Galena.

Prairie du Chien to Nelson-Dewey State Park (Highways 18 & X) 15 miles.

99 Stop 6 - At State Park: See Jordan, Oneota, New Richmond, Shakopee, St. Peter, Platteville, Decorah and Galena.

Nelson-Dewey State Park to Montfort (Highways X & 18) 44 miles.

143 Stop 7 - Quarry in upper beds of Galena, " Upper Receptaculities zone."

Montfort to Highland (Highways 18 & 80) 12 miles.

155 Stop 8- At Highland: Quarries and pits exposing St. Peter, Glenwood, "Lower Quarry beds" "Blue Beds" etc of Platteville; many megasopic fossills.

Highland to Edmond (Highways 80, 18, 62) 12 miles

187 Stop 9 - Zinc mine and mill south of Edmond. Could not go down mine because of lack of time but could see zinc flotation plant in mill.

Edmond to Blue Mounds (Highways 62 & 18) 25 miles.

212 Stop 10 -At Blue Mounds: Second highest point in Wisconsin. Monadnock made of cherty niagaran limestone, unexposed Maquoketa shale and upper Galena, standing on " Dodgeville peneplane" which here bevels middle Galena.

Blue Mounds to Mazomanie (Highways 18, 78, & 11) 17 miles.

229 Stop 11 -Type section of Mazomanie -- see Mazomanie Black Earth (St. Lawrence) Lodi, Jordan and basal Oneota.

Mazomanie to Madison (Highway 11) 28 miles.

257 Madison---- end of day.

NOTES.

Stop 5 to replace Thwaites stop at Victory.

Stop 6 might be omitted because of duplication with stops 5 and 6 on second day.

Stop 8 might be omitted if equally good section of St. Peter, Glenwood, and Platteville is seen previously.

FOURTH DAY.

Madison to Baraboo---- 268 Miles.

0- 15 **Stop 1-** Around Madison: see sections at (Middleton,) Pheasant Branch and Farwell Point, 40 minutes. See Mazomanie, Mendota, Madison and Oneota beds

Madison to Milwaukee (Highway 18) 77 Miles.

92 **Stop 2** - At Wauwatosa: quarry in edge of Milwaukee--- reef in Niagaran limestone.

Milwaukee to Cedarburg (Highway 57) 18 miles.

100 **Stop 3** - Quarries in Devonian limestone

109 **Stop 4** - Devonian-Silurian contact.

113 **Stop 5** - At Cedarburg: good quarry in Niagaran.

Cedarburg to Mayville ( ) 45 miles.

158 **Stop 6** - At Mayville: See Mayville and Nada beds (Clinton ?) in open pit.

Mayville to Waupon (town roads) 25 miles.

183 **Stop 7** - At Waupon: Quarry in Black River Limestone.

Waupun to Ripon (Highway 49) 25 miles.

208 **Stop 8** - At Ripon Shakopee -- St. Peter and St. Peter--- Black River(Platteville) contacts exposed in quarry.

Ripon to Baraboo via Portage (Highways 44 & 33) 60 miles

260 **Stop 9** At Lower Narrows: gorge cut by Wisconsin River flowing south, occupied since retreat of Wisconsin glacier by Baraboo River flowing north. Huronian quartzite in vertical beds beautifully ripple-marked overlies rhyolite, contact vertical.

268 Baraboo----- end of day.

NOTES

Do not see how Wausau and Rib Hill can be worked into this day.

Could about as well go from Ripon to Wisconsin Dells and spend the night there.

BRF

FIFTH DAY.

Baraboo to LaCrosse --- 261 miles.

0- 5 **Stop 1** - Around Baraboo: See south quartzite range, Devils Lake gap, Wisconsin terminal moraine etc.

Baraboo to Leland (Highways 13 & c) 17 miles; cross south quartzite range and see excellent Dreshbach, Franconia contacts along road south of range. Leland to Ableman(county roads) 15 miles.

37 **Stop 2** - At Ableman: See range of vertical Huronian quartzite, overlain by horizontal sandstone and conglomerate of Dreshbach and Franconia age. Upper Narrows of Baraboo river and several large quarries.

Ableman to Wisconsin Dells (Highways 33 & 12) 22 miles.

59 **Stop 3-** At Wisconsin Dells -- launch trip through Dells. See Dresbach sandstone in an unusual development.

Wisconsin Dells to New Lisbon (Highway 12) 30 miles.

89 **Stop 4** - At New Lisbon -- cave in butte of Dresbach sandstone.

New Lisbon to Sparta via Norwalk (Highways 12, A. T. 71) 47 miles.

124 **Stop 5** **Type section Norwalk sandstone**

Sparta to La Crosse (Highway 16) 29 miles.

165 LaCrosse to Dresbach (Highway 61) 9 miles.

174 **Stop 6** - At Dresbach: Type section includes Eau Claire, Galesville? Franconia, St. Lawrence, Jordan, Oneota, New Richmond.

Dreshbach to Winona (Highway 61) 22 miles.

196 **Stop 7** - At Winona Quarry.

Winona to Trempealeau (Highways 54 and K) 18 miles.

214 **Stop 8** - At Trempealeau Mtn. Type section includes Galesville? Franconia, St. Lawrence, Jordan, Oneota.

Trempealeau to Galesville (Highways K and 54) 11 miles.

225 **Stop 9** - At. Galesville: section includes EauClaire, Galesville? and Franconia.

Galesville to Black River Falls (Highway 54) 36 miles.
No stops, but see Mt. Simon, Eau Claire, Galesville? and Franconia along road.

261 Black River Falls--- end of day.

NOTES

Too long a day. If could get either Wisconsin Dells or Baraboo stops in with FOURTH DAY, it would help. Should really Spend 2 hours at each of these places.

not at D.L.

Could shorten FIFTH DAY by going from Trempealeau to LaCrosse as originally planned. La Crosse has better over night accommodations than Black River Falls. Would lengthen SIXTH DAY, however.

SIXTH DAY.

Black River Falls to Minneapolis --- 231 Miles.

0-5 Stop 1 - At Black River Falls: see Mt. Simon and Eau Claire, Cambrian-- pre Cambrian unconformity and pre-Cambrian iron knobs.

Black River Falls to Eau Claire (Highway 12) 65 miles.
no regular stops but to see road cuts.

70-75 Stop 2 - At. Eau Claire: see type sections of Mt. Simon and Eau Claire.

Eau Claire to Chippewa Falls (Highway 53) 10 miles.

85 Stop 3 - At. Chippewa Falls: Power dam, pre-Cambrian, and deep gorge in Mt. Simon.

Chippewa Falls to Menomonie (Highway 29 & 12) 22 miles

107 Stop 4 - At Menomonie: Eau Claire, Galesville? and Franconia

Menomonie to Red Wing (Highways 25, 72, & 46) 55 miles.

162 Stop 5 - At Red Wing, two excellent sections of Franconia, St.Lawrence, Jordan, and Oneota with a fault valley between them.

Red Wing to Hastings (Highway 3) 28 miles.

190 Stop 6 - At. Hastings: gorge in Oneota and Shakopee and old mill in state Park; famous section. Two faults have been worked out.

Hastings to Minneapolis (Highway 3) 41 miles.

231 Minneapolis--- end of day.

NOTES

Instead of going from Menomonie to Minneapolis, via Hudson and Still water, and going through Stillwater again on

EIGHTH DAY this route takes in Red Wing and Hastings so as to shorten Seventh day. The Willow River section at Burkhardt is cut out altogether.

SEVENTH DAY

Minneaplois and return to Minneaplois --- 234 Miles.

Minneapolis to Fort Snelling; 10 miles.

7 Stop 1 - Minnehaha Falls..

10 Stop 2 - At. Fort Snelling: mouth of Minnesota River, Type section of St. Peter includes St. Peter, Glenwood, and Platteville.

13 Stop 3 - Brick Plant on river in south St. Paul Exposes thick, highly fossiliferous DeCorah, an excellent exposure, 90 feet of shale.

Back to Fort Snelling and to Shakopee (Highway 5) 26 miles.

39 Stop 4 - At. Shakopee: type section Shakopee.

Shakopee to Jordan (Highway 5) 11 miles See Merriam Junction and Van Oser Creek sections on way. Stops at these places?

50 Stop 5 - At. Jordan: Type section of Jordan

Jordan to St. Lawrence (country road) 3 miles.

53 Stop 6 - Type section of St. Lawrence

Back to Highway 5 and to Ottawa; 33 miles.

86 Stop 7 - At. Ottawa: Jordan " White Rock" younger silt and clay and basal Oneota.

Ottawa to St. Peter (Highway 5) 3 miles.

89 Stop 8 - At. St. Peter. reworked Jordan sandstone containing Oneota like gastropods overlain by silt and clay containing cambrian like brachiopoda, the latter squeezed up into solution crevices in Oneota.

St. Peter to Kasota (Highway 5) 5 miles.

94 Stop 9 At. Kasota: See quarries and mills cutting Oneota dolomite for interior decorating stone.

Kasota to Mankato, (highway 5) 6 miles.

99 Stop 10 More quarries and mills and quarry sections including Jordan Oneota, New Richmond and Shakopee.

Mankato to New Ulm (Highway 14) 28 miles.

109 Stop 11 - At. Judson: Franconia and St. Lawrence in Quarries.

127 Stop 12 - In and around New Ulm. See pre-Cambrian quartzite, granite and conglomerate and cretaceous shale and sandstone.

New Ulm to Minneapolis (Highways 15, 14, 22, 51, 5) 107 Miles no stops.

234 Minneapolis --- end of day

NOTES

Rather large number of short, easily accessible stops.

EIGHTH DAY.

Minneapolis to Duluth ---- 263 miles.

Minneapolis to Hudson (Highway 12) 27 miles.

27 Stop 1 - At Hudson. Dresbach and Franconia well exposed.

Hudson to Stillwater (Highway E) 7 Miles.

34 Stop 2 - At Stillwater: famous section including St. Lawrence, Jordan, and Oneota. Ulrich says Upper Canadian Shakopee uncomformable on Upper Ozarkian Oneota.

Still water to Taylor's Falls (Highway 35) 36 miles.

59 Stop 3 - At. Osceola: famous section including Franconia, St. Lawrence, Jordan and Oneota.

70 Stop 4 - At. Taylor's Falls: Falls of St. Croix River Keweenawan trap overlain unconformably by Dresbach and Franconia sandstones and famous pot holes 60 feet deep in the trap.

Taylor's Falls to Hinckly~~s~~ via Wyoming (Highway 46 & 1) 65 miles.

135 Stop 5 - At Hinckley: Type section Hinckley sandstone in quarry.

Hinckley to Danbury; 30 miles.
Danbury to Minong, (Highway 35 and county roads) 40 miles.

244 Stop 6 - At Amnicon Falls. Interesting gorge and falls. Middle Keweenawan thrust faulted over Upper Keweenawan.

Amnicon Falls to Duluth (Highway 2) 19 miles. Cross Superior Duluth harbor on bridge.

263 Duluth end of day.

NOTES.

To go Danbury to Wakefield via Hayward and Mellen and back to Amnican Falls as per Thwaites would make total mileage for day 560 miles.

Ommited type section of Franconia between Stops 4 and 5

EXTRA DAY

Unchanged from our original plan.

Gypsy Oil Company

Tulsa, Okla.

1107 Union Nat. Bank Bldg;
Wichita - Kansas.
April 8, 1933.

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

Dear Thwaites;

I must not delay longer in answering your letter of April 4th, with route schedule and map enclosed of the Wisconsin portion of the 1934 conference. I am appreciative of the labor and time which you spent.

I note that I failed to advise you that the Conference would have to go into Minnesota after passing through Wisconsin and before proceeding northward to Duluth. Thus it will be necessary to adjust your route to proceed from Baraboo northwestward to Minneapolis and thence to Duluth. It has been tentatively determined to spend one full day in the Minnesota River Valley between Minneapolis Mankato and New Ulm in a study of many of the type sections of the older Paleozoics. But this change is in line with your alternative proposal, contained in your letter, so I judge it will meet with your entire approval.

There is some doubt in our minds as to whether or not a day spent in eastern Wisconsin (from Madison to Milwaukee to Mayville to Waupun to Ripon and thence southwestward to Baraboo) will be worth while - or - whether this would be made at the expense of seeing localities of more importance farther to the west?. I am informed that the Silurian sediments in this area, east of the Wisconsin Arch, differ considerably from the Silurian westward in Iowa and Kansas. To see this very difference may be of real importance, but I would like to receive your own reactions to this matter.

Just at the present time I think it will not be necessary for you to forward me an alternative routing from Baraboo to Minneapolis. At a little later date this will be very desirable so please keep it in mind. But just at present I think we have enough data at hand for our present use.

I am enclosing a carbon of a letter to Bean. I wish you would use what influence you can to successfully bring about the stipulations contained therein. If you think Mr. and Mrs Boos (who I understand are now at the University) can aid in this matter of influence, I wish you would ask them to do so. They are well acquainted with our conferences.

Cordially yours, /Anthony Folger

1107 Union Nat. Bank Bldg;
Wichita - Kansas.
April 8, 1933.

Dr. Ernest F. Bean,
Wisconsin Geological Survey,
Madison - Wisconsin.

Dear Dr. Bean;

I have delayed answering your letter of March 7th until I had received concrete information relative to the action of the other State Surveys which are involved. It is now my privilege to advise that Iowa and Illinois have accepted the invitation of this Society and plan to give the full cooperation requested. The Minnesota Survey will cooperate in every way possible, but is uncertain at present whether or not they will have funds available to log their portion of the trip and the funds to furnish leadership for that state. I think, however, that Emmons has wholly misunderstood what financial support is expected of his Survey. This I have explained to him, and I am hopeful, on the basis of the information forwarded him, that he will see his way clear to accept that part as well.

Emmons misunderstanding leads me to wonder if you also may not be laboring under false impressions?. The only actual outlay of money deals with the logging of the trip, and the measurement of outcrop sections at the stops provided this data has not already been assembled by your Survey or adjacent surveys. There is no assessment for conference expenses into a general conference fund.

Tentatively it is assumed that some 4½ days will be spent in the state of Wisconsin. Thus you will see that in our conference plans Wisconsin is the key state. In your state the conference route will cover some 1800 miles. This will mean that the participants will spend in Wisconsin a large amount of money. Roughly I would estimate that car operaters will purchase between 9000 and 12000 gallons of gasoline and between 1200 and 1600 quarts of oil. The hotel bills of the participants will approximate some $2000. and their meals will be in the neighborhood of $1500. Since the cost of logging the trip, and of furnishing state leadership, will call for a relatively small expenditure (but a few hundreds of dollars) if this amount cannot be obtained either from your Survey or from some fund of the Department of Geology of the University of Wisconsin or some other University fund, might it not be possible to enlist some outside aid (say through your State Chamber of Commerce, etc) in as much as such a large sum of money will be spent in Wisconsin by the participants themselves?.

At the present time we are concerned chiefly with knowing that the Wisconsin Survey will get whole-heartedly behind this conference project, that it will supply such maps and measured sections of the areas to be covered as are at your command, that it will advise us specifically what localities to visit, that it will log

the Wisconsin portion of the trip, and that it will furnish Wisconsin leadership for your part of the conference. Your letter, together with your verbal instructions to Thwaites (who already has given us much valued help) assures us of all but the last two things. But you will appreciate that until you agree, even tentatively, on these last two things we cannot announce formally that the Wisconsin Survey has joined with this Society in "putting-on" this conference.

I am sure that you would not wish from 150 to 300 geologists, from all over the United States, to come into Wisconsin on a conference and not have the Wisconsin Geological Survey take an official part in this program. I am just as sure that you and Thwaites and Raach will wish to take a very real, and a very active, part in the Wisconsin portion of the program.

I fully appreciate that there are many things which you might like to do and cannot because of lack of Survey funds. But let us assume that you can and will do this one. I am disposed to ask if you not not reconsider your first answer?. The real question at issue is - will the Wisconsin give official recognization and official support to the conference?. Will you not advise me that your Survey will aid in the logging of the Wisconsin portion of the trip, and will furnish leadership thereon, provided when the time comes to make the log and furnish the leadership there are sufficient funds available (either from the Survey, the University, or from some outside source) that can be delegated to this small expense. If and when that time comes, that expense cannot be met, you will find this Society most considerate in this regard. It would be unethical for this Society to hold you to a promise, made so long in advance, should you not have the funds with which to do it when the time comes. Usually, where there is a will there is a way, and I am sure that some way can be worked out by you to accomplish what has to be done for such a very important project.

I shall look forward with considerable anticipation to your early reply. I trust you will see your way clear to assure us of the full support of your Survey, and we wish to assure you that we will bear in mind the qualifications which this assurance from you will carry. With kindest personal regards, and many thanks for your cooperation and that of Thwaites thus far. I remain,

Most cordially yours,

Anthony Folger.

Copy to George F. Kay

Copy to Fred T. Thwaites

EIGHTH ANNUAL FIELD CONFERENCE, KANSAS GEOLOGICAL SOCIETY,
1934

Tentative route in Wisconsin and Michigan

F. T. Thwaites, G. O. Raasch, R. R. Shrock, 1933

Enter Wisconsin via toll bridge from Lansing, Iowa. North to ravine section at Victory. Hour stop, section Ironton to Oneota. Highway 35. Victory to Viroqua via County Highway U and Wis. 82. Stop 10 min. in city park to see St. Peter. St. Peter-Black River contact at Liberty Pole Hill, 10 min. To Coon Valley via C. H. B. Two stops to see section from Eau Claire to Oneota, 3/4th hour. Continue on U. S. Highway 61 (paved) through LaCrosse to Dresbach, Minnesota. Stop 15 min. Continue on 61 to Winona, Minn. Stop at quarry. Wis. 54 to Black River Falls. Stops here to see Eau Claire and Mt. Simon formations, also contact of Mt. Simon and pre-Cambrian, possibly also pre-Cambrian iron formation knobs. Night at Black River Falls, Distance from Lansing estimated at 170 miles. About half this distance is paved but part is black-top, not concrete. Detour to Trempealeau for type locality?

U. S. 12 to New Lisbon, no scheduled stops but new grading has undoubtedly made good exposures. Also interesting buttes of Dresbach and older sandstones. Cave in one of these outside New Lisbon is worth a stop. 54 miles to New Lisbon. South on Wis. 80 with stop at Wood Hill to see Franconia-Dresbach contact, etc. Continue on 80 and Wis. 33 to Ableman. One hour stop for unconformable contact of Franconia and Dresbach on vertical pre-Cambrian quartzite, also pre-Cambrian structure, etc. Continue on 33 to Baraboo and turn south on U. S. 12. Stop at Skillet Falls-Cahoon (Wood) quarry section, about 20 min. Here detour to top of West Bluff at Devils Lake if time permits, otherwise drive in to north end and turn around, Highways 159 and 123. Continue on U. S. 12 to Sauk City, thence south on Wis. 78 to Mazomanie where visit School Section Bluff, type locality of formation. Estimated time 30 min. Continue on Wis. 11 to Middleton. Thence C. H. M. around north shore of Lake Mendota to Wis. 113. Stop at Pheasant Branch quarry and at Farwell Point cliff to study Black Earth-Mendota controversy. Total time 40 min. Detour through east end of Madison to Wis. 30. Thence to Milwaukee (77 miles) with only stop at quarry in Wauwatosa showing Niagaran reef. Night at Milwaukee. Estimated distance for day 275 miles!

North from Milwaukee to old cement quarries-Devonian, 30 min. Continue north on Wis. 57 to Thiensville to see Devonian-Silurian contact. Good quarry in Niagaran at Cedarburg may have to be omitted. Go west on Wis. 60 to Hartford. North on Wis. 67 with stops at Mayville quarry (Mayville and Byron) and old open pit (Mayville and Neda), total 3/4 hour. North from Mayville on C. H. Y (part paved) and west via town roads and C. H. D to Waupun. Quarry in Black River might be worth a stop. Continue north on Wis. 49 to Ripon. Excellent exposure in quarry of Shakopee, St. Peter, Black River contacts. See paper by Thwaites on gravel seam in limestone at Ripon, Jour. of Geology, vol. 29, p. 57—. East on Wis. 23 to Fond du Lac. Possible stop at folded Black River in old quarry, 5 min. Continue east to vicinity of Taycheedah. Stop to see Mayville, Richmond contact in cliff. Detour to Wis. 31 and follow that to Quarry. Good exposure of a reef in Niagaran. Last two stops 15 min. each. Continue on 23 to Manitowoc. Night. Estimated distance for day not over 150 miles.

North from Manitowoc on Wis. 42 to Two Creeks. Stop 3/4 hour to see interglacial forest in lake cliff. Thence west on town road to Tisch Mills, thence on Wis. 163 and Wis. 96 to Denmark. Denmark to Green Bay on U. S. 141. Possible stops are at quarries in Richmond shale and those in Black River at Duck Creek. Total 30 min. Continue on Wis. 29 to Wausau. Many interesting glacial features. Side trip to top of Rib Hill on new road, 1 hour? Rib Hill is highest known point in Wisconsin and consists of vertical quartzite. North on U. S. 51 with possible detour via Wis. 91 with brief stop at Grandfather Falls. 51 is paved to Tomahawk. Continue on 51 through northern lake district to Hurley, thence east on U. S. 2 (paved) to Ironwood, Night. Estimated distance 300 miles.

East from Ironwood, Mich. to Bessemer. Visit open pit mine at W akefield. 15 min. North on road to Lake Superior down Black River giving an excellent section of the Keweenawan described in Rept of Michigan Geol. Survey for 1906, pp. 401-512. Return to Bessemer and go west on U. S. 2 to Hurley, thence on Wis. 77 to Mellen following the Gogebec Iron Range. Stop at Mellen to see Keweenawan gabbro. North on Wis. 13 to Ashland with stop to see abandoned glacial lake beaches near Highbridge. 10 min. West on U. S. 2 to Ashland Junction with detour to see outcrops of Upper Keweenawan on Fish Creek as described by Thwaites in Wis. Geol. Survey, Bull. 25. Marth 30 min. North on Wis. 112 to rejoin Wis. 13. Follow 13 around the Bayfield Peninsula with one or two stops to see cliffs of Lake Superior sandstone. Good sea caves at Squaw Bay. Continue on 13 to junction with C. H. U. South on U to Falls of the Amnicon with wonderful exposure of thrust fault of Middle Keweenawan over Upper Keweenawan. Rejoin U. S. 2 and follow that to Duluth, Minnesota. Estimated distance for day 180 miles.

April 4, 1933

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

Dear Mr. Folger:

Reply to yours of March 18 and "telegram" of March 28 has been delayed because this is about the busiest time of the year with midsemester exams and preparation for a week at Devils Lake with my students.

I am enclosing the result of several conferences with Messers Raasch and Shrock. Also took the matter up with Dr. Leith who said to go ahed on the assumption that I would still be here in 1934 and yet not to promise anything with respect to logging the route. The State Survey is said to be cut 25 percent, and the University more than that, some claim 40 percent.

Now I do not like the schedule as given here. The distances are far too great and the course is too irregular. Worse still the Galena and Black River formations are slighted in favor of the Cambrian to which too much time is given. But we could do little else in view of the request to visit the Silurian of eastern Wisconsin and the pre-Cambrian of the north as well.

Subject to your approval I will study out an alternative when I get back from the field. My idea would be to enter at Lansing or Prairie du Chien and go east to Madison mainly on the ridge road, U. S. 18 where good exposures of the Ordovician beds are found. I would swing north to Mazomanie and around Lake Mendota to see the Mendota problem (which led to my undoing, by the way). Then I would go to Baraboo and north to Black River Falls either directly or via Wisconsin Rapids where another good exposure of the base of the Cambrian is known (see my paper on the Buried pre-Cambrian, Bull. G. S. A.) This alternative would take us past some of the very striking buttes of Dresbach and older Cambrian. From the Falls I would go southwest to the Trempealeau-Dresbach localities. Thence I would follow the Mississippi north to its junction with the St. Croix and then go up that to the Taylors Falls district. Thence north to the Hinckley-Sandstone district of Red Clastics. Then on to the Falls of the Amnicon southeast of Superior, ending at Duluth.

On this route we could get in exposures of the sub-St. Peter unconformity in southwestern Wisconsin.

I am informed by Mr. Gordon Atwater that the best Platteville-Decorah, Galena exposures are south of this route near Beetown and east of Cassville. These might be included. He also mentions good exposures at Guttenberg, Iowa in a road cut and excellent exposures of the Oneota, New Richmond, and Shakopee at Lansing, Iowa.

Please inform me of your desires and we will try to do our best in these hard times. Only one map is enclosed but I am sure you have another.

Very truly yours,

Form T-299—100M—7-32—Palace

TELEGRAM

March 28, 1933.

Thwaites:-

While there is no special hurry about the receipt of the tentative Wisconsin itinerary, we have nevertheless several things in the "wind", and I would be very appreciative if your duties will permit you to forward me this schedule at the earliest possible date.

Folger

Form T-299—100M—7-32—Palace

TELEGRAM

Thwaites:-

It will aid us in our Committee work if you will make a carbon copy of the suggested route through Wisconsin, thus forwarding me two copies instead of one.

Anthony

Gypsy Oil Company

Tulsa, Okla.

1107 Union Nat Bank Bldg
Wichita - Kansas.
March 18, 1933.

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

Dear Thwaites;

Your letter of March 16th has just come to hand. I am indeed sorry to learn of the low status of the Survey funds. I hope however that Mr. Bean can be prevailed upon to lend the cooperation of his survey in as much as Wisconsin is the key state.

I wish to thank you for your offer of cooperation, whatever form it may take because of the financial condition. Just at present we are concerned with the tentative route through Wisconsin and the number of days to be assigned to that State. I wish you would confer with the men mentioned in your letter, and forward me at your very early convenience a rough outline of your combined ideas of where the conference might go in Wisconsin, the daily route, night stops, and what may be seen during each days trip.

Information from Iowa seems to make it desirable that we enter Wisconsin from Lansing, thence to Prairie du Chien by way of the highway on the east side of the river, and thence to Madison. I think we can omit going south to see the Beloit member unless it can be worked in conveniently. Possibly we should enter Minnesota at Hudson, and reenter Wisconsin again for a study of the area between St Paul and Duluth. It is our present plan to end the conference at Duluth, instead of at St Paul. Trowbridge thinks it would be desirable to include a study of the Hinkley formation, and of the Bayfield Group-Lake Superior Sandstone-Oronto Group sections in the vicinity of Ashland Junction and Bayfield en route from St Paul to Duluth on the last day. With this suggestion we concur, but he states that you know more about this area than anyone else.

While the detailed route in Wisconsin cannot be worked out at the present time, I wish you would give the matter your immediate serious attention, and, if it be not too much of a task, describe the suggested route to be taken by highway numbers.

I trust all will work out satisfactorily relative to the Survey cooperation. I have not as yet heard from Bean. Iowa has accepted. Again many thanks for the spirit of cooperation contained in your letter, and, with kindest personal regards.

Cordially yours,

Anthony Folger

Anthony Folger

March 16, 1933

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

Dear Mr. Folger:

Reply to your circular of Feb. 25 was delayed until I could learn of the action which would be taken by Mr. Bean. When I talked over the matter of your coming to our state he told me that he could do nothing about logging a route. We are faced by a very drastic economy program and it is not unlikely that the State Geological Survey may go, at the best it will be still more cut than now.

I then took up the matter with Mr. Gilbert Raasch who took over the work in western Wisconsin when I was removed for not agreeing with Ulrich. Both of us will be glad to render such help as we can in the way of suggestions and unpublished field notes but so far as we can see no possible way in which we could log an extensive route unless we hiked and begged handouts along the road. Inffact if we have salaries large enough to support our families in 1934 we will consider ourselves lucky. We simply would not dare to ask for any public funds to support this undertaking any more than we would dare dig into our own pockets very deeply.

If you will inform me as to where I should send material on suggested routes that is to Dr. Kay or to you, I will obtain the help of Mr. Raasch and Dr. R. R. Shrock (who has been working on the Silurian of eastern Wisconsin) and make up some tentative plans.

Your suggestion about seeing the Red Clastics involves much difficulty. To do so would take a trip of several hundred miles more than otherwise. I have not seen some of the most important exposures for over 20 years and know little about their present condition. In those days the streams in the north had been recently driven for logging operations. Since then trees and brush have encroached on the beds and covered much of the former exposures.

Please let me know your desires in regard to plans and meantime, especially as the Moratorium was lifted yesterday and we got paid, we will hope for a turn for the better by 1934!

Sincerely,

F. T. THWAITES

OFFICERS

N. W. BASS, . PRESIDENT
228 FEDERAL BLDG.

E. C. MONCREIF, VICE PRES.
358 N. LAWRENCE

L. R. FORTIER, SEC'Y-TREAS.
1019 UNION NAT'L BANK BLDG.

KANSAS GEOLOGICAL SOCIETY

WICHITA, KANSAS

1107 Union Natl. Bank Bldg.
Wichita - Kansas
February 25, 1933

Ernest F. Bean,
Wisconsin Geological Survey,
Madison - Wisconsin

George F. Kay,
Iowa Geological Survey,
Iowa City, - Iowa

William H. Emmons,
Minnesota Geological Survey,
Minneapolis - Minnesota

Morris M. Leighton,
Illinois Geological Survey,
Urbana - Illinois

Gentlemen:-

The Kansas Geological Society, acting upon the recommendation of its Board of Directors, has authorized an Eighth Annual Field Conference to be held during the fall of 1934 in the upper Mississippi Valley Area. It is the wish of the Society that this conference shall specialize in the field examination of pre-Mississippian sediments exposed in those areas embracing eastern Iowa, Wisconsin, southeastern Minnesota, and, at the discretion of the Arrangements Committee, northwestern Illinois.

In the fall of 1927 the Kansas Geological Society held its First Annual Field Conference in northeastern Missouri and eastern Iowa, studying the Paleozoic rocks of this area. The conference was attended by 41 geologists. Despite hurried arrangements, and our imperfect knowledge of where special emphasis should be placed, it is conceded generally that unusual economic results have accrued to those oil companies participating. After a lapse of six years there still remain many unsolved problems of regional correlation, but at the same time the Society is better qualified to suggest geologic points of concentration.

Since the attendance of this first conference was so small, and the importance of the area involved so great, it would be directly beneficial to Mid-Continent geologists to revisit eastern Iowa and extend its itinerary into adjacent states in order to complete a careful investigation of the Paleozoic sediments of the upper Mississippi Valley. Because of incompleted important investigations involving several areas which the Society should cover; and because of unsolved problems in inter-state correlation, a tentative settlement of which is necessary before discussion by a conference group, it has been deemed advisable to advise your Surveys of our plans some two field seasons in advance, making it possible for you to prepare that detailed information which the Society will desire for a conference of this importance.

Most of our annual field conferences have been under the auspices of the Surveys in those states where conferences have been held. Thus, in the past, this Society has been fortunate in securing the cordial co-operation and valued leadership of the State Geological Surveys of Arkansas, Iowa, Kansas, Missouri, Nebraska and Oklahoma.

This letter is being addressed to you gentlemen to request your cooperation and leadership in planning and directing this Eighth Field Conference.

In making this request the Arrangements Committee feels that since the surveys of Illinois, Minnesota and Wisconsin have not been called upon previously to officiate during a conference of the type held annually by this Society, statements are included herein setting forth the methods to be used in conducting this conference, so that your Surveys will not consider this invitation under false impressions.

The most important cooperative work preliminary to the conference is the assembling of the Guide Book. Different types of Guide Books have been issued in the past, the most satisfactory being the litho-printed type first used in 1931 and perfected further in 1932. The latter, in addition to the road log, incorporated a graphic measured section showing the thickness and litho-logic details of the stratigraphic units exposed at each stop. The present committee will incorporate in the 1934 Guide Book the best features contained in all previous books, together with such improvements as occur to us and which may be suggested by your own Surveys.

No. 1 It will be desirable for each State Survey to be responsible for the actual logging of the entire route of the conference within its state; beginning and ending at its own State line, or, at such point as may be indicated by the itinerary. At least three factors should be kept in mind in the composition of this road log. First, an accurate and complete description of the geology to be observed along the route of travel between stops. Second, the details of the local geology at each stop, and their relationship if any, to the regional geology of the upper Mississippi Valley area. Third, interesting remarks relative to the historical and geographical points of interest which may be seen along, or closely adjacent to, the conference route.

No. 2 It is requested that each State Survey prepare in typewritten form a copy of the entire road log within their state and forward this to the Arrangements Committee on or before May 1, 1934.

No. 3 Experience indicates that each State Survey should measure accurately the section as exposed at each stop and prepare, in rough draft, a columnar section which will show in addition to the graphic picture, the thicknesses in feet of each unit, a concise written description thereof, and the correct age placement of these units in the stratigraphic column.

No. 4 Each State Survey should prepare in rough draft "strip route maps", showing the exact route traversed by the conference. A number of these "strips" are necessary for each days travel. Their form should be similar to those appearing in the Guide Book of the 1932 Conference, or to a form agreed upon mutually by your Surveys and the Arrangements Committee.

No. 5 It will be necessary for each State Survey to follow previous proceedure and assume the expense of all field work incident to logging the route of the conference in their state, and of any field work they may elect to carry on to aid in the solution of inter-state problems necessary for conference discussion.

No. 6 Especially desirable, will be the contribution by each State Survey of an Areal Geologic Map of that portion of their state covered by the conference, showing the results of the most recent areal mapping at their command. These will be assembled and drafted into one large areal map at our expense.

No. 7 The Kansas Geological Society will be responsible for editing the Guide Book, and will assume the full cost of its publication, together with the cost of drafting into final form the columnar sections of each stop, the "strip route maps", and the expense of drafting and printing all other maps, charts, and diagrams contained in or included with the Guide Book.

As previously stated, the conference will concentrate on pre-Mississippian sediments. Naturally however, the itinerary will be sufficiently flexible to assure the examination of any Mississippian localities exposed conveniently along the line of travel. Especially valuable would be Kinderhook localities, and it is hoped that time will permit stops to examine sections similar to that at Burlington. Most certainly the itinerary should include, if possible, a stop at the locality in north-central Iowa from which L. R. Lundon has described 210 feet of beds above the Kinderhook and below the lowermost Osage (of Iowa), lying conformably on the Chouteau, and carrying a fauna closely allied with the Madison Limestone of the Rocky Mountain Front Range.

The same flexibility applies to post-Mississippian exposures. Since the participants will be highly trained geologists, no important outcrop (whatever its age) should be disregarded along the route of travel, provided time permits its examination. And especially does this apply to a study of the glacial and inter-glacial deposits outside of the Driftless Area. Few petroleum geologists have had the time or the chance to study the sediments comprising this most interesting record, and we feel they would welcome such an opportunity, realizing full well it would be a rare privilege under the leadership of such competent glacialogists as will form a part of our leadership.

In planning the itinerary it should be your endeavor to so adjust the line of travel that every exposed unit in the upper Mississippi Valley area, between Devonian and pre-Cambrian inclusive, shall be visited at least once. Unusual emphasis, however, is to be placed on the Siluro-Devonian, the Cincinnatian and Mohawkian, the upper Cambrian, the Red Clastics and pre-Cambrian. And by all means the salient points of concentration must include a most careful study of all the Siluro-Devonian, Maquoketa, Galena (especially the Dubuque and Prosser members) Madison-Jordan, Trempealeau, Franconcia and Eau Claire.

Relative to the Red Clastics (by some thought to be middle Cambrian) and to the pre-Cambrian, your attention is called to the fact that as far as our imperfect knowledge extends the pre-Cambrian sequence in Kansas consists of:-

Arkose and Feldspathic Quartzite
Granite
Red and White Mica Schists
Green Olivene Schists

The basement complex of Kansas is composed supposedly, of these metamorphic sediments (possibly referable to the Keewatin-Coutchiching Series) into which, at local points, granitoid rocks were intruded during the Lauretian Revolution. The Arkoses, sometines thin and sometimes totaling a thousand feet in thickness, are thought to be pre-Cambrian (presumably pre-Killarney Algonkian) but the evidence is far from conclusive. The problem of the pre-Cambrian within the Mid-Continent area is one of salient economic importance. Be assured that we shall be anxious to study all types of pre-Cambrian localities, especially the sedimentary-crystalline contact, and localities as well where arkose intervenes.

For the sedimentary series, it should be your aim to plan the itinerary to include as many Type Localities as consistent with the time factor. It is recognized that many of the older Type Localities may not be representative of a stratigraphic unit. Thus the decision to make such a stop should be left to the discretion of the leader, although he should bear in mind that the more important the formation in question (to us) the more will be the inherent interest in such a stop, though non-typical.

When choosing which of a number of localities of the same unit should be selected for a conference stop, it should be remembered that for oil company purposes that locality should be chosen containing the best microfauna. Accordingly a study of the Guttenberg limestone should include a stop at its particularly fossiliferous locality at Milbrig, Illinois. Similarly, a consideration of the Maquoketa should involve the four divisional facies of the northwest area in Fayette County, and the single divisional facies of the southwest area as exposed south of Bellevue and Graf. In the event that your Surveys do not at present know of a locality for some specific unit, rich in micro-faune, an effort should be made to find such a locality through field study.

The number of times a specific formation should be visited during the conference must be left to the discretion of the leaders. But may we be permitted the suggestion that experience has taught us, that participants show real interest in examining many exposures of the same unit, provided they show differences in lithology, fauna, thickness and age relationship. But by the end of a week they rightly tire at looking at too many exposures of the same unit in the same dress.

Particularly we stress the need for selecting localities which expose the upper and lower contacts of a stratigraphic unit and including a few feet of the superjacent and subjacent beds. Many times the best locality for the examination of a unit is not ideal for contact observation. Such a condition pertains in the Maquoketa south of Bellevue. In cases of this kind additional nearby localities, illustrating these missing intervals, should be found at which only a short stop may be required.

Still another important type of observation to be included is the progressive change in sedimentation from south to north of the Cincinnatian and Mohawkian. Thus, the Galena, completely dolomitized at DuBuque, changes to a limestone in northern Iowa and finally becomes chiefly a shale horizon in southern Minnesota. Equally changeable conditions exist in the Maquoketa and Decorah. Localities should be chosen to illustrate any regional variation in sedimentation.

In Wisconsin and Minnesota it will be important, amongst other things, to see each of the five members of the Niagaran, including the basal vari-colored calcareous shales thought to be older than Mayville; the Richmond-aged Neda member if feasible, and especially, outcrops of the dolomitic or dolomitic shale phases of the Maquoketa; the Black River-Trenton Beloit member; and, of real significance, those localities which show the sub-St.Peter unconformity illustrating cases where the St. Peter rests in juxtaposition with older and older beds, until finally it is in contact with Eau Claire, should such a phenomenon be expressed in surface exposure. Furthermore, it appeals to us that these two states have a real opportunity to bring out the significance of the unconformities and overlaps so characteristic of the Cambro-Ordovician therein exposed. One example of this would be an inspection of the quarry at Stillwater, Minnesota, where no New Richmond intervenes between Oneota and Shakopee and the Oneota is 60 feet thick, followed by stops showing the regional southward thickening of the Oneota until finally at Prairie du Chein it has attained a thickness of 150 feet, due to the coming in, at the top, of 90 feet of cherty beds, absent at Stillwater.

It is the decision of the Arrangements Committee that the personnel which will comprise the leadership of the 1934 conference shall consist of the following members:- A Director, responsible (with the Arrangements Committee) for the success of the conference, and who will see that all conference material requested is prepared in proper form and by the time designated; Three Associate Directors, who will cooperate with the Director (and with the Arrangements Committee) in all conference details pertaining to their own State; A Leader, directly responsible for all field lectures and discussion in the four states to be visited, and who will be present (if possible) during the logging of the entire conference route in order to pass final judgement on the selection of stops and add to the remarks in the Guide Book of the district leader's road log, thus resulting in a clearer regional picture; Four Associate Leaders, one for each state, whose duty it will be to select the stops, prepare the road log, and give the principal field discussion; And finally, as many Assistant Leaders in each state as the directors deem advisable, consisting of men locally or regionally acquainted with a specific problem, or a specific stratigraphic unit, and thus valuable to lend assistance on certain problems.

The Arrangements Committee takes unusual pleasure in requesting George F. Kay to accept the post of Director. In so doing the Society acknowledges his ever cheerful cooperation, and we feel assured that under his leadership, the Eighth Field Conference will be an outstanding success. The posts of Associate Directors will be chosen by the committee, with the aid of the Director. Those of Leader and Associate Leaders, will also be chosen by the Arrangements Committee, but with the advise and approval of the directors.

No concrete statement can be given you at present as to the exact length of the conference. That will depend largely upon your recommendation to us. Probably we will not be able to cover the territory adequately in less than eight days. But longer than this is virtually out of the question, unless conditions of the oil industry improve, or the added time be designated as either a pre-conference or post-conference trip. The date of the conference is also undecided, but presumably it will be during the latter part of August or early part of September. Your recommendations and reason for choice of dates will be appreciated. Tentatively it is suggested that the conference convene Saturday night, August 25, 1934, in readiness for an eight o'clock start Sunday morning, and end Sunday night, September 2, thus allowing those participants in a hurry to return to business an opportunity to avail themselves of Labor Day for travel, and reach their offices early Tuesday. For your further information in determining the maximum number of stops possible during any one day, please note that it will be necessary to add 15 minutes to the length of time required for every stop (10 minutes for the cars to come up into line and the participants to assemble in front of the speaker, and 5 minutes for them to get into their cars and the line to get under way).

It is our present thought that the conference should convene either at Iowa City or Davenport, and end at St. Paul. It is important to begin and end a conference in a city well equipped with a first class hotel. Particularly do we wish to end at St. Paul, in order to have a post-conference trip on Monday, September 3, to the Mesabi Iron Mines. So popular was the trip into the mines at Lead, South Dakota, on the Third Field Conference, that we feel assured the majority of the participants would welcome a chance to inspect the mines at Mesabi, with a field explanation of its geology and the methods of mining.

Frankly the Arrangements Committee find themselves unable to determine whether or not the conference itinerary should be so routed as to include portions of northwestern Illinois. But if this area is included, we feel that not more than one days time should be thus allotted. Apparently the problem hinges on the age and lithologic relationship of the Siluro-Devonian (especially the Alexanderian) and the Maquoketa-Galena interval to similar sediments exposed in Iowa. It is provisionally not our intention to include a study of the Silurian adjacent to Joliet and Chicago unless your Surveys especially recommend such a program, since presumably the same facies may be studied further north at Racine, Milwaukee, Fond du Lac and Green Bay. It is urgently requested that the Iowa and Illinois Surveys cooperate on this matter as soon as conveniently possible, even if it requires a short field investigation to ascertain the merits of including northwestern Illinois in the Itinerary, and forward us your early decision. Be assured that we are ready and anxious to thus include a part of Illinois, provided the formations included do not wear quite the same "dress" as elsewhere. But even though your decision be negative, it still remains our wish that the Illinois Survey will comprise a part of the active leadership in that Illinois leaders may aptly discuss at various stops pertinent inter-state problems.

There exists in Illinois one locality extremely valuable to visit from the economic standpoint of the petroleum geologist, but most unfortunately it appears that this desirable locality could not be placed expeditiously in the itinerary. This feature would call for the beginning of the confer-

ence at St. Louis, instead of Iowa City or Davenport, and studying in detail the post-Kinderhook Mississippian of Monroe and Randolph Counties. The undescribed Osage and Meramec section, constituting Weller's Valmeyer Series, exposed in the vicinity of Valmeyer (beginning with the exposures in the North Valmeyer quarry of uppermost Plattin, Decorah and Kimmswick, followed by the continuous highway outcrops of Fernvale, Maquoketa, and a complete succession from Fern Glen to St. Louis exposed within the first few miles east of town on the new Valmeyer-Waterloo highway) is reported to be the most famous locality for these stratigraphic units in the central United States, because of the almost 100% completeness of their exposure. Equally interesting, and in some respects even more valuable to Mid-Continent geologists, is the thick Chester section which may be seen between Chester and Prairie du Rocher, economically important because of the recently discovered Chester sediments, reaching a possible maximum of 1500 feet in thickness, present in deep wells in northern Oklahoma and southcentral Kansas. But since the area between Chester and East St. Louis cannot be covered adequately in less than a long field day, and since it would necessitate an additional 6 hours non-stop drive from East St. Louis to Davenport, it remains out of the question to include this Mississippian locality in the first days itinerary, and yet reach Davenport that night.

The only method by which this feature could be incorporated as part of the conference would be for the Surveys of Iowa, Wisconsin and Minnesota to so divide their time that two days could be alloted Illinois. This second day could be used in covering the distance between St. Louis and Davenport, either by way of the "River Road" stopping at Warsaw and Burlington, etc., or by way of Peoria, thus affording the participants an opportunity to spend most of the day on Pennsylvanian deposits, and thereby allowing Weller to exhibit localities illustrating the theory by cyclic sedimentation. This latter program would be a desirable and appreciated feature, provided two days time in Illinois does not detract too greatly from the chief aim of the conference which emphasizes the pre-Mississippian. Probably the best way to solve this problem would be for the three surveys aforementioned to forward us a statement of what may be accomplished in six days and seven days respectively, particularly calling attention to what important stops would be omitted by a six day schedule, and allow the Arrangements Committee to make that decision which in their opinion would most benefit the petroleum geologist. In addition to this, may be request the Illinois Survey to transmit us alternative schedules for the above suggested second Illinois day; showing tentatively how much of the Pennsylvanian of northern Illinois could be seen on the second day (together with the relation of these exposures to our Kansas Pennsylvanian, and the general route to be taken) and what could be accomplished by keeping on the Mississippian, via the "River Road", over and above that already accomplished during the first day, other than, of course, a study of the Kinderhook at Burlington.

We believe it is safe to inform you that the oil companies value this conference so highly that they will send their best representatives. The rating of our field conference is now so generally known amongst Universities and State Surveys throughout these United States, and the inherent interest in the upper Mississippi Valley area is so great, no difficulty is anticipated in drawing from a majority of the States in the Union. It is not unlikely that the attendance will approximate from 100 to 150 participants. You will there-

fore be justified in expending an extraordinary effort to prepare material for a conference unique in the geological profession. Thus with 20 months notice, embracing two field seasons, we trust it will be possible for your Surveys to cooperate so extensively that many of the problems peculiar to the upper Mississippi Valley (which otherwise might remain unsolved for long years) will be brought to a satisfactory solution for conference discussion.

In this regard may we call attention to the work of Moore and Condra, for the Sixth Field Conference, in revising completely the Classification of the Lower Permian and Pennsylvanian of Kansas and Nebraska. Should any of your systems of classification, or portions thereof, be in need of revision, we are strongly hopeful that this forthcoming conference will provide the incentive for such in order that geologists may benefit from such a program.

Chiefly these problems should relate to the careful correlation of the upper Cambrian and Black River-Trenton sections in the upper Mississippi Valley. More specifically, it would materially benefit the petroleum geologist for your surveys to cooperate in a further study of (1) the St. Lawrence-Trempealeau relationship (2) the Madison-Jordan relationship (3) the exact interval occupied by the Platteville of Iowa and Wisconsin (4) whether the Richmond-aged Dubuque formation is a valid member of the Galena Group, or, should the term Galena in Iowa be confined to sediments of Trenton age (5) the exact correlation of the upper and lower limits of the Maquoketa shale of the upper Mississippi Valley to the Richmond sections of the Ohio Valley, (6) the relationship of the Lower Magnesian group of Wisconsin and Minnesota to the Beekmantown of the Ozark region, and, (7) the problem of the New Richmond Sandstone.

It is our combined wish that each of the four State Surveys addressed will join the Kansas Geological Society in preparing for this conference, and that you will immediately inform us of your affirmative decision. Furthermore, that you will advise the tentative number of days you think should be allotted your State, together with a rough preliminary outline of possible routes to be selected, and what stratigraphic units may be studied en route. And lastly, may be emphasize that the inclusion of structural features, if such exist in your state, is an essential prequisite to be included in the Itinerary.

Cordially yours,

Anthony Folger

Anthony Folger

Committee on Arrangements.

Anthony Folger - Chairman
Gypsy Oil Company

L. W. Kesler,
Sinclair Prairie Oil Company

E. C. Moncreif,
Derby Oil Company

E. A. Wyman,
Amerada Petroleum Corporation

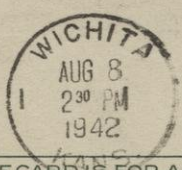
Copy to:
Marshall Kay - New York

James H. Lees - Des Moines

Allen C. Tester - Iowa City

Fred T. Thwaites - Madison

Marvin Weller - Urbana



THIS SIDE OF CARD IS FOR ADDRESS

F.T.Thwaites.
Wisconsin Geological Survey.
Madison, Wis.

KANSAS GEOLOGICAL SOCIETY
412 Union National Bk Bldg
Wichita, Kansas

August 4, 1942

The Society has had a number of requests regarding a field trip this year.

We felt that because of the war, it would be advisable to cancel this year's trip which would have been the Sixteenth Annual Field Conference.

We wish to take this opportunity to thank you for your co-operation and interest in these conferences.

Your name will remain on our mailing list and should there be a trip this next year or the following year, you will be notified.