
Marquis Who's Who Directory of Computer Graphics

First Edition

Marquis Who's Who, Inc.

Professional Publications Division

200 East Ohio Street
Chicago, Illinois 60611 U.S.A.

Copyright © 1984 Marquis Who's Who Incorporated, a publishing subsidiary of
ITT. All rights reserved. No part of this publication may be reproduced, stored in a
retrieval system or transmitted in any form or by any means, mechanical, electronic,
photocopying, recording or otherwise without the prior written permission of
the publisher. For information, address Marquis Who's Who Incorporated,
200 East Ohio Street, Chicago, Illinois 60611.

International Standard Book Number 0-8379-5901-2
Product Code Number 031121

Manufactured in the United States of America

Preface

The images of computer graphics are infinitely varied — charts and graphs for business and research, precision drawings for engineering and architecture, molecular models for science and medicine, illustration and animation for advertisements and movies. Through individual applications such as these, computer graphics touch virtually every aspect of today's world. In fact, computer graphics constitutes a large and expanding industry in its own right, one that has become firmly established in recent years.

Computer graphics technology has introduced a new dimension to the manipulation and communication of information. By combining static and dynamic graphic images with alphanumeric representations, computer graphics is making information management and exchange more efficient and more effective than ever before. When applied to an endless number of traditional fields of human endeavor, this technology makes possible greater productivity, higher-quality results and products and lower design, analysis and production costs.

Steadily expanding capabilities, reductions in price/performance ratios and advances in software development have created a strong worldwide market for the computer graphics industry, estimated to be \$7.8 billion by the end of 1984. With compounded annual growth rates projected at 36 percent, the computer graphics market could reach \$30 billion by 1990.

Computer-aided design and computer-aided manufacturing (CAD/CAM) applications comprise about one-half of the market today. However, with the growth of new applications, CAD/CAM applications are expected to reduce to 25 percent of the market by the end of the decade. CAD/CAM technology applied to the design and production of ships, automobiles, aircraft, buildings and other products is making a number of industries more productive. For example, the integrated circuit industry owes much of its current success to the use of high-resolution graphics systems.

Business graphics is the area experiencing the highest growth rate. In business applications, computer graphics is turning long and tedious lists of numbers and facts into readily understood visual images for advertising, corporate reports and audiovisual presentations. In medical and scientific laboratories, experiments are being conducted using simulation techniques made possible only with computer graphics. These are just a few examples of how computer graphics technology can benefit a large segment of our society.

The history of the National Computer Graphics Association (NCGA) is evidence of this rapidly growing user community. From a small group of 80 founding members in 1979, NCGA has grown to a strong national organization of 6,500 professionals and more than 50 major corporations. In its five-year history, NCGA's annual conference has grown from a modest event that attracted 1,700 attendees, to the nation's largest computer graphics conference — over 25,000 attended in 1984.

Similar success at computer graphics conferences sponsored by other organizations, and the growing number of seminars, courses and training programs in computer graphics are further indications of ongoing growth of the user base in this industry. The number of specialized graphics conferences that focus on applications in architecture, engineering, construction, defense work or in graphic arts, is illustrative of the impact of computer graphics technology on other industries.

As the range of applications expands, areas of specialization are being created within the field. The computer graphics specialist of yesterday has become the applications expert of today. These experts can help you make maximum use of the technology. As you become more involved with computer graphics, you will want to tap into these areas of specialization. The *Directory of Computer Graphics* now makes that possible.

The technology is advancing rapidly, creating constantly growing need to gain and exchange knowledge and information among specialists. This directory will prove invaluable both for new users of the technology and for those established experts who remember the early days of vacuum tubes, transistors and the beginnings of interactive computer graphics.

A professional directory of this caliber acknowledges this industry's widespread impact and provides a valuable service to all those individuals involved with computer graphics. From computer engineers working in hardware design to programming specialists involved in graphic software development to researchers, educators, consultants and experienced users in a range of application areas, computer graphics specialists from around the world are listed in this volume.

Using the *Directory of Computer Graphics*, you can create and participate in an information network composed of the growing community of individuals involved with computer graphics. As such, this publication promises to be among the most valued reference tools in the field. The National Computer Graphics Association is pleased to have been a part of the effort that went into producing this directory. The services it provides to the industry are needed and valued.

Ellen M. Knapp
President
National Computer Graphics Association
Principal
Booz-Allen & Hamilton Inc.

Introduction

The Marquis Who's Who *Directory of Computer Graphics* is the first title in a new line of information resources developed by this company for professional and reference audiences. The line, Professional Publications, currently includes directories and sourcebooks in rapidly developing areas of computer technology and medicine. Directories and sourcebooks in additional areas are in development. These titles represent an extension of our continuing commitment to provide useful information about people. Whenever appropriate, they will be offered in electronic database as well as print form.

The publications introduce a unique and exciting concept. They are designed to provide essential information about the people and resources engaged in forefront fields. The goal is to provide both depth and breadth of coverage. The information included is tailored to meet specific information needs. Such information goes beyond biographical career and education facts to include professional data, such as product, subject and consulting expertise. And the people profiled in each directory include the range of key participants in a field — at all levels. Multiple indexes enable users to locate individuals by expertise or geographic area, without necessarily knowing a specific name. The *Directory* provides a simple and practical way to find the professionals.

Another new feature introduced in this series is an advertising section provided as a service for the companies that want to direct a particular message to the highly targeted audiences covered by the directories. Plans are underway for expanding this section in subsequent editions of the *Directory of Computer Graphics*.

Creating the Directory

Because of the rapid growth rate in the computer graphics industry, experts and novices alike expressed the need for a tool to facilitate communication and the exchange of information. The *Directory of Computer Graphics* provides such a tool. The processes involved in its creation are briefly described here.

The Editorial Process:

The editorial work on the *Directory*, launched in the fall of 1982, was carried out under the direction of a carefully selected editorial board, made up of a cross-section of leaders in the computer graphics field. These experts, from academia and industry, helped us both to identify specific information needs of their industry, and to locate appropriate sources for reaching the thousands of people involved in computer graphics development and applications. From the beginning, we sought to create a directory that would be comprehensive in scope and provide detailed information within each professional profile. The Board of Advisors and the National Computer Graphics Association, acting in advisory capacities, helped us create a questionnaire to obtain the maximum amount of professional information desired from each respondent.

The Compilative Process:

In the spring of 1983, we initiated extensive worldwide data mailings to members of leading professional societies in the field, including the National Computer Graphics Association, the SIGGRAPH section of the Association for Computing Machinery, the IEEE Computer Society and the Society for Information Display. Additional mailings were sent to attendees of major computer graphics conferences and seminars and to subscribers of major technical publications. Follow-up mailings were sent to encourage those who had not responded to complete their questionnaires and submit them to us.

As we received the completed questionnaires, we screened each according to the established selection guidelines. To be included in the *Directory of Computer Graphics*, a respondee had to be an active participant in the computer graphics field. Computer graphics consultants, designers, educators, vendors, systems analysts, programmers, publishing and association professionals, and major industrial or academic users with continuing professional activities in the area were admitted to the volume.

Our sketchwriters and editors prepared a full biographical profile for each respondee according to Marquis standards of style and abbreviation. Each individual selected for inclusion received a proof of his or her keyboarded entry and was asked to check it for accuracy and currency of data. A production schedule was designed to permit as many late changes and corrections as possible.

To assure the accuracy and thoroughness of publications in the Professional Publications program, we obtained biographical and professional data directly from the individual listee. Thus, we were unable to include many people who, although actively involved in the computer graphics field, did not respond to our request to submit data, or perhaps did not receive one of our mailings. Any assistance our readers can provide in identifying likely candidates for inclusion in the next edition and any general comments and suggestions about the *Directory* would be greatly appreciated. Such information will assist our efforts with future editions.

Acknowledgements

Marquis Who's Who gratefully acknowledges the contribution of numerous individuals and organizations, whose assistance at various stages made this *Directory* possible. Among others, these include each member of the Board of Advisors, the National Computer Graphics Association, the World Computer Graphics Association, the Institute of Electrical and Electronic Engineers, the Association for Computing Machinery and the Society for Information Display. Special thanks is extended to Ellen Knapp for her unwavering enthusiasm, support and guidance with this *Directory*.

Nancy Gorham
Editor-in-Chief
Professional Publications

Board of Advisors*

Marquis Who's Who gratefully acknowledges the following individuals who have made themselves available for review, evaluation and general comment with regard to publication of the First Edition of the Marquis Who's Who *Directory of Computer Graphics*.

Marquis Who's Who also gratefully acknowledges the assistance of the National Computer Graphics Association.

Robert T. Aangeenbrug

Professor
University of Kansas at Lawrence

Saul Bernstein

Professor
California State University
at Northridge
President
Computer Art, Inc.

Thomas DeFanti

Associate Professor
University of Illinois at Chicago

Julius Dorfman

President
International Technology Marketing

James D. Foley

Professor
The George Washington University
President
Computer Graphics Consultants

James E. George

Mesa Graphics

William L. Howard

Corporate Director
Performance and Productivity
Fairchild Industries

Irwin M. Jarett, Ph.D.

Chairman
Fingraph Corporation

Stanley Klein

Publisher and Editor
The S. Klein Newsletter
on Computer Graphics

Ellen M. Knapp

Principal
Booz-Allen & Hamilton, Inc.

Carl Machover

President
Machover Associates Corporation

Joel Orr

Chairman
Orr Associates

Alan Paller

President
AUI Data Graphics

Richard L. Phillips

Professor
The University of Michigan

Harry E. Richter

Information Systems Group
National Accounts Division
IBM Corporation

Allan H. Schmidt

Senior Research Associate
Laboratory for Computer Graphics
and Spatial Analysis
Harvard University

Caby C. Smith

President and Executive Director
World Computer Graphics
Association, Inc.

Randall L. Stickrod

Publisher and Editor-in-Chief
Computer Graphics World

Michael J. Wozny

Professor and Director
Center for Interactive
Computer Graphics
Rensselaer Polytechnic Institute

Robert J. Young

Consultant
Mission Computer Associates

Edward K. Zimmerman

Management Consultant

*The Board of Advisors, collectively or individually, and the National Computer Graphics Association are not responsible for the selection of names appearing in this volume. Neither bear responsibility for the accuracy or comprehensiveness of the biographical information or other material contained herein.

How to Use This Directory

The Directory of Computer Graphics profiles computer graphics specialists and major industrial or academic users by describing their current job function, computer graphics function, area(s) of interest or expertise, application areas, product expertise, birth information, education, professional certification, career history, career-related activities, professional memberships, creative works, address(es) and telephone number. Listees submitted their data to us by completing one of our data request forms, designed to elicit accurate responses. We provided listees with a variety of choices and asked them to check off an appropriate response from those provided on the form. If unable to do so, listees provided the information in a space for "other."

Each individual listed in the *Directory* is indexed in four ways: area(s) of interest or expertise; application area(s); product expertise; and geographic location. A full description of the indexes follows below.

Criteria for Admission: Employment in the industry or major industrial or academic use of the industry's products were considered standards for inclusion. Employment sectors include private, government, academic and non-profit. Information on these sectors is provided in the online database only.

Biographee's name: The style of name indicated or preferred by the biographee is the form presented.

Job Function: Biographees were asked to identify their job function from the following list of functions:

Official and Administrator, Private

- President/Owner/Vice President/General Manager
- Financial Manager
- Purchasing Manager
- Marketing/Advertising/Public Relations Manager
- Production/Operations Manager
- Public Utilities Manager
- Engineering/Mathematics/Natural Sciences Manager
- Electronic Data Processing Manager
- Management Information Systems
- Research and Development Director
- Other (Specify)
- Services Organization Manager
- Entertainment Manager
- Membership Organization Manager
- Other (Specify)
 - Medicine and Health Manager
 - Other (Specify)

Official and Administrator, Public Administration Professional

- Accountant/Auditor/Financial Specialist
- Architect/City, Regional Planner
- Artist (graphic and other)
- Computer Programmer
- Computer Scientist
- Computer Systems Analyst
- Consultant
- Designer
- Editor
- Educator
 - Engineer
 - Aerospace
 - Architectural
 - Chemical
 - Civil
 - Electrical and Electronic
 - Industrial
 - Manufacturing
- Materials
- Mechanical
- Mining/Petroleum
- Systems
- Transportation
- Other (Specify)
- Lawyer
- Life Scientist
- Management Analyst
- Mathematical Scientist
- Natural Scientist
- Operations and Systems Researcher/Analyst
- Physician
- Purchasing Agent or Buyer
- Social Scientist
- Statistician
- Surveyor and Mapping Scientist
- Other (Specify)

Marketing, Sales and Support

- Marketing and Sales Supervisor
- Sales Representative
- Sales Engineer
- Customer Support
- Other (Specify)

Computer Graphics Function: Biographees selected from the following functions: user; vendor or salesperson; consultant; systems analyst, designer or programmer; association or publishing professional; educator; or other.

Computer Graphics Area(s) of Interest or Expertise (Index provided): Biographees could indicate up to three interest or expertise areas including the following:

- Animation/Entertainment
- Animation/Simulation/Modeling
- Architectural and Engineering CAD
- Artificial Intelligence/Robotics
- Biomedical Graphics
- Business Graphics
- Communications
- Consumer Computer Graphics
- Defense Automation
- Electrical CAD/CAM
- Graphic Arts/Design
- Mapping & Cartography
- Mechanical CAD/CAM
- Microcomputer Graphics
- Pattern Recognition/Image Processing
- Printing/Publishing
- Process Control
- Scientific Research
- Statistical Graphics
- Videotechnology
- Other (Specify)

Computer Graphics Application Area(s) (Index provided): If applicable, biographees were asked to identify up to three areas from the following non-manufacturing and manufacturing sectors:

Non-Manufacturing

- Communications
- Electric, Gas, and Water Utilities
- Wholesale Trade/Retail Trade
- Banking/Insurance/Real Estate Service Industries
 - Computer Services
 - Business & Mgmt. Services
 - Motion Pictures
 - Other (Specify)
- Medical and Health Services
- Education
- Science, Research, and Development
- Membership Organizations
- Professional Services
 - Engineering and Architectural Services
 - Legal Services
 - Other (Specify)
- Government
 - National Government
 - Space, Science, & Technology
 - Defense
 - Resources, Environment & Energy
 - Other (Specify)
 - State & Local Government
 - Other (Specify)

Manufacturing

- Agriculture/Forestry/Fishing
- Mining/Construction
- Food/Tobacco
- Textile/Apparel
- Wood/Paper Products
- Printing/Publishing
- Chemical and Allied Products
- Petroleum and Energy Products
- Rubber/Plastic Products
- Primary/Fabricated Metals
- Machinery, except electrical
- Computers and auxiliary equipment
- Other (Specify)
- Electrical and Electronic Equipment
 - Telecommunications
 - Other (Specify)
- Transportation Equipment
 - Water/Land
 - Air
 - Instruments
 - Other (Specify)

Computer Graphics Product Expertise (Index provided): If applicable, the vendor or salesperson, consultant, systems analyst, designer or programmer was asked to select up to five types of product expertise from the following list, and, at the same time, indicate the category of computer processor expertise (mainframe, mini, or micro).

Computer Hardware

Digitizers	Plotters	Software
Graphics Terminals	Fiche/Film	Systems
raster	Display Devices/Systems	Applications
vector	Video Systems	Publications
vector fresh	Interaction Devices	Service Bureaus
Printers	Integrated Systems	Databases
	Turnkey Systems	Other (Specify)

Birth Data: When a biographee provided birth data, it is included here.

Education: Undergraduate and graduate study is summarized in chronological order. Earned degree, school, location and year(s) of degree or attendance are provided.

Professional Certification: When applicable, the certifying body and year the certificate was awarded are recorded.

Career History: Employment history appears in chronological order. Locations and dates are provided. Each biographee's current position appears after his or her name in the beginning of the profile, for the user's convenience.

Career-Related Activities: Types of activities include consulting and directorships in organizations. Location and dates are provided.

Creative Works: Works include books, journals, patents, and inventions. The biographee's role (i.e. author, editor), the type of work (i.e. book, invention), the title, if appropriate, and year of occurrence are provided.

Professional Memberships: The biographee's role, the organization, office held (if applicable) and award (if applicable) are provided.

Mailing address: The address(es) preferred by each biographee (home and/or work) is provided.

Telephone number: Telephone numbers were published if we were given permission by the biographee.

Indexes

If the appropriate information was provided, each individual with a full professional profile in this directory is indexed in four ways:

- Computer Graphics Area(s) of Interest or Expertise (with geographic location and computer graphics function listed after each name). See list of areas provided above or on the introductory index page.
- Computer Graphics Application Area(s) (with geographic location and computer graphics function listed after each name). See list of areas provided above or on the introductory index page.

-
- Computer Graphics Product Expertise (with geographic location listed after each name). See list of areas provided above or on the introductory index page.
 - Geographic Listing (by state, with city of employment and computer graphics function listed after each name).

These indexes facilitate identification of the experts, when a specific name is not known. For example, if you are looking for business graphics experts in the Dallas area, you can consult the Computer Graphics Area(s) of Interest or Expertise Index, under the entry "business graphics." Below this heading, such experts are listed in alphabetical order, with their location and computer graphics function. Or, if you want to find a video systems expert, you can consult the Computer Graphics Product Expertise Index to locate someone in your vicinity. As another example, if you want to find a person using computer graphics in the banking industry, you can consult the Computer Graphics Application Area(s) Index. Or, if you want to find people using computer graphics in the San Fernando Valley, you can consult the Geographic Index.

Key to Information in This Directory

① **TREIMAN, ROBERT A** ② engring mgr Computer Data, Inc, Dallas, 1970-; *Job Function:* ③ R&D dir *CG Function:* ④ vendor or salesp *Interest Areas:* ⑤ Mech CAD/CAM; elec CAD/CAM; stat grph *Application:* ⑥ telecommun; engring and archtl serv *Product Expertise* ⑦ digitzrs-mini, micro; turnkey syst-mainfr; databases-micro; plotters-mini, micro *Personal and Career:* ⑧ b. June 5, 1934. ⑨ BS in Elec Engring, Ill Inst of Tech 1957. ⑩ cert mech engr, 1961; ⑪ applctn engring mgr Data Research Co, 1958-68; engring mgr ITT-Telecom 1968-70; ⑫ bd of dir World Com, 1968-70. ⑬ Coauthor: *Computer Aided Design*, 1980; *Computer Graphics*, 1982, Author: patent #5555-integrated circuit, 1979; ⑭ Mem IEEE, ASQC (vice pres 1981-), NCGA. ⑮ 200 Main St Chicago IL 60611 200 E Ohio St Chicago IL 60611 ⑯ (312) 555-2008

Key

- ① Name
- ② Current title and company name
- ③ Job function
- ④ Computer graphics function
- ⑤ Computer graphics area(s) of interest and/or expertise
- ⑥ Computer graphics industry application area(s)
- ⑦ Computer graphics product expertise
- ⑧ Birth information
- ⑨ Education
- ⑩ Professional certification
- ⑪ Career history
- ⑫ Career-related activities
- ⑬ Creative works
- ⑭ Professional memberships
- ⑮ Address(es)
- ⑯ Telephone number

The professional listings in the *Who's Who Directory of Computer Graphics* are arranged in alphabetical order according to the first letter of the last name of the biographee. Each sketch is presented in a uniform order, as in the sketch above. The many abbreviations used in the sketches are explained in the Table of Abbreviations.

Table of Abbreviations

A.A. Associate in Arts	AIA American Institute of Architects	asst. assistant
AAAL American Academy of Arts and Letters	AIAA American Institute of Aeronautics and Astronautics	ASTM American Society for Testing and Materials
AAAS American Association for the Advancement of Science	AID Agency for International Development	astron. astronomical
AAHPER Alliance for Health, Physical Education and Recreation	AIEE American Institute of Electrical Engineers	astrophys. astrophysical
AAU Amateur Athletic Union	AIM American Institute of Management	ATSC Air Technical Service Command
AAUP American Association of University Professors	AIME American Institute of Mining, Metallurgy, and Petroleum Engineers	AT&T American Telephone & Telegraph Company
AAUW American Association of University Women	AK Alaska	atty. attorney
A.B. Arts, Bachelor of	AL Alabama	aud. auditor
AB Alberta	ALA American Library Association	Aug. August
ABA American Bar Association	alt. alternate	AUS Army of the United States
ABC American Broadcasting Company	A&M Agricultural and Mechanical	automn. automation
AC Air Corps	A.M. Arts, Master of	aux. auxiliary
acad. academy, academic	AMA American Medical Association	Ave. Avenue
acct. accountant	A.M.E. African Methodist Episcopal	AVMA American Veterinary Medical Association
acctg. accounting	Amtrak National Railroad Passenger Corporation	AZ Arizona
ACDA Arms Control and Disarmament Agency	AMVETS American Veterans of World War II, Korea, Vietnam	
ACLU American Civil Liberties Union	anat. anatomical	B. Bachelor
ACM Association for Computer Machinery	anim. animation	b. born
ACP American College of Physicians	anlyst. analyst	B.A. Bachelor of Arts
ACS American College of Surgeons	ann. annual	B.Agr. Bachelor of Agriculture
ADA American Dental Association	ANTA American National Theatre and Academy	Balt. Baltimore
a.d.c. aide-de-camp	anthrop. anthropological	Bapt. Baptist
adj. adjunct, adjutant	AP Associated Press	B. Arch. Bachelor of Architecture
adm. admiral	APO Army Post Office	B.A.S. Bachelor of Agricultural Science
adminstr. administrator	appln. application	B.B.A. Bachelor of Business Administration
adminstrn. administration	apprl. apparel	BBC British Broadcasting Corporation
adminstrv. administrative	apptd. appointed	B.C., BC British Columbia
adv. advisory	Apr. April	B.C.E. Bachelor of Civil Engineering
adv. advertising	apt. apartment	B.Chir. Bachelor of Surgery
A.E. Agricultural Engineer (for degrees only)	AR Arkansas	B.C.L. Bachelor of Civil Law
A.E. and P. Ambassador Extraordinary and Plenipotentiary	ARC American Red Cross	B.C.S. Bachelor of Commercial Science
AEC Atomic Energy Commission	archeol. archeological	B.D. Bachelor of Divinity
aero. aeronautical, aeronautic	archt. architect	bd. board
aerodyn. aerodynamic	archtl. architectural	B.E. Bachelor of Education
aerosp. aerospace	art. artist	B.E.E. Bachelor of Electrical Engineering
AFB Air Force Base	artif. artificial	B.F.A. Bachelor of Fine Arts
AFL-CIO American Federation of Labor and Congress of Industrial Organizations	ArtsD. Arts, Doctor of	bibl. biblical
AFTRA American Federation TV and Radio Artists	arty. artillery	bibliog. bibliographical
agr. agriculture	ASCAP American Society of Composers, Authors and Publishers	biog. biographical
agrl. agricultural	ASCE American Society of Civil Engineers	biol. biological
agt. agent	ASHRAE American Society of Heating, Refrigeration, and Air Conditioning Engineers	biomed. biomedical
AGVA American Guild of Variety Artists	ASME American Society of Mechanical Engineers	B.J. Bachelor of Journalism
agy. agency	assn. association	bkg. banking
A&I Agricultural and Industrial	assoc. associate	Bklyn. Brooklyn
		B.L. Bachelor of Letters
		bldg. building
		B.L.S. Bachelor of Library Science
		Blvd. Boulevard
		bn. battalion
		B.&O.R.R. Baltimore & Ohio Railroad
		bot. botanical

B.P.E. Bachelor of Physical Education
br. branch
B.R.E. Bachelor of Religious Education
brig. gen. brigadier general
Brit. British, Britannica
Bros. Brothers
B.S. Bachelor of Science
B.S.A. Bachelor of Agricultural Science
B.S.D. Bachelor of Didactic Science
B.S.T. Bachelor of Sacred Theology
B.Th. Bachelor of Theology
bull. bulletin
bur. bureau
bus. business
B.W.I. British West Indies

CA California
CAA Civil Aeronautics Administration
CAB Civil Aeronautics Board
CAD Computer Aided Design
Calif. California
CAM Computer Aided Manufacturing
C.Am. Central America
Can. Canada, Canadian
CAP Civil Air Patrol
capt. captain
CARE Cooperative American Relief Everywhere
cartog. cartography
Cath. Catholic
cav. cavalry
CBC Canadian Broadcasting Company
CBI China, Burma, India Theatre of Operations
CBS Columbia Broadcasting System
CCC Commodity Credit Corporation
CCNY City College of New York
CCU Cardiac Care Unit
CD Civil Defense
C.E. Corps of Engineers, Civil Engineer (in firm's name only or for degree)
cen. central (To be used for court system only)
CENTO Central Treaty Organization
CERN European Organization of Nuclear Research
cert. certificate, certification, certified
CETA Comprehensive Employment Training Act
CFL Canadian Football League
ch. church
Ch.D. Doctor of Chemistry
chem. chemical
Chem.E. Chemical Engineer
Chgo. Chicago
chirurg. surgical

chmn. chairman
chpt. chapter
CIA Central Intelligence Agency
CIC Counter Intelligence Corps
Cin. Cincinnati
cir. circuit
civ. civil
Cleve. Cleveland
climatol. climatological
clin. clinical
clk. clerk
C.L.U. Chartered Life Underwriter
C.M. Master in Surgery
C.&N.W.Ry. Chicago & Northwestern Railway
CO Colorado
Co. Company
COF Catholic Order of Foresters
C. of C. Chamber of Commerce
col. colonel
coll. college
Colo. Colorado
com. committee
comd. commanded
comdg. commanding
comdr. commander
comdt. commandant
commd. commissioned
commml. commercial
commn. commission
commr. commissioner
commun. communications
comp. computer
condr. conductor
Conf. Conference
Congl. Congregational, Congressional
Conglist. Congregationalist
Conn. Connecticut
cons. consultant, consulting
consmr. consumer
consol. consolidated
constl. constitutional
constn. constitution
constrn. construction
contbd. contributed
contbg. contributing
contbn. contribution
contbr. contributor
Conv. Convention
coop. cooperative
CORDS Civil Operations and Revolutionary Development Support
CORE Congress of Racial Equality
corp. corporation, corporate
corr. correspondent, corresponding,

correspondence
C.&O.Ry. Chesapeake & Ohio Railway
C.P.A. Certified Public Accountant
C.P.C.U. Chartered property and casualty underwriter
C.P.H. Certificate of Public Health
cpl. corporal
CPR Cardio-Pulmonary Resuscitation
C.P.Ry. Canadian Pacific Railway
C.S. Christian Science
C.S.B. Bachelor of Christian Science
CSC Civil Service Commission
C.S.D. Doctor of Christian Science
CT Connecticut
ct. court
ctr. center
cust. customer
CWS Chemical Warfare Service
C.Z. Canal Zone

d. daughter
D. Doctor
D.Agr. Doctor of Agriculture
DAR Daughters of the American Revolution
dau. daughter
DAV Disabled American Veterans
D.C., DC District of Columbia
D.C.L. Doctor of Civil Law
D.C.S. Doctor of Commercial Science
D.D. Doctor of Divinity
D.D.S. Doctor of Dental Surgery
DE Delaware
Dec. December
dec. deceased
def. defense
Del. Delaware
del. delegate, delegation
Dem. Democrat, Democratic
D.Eng. Doctor of Engineering
denom. denomination, denominational
dep. deputy
dept. department
dermatol. dermatological
desc. descendant
dev. devices
devel. development, developmental
D.F.A. Doctor of Fine Arts
D.F.C. Distinguished Flying Cross
D.H.L. Doctor of Hebrew Literature
digitzrs. digitizers
dir. director
disp. display
dist. district
distbg. distributing

distbn. distribution
distbr. distributor
disting. distinguished
div. division, divinity, divorce
D.Litt. Doctor of Literature
D.M.D. Doctor of Medical Dentistry
D.M.S. Doctor of Medical Science
D.O. Doctor of Osteopathy
D.P.H. Diploma in Public Health
D.R. Daughters of the Revolution
Dr. Drive, Doctor
D.R.E. Doctor of Religious Education
Dr.P.H. Doctor of Public Health, Doctor of Public Hygiene
D.S.C. Distinguished Service Cross
D.Sc. Doctor of Science
dsgnr. designer
D.S.M. Distinguished Service Medal
D.S.T. Doctor of Sacred Theology
D.T.M. Doctor of Tropical Medicine
D.V.M. Doctor of Veterinary Medicine
D.V.S. Doctor of Veterinary Surgery

E. East
ea. Eastern (use for court system only)
E. and P. Extraordinary and Plenipotentiary
Eccles. Ecclesiastical
ecol. ecological
econ. economic
ECOSOC Economic and Social Council (of the UN)
E.D. Doctor of Engineering
ed. educated
Ed.B. Bachelor of Education
Ed.D. Doctor of Education
edit. edition
Ed.M. Master of Education
edn. education
ednl. educational
EDP electronic data processing
Ed.S. Specialist in Education
eductr. educator
E.E. Electrical Engineer (degree only)
E.E. and M.P. Envoy Extraordinary and Minister Plenipotentiary
EEC European Economic Community
EEG electroencephalogram
EEO Equal Employment Opportunity
EEOC Equal Employment Opportunity Commission
E.Ger. German Democratic Republic
EKG electrocardiogram
elec. electric, electrical
electr. electronic
electrochem. electrochemical

electrophys. electrophysical
elem. elementary
E.M. Engineer of Mines
ency. encyclopedia
Eng. England
engr. engineer
engring. engineering
entertmnt. entertainment
entomol. entomological
envir. environment
environ. environmental
EPA Environmental Protection Agency
epidemiol. epidemiological
Episc. Episcopalian
equip. equipment
ERA Equal Rights Amendment
ERDA Energy Research and Development Administration
ESEA Elementary and Secondary Education Act
ESL English as Second Language
ESSA Environmental Science Services Administration
ethnol. ethnological
ETO European Theatre of Operations
Evang. Evangelical
exam. examination, examining
exc. except
exec. executive
exhbn. exhibition
expdn. expedition
expn. exposition
expt. experiment
exptl. experimental

F.A. Field Artillery
FAA Federal Aviation Administration
fabr. fabricated
FAO Food and Agriculture Organization (of the UN)
FBI Federal Bureau of Investigation
FCA Farm Credit Administration
FCC Federal Communications Commission
FCDA Federal Civil Defense Administration
FDA Food and Drug Administration
FDIA Federal Deposit Insurance Administration
FDIC Federal Deposit Insurance Corporation
FE. Forest Engineer
FEA Federal Energy Administration
Feb. February
fed. federal
fedn. federation

FERC Federal Energy Regulatory Commission
fgn. foreign
FHA Federal Housing Administration
fin. financial, finance
FL Florida
Fla. Florida
FMC Federal Maritime Commission
FOA Foreign Operations Administration
fors. forestry
found. foundation
FPC Federal Power Commission
FPO Fleet Post Office
frat. fraternity
FRS Federal Reserve System
FSa Federal Security Agency
fshng. fishing
Ft. Fort
FTC Federal Trade Commission

G-1 (or other number) Division of General Staff
Ga., GA Georgia
GAO General Accounting Office
gastroent. gastroenterological
GATT General Agreement of Tariff and Trades
gen. general
geneal. genealogical
geod. geodetic
geog. geographic, geographical
geol. geological
geophys. geophysical
gerontol. gerontological
G.H.Q. General Headquarters
G.N. Ry. Great Northern Railway
gov. governor
govt. government
govtl. governmental
GPO Government Printing Office
grad. graduate, graduated
grph. graphics
GSA General Services Administration
Gt. Great
GU Guam
gynecol. gynecological

hdqrs. headquarters
HEW Department of Health, Education and Welfare
H.H.D. Doctor of Humanities
HHFA Housing and Home Finance Agency
HHS Department of Health and Human Services
HI Hawaii

hist. historical, historic
hlth. health
H.M. Master of Humanities
homeo. homeopathic
hon. honorary, honorable
Ho. of Dels. House of Delegates
Ho. of Reps. House of Representatives
hort. horticultural
hosp. hospital
HUD Department of Housing and Urban Development
Hwy. Highway
hydrog. hydrographic

IA Iowa
IAEA International Atomic Energy Agency
IBM International Business Machines Corporation
IBRD International Bank for Reconstruction and Development
ICA International Cooperation Administration
ICC Interstate Commerce Commission
ICU Intensive Care Unit
ID Idaho
IEEE Institute of Electrical and Electronics Engineers
IFC International Finance Corporation
IGY International Geophysical Year
IL Illinois
Ill. Illinois
illus. illustrated
ILO International Labor Organization
IMF International Monetary Fund
IN Indiana
Inc. Incorporated
ind. independent
Ind. Indiana
Indpls. Indianapolis
indsl. industrial
indus. industries
inf. infantry
info. information
ins. insurance
insp. inspector
insp. gen. inspector general
inst. institute
instl. institutional
instn. institution
instr. instructor
instrmts. instruments
instrn. instruction
intel. intelligence
integrtd. integrated
interactn. interaction

intern. international
intro. introduction
IRE Institute of Radio Engineers
IRS Internal Revenue Service
ITT International Telephone & Telegraph Corporation
JAG Judge Advocate General
JAGC Judge Advocate General Corps
Jan. January
Jaycees Junior Chamber of Commerce
J.B. Jurum Baccalaureus
J.C.B. Juris Canonici Baccalaureus
J.C.D. Juris Canonici Doctor, Juris Civilis Doctor
J.C.L. Juris Canonici Licentiatius
J.D. Juris Doctor
j.g. junior grade
jour. journal
jr. junior
J.S.D. Juris Scientiae Doctor
J.U.D. Juris Utriusque Doctor
jud. judicial

Kans. Kansas
K.C. Knights of Columbus
K.P. Knights of Pythias
KS Kansas
K.T. Knight Templar
Ky., KY Kentucky

La., LA Louisiana
lab. laboratory
lang. language
laryngol. laryngological
LB Labrador
lectr. lecturer
legis. legislation, legislative
L.H.D. Doctor of Humane Letters
L.I. Long Island
lic. licensed, license
L.I.R.R. Long Island Railroad
lit. literary, literature
Litt.B. Bachelor of Letters
Litt.D. Doctor of Letters
LL.B. Bachelor of Laws
LL.D. Doctor of Laws
LL.M. Master of Laws
Ln. Lane
L.&N.R.R. Louisville & Nashville Railroad
L.S. Library Science (in degree)
lt. lieutenant
Ltd. Limited
Luth. Lutheran
LWV League of Women Voters

m. married
M. Master
M.A. Master of Arts
MA Massachusetts
mag. magazine
M.Agr. Master of Agriculture
mainfr. mainframe
maj. major
Man. Manitoba
map. mapping
Mar. March
M.Arch. Master in Architecture
Mass. Massachusetts
mat. materials
math. mathematics, mathematical
MATS Military Air Transport Service
M.B. Bachelor of Medicine
MB Manitoba
M.B.A. Master of Business Administration
MBS Mutual Broadcasting System
M.C. Medical Corps
M.C.E. Master of Civil Engineering
mcht. merchant
mcpl. municipal
M.C.S. Master of Commercial Science
M.D. Doctor of Medicine
Md, MD Maryland
M.Dip. Master in Diplomacy
mdse. merchandise
M.D.V. Doctor of Veterinary Medicine
M.E. Mechanical Engineer (degree only)
ME Maine
M.E.Ch. Methodist Episcopal Church
mech. mechanical
M.Ed. Master of Education
med. medical
medc. medicine
M.E.E. Master of Electrical Engineering
mem. member
memb. membership
meml. memorial
merc. mercantile
met. metropolitan
metall. metallurgical
Met.E. Metallurgical Engineer
meteorol. meteorological
Meth. Methodist
Mex. Mexico
M.F. Master of Forestry
M.F.A. Master of Fine Arts
mfg. manufacturing
mfr. manufacturer
mgmt. management
mgr. manager