# GEOLOGY AND GEOGRAPHY

Chairman: C. L. Bieber, DePauw University

T. F. Barton, Indiana University, was elected chairman for 1952.

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## ABSTRACTS

**Reclaiming coal mine spoils for agriculture.** Helmut Kohnke, Purdue University.—Strip mining of coal has removed many an acre from agriculture. Reclamation efforts so far have been generally in the direction of reforestation. The majority of the coal land in the United States is in an area with a climate favorable for agriculture.

It must be welcomed therefore that research stations and coal operators alike are attempting to develop methods of reclaiming coal mine spoils for agriculture. It has been found that any plant species adapted to the vicinity can be established on the spoils except on the extremely acid ones. Grading spoils to an undulating topography permits the use of agricultural implements for seed bed preparation, fertilization, seeding and harvesting and widens greatly the land use capability. Hay and pasture crops have been established successfully on calcareous and on slightly acid spoils and have given generous returns.

Further research and experience is necessary to determine how many years in grass and legumes it will take for the rocks to decompose and soil structure to form before row crops can be grown. Whether it is economical to reclaim the more acid spoils for agriculture is problematic.

**Circulation and settlement patterns of the Calumet Region of Northwest Indiana and Northeast Illinois** (Third stage of occupance). Alfred H. Meyer, Valparaiso University, Valparaiso, Indiana.—This paper deals with the third of the four stages of occupance of the Calumet Region. The first and the second, dealing with the Pottawatomie and the Pioneer respectively, have been presented previously. The present is concerned with the geographic factors and forces instrumental in the development of the circulation and settlement patterns of the period from 1850 to 1900, noteworthy for the construction of roads and railroads, river and harbor improvements, development of commercial agriculture and urban communities, and the founding of basic industries for which the Calumet region is known throughout the world. Significant relationships of land and life are considered with reference to four primary geographic functions: geographic position, regional differentiation, interregional relationships, and recognizable areal correlations between the human and physical elements of the various environments.

**The origin of the kinetic energy in the planets.** JAMES A. REEVES.—This paper takes up the Tidal Theory of Jeans-Jeffrys on the origin of the solar system. It shows how the planets obtained their great kinetic energy of revolution and rotation.

The tongue of gas drawn out of our sun by a passing sun was caught between the two suns and given a mighty whirl by the gravitational pull of the two suns. The passing sun carried its side of the gas along after it, our sun carried its side in the opposite direction, the mutual gravitation of the gas particles in the tongue drew them together to form spheres. The outside layers of the spheres were given greater speed than the inner layers on account of their closer proximity to the two suns.

When these whirling spheres got beyond the heating power of the sun they cooled off and the heavier elements solidified.

Particles in bands far out from the axis of rotation of the sphere were revolving too fast to be drawn into the main sphere. They bunched up and became satellites.

The larger planets captured rings of gas from the other sun, which was traveling in the opposite direction, and formed retrograde satellites.

**A proposed research project for southern Indiana.** OTIS P. STARKEY, Indiana University.—Representatives from six Indiana University departments have drawn up a proposal to study the causes and effects of declining population in southern Indiana. It is hoped that by an intensive study of a relatively small area it may be possible to work out general principles of value in the analysis of areas with similar population problems elsewhere.