



CONTACT INFORMATION  
Mining Records Curator  
Arizona Geological Survey  
416 W. Congress St., Suite 100  
Tucson, Arizona 85701  
602-771-1601  
<http://www.azgs.az.gov>  
[inquiries@azgs.az.gov](mailto:inquiries@azgs.az.gov)

The following file is part of the Grover Heinrichs Mining Collection

#### **ACCESS STATEMENT**

These digitized collections are accessible for purposes of education and research. We have indicated what we know about copyright and rights of privacy, publicity, or trademark. Due to the nature of archival collections, we are not always able to identify this information. We are eager to hear from any rights owners, so that we may obtain accurate information. Upon request, we will remove material from public view while we address a rights issue.

#### **CONSTRAINTS STATEMENT**

The Arizona Geological Survey does not claim to control all rights for all materials in its collection. These rights include, but are not limited to: copyright, privacy rights, and cultural protection rights. The User hereby assumes all responsibility for obtaining any rights to use the material in excess of "fair use."

The Survey makes no intellectual property claims to the products created by individual authors in the manuscript collections, except when the author deeded those rights to the Survey or when those authors were employed by the State of Arizona and created intellectual products as a function of their official duties. The Survey does maintain property rights to the physical and digital representations of the works.

#### **QUALITY STATEMENT**

The Arizona Geological Survey is not responsible for the accuracy of the records, information, or opinions that may be contained in the files. The Survey collects, catalogs, and archives data on mineral properties regardless of its views of the veracity or accuracy of those data.

THE AMERICAN INSTITUTE OF MINING AND METALLURGICAL  
ENGINEERS

# Technical Publication No. 446

*Class I, Mining Geology, No. 39*

## The Ore Deposits of the Tri-State District (Missouri-Kansas-Oklahoma) (WITH DISCUSSION)

By GEORGE M. FOWLER AND JOSEPH P. LYDEN  
JOPLIN, MO.

DISCUSSION OF THIS PAPER IS INVITED. This paper was presented at the Joplin Meeting, September, 1931. Discussion in writing may be sent to the Editor, American Institute of Mining and Metallurgical Engineers, 29 West 39th Street, New York, N. Y. Unless special arrangement is made, the discussion of this paper will close March 1, 1932. Any discussion offered thereafter should preferably be in the form of a new paper.

29 WEST 39th STREET  
NEW YORK, N. Y.

*All papers issued by the Institute are abstracted month by month in Mining and Metallurgy. This paper is issued with the January, 1932, number. Members are urged to go through the abstracts each month and select and request such papers as they can use.*

Copyright, 1932, by the American Institute of Mining and Metallurgical Engineers, Inc.  
Printed in U. S. A.

### *Notice*

Papers presented before the meetings of the Institute and accepted for publication are numbered and issued individually as TECHNICAL PUBLICATIONS. They are classified in one or more series according to subject and numbered consecutively in each.

Members of the Institute are invited to register for the receipt of papers in such class or classes as may be of interest to them or to order individual publications by number. Each month a list of new publications is printed in MINING AND METALLURGY; also abstracts of the papers of the month. Prior to July 1, 1927, the papers were issued as individual pamphlets with class letters but without class numbers. Complete lists of all papers published in the preceding six months are published in the June and December issues of MINING AND METALLURGY for each year. Temporary binders suitable for holding the papers of any one or more classes will be furnished members at cost, \$1.25 each.

The Institute also issues MINING AND METALLURGY, a monthly publication; an annual List of Members; and a Yearbook volume of TRANSACTIONS containing those papers that are of most general interest, abstracts of TECHNICAL PUBLICATIONS issued during the year and a consolidated index of all Institute publications for the year. These go to all members.

Not all papers issued as TECHNICAL PUBLICATIONS are reprinted in TRANSACTIONS. Members are therefore urged to save their TECHNICAL PUBLICATIONS.

Separate volumes of TRANSACTIONS contain papers presented before the Divisions or other groups of members of the Institute. One of these volumes is sent to each member who indicates a choice and additional volumes may be purchased at reasonable rates.

## CONTENTS

	PAGE
Scope of this Report.....	5
Production of Tri-State District.....	5
Historical Sketch.....	7
Location and Topography.....	9
Geology.....	10
The Tri-State District.....	12
Stratigraphy.....	15
Generalized Section of Boone Formation.....	15
Stratigraphic Section of Mineralized part of Boone Formation.....	16
Stratigraphic Section Bird Dog Well.....	17
Metamorphism.....	18
Structure.....	23
Regional.....	23
Due to Metamorphism.....	27
Ore Deposits.....	29
Types.....	30
Hard-Ground Deposits.....	30
Brecciated.....	30
Stratified.....	30
Sheet Ground.....	30
In Dolomite.....	31
Soft-ground Deposits.....	31
In the District as a Whole.....	31
Ore Minerals and Analysis.....	31
Paragenesis.....	32
Conclusions.....	34
Structure.....	34
Genesis of the Ore.....	35
Future of the District.....	37
Acknowledgments.....	37
Discussion.....	37





**MINED OREBODIES.**

# Structural Control Of Ore Deposits

**George M. Fowler**  
*Mining Geologist*  
Joplin National Bank Building  
Joplin, Mo.

*Engineering and Mining Journal*

September, 1938—Vol.139,No.9

Structural Control

By Dr. J. B. ...

Structural  
Control  
Of Ore Deposits  
In The  
Tri-State  
Zinc and Lead  
District

**George M. Fowler**  
*Mining Geologist*  
*Joplin National Bank Building*  
*Joplin, Mo.*



## Relation of Fracture Zones to Orebodies in the Tri-State District\*

The Origin of These Orebodies Has Been in Controversy and Methods of Predicting Distribution Doubtful—The Author Discriminates Between Several Sets of Fractures and Holds They Furnish the Key

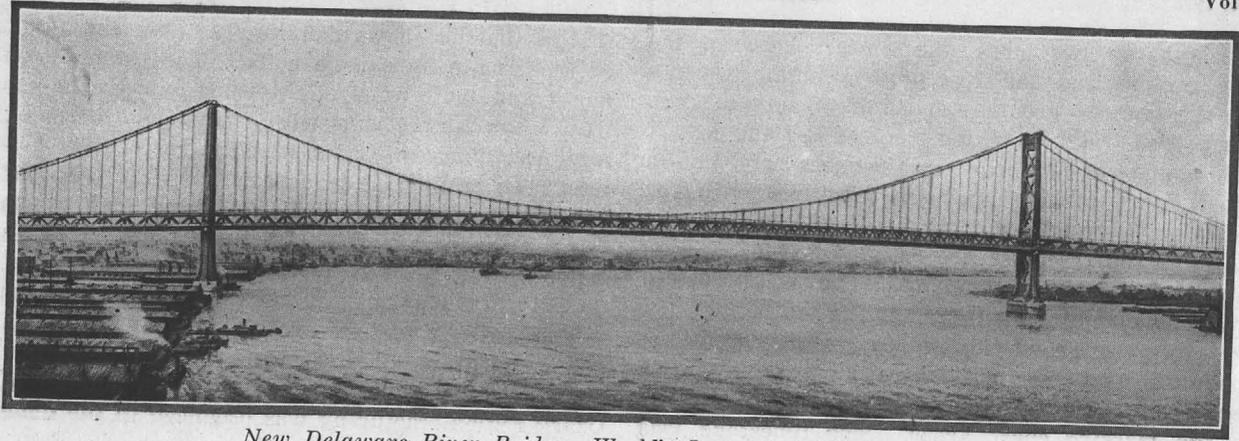
D. W. F. NETZERAND † Picher, Okla.

## Los Angeles Meeting Well Attended

Joint Gathering of A. I. M. E. and Western Division of American Mining  
Congress Provides Interesting Sessions in a Four-day  
Meeting—Ladies also Entertained

... in this district shows definite fractures and the trend





*New Delaware River Bridge—World's Largest Suspension Bridge*

## National Metal Week at Philadelphia

Joint Meeting of Three Great Societies and a Notable Exhibition of Processes  
and Products—Technical Papers in Large Variety—Metallurgical  
and Manufacturing Plants Opened to Visitors—Every  
Prospect of a Big Meeting

# Sequence of Structural Deformation in the Oklahoma Mining Field

By George M. Fowler and J. P. Lyden  
Mining Geologists, Joplin, Mo.





