CONTENTS
Reorganization effect on Geologic Survey .................. 1
Measuring the nation ............................................. 1
County topographic maps ....................................... 5
Geologic research in Pennsylvania — 1982 ................. 6
Areal Geology ...................................................... 6
Economic Geology ............................................... 8
Engineering Geology ............................................. 10
Environmental Geology .......................................... 10
General Geology ................................................ 11
Geomorphology .................................................. 12
Geophysics ........................................................ 13
Glacial Geology ................................................... 13
Hydrology .......................................................... 14
Igneous and metamorphic petrology ......................... 16
Mineralogy ........................................................ 16
Paleontology ....................................................... 16
Sedimentology .................................................... 18
Stratigraphy ....................................................... 19
Structural Geology ............................................... 20
Reports published ............................................... 22
Survey announcements .......................................... 32
Mineral and Gem Show .......................................... 32

ON THE COVER: Big Spring in Washington Township, Franklin County; along Marsh Run, 55 miles north of Maryland line. Spring is along a fault contact in the Shadygrove limestone; measured flow is 2500 gpm.
TWO DIFFERENT ANSWERS AREN'T ALL BAD

Science is generally considered synonymous with accuracy. Scientists are expected to provide answers that can be relied upon. The public expects it. To say "It is a scientific fact" is the ultimate truth!—or is it?

In the current issue of the journal American Scientist is an article entitled "Late Cretaceous Extinctions" which purports to prove that the well renowned event in geologic history when so many vertebrate and invertebrate life forms went into extinction was really a product of gradual process, rather than a sudden catastrophic event. Yet earlier this year, other highly respected geoscientists at the AAAS meeting in Washington gave several convincing talks, one "proving" that the extinction event was due to the impact of a large meteor, and another "proving" that the extinction phenomenon was due to massive volcanic eruptions which affected the atmosphere and the ocean water quality. All of these scientists are capable, respected researchers, each dealing with the same starting set of known facts.

There are many, many other examples of scientists who arrive at differing conclusions. Some issues of unsolved scientific diversity includes the origin of our moon and our solar system, the origin of life itself, the degree to which living organisms can tolerate low-level radiation, etc.

Sometimes scientific divergence moves from the labs and campuses into the courtroom where both sides of a case may call in scientists as expert witnesses, and with the same set of facts the scientists present opposing conclusions. In so doing neither of the scientific witnesses is either lying nor incompetent.

Differing scientific conclusions are a tribute to the very creative and democratic strength of the scientific process in the ability not to be dogmatic, but rather the freedom to assess and to reassess data and evidence, and the willingness to accept new interpretations and new conclusions brought about by new evidence or newly inspired interpretations.

So if you find two geologists who have arrived at differing conclusions, don't despair. They may not both be right, or they may both be partially right. But they are practitioners of the process of hypothesizing, researching and data collecting, analyzing and interpretation, followed by conclusions. The strength of science and scientists is that they are not inflexible or dogmatic, that they reflect the almost unending creative capabilities of the human mind.

Arthur G. Scoles
Reorganization Effect
On Geologic Survey

Just as we are going to press with this issue, it has been formally announced that effective August 9th our Division of Oil and Gas Regulation in Pittsburgh will become a separate bureau and will be transferred to a newly created Office of Environmental Energy Management within the Deputate for Environmental Protection headed by Deputy Secretary William B. Middendorf. Other bureaus under the Office of Environmental Energy Management will be Deep Mine Safety, Mining and Reclamation, and Radiation Protection.

Within the Deputate for Environmental Protection there is also being created an Office of Environmental Management, under which will operate the Bureaus of Air Quality Control, Community Environmental Control, Solid Waste Management, Water Quality Management, and Laboratories.

The Division of Oil and Gas Geology in Pittsburgh will remain as a division of our Bureau of Topographic and Geologic Survey. Our Survey continues as a bureau within the Deputate of Resources Management.

Measuring the nation
-past and present

Some experts know the highest and lowest elevations in the 48 conterminous United States and the highest and lowest elevations in Pennsylvania, but how many people know how these elevations were established? How many people know how a surveyor can say a monument near Millerstown, Pennsylvania, is located precisely at latitude 40°37’04.6130”N and 77°10’00.6663”W longitude and is at elevation 1057.848 feet?

The horizontal position (the latitude and longitude) of a point and altitude above sea level (elevation) are some of the most significant information depicted by a map. This information locates the site in relation to all other places in the United States, and is called “geodetic control data”.

2
The data for a horizontal control point consist of the latitude and longitude of the control mark, and a description of the mark. The data for a vertical control point consist of the elevation of the mark and a description of its location.

The entire country is covered with a network of geodetic control points. The control points are indicated by bronze markers or tablets which have been set in the ground. The horizontal control markers are called monuments, and the vertical markers are called bench marks. The markers may be found in varied places: the tops of remote mountains, and sidewalks of large cities. The monument northwest of Millerstown is also a bench mark. A bench mark at elevation 412 feet is due west of Millerstown.

Geodetic control data are the basis for U.S.G.S. topographic maps. Every map includes horizontal markers and vertical bench marks that exist in the area covered by the map.

EXPLANATION
△ Monument
× Benchmark

Portion of the Millerstown, Pa., topographic map showing monuments and bench marks
The Department of the Treasury was assigned the task of making a survey of the entire coast of the United States in 1807. A world renowned Swiss scientist, Ferdinand Rudolph Hassler, directed the field work. Hassler's work produced the first systematic approach to surveying the country and establishing a geodetic system that could be extended nationwide. A network of horizontal control data points was developed and came to be known as the North American datum 1927.

A similar study of elevations was undertaken at about the same time and is known as the National Geodetic Vertical Datum 1929. It is still in use, as is the North American Datum 1927.

Because of natural and man induced ground movements, as well as the disruption of certain monuments, the National Geodetic Survey has decided to redefine and readjust the network to produce the North American Datum 1983. The latitude and longitude of almost all points in the United States will change slightly to reflect the correct position in relation to the entire world. A similar readjustment is planned for the vertical network and will be completed by the end of the decade.

Geodetic Survey Control Lists are published by two agencies, the U.S. Geological Survey and the National Geodetic Survey. The National Geodetic Survey horizontal and vertical control data are published separately by 30-minute quadrangles. The price is determined by the number of sheets per booklet. These products may be ordered from: The Director, National Geodetic Survey, NGS Information Center C185, Rockville, Maryland 20852.

U.S.G.S. vertical control lists contain the descriptions, location, and elevation of bench marks. The horizontal control lists contain the description, geodetic and/or geographic position of transit traverse, triangulation, and electronic traverse stations. Both types of lists are assembled in 15-minute quadrangle units. To order, the area must be identified and the type of list desired. Orders may be placed directly with: Eastern Mapping Center-NCIC, U.S. Geological Survey, 536 National Center, Reston, Virginia 22092.


Detailed information on this subject may be found in a pamphlet entitled "Measuring the Nation" available from the National Cartographic Information Center at the address listed above.
During the past year new county topographic maps have been published by the U.S. Geologic Survey. The maps are at a scale of 1:50,000 (approximately 400 feet to the inch). These maps are multicolored, following the standard colors of topographic maps, with the addition of political boundaries for county, township and boroughs outlined in orange. These county maps are of widespread use to all who are concerned with county and regional planning, engineering, agriculture, and recreational projects. These maps may be obtained for $3.25 each ($6.50 for Centre, Lycoming, and Schuylkill) by writing to Distribution Section, U.S. Geological Survey, 1200 S. Eads Street, Arlington, Virginia 22202. Prepayment is required and check should be made payable to "U.S. Geological Survey".

The Lehigh County map (map #39) costs $1.00 and is available by writing to the State Book Store, P.O. Box 1365, Harrisburg, Pennsylvania 17125 (Prepayment is required, Pennsylvania residents should add 6% sales tax, and make check payable to the "Commonwealth of Pennsylvania").
GEOLOGICAL RESEARCH IN PENNSYLVANIA 1982

INTRODUCTION

With this issue of "Pennsylvania Geology", you celebrate with us a 25th anniversary. Twenty-seven years ago we began reporting to you on the geological research activity in Pennsylvania. The first report was issued in May, 1956 as "Newsletter No. 1" and contained information on 80 separate projects. Reports were issued in all subsequent years except in 1961 and in 1972, the year of the Hurricane Agnes Flood which destroyed the Bureau offices.

In this, our silver anniversary report on geologic research, we list 89 projects. As the number of reports on research activities has grown greatly over the past quarter century plus, we have had to exercise editorial prerogative in reducing or omitting the description of some activities that were clearly not research in the classic sense of geological work that would be published, or otherwise distributed to fellow workers through normal scholarly methods. The three most active research areas over the past year were Economic Geology, Hydrology and Paleontology. When we started, the three most popular research areas were Stratigraphy, Sedimentary Petrology and Areal Geology. Mineralogy and Igneous and Metamorphic Petrology were least favored in 1956 as in 1982. That's hard rocks for you — consistently hard!

If you wish more information on a project described herein, please write directly to the author. Most of these projects will not be published by the Pennsylvania Geological survey inasmuch as most are not survey sponsored projects.

The ACD is the anticipated completion date, which is when the author expects to complete his or her project; additional time may elapse before the report is published or distributed.

Happy twenty-fifth anniversary reading to you!

AREAL GEOLOGY 1956 1957 1958 1959 1960

W. R. BRICE, BRENDA HOCKENSMITH, and THOMAS MOUREY, Univ. of Pitt. at Johnstown. Loyalhanna Limestone Outcrops—Laurel Ridge, Johnstown, Pa. [Laurel Ridge, NE of Conemaugh Gap]. Loyalhanna Limestone has been found 3 km from mapped positions. The outcrops appear to be erosional windows cut through the Mauch Chunk. ACD: Aug. 1982.


S. W. BERKHEISER, JR., Pa. Geol. Survey. Reconnaissance Study of High-Purity Silica Deposits in Pa. A reconnaissance study of sedimentary, metamorphic, and igneous sources of high-purity (+ 97%) silica has been initiated to characterize their chemical and physical properties.

S. W. BERKHEISER, JR., Pa. Geol. Survey. Reconnaissance Survey of Bedded(? ) Barite Showings in Western Berks Co., Pa. [Frystown area]. This reconnaissance study will attempt to identify the mineral resource potential of apparent bedded barite showings occurring in allochthonous Ordovician Martinsburg (Hamburg Sequence) rocks. Emphasis is placed on mapping lithologic associations and reconnaissance geochemistry. ACD: July 1982.

S. W. BERKHEISER, JR., Pa. Geol. Survey. Reconnaissance Survey of Potential Carbonate “Whiting” Sources in Pa. [SE Pa.]. Nineteen samples from fourteen sources ranging in age from Precambrian to Triassic, were analyzed for brightness, whiteness, and chemical characteristics. Potential economic resources have been identified in three formations of southeastern Pa. ACD: 1982.


strata in Greene, Washington, and Allegheny Counties have been entered into the National Coal Resources Data System (NCRDS) computer. Information for Fayette, Westmoreland, Butler, and Cambria Counties is currently being assembled and prepared for entry into the system. This will result in computer-generated geologic and resource maps for western Pa.

E. M. HOPKINS, Univ. of Pitt. at Bradford. Correlation of Photo-Lineaments (Landsat) with Oil and Gas Production in North-Central and Western Pa. Lineaments coincide with many oil-producing trends in Pa. Those parallel to fold axes indicate brittle deformation during folding. Others trending at high angles to fold axes delineate various types of transverse faults. Exploration rationale will be investigated. ACD: Oct. 1982.

C. D. LAUGHREY, Pa. Geol. Survey. Reservoir Geology of the Athens and Geneva Gas Fields, Crawford Co., Pa. This study consists of four parts: (1) mapping the external form and trend of the reservoirs; (2) petrographic determination of composition and texture; (3) diagenetic history of the reservoir rocks and its relation to porosity and permeability; and (4) reservoir engineering parameters. ACD: June 1982.


A. T. SMITH and A. W. ROSE, The Pa. State Univ. Geologic and Geochemical Controls on the Formation of Cu-U Red-Bed Occurrences in the Upper Devonian Catskill Formation of Pa. Regional and local stratigraphic controls have been examined. Geochemical constraints determined by fluid inclusion, isotope (C-O) and fluid flow due to compaction have been proposed. An early diagenetic model is being developed. ACD: Oct. 1982.

R. C. SMITH, II, and J. H. BARNES, Pa. Geol. Survey. Geologic and Mineralogic Interpretation of Gamma-Ray Reconnaissance Data for the Reading Prong, Easton, Pa. [portions of Berks, Bucks, Lehigh, and Northampton Cos.]. The composition and mineralogy of 60 host rocks have been determined. Gamma-ray spectrometer and magnetometer data have been obtained at the more interesting areas of uranium mineralization. ACD: 1983.
R. C. SMITH, II, Pa. Geol. Survey, and D. T. HOFF, Wm. Penn Memorial Museum. Copper-Uranium Occurrences in the Catskill Formation, Picture Rocks and Sonestown Quads., Pa. Geologic and mineralogic studies of 50 small Cu-U bearing lenses have been completed. Quantitative analyses for U, Cu, As, and Pb as well as semiquantitative data for several others have been interpreted. Mineralogic data for some rare minerals are included. ACD: 1982.


J. V. HAMEL, Hamel Geotechnical Consultants, and H. M. FAUSOLD and C. E. STEVENSON, U.S. Army Corps of Engineers, Pbg. District. Bank Instability on the Monongahela River, Pa. [six sites along Monongahela River, 92 to 103 km]. Bank instability is being investigated at six sites along the Monongahela River 92 to 103 km upstream from Pbg. ACD: June 1983.


J. P. WILSHUSEN, Pa. Geol. Survey. Geology of the Appalachian Trail in Pa. [SE Pa.]. A description of geologic characteristics of each physiographic province crossed by the trail with detailed, illustrated geologic accounts at points of interest along the route. Sketch maps, geologic cross sections, and descriptions are keyed to a geologic map of the trail. ACD: Nov. 1982.

KEN LAURIE, Univ. of Ill. at Urbana. Geomorphic Analysis of Paraglaciational Processes on the Wisconsinan Glacial Border in North-Central Pa. [Elk Grove and Red Rock quads.]. Sedimentologic data attest to a period of widespread and rapid mass wasting during the close of the last episode of glaciation. Corresponds to paraglacial deposits reported by Church and Ryder (1972) in British Columbia and Baffin Island. ACD: Sept. 1982.

NOEL POTTER, JR., Dickinson Coll. Distribution and Origin of Gravels and Colluvium in Cumberland and Franklin Cos. Continuation of mapping of thick gravels along the flanks of South and Blue Mountains, and their relations to residuum weathered from underlying carbonates and to alluvial terraces along Conodoguinet, Yellow Breeches, and Conococheague Creeks. ACD: Continuing.

G. H. THOMPSON, JR., Elizabethtown Coll. Incised River Meander Cutoffs in the Central Appalachian Region. Cutoffs attributed to intensified lateral stream activity during Pleistocene periglacial climate regimes.


L. J. LaFOUNTAIN, D’Appolonia Geophysical Corp. Various Geophysical Surveys for Oil and Gas [Fayette, Somerset, and Westmoreland Cos.]. High-resolution and conventional surveys to explore for oil- and gas-bearing structures in western Pa. ACD: Ongoing.

F. E. SENFTLE, Project Chief, U.S. Geol. Survey. Magnetic Properties of Coal. Using samples from Pa., Ky., R.I., Ill., and Ohio, the study of change in the magnetic properties of pyrite as a function of temperature and oxidizing atmosphere will continue in FY 1982. Some measurements are also planned for illite in coal. The basic studies of chemical oxidation of anthracite will be continued in terms of charge transfer, pH, and chemical environment. A field study of the electrolytic oxidation of coal is tentatively planned in Pa., with the idea of solution mining of coal, if time and funding permit. ACD: Sept. 1982.
areas to determine ice recessional positions between the terminal moraine and the New York State line. ACD: Continuing.

JAMES COTTER and E. B. EVENSON, Lehigh Univ., LES SIRKIN, Adelphi Univ., BOB STUCKENRATH, Smithsonian Inst., and W. D. SEVON, Pa. Geol. Survey. Deglaciation Chronology of NE Pa. and NW N.J. This project has attempted to determine the timing of the Late Wisconsinan (Woodfordian) deglaciation. A radiocarbon date of 18,570 from the base of a post-glacially formed lake has been obtained. Other dates and palynologic evidence suggest this date may accurately represent the age of deglaciation. ACD: June 1983.


J. R. HOLLOWELL and P. B. BALLARON, Susquehanna River Basin Comm. Special Ground-Water Study of the Susquehanna River Basin. Final report by the Commission staff and summary of the findings and conclusions from 13 ground-water research projects. The projects, partially funded by the Water Resources Council, were conducted in Pa., N.Y., and Md. by participating water resource agencies. ACD: Dec. 1982.

THOMAS McELROY, Pa. Geol. Survey. The Groundwater Resources of Fayette Co., Pa. The project will provide a description and in-
ventory of groundwater resources in Fayette County. Particular emphasis is being put on the impact of coal mining on groundwater quality. Field work is completed. ACD: June 1982.

G. N. PAULACHOK, U.S. Geol. Survey. Hydrologic Investigations of the Ground-Water Resources in the Commonwealth of Pa. Objectives are to determine the quantity, quality, and availability of ground water in areas where needed information is not available or where major changes in the hydrologic system have occurred since the last study. Project will begin in Delaware County. ACD: Sept. 1984.

G. N. PAULACHOK, U.S. Geol. Survey. Water Resources of the Oley Valley, Berks Co., Pa. Objectives are to evaluate the water resources of the Oley Valley to provide basic hydrologic data on which future management decisions may be based. Stream gaging stations, observation wells, and rain gage network has been established. Water table map is in preparation. ACD: Mar. 1983.


F. H. ROBERTS, LAWRENCE MARK, and PAUL FARREL, Delaware County Christian Sch. Structural Geology and Petrology of High Grade Metamorphic Rocks between Lima and Marcus Hook, Pa. Objective is to investigate the mapped boundary between the Wissahickon Formation and the Precambrian rocks. The relationship between charnockitic and noritic rocks and apparently similar rocks northeast of Lenni is being studied. ACD: 1985?

P. S. BOYER, Fairleigh Dickinson Univ. Scolecodonts from the Devonian Oriskany Group, Monroe Co., Pa. Scolecodonts from the Oriskany Group have been isolated from acid residues. Descriptions will compare these with other Devonian scolecodonts from Ohio, Ky., and Mich. ACD: Summer 1983.

E. B. EVENSON, Lehigh Univ., JOHN GUILDAY, Carnegie Inst., BOB STUCKENRATH, Smithsonian Inst., and JIM COTTER, KATHY VANDERWAL, DAVE CUNDALL, and JOHN GATEWOOD, Lehigh Univ. The Paleo-Ecology of a Pleistocene Sinkhole, Hanover, PA. Radiocarbon dates, faunal assemblages, and pollen analysis have been utilized to determine the age and history of a post-Illinoian sinkhole. Radiocarbon ages of 41,800 and 37,800 years B.P. serve as minimum dates for this deposit. ACD: Dec. 1982.


G. R. McGHEE, JR., Rutgers Univ., and R. G. SUTTON, Univ. of Rochester. Late Devonian Marine Ecology and Zoogeography [along the Allegheny Front across the entire state, and in NW Pa.]. The project concerns the marine ecology and zoogeographical distribution patterns of marine animals which existed during the Late Devonian, and the response of those animals to the collapse of the ecosystem which occurred during the end of the Frasnian Epoch. ACD: Open ended.
W. A. OLIVER, Project Chief, U.S. Geol. Survey. Upper Silurian/Lower Devonian Biostratigraphic Framework of the Central Appalachians. Fieldwork in Pa., N.J., and SE N.Y. will be underway in FY 1982 in order to supplement earlier collections. A report on Manlius-Coeymans ostracodes identified during this fieldwork will be prepared. Analysis and description of stromatoporoid-facies corals is also planned. A report on the ecological aspects of Devonian corals of N.Y. will be in preparation. Analysis of worldwide Devonian rugose corals will be completed, and a report documenting the results of this study will be prepared. ACD: Sept. 1985.


ALFRED TRAVERSE and N. G. JOHNSON, The Pa. State Univ., and P. K. STROTHER, Harvard Univ. Palynological-Paleobotanical Study of Primitive Land Plants in the Tuscarora Formation and Other Lower Silurian Rocks of Pa. [central and eastern Pa.]. Investigation of mostly microscopic, but some megascopic, plant remains in the lower Silurian rocks of Pa. is a continuing project of our laboratory. Studying remains of these pre-vascular embryophytic plants is important to understanding the early evolution of the land flora. ACD: Continuing.

A. L. GUBER and TED SHUSTER, The Pa. State Univ. Facies Analysis of the Rose Hill and Mifflintown Formations [central and western Pa.]. A geochemical, paleontological, and sedimentological approach is being used to define facies sequences, prepare facies maps, and develop facies models for the Mifflintown and Rose Hill Formations. ACD: 1984?

S. W. NEWSOM, Univ. of Delaware. A Paleogeographic Model for Middle Ordovician Lithofacies in Central Pa. [Centre, Huntingdon, Blair, and Mifflin Cos.]. Carbonates and shales of Middle Ordovician age are currently being examined, with emphasis on sedimentation processes that document the change from a carbonate to a siliciclastic depositional regime across central Pa. ACD: Dec. 1982.


W. R. BRICE and K. M. JONES, Univ. of Pitt. at Johnstown, Mauch Chunk Marine Limestone Correlation—Clark Run—Conemaugh Gap [small stream and roadcut—Route 403 near Cramer, Pa.]. A small marine limestone in the Mauch Chunk crops out along Rte. 403 near Cramer, PA, and in Clark Run. The project will produce a detailed measured section and correlations with other Mauch Chunk sections. ACD: Aug. 1982.

W. R. BRICE, TIMOTHY PERRY, and PATRICK CRAFT, Univ. of Pitt. at Johnstown. Allegheny Group Measured Section—Rte. 56, Johnstown, PA. [Rte. 56 bypass]. Roadcuts on Rte. 56 in Johnstown, PA have exposed a good section of the Allegheny Group. The project will produce three or four measured sections and correlations with other Allegheny sections. ACD: Dec. 1982.

A. D. GLOVER, C. H. DODGE, J. R. SHAULIS, and V. W. SKEMA, Pa. Geol. Survey. TASIC (Temporarily Available Stratigraphic Informa-
A continuing program for recording stratigraphic data on active coal and clay strip mines while exposures are available. The ongoing project is designed to provide data for future mapping and regional mineral resource evaluation.

R. W. GOODWIN and E. J. ANDERSON, Temple Univ. Punctuated Aggradational Cycles in Limestones of the Helderberg Group, Appalachian Basin. A sedimentologic and stratigraphic analysis of the Helderberg Group applying the hypothesis of Punctuated Aggradational Cycles (PACs). The ultimate goal is to correlate small-scale time-stratigraphic rock units (PACs) throughout the Helderberg Basin and interpret the paleogeography represented by each PAC.

M. K. McINERNEY, W.Va. Univ., and T. M. BERG, D. B. MacLACHLAN, and J. H. WAY, Pa. Geol. Survey. Stratigraphic Correlation Diagram for Pa. The correlation chart has been reviewed by about 35 geologists outside the Pa. Survey, and has also been reviewed internally. Final revisions are being made, and the diagram will be published as a General Geology Report. ACD: Late 1982.


1956 1957 1958 1959 1960

ERIC ERSLEV, Lafayette Coll. Element Distribution and Morphology of Solution Cleavage in the Bossardville Limestone, Pa. [Bossardsville, Pa.]. Solution cleavage in the Bossardville Limestone has been studied using S.E.M. imaging and E.D.S. analysis. Preliminary results indicate that calcite dissolved from the selvages leaving a residue of illite, quartz, and pyrite. ACD: 1983.

RODGER FAILL, Pa. Geol. Survey. Tectonic Map of Pa. Delineation of anticlines, synclines, and faults; portrayal of igneous rocks; basement contours; structure contours on Onondaga limestone in Pla-
teau; delineation of tectonic phases and lithotectonic units; unconformities; major fracture orientations; metamorphic facies; radiometric dates, earthquake epicenters; geothermal gradient; cross sections; text. ACD: Dec. 1982.


S. T. PEES, Samuel T. Pees & Associates, J. C. PALMQUIST, SCOTT CHASE, and others, Lawrence Univ., and ANTONIO SEGOVIA, Univ. of Md. Detailed Fracture Trace Study of Portions of NW Pa. [Crawford, Erie and Mercer Cos. in particular]. Fracture traces are picked from enlarged aerial photographs and depicted on specially prepared base maps, scale 1" = 1,000′. Fracture traces are normally less than one mile in length. Fractures may advantageously affect some hydrocarbon reservoir beds. ACD: June 1982.


H. A. POHN and T. L. PURDY, U.S. Geol. Survey. The Structure of the Appalachian Structural Front in Pa. The detailed structure of the 50 quadrangles along the Appalachian structural front has been completed. Comparisons of structural style with styles exhibited on the Appalachian Plateau and Valley and Ridge provinces is being synthesized. ACD: Fall 1982.

S. N. WILLIAMS, Indiana Univ. of Pa. A Geological Study of a Portion of the St. Marys, Pa., 7.5′ Quad. A geological map of the eastern portion of the quadrangle has been completed. Significant structural control of the area has been obtained and some problem areas have been looked at with some very positive results. ACD: Apr. 29, 1982.
REPORTS PUBLISHED


GARDNER, T. W., 1980, Geomorphology of Nittany Valley, Ch. 5 in Soils and geology of Nittany Valley. Agronomy Ser. no. 64, Pa. State Univ., p. 52-75.


Iron mine districts of York County, Pennsylvania. Geoinformer, April, p. 4-5.


MILLER, C. E., JR., 1981, Fossil collecting locality in the Keyser Formation at Maple-

PODWYSOCKI, M. H., and others, 1982, Evaluation of remote-sensing, geological and


SEVON, W. D., 1981, Ground water and surface water, in Berg, T. M., and others, Geol-


STONER, J. D., 1981, Bedrock hydrology in the Appalachian coal basin, southwest-
STROTHER, P. K., and TRAVERSE, ALFRED, 1981, Early Silurian nonmarine polyno-
florules from Poe Paddy, Pennsylvania [abs.]. Palynology, v. 5, p. 223.
SUTTER, J. F., and DALLMEYER, R. D., 1982, Interpretation of $^{40}$Ar/$^{39}$Ar ages from the
TAYLOR, KENT, FAHNESTOCK, R. K., SONNENFELD, DAVID, and NUMMEDAL,
Soc. America Abs. with Programs, v. 14, no. 1 and 2, p. 89.
TAYLOR, L. E., and ROYER, D. W., 1981, Summary groundwater resources of Adams
THOMPSON, G. H., JR., 1981, incised river meander cutoffs in the central Appalachian
THOMSEN, M. A., and MARTIN, W. D., 1981, Petrology of the mudrocks of the Dumb-
ard Group (Upper Pennsylvanian-Permian), northern Dunkard Basin, West Virginia
Sci., v. 81, p. 46.
TOLE, M. P., and LASAGA, A. C., 1981, Factors controlling the dissolution kinetics of
mining on stream morphology with emphasis on twenty nine small watersheds in central Pennsylvania [abs.]. Geol. Soc. America Abs. with Programs, v. 14, nos. 1 and 2, p. 91.
TRAMER, F. W., 1981, Permeability of fractured rocks in the central Appalachian region
TURNER-PETERSON, C. E., 1982, Tectonism and sedimentation of the Triassic-Jurassic
with Programs, v. 14, nos. 1 and 2, p. 92.
UNITED STATES GEOLOGICAL SURVEY, 1982, Land use and land cover, 1973, Cumber-
VOLMAN, K. C., 1981, Paleoenvironmental implications of botanical data from Mea-
controlling the generation of acid-mine drainage [abs.]. Geol. Soc. America Abs. with
Programs, v. 13, no. 7, p. 576.
WILLIAMS, S. J., MEISBURGER, E. P., CARTER, C. H., and FULLER, J. A., 1981, Shal-
low subbottom geologic character, sediment disturbance and sand and gravel re-
sources based on a geophysical and vibracore survey of southern Lake Erie between
WILSHUSEN, J. P., and WILSON, D., 1981, Tioga-Hammond flood control project, in Ferg,
WOLOSZ, T. H., and WALLACE, R. J., 1981, Coral population variations in a coloniz-
ing community, in Gray, Jane, ed., Communities of the past. Stroudsburg, Pa., Hutch-
inson Ross Publishing Co.
WONES, D. R., BUTLER, J. R., CRAWFORD, M. L., and others, 1981, Plutonic map of
WOOD, C. R., 1980, Groundwater resources of the Gettysburg and Hammer Creek
Rept. 49, 87 p.
WOOD, G. H., JR., 1981, Geologic map of anthracite-bearing rocks in the Nesquehoni-
WOODLAND, B. G., 1982, Gradational development of dominal slaty cleavage; its

SURVEY ANNOUNCEMENTS

SWATARA STATE PARK GUIDE

The Pennsylvania Geological Survey has just released the Swatara State Park Guide, another addition to its park guide series. Park Guide 16, written by Denise W. Royer, discusses the general geology of the Swatara Park area as well as the formation of the Swatara Gap. Geologic features are discussed including a prominent disconformity adjacent to the park area and exfoliation weathering in the Mahantango Formation. The guide also describes two excellent fossil collecting sites and includes sketches of the specimens most commonly collected at each location. This park guide is available at the Swatara State Park office and the Pennsylvania Geological Survey’s office in Harrisburg.

MINERAL & GEM SHOW

“The Central Pennsylvania Rock & Mineral Club, Inc. will hold its 17th annual Gem, Mineral & Jewelry Show in the Tile Room of the Zembo Temple, 2801 N. Third Street, Harrisburg, Pennsylvania on September 11 and 12. Hours: 11th—10 a.m.-7 p.m.; 12th—10 a.m.-5 p.m.

Exhibits by club members will include mineral specimens, fossils, spheres, jewel trees, cabachons and faceted stones, and jewelry. Club members will give demonstrations of silversmithing and lapidary work. Dealers will have minerals, fossils, gemstones, jewelry, and supplies for sale. Ample free parking.”

32
PENNSYLVANIA GEOLOGICAL SURVEY STAFF
Arthur A. Socolow, State Geologist
Donald M. Hoskins, Assistant State Geologist

TECHNICAL SERVICES
Shirley J. Barner, Stenographer
Sandra Blust, Librarian
James H. Dolimpió, Draftsman
John G. Kuchinski, Draftsman
Christine M. Dodge, Geologist Supervisor
Mary A. Miller, Stenographer
Geary L. Sarno, Draftsman
Marjorie Steel, Stenographer
Linda Tucker, Clerk
Albert Van Olden, Draftsman
Janet L. Worthing, Typist

ENVIRONMENTAL GEOLOGY DIVISION
Alan R. Geyer, Division Chief
Mari G. Barnhart, Clerk
Helen L. Delano, Geologist (Pittsburgh Office)
Thomas A. McElroy, Hydrogeologist
Denise W. Royer, Hydrogeologist
Donna M. Snyder, Stenographer
Larry E. Taylor, Hydrogeologist
John P. Wilshusen, Geologist

GEOLOGIC MAPPING DIVISION
Thomas M. Berg, Division Chief
Clifford H. Dodge, Geologist
Rodger T. Faill, Geologist
Albert D. Glover, Geologist
Jon D. Inners, Geologist
Valerie D. Lawson, Typist
David B. MacLachlan, Geologist
William D. Sevon, Geologist
James R. Shaullis, Geologist
Viktaras W. Skema, Geologist
John H. Way, Jr., Geologist

MINERAL RESOURCES DIVISION
Robert C. Smith, Division Chief
John H. Barnes, Geologist
John C. Benson, Typist
Samuel W. Berkheiser, Jr., Geologist
Leslie T. Chubb, Laboratory Technician

OIL AND GAS GEOLOGY DIVISION
John A. Harper, Division Chief
1201 Kossman Bldg.
100 Forbes Ave., Pittsburgh, Pa. 15222
Kathleen D. Abel, Geologist
Lajos Balogh, Draftsman
Cheryl Cozart, Statistical Asst.
Robert Fenton, Laboratory Technician
Elizabeth E. Grego, Typist
Christopher D. Laughrey, Geologist
John Petro, Draftsman

TOPOGRAPHIC DIVISION
In Cooperation with The U.S. Geological Survey

GROUND WATER DIVISION
In Cooperation with The U.S. Geological Survey
GROUND WATER LEVELS
FOR
July 1982

Bureau of Topographic and Geologic Survey
Dept. of Environmental Resources
P.O. Box 2357
Harrisburg, Pa. 17120

Address Corrections Requested