GEOLOGY AND GEOGRAPHY

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ABSTRACTS

Local Lithologic Discontinuities in the Reelsville (Lower Chester) Limestone of Indiana.[1] HENRY H. GRAY, Indiana Geological Survey and T. G. PERRY, Indiana University.—Exposures in Lawrence, Martin, and Orange Counties, Indiana, show abrupt lateral lithologic charges in the Reelsville (lower Chester) limestone. The overlying Elwren formation appears to rest unconformably on the Reelsville in these sections, but a significant unconformity cannot be demonstrated because: (1) sediments above and below the Reelsville are similar and, where the Reelsville limestone is absent, do not show evidence of a break in deposition, and (2) Reelsville fossils are found locally in clastic beds that are lateral equivalents of the Reelsville limestone.

At Huron, Lawrence County, an 8-foot section of Reelsville limestone abuts olive-gray, silty shale which exhibits differential compaction features suggesting deposition contemporaneous with the limestone. Near Willow Valley, Martin County, relict boulders of Reelsville limestone are surrounded by reddish-brown, residual clay. Here 1 foot to 6 feet of olive-gray, silty shale lies above the Reelsville and is overlain unconformably by crossbedded sandstone of the Elwren formation; this unconformity probably lacks regional significance. Approximately 2 miles west of Prospect, Orange County, the Reelsville is represented by 6 feet of fossiliferous, calcareous sandstone which abuts unfossiliferous, olive-gray, silty shale.

Abrupt lateral facies changes, not erosional unconformity, caused lithologic discontinuity of the Reelsville.

The Change of the Physical Properties of Some Clays at Temperatures Below 200° C. ERHARD WINKLER, University of Notre Dame.—The adobe structures of the low latitude arid areas have been able to resist rain storms for many centuries. In order to study the possible stabilizing effect of the sun, six different American clays of known mineral composition were exposed to temperatures of 25°, 50°, 100° and 200° C. for six days. For each temperature raise, the compressive strength, water resistance, and Atterberg plastic limits were performed. The values of the compressive strengths rapidly increased from 25° to 50°C to find a peak at 200°C. The water resistance showed a general increase except Ball Clay and Fuller's Earth which reached a peak at 50°C. The plastic index increases for Attapulgite, Fuller's Earth and Kaolinite; however, a decreasing plasticity was expected rather than an increasing plasticity, as actually achieved by the Fithian Illite and Ball Clay. All pre-heated clays were exposed to a super-saturated atmos-

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phere at 25°C for six days. The physical properties could be easily reversed at temperatures up to 100°C. However, compaction of the clay particles of colloidal size caused the limited reversibility at 200°C.

Thus the sun is a potent stabilizer of most of the common clays of temporary character.

The Dimensions of Steam Railroad Abandonment in Indiana. ELMER G. SULZER, Indiana University.—Almost one thousand miles of main and branch line steam railroad trackage in Indiana have been abandoned and removed. This paper lists each of these abandonments, presenting names of railroads involved, termini of segments, mileage, Indiana counties, and abandonment dates.

Contained in the compilation are all railroads using steam or any other power except electric. This has led to the inclusion of four lines, the Evansville and Ohio Valley Railway, the Evansville, Suburban and Newburgh Railway, the St. Joseph Valley Railway, and the Winona Railroad, that were at one time or another electrically operated, but also used other types of motive power during their existences.

Industrial spur lines, not termed "branches" by their owners, are not included. Segments of track abandoned because of short relocation are also omitted.

Bedford and Evansville share the doubtful honors of being the termini of more abandoned railroads than any other Indiana county seats, each claiming three sections of "ghost" trackage. No longer entering Bedford are the short Bedford and Wallner Railroad, the Rivervale-Bedford branch of the B. & O. R. R., and the Switz City branch of the Monon. Serving Evansville no more are the Evansville, Suburban & Newburgh, the Evansville & Ohio Valley, and the line of the Illinois Central running between that city and Henderson, Kentucky, by way of a car ferry. This car ferry, was the only facility of its kind that originally moved the cars of a steam railroad, and was later pressed into service as the means of transporting across the Ohio River the interurbans scheduled between Henderson and Evansville.

With a few exceptions, Indiana's steam railroad abandonments were caused by three factors: (a) exhaustion or lack of demand of mineral resources for the movement of which the lines were originally built, (b) segments without overhead traffic and depending on local business that was absorbed by the automobile and highway truck, and (c) the construction of parallel or duplicating routes that negated advantages formerly possessed by the railroad.

Some Climatic Contrasts Between Indiana and Adjacent States. STEPHEN S. VISHER, Indiana University.—Fifteen lantern slides showing the eastern half of the maps of the United States from the Climatic Atlas of the United States (1954) illustrate some of the differences between Indiana and neighboring states.

1. Hot summer (75° average of day and night) commences by mid-June in western Kentucky, but does not occur in Michigan. Ohio has less such hot weather than does Illinois.

2. Exceptionally short frost-free seasons are shorter in Illinois, Michigan and Indiana than in Ohio and Kentucky.

3. The variation from year to year in average winter temperatures is significantly greater in Kentucky and southern Illinois than in Indiana, and especially greater than in Michigan.

4. Much of Kentucky has four times as many very hot days as northern Indiana. Ohio is somewhat cooler than Indiana, whereas Illinois is somewhat warmer.

5. The lowest temperatures ever officially recorded are lower in Ohio and Michigan than in Indiana, and almost as low in Kentucky and Tennessee as in Indiana. Illinois' lowest is the same as Indiana's, —35°, but —20° is much more frequent in northern Illinois than in Indiana.

6. April cold spells are almost equally cold in this region except that Kentucky and Indiana are somewhat less cold than Illinois, Michigan and Ohio.

7. Thunderstorm frequency increases southward in this region.

8. Illinois has more tornadoes than does Indiana while Michigan, Ohio and eastern Kentucky have fewer.

9. Kentucky receives a notably greater share of its precipitation in winter and early spring than does Indiana; Illinois receives less.

10. There is a southward increase in this region in the frequency of "cloudbursts."

11. In the day with most rainfall, Kentucky and Illinois receive the largest totals of these states, Michigan least, very seldom more than 4 inches, while Kentucky occasionally receives more than 10 inches in a day.

12. In an exceptionally dry growing season, much of Illinois, southern Indianua and western Kentucky are semiarid while Ohio and Michigan are dry subhumid.

13. In an exceptionally dry summer month, Illinois, Michigan, and much of Kentucky receive less than an inch of rain, while Ohio and most of Indiana receive more than an inch.

14. The contrast between the amounts of precipitation received in the driest and wettest years increases southward among these states.

15. There is a westward increase in this region in the percentage of the growing season rain which falls at night.

These, and other contrasts between the climate of Indiana and its neighboring states result in a slight advantage in favor of Indiana in most respects.

Upset of Nature's Balance Between Carbon Dioxide and Oxygen in the Air. J. A. REEVES, R. R. 2, Terre Haute.—Callendar (Royal Meterological Society) has shown that the carbon dioxide content of the air over England remained constant at 292 ppm between 1865 and 1895. It then increased 7 ppm during each ten year period from 1895 to 1935. Since 1935, the rate of increase presumably was greater, but accurate measurements are not available. Calculations indicate that the overall increase in carbon dioxide in the air since 1895 is in excess of 300 billion tons.

This rapidly growing percentage of carbon dioxide, in the air in England and allegedly elsewhere, may show up in a modifying effect on our climate, in crop and tree growth, tornadoes, health, and personal comfort.