

GEOLOGY AND GEOGRAPHY

Chairman: ALLAN F. SCHNEIDER, Indiana Geological Survey.

L. I. DILLON, Ball State University, was elected chairman for 1968.

ABSTRACTS

Arroyos of the Southeastern Portion of the Canon City Embayment, Colorado. HENRY E. KANE, Department of Geography and Geology, Ball State University.—Channels of ephemeral streams of the southeastern portion of the Canon City Embayment of Colorado display many degrees of arroyo development ranging from incipient, shallow arroyos to deep and vertical-walled trenches. Arroyos are well developed in the outcrop area of the Cretaceous Pierre and Smoky Hills shales.

In the initial developmental stage, headward positions of the arroyo contain scarps which are developed in the fine-grained alluvium of upland valleys. A semicircular plunge pool usually occurs at the base of the scarp. From the plunge pool position, the channel deepens, with the walls assuming a vertical position until, with increased development, the channel is 20 or more feet deep and flanked by high vertical walls. Arroyo channels and adjacent areas display many features, such as circular holes, vertical channels, tunnels, and fallen columns and blocks, all of which contribute to arroyo enlargement.

The explanation for arroyo cutting and development is similar to Scott's explanation for the development of the arroyos in the Kessler quadrangle near Denver, Colorado. Arroyo cutting is considered to be induced by climatic change and accelerated by fire and man's land practices, such as overgrazing. The present arroyo cycle is one of many similar cycles that have occurred in the Southern Rockies, most of which have antedated man on the North American continent.

A Topographic Map of the Bedrock Surface of Tippecanoe County, Indiana as Drawn by a Computer. BRENT LOWELL and TERRY R. WEST, U. S. Geological Survey and Purdue University.—Using available water well data, a contour map was drawn for the bedrock surface of Tippecanoe County, Indiana, by an IBM 7094 computer. Elevations on the bedrock surface were obtained by subtracting the depth to bedrock from surface elevations at well locations. Wells were located by x and y coordinates with the z coordinate registering the elevation above sea level.

Trend surfaces from the first through sixth degree were fitted to the data and the residuals obtained. The sixth degree surface, which is a surface containing a sixth power polynomial as the highest power in the equation, showed the best fit with the input data.

A topographic map was drawn by the computer for each power equation using different characters for each contour interval. This contouring technique shows promise, as the sixth degree surface had an 82% duplication of the input data.

Contouring by computer is not more accurate than contouring by hand, but it is considerably faster. As such, the method is not meant as a complete replacement for manual contouring, but it can be applied to large areas when searching for general trends that warrant further investigation.

Genesis of a Belt Road. BENJAMIN MOULTON, Indiana State University. —Four streets of Terre Haute encompassing a large share of the urban population and on the inner margin of the suburban fringe give strong indications of becoming a belt road. This belt road, 21 miles in length, has experienced remarkable industrial, commercial and service function growth in the last decade. It shows ribbon or strip development with little nucleation. Many of the functions now found along the route were once in the C B D or near C B D. The growth reflects the need for careful planning.