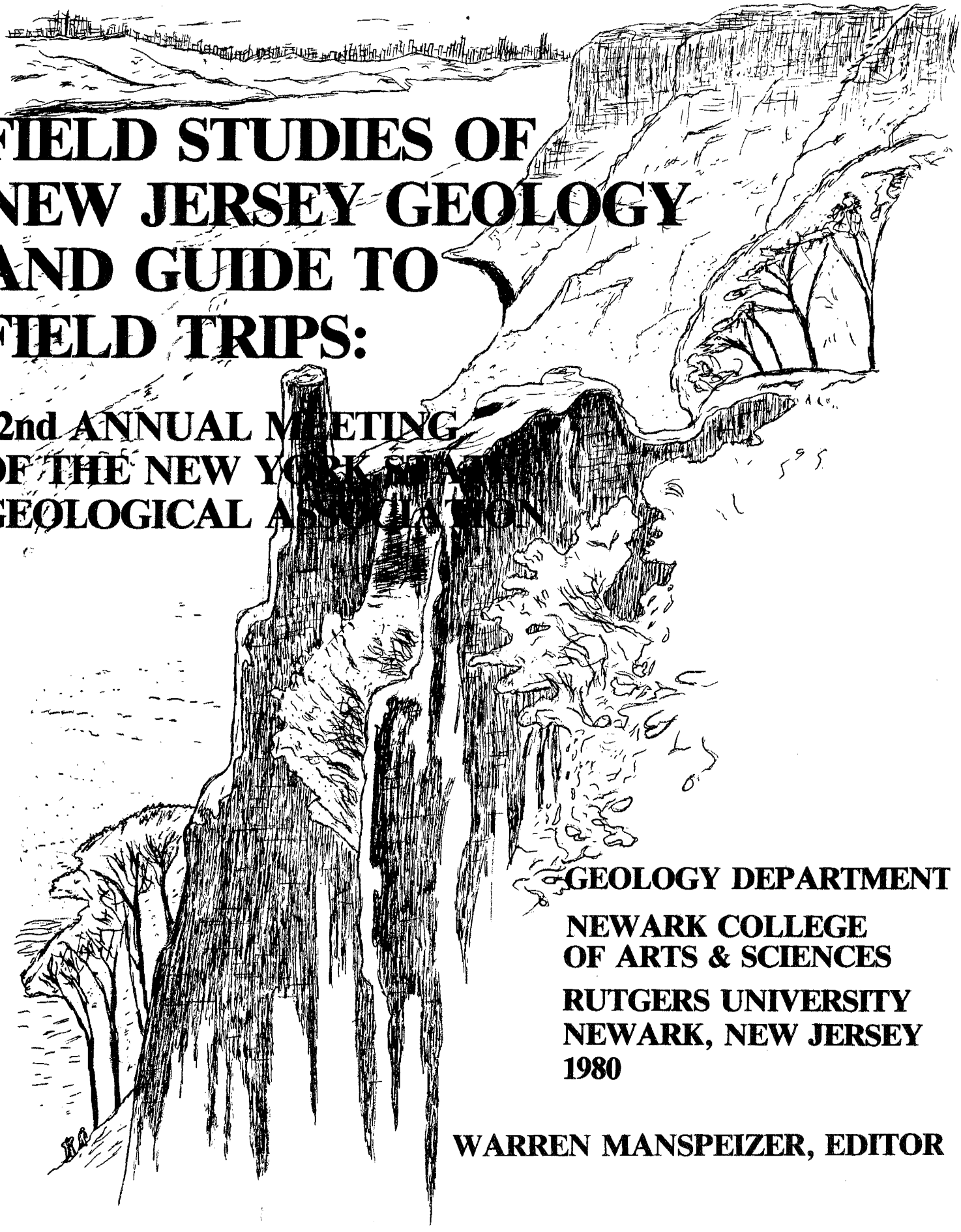

FIELD STUDIES OF NEW JERSEY GEOLOGY AND GUIDE TO FIELD TRIPS:

52nd ANNUAL MEETING OF THE NEW YORK STATE GEOLOGICAL ASSOCIATION

GEOLOGY DEPARTMENT

NEWARK COLLEGE
OF ARTS & SCIENCES

RUTGERS UNIVERSITY
NEWARK, NEW JERSEY

1980

WARREN MANSPEIZER, EDITOR

FIELD STUDIES OF NEW JERSEY GEOLOGY AND GUIDE TO FIELD TRIPS:

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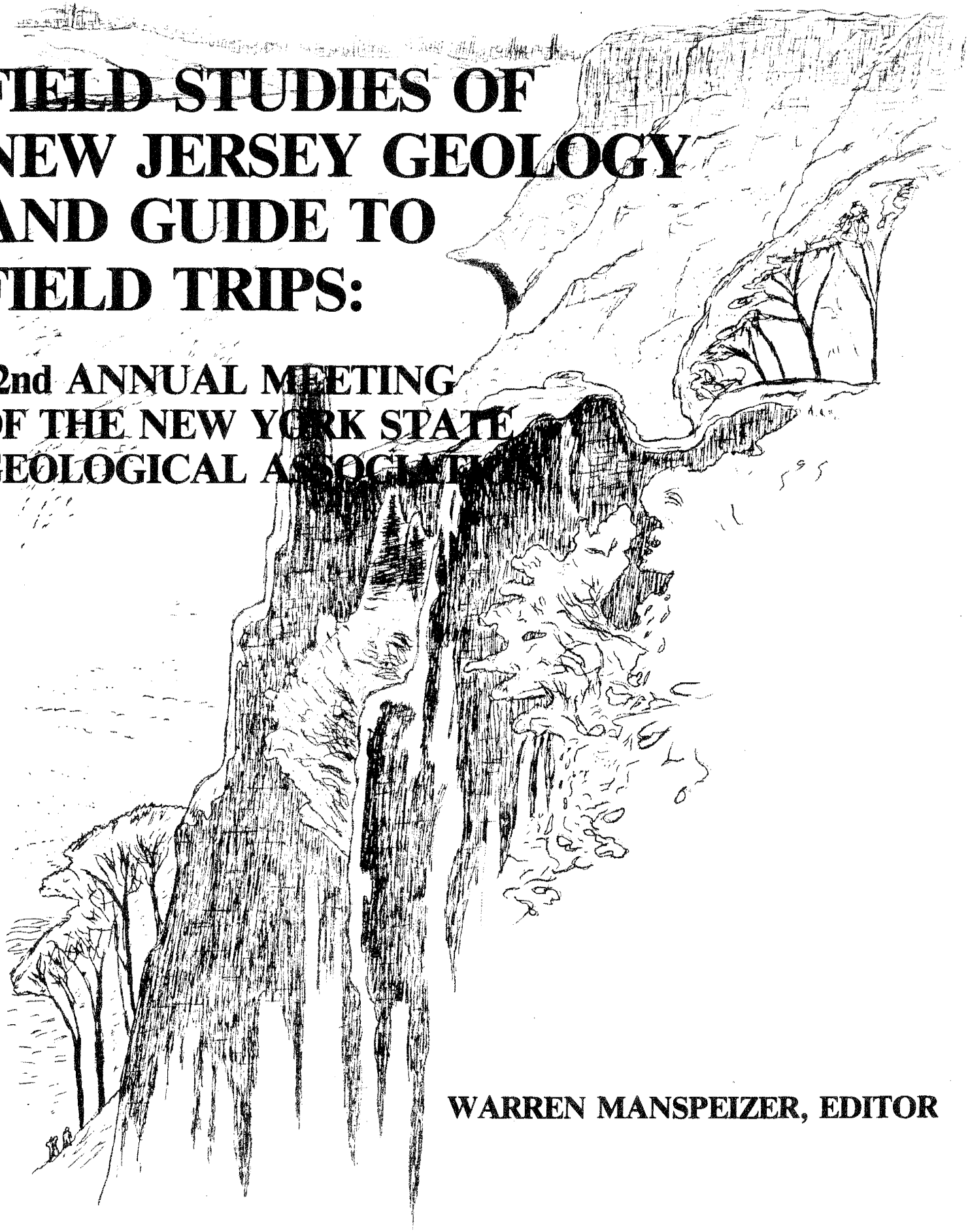

WARREN MANSPEIZER, EDITOR

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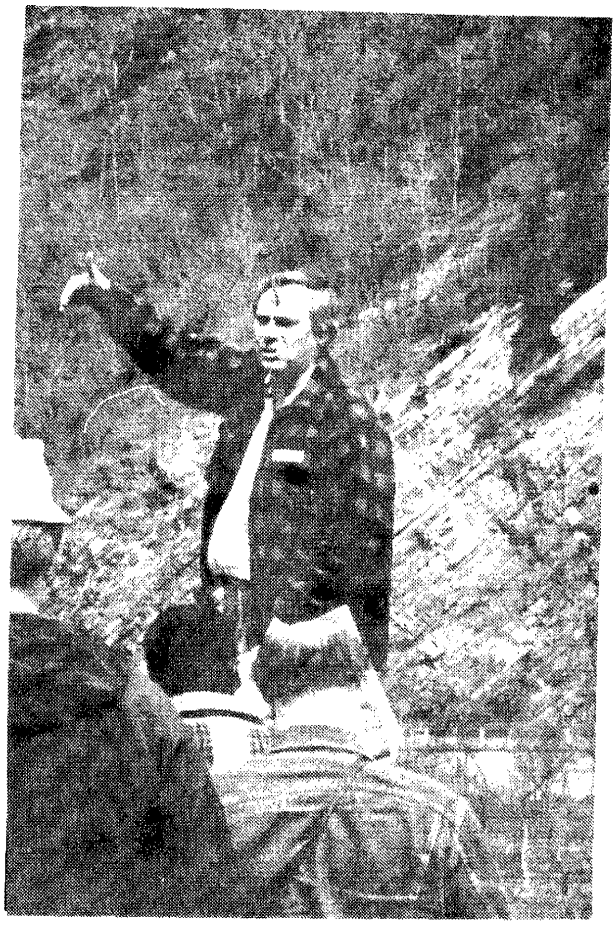
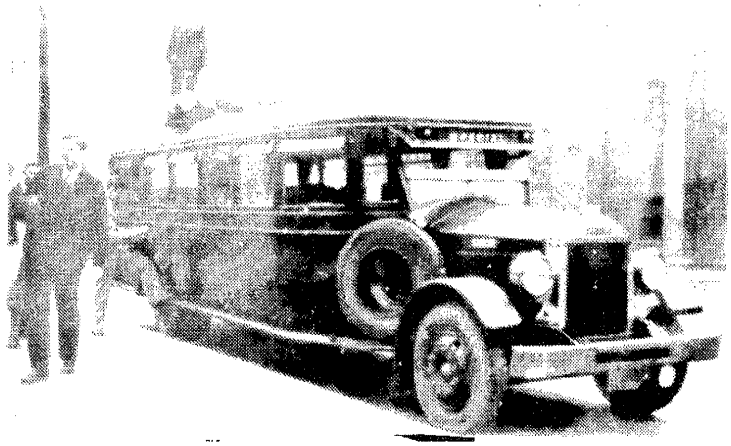
(1899-1968)
First professor of the Geology Department, first Dean of the college, and outstanding student of Appalachian Geology.

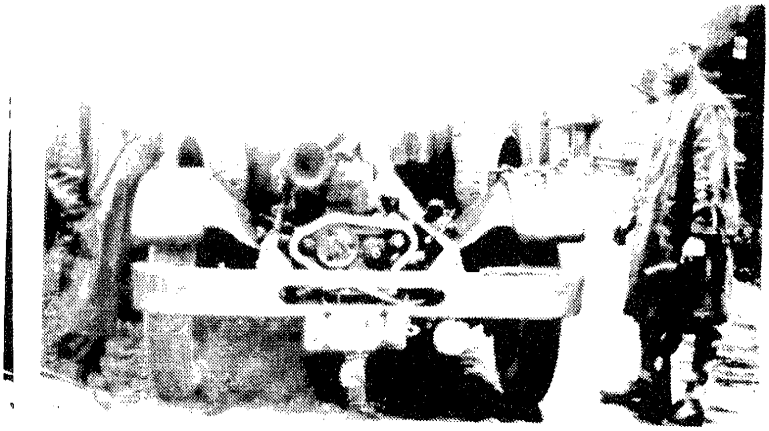
In memory of
WILLIAM W. WILES
(1927-1975)
An extraordinarily gifted and inspiring teacher, loyal colleague and trusted friend.





The bus; loading up

looking for fossils near Bushkill, Pa.



trouble

at Port Jervis

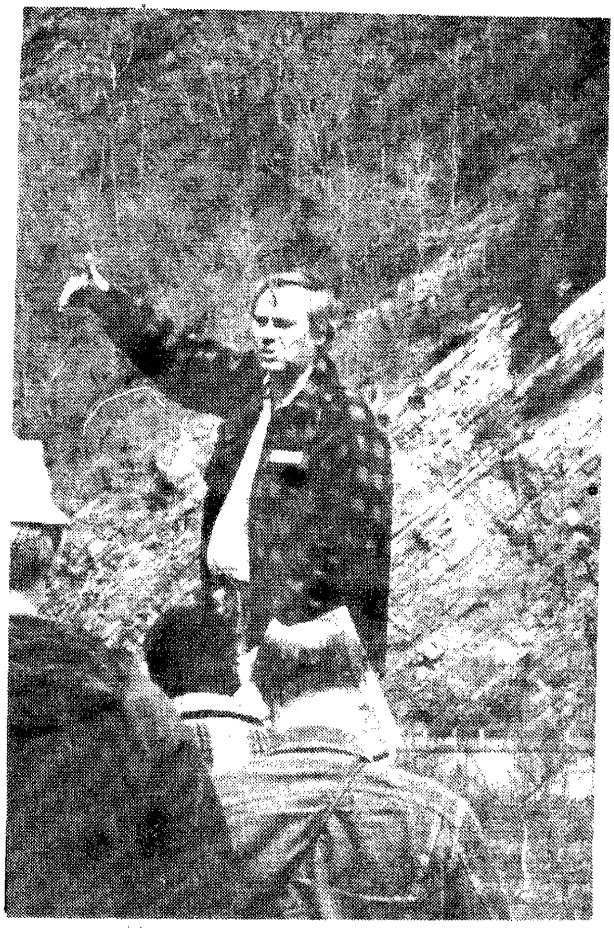
one of the stops

fossil hunting in the
Cobleskill Limestone

GEOLOGY FIELD TRIP
THE LEGAL DEPARTMENT
NEW JERSEY LAW SCHOOL

Newark–Port Jervis–Kingston
April 20-22, 1929

(captions by H.P. Woodward, 1929)



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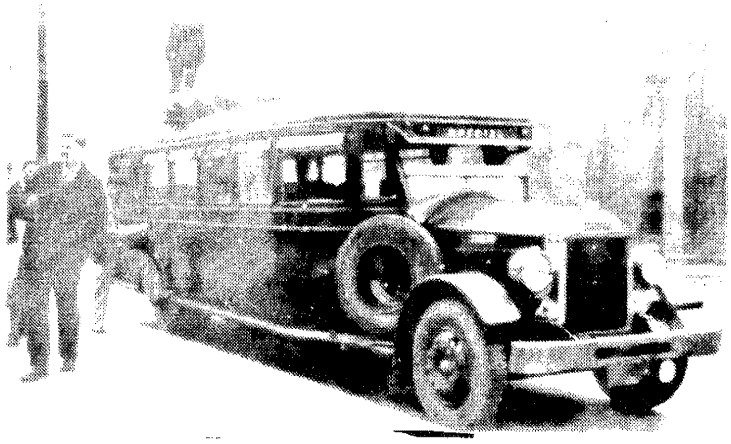

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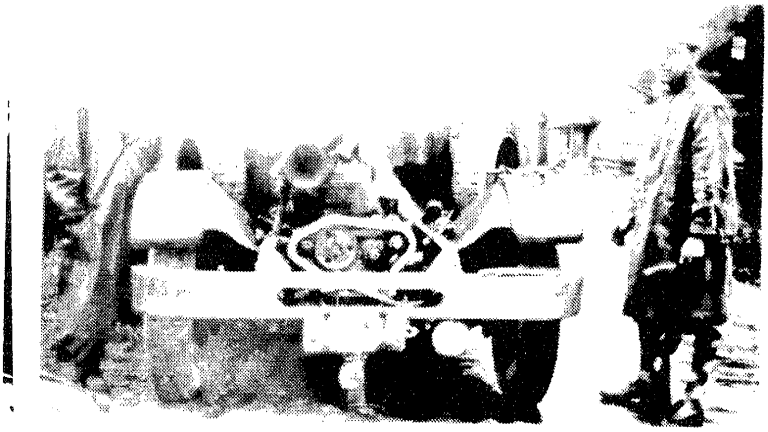

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PREFACE

Writing in 1918 shortly after the United States entered the war in Europe and the resultant need to restrict travel for field study was manifest, Professor A. K. Lobeck of Columbia University drew attention to the location of New York City as a superb center for geologic study[1]*. How fortunate, he wrote, the we have at hand a museum of landforms that invites us to take our students to see at first hand, to broaden our conceptions, to attain the confidence in teaching which comes in its broader views, and to be inspired by bringing us face to face with the fascinating problems of the earth. There are cities, he continued, situated in the plains with miles and miles of undiversified country, within one physiographic province, and miles from a seaboard. Students in those cities cannot readily experience coastal shoreline processes, the work of waves, and the formation of spits and bars. Then he asked his readers to consider students in some of our great southern cities who are denied ready access to the terminal moraine, eskers and glacial lakes. The sense of Lobeck's paper was later to be displayed in graphic form in the now classical "Physiographic diagram of the New York City Region" by E. J. Raisz*[2] *(Fig. 1).*

Ten years after Professor Lobeck's article was published, H.P. Woodward, then a young graduate student at Columbia University from Batavia, New York was appointed to the faculty of the pre-legal department of the New Jersey Law School in Newark. There, he offered the first science course in the curriculum, a course in geology. In 1930, the pre-legal department had grown to a four-year liberal arts institution, Dana College, with a faculty of fifteen serving a student body struggling with the great depression and in 1936, Dana College was subsumed into the Newark College of Arts & Sciences within the then new University of Newark; in its time, the University of Newark was absorbed by Rutgers University in 1946.

H.P. Woodward was to become a leading authority on Appalachian Geology[3]*. He gained further recognition as an educator, as founder of the Geology Department at Dana College and as first academic Dean of the Newark College of Arts and Sciences of Rutgers University in 1946. Today, as the college celebrates its 50th Anniversary as a four-year institution, it is pleased to sponsor the 52nd Annual Meeting of the New York State Geological Association and to recall that in 1928, 52 years ago, it also sponsored its first geology field trip (see photographs facing this article).*

While the geology of the New York region remains much the same as in Professors Lobeck's and Woodward's day, the need to conserve energy is now critical to our national

economy, the challenges of the day are much more complex, and the focus of our inquiry differs. We still take our students on field trips to study coastal plain sedimentation, Pleistocene glaciation, Appalachian folding and Devonian brachiopod communities. And we still raise questions about correlation, granitization and evolutionary trends in strophomenid brachiopods. But now we also take them to sanitary land fills and flood-prone communities, and we study the rocks as possible sites for toxic waste disposal, sources of alternative energy, and as potential carcenogenic agents.

Field trips prepared for this guidebook reflect both the spirit of Professor Lobeck's remarks and the excitement of doing field work in metropolitan New Jersey-New York. Our field trip program for these meetings is extensive, ranging throughout the geologic column and addressing such diverse subjects as: plate tectonics, environmental geology, Alleghenian thrusting, Pleistocene glaciation, zinc, iron and uranium mining, the Baltimore Canyon Trough, vulcanism, coastal processes, seismicity, Appalachian folding, carbonate deposition, the Pine Barrens, etc.

During the past 15 years the unifying theory of plate tectonics has captured our imagination. When applied to old problems, the new concepts stimulate new insight and present new challenges. It is in this spirit, in order to facilitate the exchange of ideas and data between geologists studying onshore basins and those studing offshore basins, that we have convened the symposium on marginal rift basins. A special welcome and acknowledgement is extended to the participants of the symposium.

Publication of this book required considerable effort by many, and therefore, it is a pleasure to acknowledge the assistance extended to me in preparing this publication, and to give thanks to:

My colleagues in the Geology Department for their enthusiastic and helpful cooperation throughout the preparation of this book. Each author for his or her contribution to a collection of superior papers.

Commissioner Joel Jacobson, Ms. Gwen Watson, Mr. Stan Kulp and the print shop of the New Jersey Department of Energy for their grant and assistance enabling us to publish a quality book. Deans Samuels, Caprio and Panson, and Provost Young of Rutgers University for their financial assistance and encouragement.

Cris Car, Maria Holinaty, Rick Wray and Professor Judith K. Brodsky of the Art Department for their commitment, extraordinary service and superior talents composing this book. My students Sharon Hall, Richard

Bizub and Michael McGowan for their assistance, patience and understanding.

The Hammond Map Company and New York Geographical Society and for permission to reproduce respectively, "Physiographic Diagram of New York Region" by E. J. Raisz (1930), and sketches from the New York Walk Book, by R. L. Dickinson (1971). Mr. Frazier and his staff at the New Jersey Historical Society for their assistance photographing old etchings, and two members of the Geology Department, Mr. John Szalkowski who faithfully photographed the old etchings and maps included in this book and Miss Muriel Meddaugh, who patiently retyped many of the manuscripts.

And finally to my wife Sylvia, who proof read galleys night after night with dedication and care.

Warren Manspeizer, President
New York State Geological Association

Newark, N.J.
October, 1980

[1]Lobeck, A. K., 1918, The superb position of New York City as a center for physiographic study: *Annals of the N.Y. Acad. Sci.*, vol. 28, P. 1-50.

[2]Raisz, E. J., 1930, Physiographic Diagram of the New York Region: The Geographic Press, Hammond Map. Co., Maplewood, N.J.

[3]Bates, R. L., 1969, Memorial to: Herbert Preston Woodward, 1899-1968: *Geol. Soc. America, Proceedings for 1968, P. 1-6.*

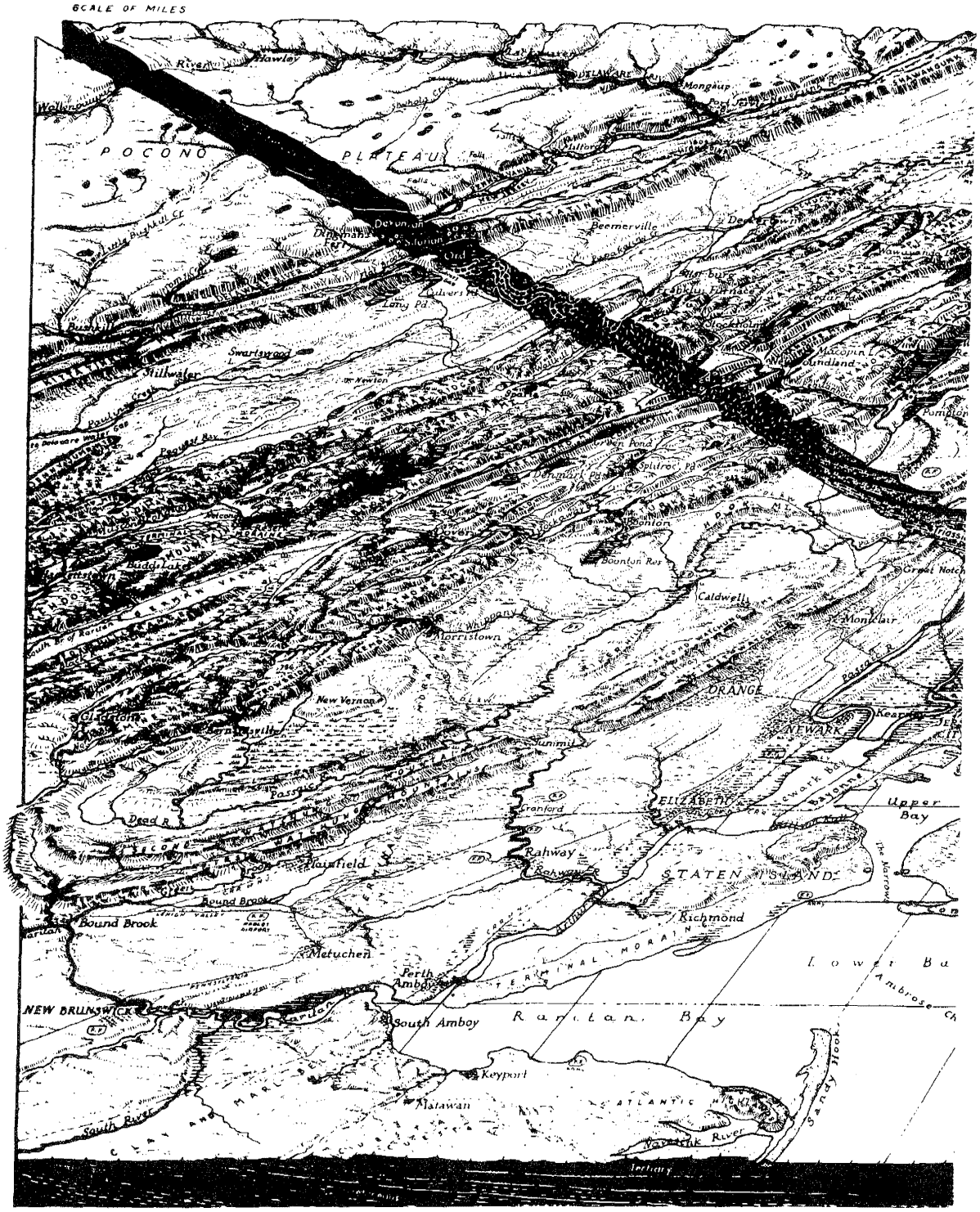
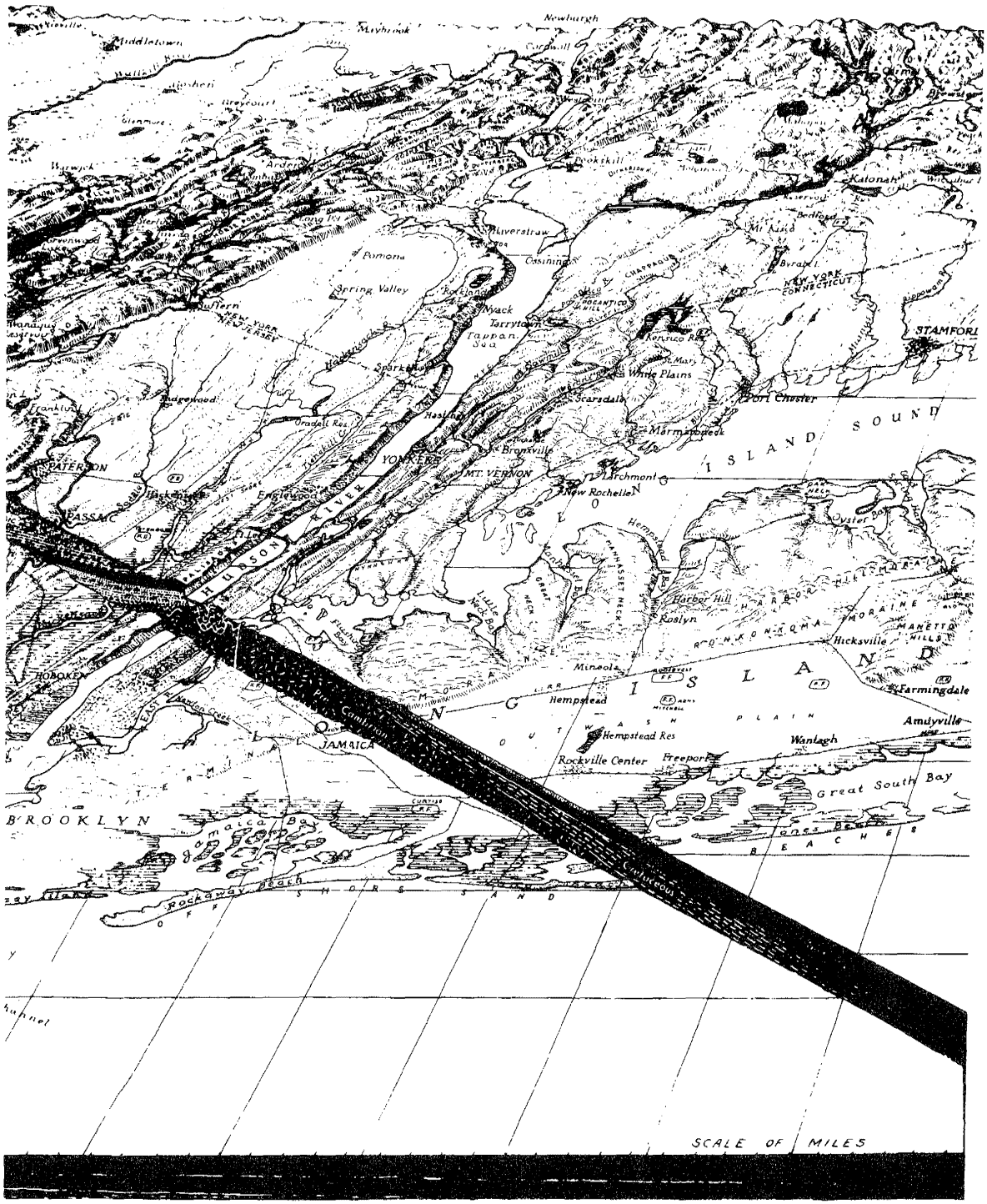


FIG 1. Physiographic Diagram of the New York Region



Drawn By Erwin J. Raisz

(Map courtesy of Hammond Incorporated, Maplewood, N.J.)

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PROGRAM OF THE SYMPOSIUM
FRIDAY, OCTOBER 10, 1980
ROBESON CENTER
RUTGERS NEWARK CAMPUS

RIFT BASINS ON THE TRAILING ATLANTIC MARGIN: BALTIMORE CANYON TROUGH TO THE NEWARK-GETTYSBURG BASIN

ONSHORE: NEWARK-GETTYSBURG BASIN

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Sedimentary Facies and Biostratigraphy:
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Paleogeography and Tectonics:
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Earthquakes and Causes in Mid-Atlantic Region:
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OFFSHORE: BALTIMORE CANYON TROUGH

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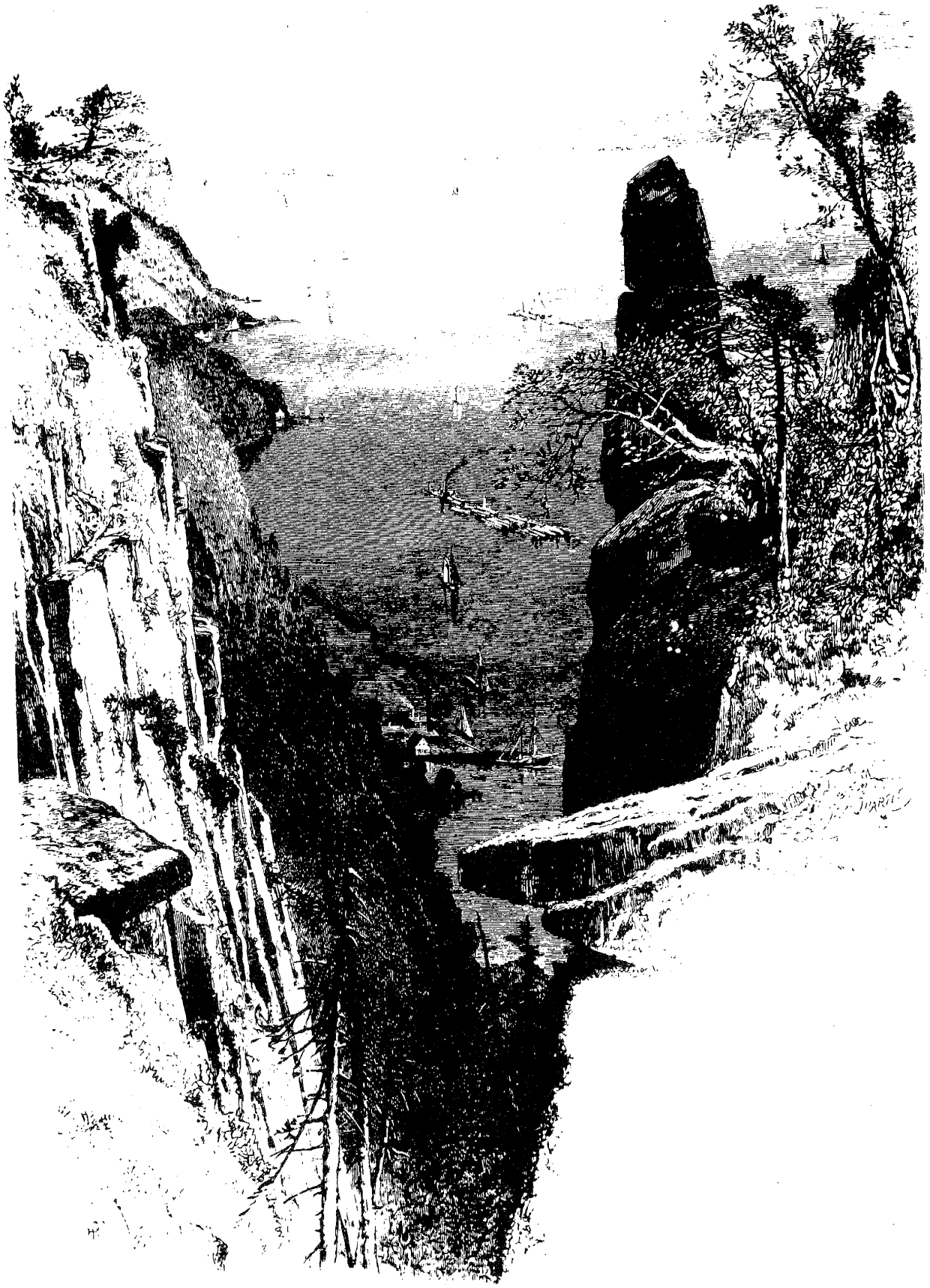

The Palisades by Harry Fenn
from Picturesque America, Vol. II, 1874