

Census

11

11
11
11

Ca

111

REFERENCE COPY

U. S. DEPARTMENT OF COMMERCE

W. AVERELL HARRIMAN, *Secretary*

BUREAU OF THE CENSUS

J. C. CAPT, *Director*

NATIONAL REFERENCE COPY
BUREAU OF THE CENSUS
WASHINGTON, D. C.

SIXTEENTH CENSUS OF THE UNITED STATES : 1940

MEASUREMENT OF GEOGRAPHIC AREA

*Bureau of the Census
Library*

By

MALCOLM J. PROUDFOOT

Assistant Geographer

United States Bureau of the Census

BUREAU OF THE CENSUS

J. C. CAPT, *Director*

PHILIP M. HAUSER, *Assistant Director*

MORRIS H. HANSEN, *Statistical Assistant to the Director*

A. ROSS ECKLER, *Chief Social Science Analyst*

HOWARD C. GRIEVES, *Chief Economist*

RALPH E. GALLOWAY, *Executive Assistant to the Director*

FRANK R. WILSON, *Information Assistant to the Director*

Administrative Service—DAVID S. PHILLIPS, *Chief*

Agriculture—RAY HURLEY, *Chief*

Budget Officer—JOHN T. MOORE, *Chief*

Business—WILLIAM C. TRUPPNER, *Chief*

Field—ROBERT Y. PHILLIPS, *Chief*

Foreign Trade—J. EDWARD ELY, *Chief*

Geography—CLARENCE E. BATSCHELET, *Chief*

Governments—ALLEN D. MANVEL, *Chief*

Industry—MAXWELL R. CONKLIN, *Chief*

Machine Tabulation—C. F. VAN AKEN, *Acting Chief*

Personnel—HELEN D. ALMON, *Chief*

Population—LEON E. TRUESDELL, *Chief*

Foreword

FOR decades the Bureau of the Census has given increasing attention to the measurement of the areas of the States and counties of the United States. In connection with the Sixteenth Decennial Census, funds were made available for the first time for a comprehensive remeasurement not only of the areas of the States and counties but also of the areas of the minor civil divisions. These new measurements made possible density computations of a highly refined character fully keyed to Census statistics.

Before the undertaking of these remeasurements it was necessary to analyze fully the work done in the

past. After this analysis had been completed, it was believed desirable to summarize the development of the science of measuring geographic area, giving particular emphasis to work done in the United States.

Most of the work on this report was completed during the summer of 1943 by Malcolm J. Proudfoot, Assistant Geographer of the Bureau. The completion and publication, however, were delayed by the pressure of more urgent wartime tasks in the Bureau and specifically by the absence of the author, who was overseas.

J. C. CAPT,
Director of the Census.

Preface

THIS study was initiated and completed as a Sixteenth Decennial Census monograph. The investigations summarized here were made to assist in selecting a suitable method for remeasuring the States, counties, and minor civil divisions of the United States for the Census of 1940. This summary seeks to trace the development of techniques and tools required for the measurement of geographic area and to discuss the work of those men who have contributed to this development.

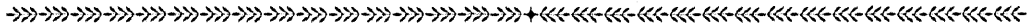
The volume had its origin in an invitation extended by Professor Charles C. Colby, Chairman of the Department of Geography of the University of Chicago, to lecture on the measurement of geographic area during the summer of 1941 in connection with the fiftieth anniversary celebration of the University of Chicago. The work owes its completion to the sustained interest of Professor Colby.

For more than a decade, Clarence E. Batschelet, Geographer of the Census, has taken an active interest

in the remeasurement of the United States. As part of this interest, he has in every way fostered the writing of this book, and he has made helpful suggestions regarding that portion pertaining to the United States. Mr. Batschelet's interest was shared by William L. Austin, former Director of the Bureau of the Census, and by J. C. Capt, the present Director, who gave the author all possible encouragement. Acknowledgment too should be made for the friendly assistance of Lawrence Martin, Chief of the Division of Maps of the Library of Congress; to the active encouragement and help of Betty P. Churchill; and for the interest in area measurement instilled by Professor Wellington D. Jones while I was a student of geography at the University of Chicago. Finally, my debt to Walther Schmiedeberg and Th. Willers should be recognized. Without their painstaking investigations of the European literature, my wartime schedule would never have permitted this summary of the measurement of geographic area.

MALCOLM J. PROUDFOOT.

Contents



Chapter	Page
I. GEOGRAPHY AND AREA.....	1
II. GEODESY, CARTOGRAPHY, AND AREA.....	3
III. ANCIENT AND MEDIEVAL AREAS.....	7
IV. DEVELOPMENTS IN AREA MEASUREMENT.....	9
V. A SOLUTION FOR THE PROBLEM OF AREA MEASUREMENT.....	17
VI. MODERN EUROPEAN AREAS.....	21
VII. DEVELOPMENTS IN THE UNITED STATES.....	27
VIII. REMEASUREMENT OF THE UNITED STATES: 1940.....	31
Appendix	
A. A NEW SURVEY OF THE GLOBE: OR AN ACCURATE MENSURATION OF ALL THE EMPIRES, KINGDOMS, STATES, PRINCIPAL PROVINCES, COUNTIES, AND ISLANDS IN THE WORLD, 1729, PREPARED BY THOMAS TEMPLEMAN.....	55
B. THE AREAS OF CERTAIN STATES OF THE UNITED STATES AS PREPARED BY THE GENERAL LAND OFFICE, 1850.....	63
C. THE TERRITORIAL EXTENT OF THE UNITED STATES, 1853, AS PREPARED BY COLONEL J. J. ABERT OF THE TOPOGRAPHICAL ENGINEERS FOR THE CENSUS OF 1850.....	67
D. THE AREAS OF THE SEVERAL STATES AND TERRITORIES OF THE UNITED STATES AS PREPARED BY THE GENERAL LAND OFFICE, 1860.....	71
E. THE AREAS, FAMILIES, AND DWELLINGS, WITH THE DISTRIBUTION OF POPU- LATION TO EACH, IN THE UNITED STATES, AT THE CENSUSES OF 1870, 1860, AND 1850 (BY STATES AND TERRITORIES), PREPARED BY THE CENSUS OFFICE, 1872.....	75
F. THE AREAS OF THE UNITED STATES, THE SEVERAL STATES AND TERRI- TORIES, AND THEIR COUNTIES, 1881, PREPARED BY HENRY GANNETT.....	81
G. THE AREAS OF THE UNITED STATES, THE STATES AND THE TERRITORIES, 1906, PREPARED BY HENRY GANNETT.....	107
H. AREAS OF THE UNITED STATES: 1940 PREPARED UNDER THE SUPERVISION OF CLARENCE E. BATSCHELET AND MALCOLM J. PROUDFOOT.....	115