

**AMERICAN
MEN AND WOMEN
OF SCIENCE**

13TH EDITION

VOLUME 1 A-C

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**AMERICAN
MEN AND WOMEN
OF SCIENCE**

13TH EDITION /

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Edited by the Jaques Cattell Press, ed.

③ /
Volume 1 A-C /

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Preface

The observance of an anniversary prompts reflection on the past, and it is natural to note here that the astounding growth in the dimension and stature of this 200 year old American nation has been influenced immeasurably by the achievements of her scientists. 1976 also marks the 70th anniversary of **AMERICAN MEN & WOMEN OF SCIENCE** as a chronicle of the lives and professional activities of those men and women most instrumental in affecting the shape and quality of science in America. The explosion in scientific activity over the past seven decades is clearly evident when one compares the 1906 edition, a single volume containing 4,000 entries, with the present edition, six volumes profiling nearly 110,000 men and women of importance in their fields.

This edition of **AMERICAN MEN & WOMEN OF SCIENCE** is a landmark in biographic achievement. The information contained in all seven volumes has been gathered, edited and compiled by the Jaques Cattell Press in the space of ten months. This is a radical, and beneficial, departure from the production of the 12th edition, which took three years to publish in its entirety. The acceleration was made possible by the use of a computerized printing method and more efficient production procedures.

The editors have not sacrificed quality in the interest of speed, however. The criteria were stringently applied in the selection of new entrants, all nominated by former biographees. The criteria follow.

Achievement, by reason of experience and training, of a stature in scientific work equivalent to that associated with the doctoral degree, coupled with presently continued activity in such work;

or

Research activity of high quality in science as evidenced by publication in reputable scientific journals; or, for those whose work cannot be published because of governmental or industrial security, research activity of high quality in science as evidenced by the judgment of the individual's peers;

or

Attainment of a position of substantial responsibility requiring scientific training and experience to the extent described for (1) and (2).

All data forms submitted by biographees were carefully edited and proofread. Those whose information was appearing for the first time received a proof before publication. Information on scientists who did not supply current material is included only if verification of present professional activity was established by our researchers. A former biographee whose current status could not be verified is given a reference to the 12th edition if the probability exists of a continued activity in science. References are also given to scientists who have died since publication of the last edition. Omitted are the names of those previously listed as retired and those who have entered fields or activities not covered by the scope of the directory. More than 20,000 nominations for inclusion were received and over 12,000 of those nominated returned information and were selected for listing. This is a significant increase in both nominations and selections over any previous edition and gives fuller representation to the developing scientist.

Geographic and discipline indexes make up the seventh volume of the set. The discipline index has been rearranged and is organized with major subject headings, providing easier access to this information.

Certain disciplines previously included in the directory are not represented in this edition. Engineering and economics will appear in separate directories with expanded criteria, to enable even broader coverage of these areas. Others, including sociology, psychology and political science were omitted because they are fully covered by membership directories in each field.

Great appreciation is expressed to the **AMERICAN MEN & WOMEN OF SCIENCE** Advisory Committee for their guidance in the planning of the 13th edition. Their efforts have contributed to an unusually good response to our requests for information and nominations, which has enhanced the value of the publication. Also to be thanked are the many scientific societies that provided membership lists for the use of our researchers or that published announcements in their bulletins and journals.

The staff of the Jaques Cattell Press deserves the highest accolade for their sustained interest, devotion and good will through the many hours of learning and implementing the new procedures necessary to the successful completion of this book. The overwhelming workload was shared by temporary employees who performed with the greatest diligence and responsibility. The job could not have been completed without their fine help. Everyone involved with this project gave outstanding service, but the contributions of Alice Smith, Pauline Stump, Joyce Howell and Ila Martin cannot go without mention. Special acknowledgement is given to Fred Scott, former general manager of the Jaques Cattell Press, who was responsible for initiating the formation of the advisory committee and for overseeing the planning and early stages of work on the 13th edition.

Comments and suggestions are invited and should be addressed to The Editors, American Men & Women of Science, Jaques Cattell Press, P.O. Box 25001, Tempe, Arizona, 85282.

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JAQUES CATTELL PRESS

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Abbreviations

AAAS—American Association for the Advancement of Science
 abnorm—abnormal
 abstr—abstract(s)
 acad—academic, academy
 acct—account, accountant, accounting
 acoust—acoustic(s), acoustical
 ACTH—adrenocorticotrophic hormone
 actg—acting
 activ—activities, activity
 addn—addition(s), additional
 Add—Address
 adj—adjunct, adjutant
 adjust—adjustment
 Adm—Admiral
 admin—administration, administrative
 adminr—administrator(s)
 admis—admission(s)
 adv—adviser(s), advisory
 advan—advance(d), advancement
 advert—advertisement, advertising
 AEC—Atomic Energy Commission
 aerodyn—aerodynamic(s)
 aeronaut—aeronautic(s), aeronautical
 aerophys—aerophysical, aerophysics
 aesthet—aesthetic(s)
 AFB—Air Force Base
 affil—affiliate(s), affiliation
 agr—agricultural, agriculture
 agron—agronomic, agronomical, agronomy
 agrost—agrostologic, agrostological, agrostology
 agt—agent
 AID—Agency for International Development
 Ala—Alabama
 allergol—allergological, allergology
 alt—alternate
 Alta—Alberta
 Am—America, American
 AMA—American Medical Association
 anal—analysis, analytic, analytical
 analog—analogue
 anat—anatomic, anatomical, anatomy
 anesthesiol—anesthesiology
 angi—angiology
 Ann—Annal(s)
 ann—annual
 anthrop—anthropological, anthropology
 anthropom—anthropometric, anthropometrical, anthropometry
 antiq—antiquary, antiquities, antiquity
 antiqn—antiquarian

apicult—apicultural, apiculture
 APO—Army Post Office
 app—appoint, appointed
 appl—applied
 appln—application
 approx—approximate(ly)
 Apr—April
 apt—apartment(s)
 aquacult—aquaculture
 arbit—arbitration
 arch—archives
 archaeol—archaeological, archaeology
 archit—architectural, architecture
 Arg—Argentina, Argentine
 Ariz—Arizona
 Ark—Arkansas
 artil—artillery
 asn—association
 assoc(s)—associate(s), associated
 asst(s)—assistant(s), assistantship(s)
 Assyriol—Assyriology
 astrodyn—astrodynamics
 astron—astronomical, astronomy
 astronaut—astronautical, astronautics
 astronr—astronomer
 astrophys—astrophysical, astrophysics
 attend—attendant, attending
 atty—attorney
 audiol—audiology
 Aug—August
 auth—author
 AV—audiovisual
 Ave—Avenue
 avicult—avicultural, aviculture
 b—born
 bact—bacterial, bacteriologic, bacteriological, bacteriology
 BC—British Columbia
 bd—board
 behav—behavior(al)
 Belg—Belgian, Belgium
 bibl—biblical
 bibliog—bibliographic, bibliographical, bibliography
 bibliogr—bibliographer
 biochem—biochemical, biochemistry
 biog—biographical, biography
 biol—biological, biology
 biomed—biomedical, biomedicine
 biomet—biometric(s), biometrical, biometry
 biophys—biophysical, biophysics

bk(s)—book(s)
 bldg—building
 Blvd—Boulevard
 Bor—Borough
 bot—botanical, botany
 br—branch(es)
 Brig—Brigadier
 Brit—Britain, British
 Bro(s)—Brother(s)
 bryol—bryology
 Bull—Bulletin
 bur—bureau
 bus—business
 BWI—British West Indies
 c—children
 Calif—California
 Can—Canada, Canadian
 cand—candidate
 Capt—Captain
 cardi—cardiology
 cardiovasc—cardiovascular
 cartog—cartographic, cartographical, cartography
 cartogr—cartographer
 Cath—Catholic
 CEng—Corps of Engineers
 cent—central
 Cent Am—Central America
 cert—certificate(s), certification, certified
 chap—chapter
 chem—chemical(s), chemistry
 chemother—chemotherapy
 chmn—chairman
 citricult—citriculture
 class—classical
 climat—climatological, climatology
 clin(s)—clinic(s), clinical
 cmdg—commanding
 Co—Companies, Company
 coauth—coauthor
 co-dir—co-director
 co-ed—co-editor
 coeduc—coeducation, coeducational
 col(s)—college(s), collegiate, colonel
 collab—collaboration, collaborative
 collabr—collaborator
 Colo—Colorado
 com—commerce, commercial
 Comdr—Commander
 commun—communicable, communication(s)
 comn(s)—commission(s), commissioned

ABBREVIATIONS

comnr—commissioner
comp—comparative
compos—composition
comput—computation, computer(s), computing
comt(s)—committee(s)
conchol—conchology
conf—conference
cong—congress, congressional
Conn—Connecticut
conserv—conservation, conservatory
consol—consolidated, consolidation
const—constitution, constitutional
construct—construction, constructive
consult(s)—consult, consultant(s), consultant-ship(s), consultation, consulting
contemp—contemporary
contrib—contribute, contributing, contribution(s)
contribr—contributor
conv—convention
coop—cooperating, cooperation, cooperative
coord—coordinate(d), coordinating, coordination
coordr—coordinator
corp—corporate, corporation(s)
corresp—correspondence, correspondent, corresponding
coun—council, counsel, counseling
counr—councilor, counselor
criminol—criminological, criminology
cryog—cryogenic(s)
crystallog—crystallographic, crystallographical, crystallography
crystallogr—crystallographer
Ct—Court
Ctr—Center
cult—cultural, culture
cur—curator
curric—curriculum
cybernet—cybernetic(s)
cytol—cytological, cytology
CZ—Canal Zone
Czech—Czechoslovakia

DC—District of Columbia
Dec—December
Del—Delaware
deleg—delegate, delegation
delinq—delinquency, delinquent
dem—democrat(s), democratic
demog—demographic, demography
demogr—demographer
demonstr—demonstrator
dendrol—dendrologic, dendrological, dendrology
dent—dental, dentistry
dep—deputy
dept—department(al)
dermat—dermatologic, dermatological, dermatology
develop—developed, developing, development, developmental
diag—diagnosis, diagnostic
dialectol—dialectological, dialectology
dict—dictionaries, dictionary
Dig—Digest
dipl—diploma, diplomate
dir(s)—director(s), directories, directory
dis—disease(s), disorders
Diss Abstr—Dissertation Abstracts
dist—district
distrib—distributed, distribution, distributive
distribr—distributor(s)
div—division, divisional, divorced

DNA—deoxyribonucleic acid
doc—document(s), documentary, documentation
Dom—Dominion
Dr—Drive

e—east
ecol—ecological, ecology
econ(s)—economic(s), economical, economy
economet—econometric(s)
ECT—electroconvulsive or electroshock therapy
ed—edition(s), editor(s), editorial
ed bd—editorial board
educ—education, educational
educr—educator(s)
EEG—electroencephalogram, electroencephalographic, electroencephalography
Egyptol—Egyptology
EKG—electrocardiogram
elec—electric, electrical, electricity
electrochem—electrochemical, electrochemistry
electrophys—electrophysical, electrophysics
elem—elementary
embryol—embryologic, embryological, embryology
emer—emeriti, emeritus
employ—employment
encour—encouragement
encycl—encyclopedia
endocrinol—endocrinologic, endocrinology
eng—engineering
Eng—England, English
enr(s)—engineer(s)
enol—enology
Ens—Ensign
entom—entomological, entomology
environ—environment(s), environmental
enzym—enzymology
epidemiol—epidemiologic, epidemiological, epidemiology
equip—equipment
ESEA—Elementary & Secondary Education Act
espec—especially
estab—established, establishment(s)
ethnog—ethnographic, ethnographical, ethnography
ethnogr—ethnographer
ethnol—ethnologic, ethnological, ethnology
Europ—European
eval—evaluation
evangel—evangelical
eve—evening
exam—examination(s), examining
examr—examiner
except—exceptional
exec(s)—executive(s)
exeg—exegeses, exegesis, exegetic, exegetical
exhib(s)—exhibition(s), exhibit(s)
exp—experiment, experimental
exped(s)—expedition(s)
explor—exploration(s), exploratory
expos—exposition
exten—extension

fac—faculty
facil—facilities, facility
Feb—February
fed—federal
fedn—federation
fel(s)—fellow(s), fellowship(s)
fermentol—fermentology

fertil—fertility, fertilization
Fla—Florida
floricult—floricultural, floriculture
found—foundation
FPO—Fleet Post Office
Fr—French
Ft—Fort

Ga—Georgia
gastroenterol—gastroenterological, gastroenterology
gen—general
geneal—genealogical, genealogy
geod—geodesy, geodetic
geog—geographic, geographical, geography
geogr—geographer
geol—geologic, geological, geology
geom—geometric, geometrical, geometry
geomorphol—geomorphologic, geomorphology
geophys—geophysical, geophysics
Ger—German, Germanic, Germany
geriat—geriatric(s)
geront—gerontological, gerontology
glaciol—glaciology
gov—governing, governor(s)
govt—government, governmental
grad—graduate(d)
Gt Brit—Great Britain
guid—guidance
gym—gymnasium
gynec—gynecologic, gynecological, gynecology

handbk(s)—handbook(s)
helminth—helminthology
hemat—hematologic, hematological, hematology
herpet—herpetologic, herpetological, herpetology
Hisp—Hispanic, Hispania
hist—historic, historical, history
histol—histological, histology
HM—Her Majesty
hochsch—hochschule
homeop—homeopathic, homeopathy
hon(s)—honor(s), honorable, honorary
hort—horticultural, horticulture
hosp(s)—hospital(s), hospitalization
hq—headquarters
HumRRO—Human Resources Research Office
husb—husbandry
Hwy—Highway
hydraul—hydraulic(s)
hydrodyn—hydrodynamic(s)
hydrol—hydrologic, hydrological, hydrology
hyg—hygiene, hygienic(s)
hypn—hypnosis

ichthyol—ichthyological, ichthyology
Ill—Illinois
illum—illuminating, illumination
illus—illustrate, illustrated, illustration
illusr—illustrator
immunol—immunologic, immunological, immunology
Imp—Imperial
improv—improvement
Inc—Incorporated
in-chg—in charge
incl—include(s), including
Ind—Indiana
indust(s)—industrial, industries, industry
inf—infantry
info—information
inorg—inorganic

ins—insurance
inst(s)—institute(s), institution(s)
instnl—institutional(ized)
instr(s)—instruct, instruction, instructor(s)
instrnl—instructional
int—international
intel—intelligence
introd—introduction
invert—invertebrate
invest(s)—investigation(s)
investr—investigator
irrig—irrigation
Ital—Italian

J—Journal
Jan—January
Jct—Junction
jour—journal, journalism
jr—junior
jurisp—jurisprudence
juv—juvenile

Kans—Kansas
Ky—Kentucky

La—Louisiana
lab(s)—laboratories, laboratory
lang—language(s)
laryngol—laryngological, laryngology
lect—lecture(s)
lectr—lecturer(s)
legis—legislation, legislative, legislature
lett—letter(s)
lib—liberal
libr—libraries, library
librn—librarian
lic—license(d)
limnol—limnological, limnology
ling—linguistic(s), linguistical
lit—literary, literature
lithol—lithologic, lithological, lithology
Lt—Lieutenant
Ltd—Limited

m—married
mach—machine(s), machinery
mag—magazine(s)
maj—major
malacol—malacology
mammal—mammalogy
Man—Manitoba
Mar—March
Mariol—Mariology
Mass—Massachusetts
mat—material(s)
mat med—materia medica
math—mathematic(s), mathematical
Md—Maryland
mech—mechanic(s), mechanical
med—medical, medicinal, medicine
Mediterr—Mediterranean
Mem—Memorial
mem—member(s), membership(s)
ment—mental(ly)
metab—metabolic, metabolism
metall—metallurgic, metallurgical, metallurgy
metallg—metallographic, metallography
metallogr—metallographer
metaphys—metaphysical, metaphysics
meteorol—meteorological, meteorology
metrol—metrological, metrology
metrop—metropolitan
Mex—Mexican, Mexico
mfg—manufacturing

mfr(s)—manufacture(s), manufacturer(s)
mgr—manager
mgt—management
Mich—Michigan
microbiol—microbiological, microbiology
micros—microscopic, microscopical, microscop
mid—middle
mil—military
mineral—mineralogical, mineralogy
Minn—Minnesota
Miss—Mississippi
mkt—market, marketing
Mo—Missouri
mod—modern
monogr—monograph
Mont—Montana
morphol—morphological, morphology
Mt—Mount
mult—multiple
munic—municipal, municipalities
mus—museum(s)
musicol—musicological, musicology
mycol—mycologic, mycology

n—north
NASA—National Aeronautics & Space Administration
nat—national, naturalized
NATO—North Atlantic Treaty Organization
navig—navigation(al)
NB—New Brunswick
NC—North Carolina
NDak—North Dakota
NDEA—National Defense Education Act
Nebr—Nebraska
nematol—nematological, nematology
nerv—nervous
Neth—Netherlands
neurol—neurological, neurology
neuropath—neuropathological, neuropathology
neuropsychiat—neuropsychiatric, neuropsychiatry
neurosurg—neurosurgical, neurosurgery
Nev—Nevada
New Eng—New England
New York—New York City
Nfld—Newfoundland
NH—New Hampshire
NIH—National Institutes of Health
NIMH—National Institute of Mental Health
NJ—New Jersey
NMex—New Mexico
nonres—nonresident
norm—normal
Norweg—Norwegian
Nov—November
NS—Nova Scotia
NSF—National Science Foundation
NSW—New South Wales
numis—numismatic(s)
nutrit—nutrition, nutritional
NY—New York State
NZ—New Zealand

observ—observatories, observatory
obstet—obstetric(s), obstetrical
occas—occasional(ly)
occup—occupation, occupational
oceanog—oceanographic, oceanographical, oceanography
oceanogr—oceanographer
Oct—October
odontol—odontology

OEEC—Organization for European Economic Cooperation
off—office, official
Okla—Oklahoma
olericult—olericulture
oncol—oncologic, oncology
Ont—Ontario
oper(s)—operation(s), operational, operative
ophthal—ophthalmologic, ophthalmological, ophthalmology
optom—optometric, optometrical, optometry
ord—ordnance
Ore—Oregon
org—organic
orgn—organization(s), organizational
orient—oriental
ornith—ornithological, ornithology
orthod—orthodontia, orthodontic(s)
orthop—orthopedic(s)
osteop—osteopathic, osteopathy
otol—otological, otology
otolaryngol—otolaryngological, otolaryngology
otorhinol—otorhinologic, otorhinology

Pa—Pennsylvania
Pac—Pacific
paleobot—paleobotanical, paleobotany
paleont—paleontological, paleontology
Pan-Am—Pan-American
parasitol—parasitology
partic—participant, participating
path—pathologic, pathological, pathology
pedag. pedagogic(s), pedagogical, pedagogy
pediat—pediatric(s)
PEI—Prince Edward Islands
penol—penological, penology
periodont—periodontal, periodontic(s), periodontology
petrog—petrographic, petrographical, petrography
petrogr—petrographer
petrol—petroleum, petrologic, petrological, petrology
pharm—pharmacy
pharmaceut—pharmaceutic(s), pharmaceuti-
cal(s)
pharmacog—pharmacognosy
pharmacol—pharmacologic, pharmacological, pharmacology
phenomenol—phenomenologic(al), phenomenology
philol—philological, philology
philos—philosophic, philosophical, philosophy
photog—photographic, photography
photogeog—photogeographic, photo geography
photogr—photographer(s)
photogram—photogrammetric, photogramme-
photogrammetry
photom—photometric, photometrical, photometry
phycol—phycology
phys—physical
physiog—physiographic, physiographical, physiography
physiol—physiological, physiology
Pkwy—Parkway
Pl—Place
polit—political, politics
polytech—polytechnic(al)
pomol—pomological, pomology
pontif—pontifical
pop—population
Port—Portugal, Portuguese
postgrad—postgraduate

ABBREVIATIONS

PQ—Province of Quebec	RD—Rural Delivery	sr—senior
PR—Puerto Rico	rec—record(s), recording	St—Saint, Street(s)
pract—practice	redevelop—redevelopment	sta(s)—station(s)
practr—practitioner	ref—reference(s)	stand—standard(s), standardization
prehist—prehistoric, prehistory	refrig—refrigeration	statist—statistical, statistics
prep—preparation, preparative, preparatory	regist—register(ed), registration	Ste—Sainte
pres—president	registr—registrar	steril—sterility
Presby—Presbyterian	regt—regiment(al)	stomatol—stomatology
preserv—preservation	rehab—rehabilitation	stratig—stratigraphic, stratigraphy
prev—prevention, preventive	rel(s)—relation(s), relative	stratigr—stratigrapher
prin—principal	relig—religion, religious	struct—structural, structure(s)
prob(s)—problem(s)	REME—Royal Electrical & Mechanical Engineers	stud—student(ship)
proc—proceedings	rep—represent, representative	subcomt—subcommittee
proctol—proctologic, proctological, proctology	repub—republic	subj—subject
prod—product(s), production, productive	req—requirements	subsid—subsidiary
prof—professional, professor, professorial	res—research, reserve	substa—substation
Prof Exp—Professional Experience	rev—review, revised, revision	super—superior
prog(s)—program(s), programmed, programming	RFD—Rural Free Delivery	suppl—supplement(s), supplemental, supplementary
proj—project(s), projection(al), projective	rhet—rhetoric, rhetorical	supt—superintendent
prom—promotion	RI—Rhode Island	supv—supervising, supervision
protozool—protozoology	Rm—Room	supvr—supervisor
prov—province, provincial	RM—Royal Marines	supvry—supervisory
psychiat—psychiatric, psychiatry	RN—Royal Navy	surg—surgery, surgical
psychoanal—psychoanalysis, psychoanalytic, psychoanalytical	RNA—ribonucleic acid	surv—survey, surveying
psychol—psychological, psychology	RNR—Royal Naval Reserve	survr—surveyor
psychomet—psychometric(s)	RNVR—Royal Naval Volunteer Reserve	Swed—Swedish
psychopath—psychopathologic, psychopathology	roentgenol—roentgenologic, roentgenological, roentgenology	Switz—Switzerland
psychophys—psychophysical, psychophysics	RR—Railroad, Rural Route	symp—symposia, symposium(s)
psychophysiol—psychophysiological, psychophysiology	rte—route	syphil—syphilology
psychosom—psychosomatic(s)	Russ—Russian	syst(s)—system(s), systematic(s), systematical
psychother—psychotherapeutic(s), psychotherapy	rwy—railway	
Pt—Point		taxon—taxonomic, taxonomy
pub—public	s—south	tech—technical, technique(s)
publ—publication(s), publish(ed), publisher, publishing	SAfrica—South Africa	technol—technologic(al), technology
pvt—private	SAm—South America, South American	tel—telegraph(y), telephone
	sanit—sanitary, sanitation	temp—temporary
	Sask—Saskatchewan	Tenn—Tennessee
	SC—South Carolina	Terr—Terrace
	Scand—Scandinavia(n)	Tex—Texas
	sch(s)—school(s)	textbk(s)—textbook(s)
Qm—Quartermaster	scholar—scholarship	text ed—text edition
Qm Gen—Quartermaster General	sci—science(s), scientific	theol—theological, theology
qual—qualitative, quality	SDak—South Dakota	theoret—theoretic(al)
quant—quantitative	SEATO—Southeast Asia Treaty Organization	ther—therapy
quart—quarterly	sec—secondary	therapeut—therapeutic(s)
	sect—section	therodyn—thermodynamic(s)
	secy—secretary	topog—topographic, topographical, topography
	seismog—seismograph, seismographic, seismography	topogr—topographer
	seismogr—seismographer	toxicol—toxicologic, toxicological, toxicology
	seismol—seismological, seismology	trans—transactions
	sem—seminar, seminary	transl—translated, translation(s)
	sen—senator, senatorial	translr—translator(s)
	Sept—September	transp—transport, transportation
	ser—serial, series	treas—treasurer, treasury
	serol—serologic, serological, serology	treat—treatment
	serv—service(s), serving	trop—tropical
	silvicult—silvicultural, silviculture	tuberc—tuberculosis
	soc(s)—societies, society	TV—television
	soc sci—social science	Twp—Township
	sociol—sociologic, sociological, sociology	
	Span—Spanish	UAR—United Arab Republic
	spec—special	UK—United Kingdom
	specif—specification(s)	UN—United Nations
	spectrog—spectrograph, spectrographic, spectrography	undergrad—undergraduate
	spectrogr—spectrographer	unemploy—unemployment
	spectrophotom—spectrophotometer, spectrophotometric, spectrophotometry	UNESCO—United Nations Educational Scientific & Cultural Organization
	spectros—spectroscopic, spectroscopy	UNICEF—United Nations International Childrens Fund
	speleol—speleological, speleology	univ(s)—universities, university
	Sq—Square	UNRRA—United Nations Relief & Rehabilitation Administration

UNRWA—United Nations Relief & Works Agency
 urol—urologic, urological, urology
 US—United States
 USA—US Army
 USAAF—US Army Air Force
 USAAFR—US Army Air Force Reserve
 USAF—US Air Force
 USAFR—US Air Force Reserve
 USAR—US Army Reserve
 USCG—US Coast Guard
 USCGR—US Coast Guard Reserve
 USDA—US Department of Agriculture
 USMC—US Marine Corps
 USMCR—US Marine Corps Reserve
 USN—US Navy
 USNAF—US Naval Air Force
 USNAFR—US Naval Air Force Reserve
 USNR—US Naval Reserve
 USPHS—US Public Health Service
 USPHSR—US Public Health Service Reserve
 USSR—Union of Soviet Socialist Republics
 USWMC—US Women's Marine Corps

USWMCR—US Women's Marine Corps Reserve
 Va—Virginia
 var—various
 veg—vegetable(s), vegetation
 vent—ventilating, ventilation
 vert—vertebrate
 vet—veteran(s), veterinarian, veterinary
 VI—Virgin Islands
 vinicult—viniculture
 virol—virological, virology
 vis—visiting
 voc—vocational
 vocab—vocabulary
 vol(s)—voluntary, volunteer(s), volume(s)
 vpres—vice president
 vs—versus
 Vt—Vermont
 w—west
 WAC—Women's Army Corps

Wash—Washington
 WAVES—Women Accepted for Voluntary Emergency Service
 WHO—World Health Organization
 WI—West Indies
 wid—widow, widowed, widower
 Wis—Wisconsin
 WRCNS—Women's Royal Canadian Naval Service
 WRNS—Women's Royal Naval Service
 WV—West Virginia
 Wyo—Wyoming
 yearbk(s)—yearbook(s)
 YMCA—Young Men's Christian Association
 YMHA—Young Men's Hebrew Association
 yr(s)—year(s)
 YWCA—Young Women's Christian Association
 YWHA—Young Women's Hebrew Association
 zool—zoological, zoology

Contents

ADVISORY COMMITTEE	vi
PREFACE	vii
ABBREVIATIONS	ix
BIOGRAPHIES	1

AMERICAN MEN AND WOMEN OF SCIENCE

A

AABOE, ASGER (HARTVIG), b Copenhagen, Denmark, Apr 26, 22; m 50; c 4. MATHEMATICS. Educ: Brown Univ, PhD(hist math), 57. Prof Exp: Vis lectr math, Washington Univ, 47-48; adj, Birkerød State Sch, Denmark, 49-52; from instr to assoc prof, Tufts Univ, 52-62; assoc prof, 62-67, PROF MATH & HIST SCI & MED, YALE UNIV, 67-, CHMN DEPT HIST SCI & MED, 68- Concurrent Pos: Vis assoc prof, Yale Univ, 61-62; Guggenheim fcls, 64-66. Mem: Am Math Soc; Hist Sci Soc; Danish Math Soc. Res: History of mathematics and astronomy. Mailing Add: Dept of Hist of Sci & Med Yale Univ Box 2036 New Haven CT 06520

AAGAARD, GEORGE NELSON, b Minneapolis, Minn, Aug 16, 13; m 39; c 5. INTERNAL MEDICINE, CARDIOLOGY. Educ: Univ Minn, BS, 34, BMed, 36, MD, 37. Prof Exp: Instr internal med, Univ Minn, 42-45, asst prof, 45-48, assoc prof & dir postgrad med educ, 48-51; prof med & dean, Univ Tex Southwestern Med Sch Dallas, 52-54; dean sch med, 54-64, ombudsman, 69-70, PROF MED & HEAD DIV CLIN PHARMACOL, SCH MED, UNIV WASH, 64- Concurrent Pos: Fel internal med, Univ Minn, 41-42; mem health res facil adv coun, NIH; mem nat adv coun, Nat Heart Inst; mem bd dirs, Am Heart Asn; mem spec med adv group, Vet Admin, 70-74; chmn subcomt drug spotlight prog, Am Soc Clin Pharmacol & Therapeut. Mem: AMA; Am Heart Asn; Am Pub Health Asn; Am Col Clin Pharmacol & Chemother; NY Acad Sci. Res: Medical education; cardiovascular disease. Mailing Add: Sch of Med Univ of Wash Seattle WA 98195

AAGAARD, KNUT, b Brooklyn, NY, Feb 5, 39; m 63; c 2. PHYSICAL OCEANOGRAPHY. Educ: Oberlin Col, AB, 61; Univ Wash, MS, 64, PhD(phys oceanog), 66. Prof Exp: Res assoc phys oceanog, Univ Wash, 66; Nat Acad Sci-US Air Force Off Sci Res research assoc, Geophys Inst, Univ Bergen, 67; res asst prof, 68-73, RES ASSOC PROF PHYS OCEANOGR, UNIV WASH, 73- Concurrent Pos: Mem overflow working group, Int Coun Explor of the Seas, 74- Mem: AAAS; fel Arctic Inst NAm. Res: Arctic oceanography, current measurements, general physical oceanography. Mailing Add: Dept of Oceanog Univ of Wash Seattle WA 98105

AAGARD, ROGER L, b East Chain, Minn, Aug 2, 31; m 60; c 3. PHYSICS, MATHEMATICS. Educ: Univ Minn, BA, 57, MS, 59. Prof Exp: Asst atmospheric physics, Univ Minn, 57-59; asst infrared physics, 59-63, sr res scientist optical physics, 63-67, PRIN RES SCIENTIST OPTICAL PHYSICS, HONEYWELL RES CTR, 67- Mem: Am Phys Soc; Optical Soc Am. Res: Thermal radiation sensors; semiconductor infrared detectors and dielectric lasers; atmospheric infrared radiation and optical properties of lasers; lasers and magneto-optic materials for computer information storage; integrated optics; thin film optical components and systems. Mailing Add: Honeywell Corp Res Ctr 10701 Lyndale Ave Bloomington MN 55420

AALDERS, LEWIS ELTON, b Kentville, NS, July 19, 33; div. CYTOGENETICS. Educ: Acadia Univ, BSc, 52, MSc, 53; Cornell Univ, PhD(cytogenetics), 57. Prof Exp: HORTICULTURIST PLANT BREEDING, RES STA, CAN DEPT AGR, 53- Mem: Am Pomol Soc; Am Soc Hort Sci; Can Soc Hort Sci; Genetics Soc Can. Res: Cytogenetics and breeding of fruit crops; breeding of lowbush blueberry, strawberry and raspberry; culture of lowbush blueberry. Mailing Add: Res Sta Can Dept of Agr Kentville NS Can

AAMODT, R L, b Bacchus, Utah, Feb 14, 17; m 41; c 5. PHYSICS. Educ: Univ Utah, BS, 47; Univ Calif, PhD(physics), 51. Prof Exp: Res physicist, Radiation Lab, 47-51, MEM STAFF, LOS ALAMOS SCI LAB, UNIV CALIF, 51- Mem: Am Phys Soc. Res: Nuclear and surface physics. Mailing Add: Los Alamos Sci Lab Q22 PO Box 1663 Los Alamos NM 87545

AAMODT, RICHARD E, b St Paul, Minn, Nov 22, 36; m 60; c 3. PHYSICS. Educ: Univ Mich, BSE, 58, MS, 59, PhD(physics), 63. Prof Exp: Staff assoc plasma physics, Gen Atomic Div, Gen Dynamics Corp, 62-64, staff mem, 64-65; from asst prof to assoc prof physics, Univ Tex, Austin, 65-69; vis assoc prof astro-geophysics, Univ Colo, 69-70, from assoc prof to prof, 70-75; SR STAFF SCIENTIST, SCI APPLN, INC, 75- Concurrent Pos: Consult, Lawrence Radiation Lab, Univ Calif, 66-; consult, Boeing Sci Res Lab, 66-70; vis staff mem, Los Alamos Sci Lab, 69-; res physicist, Naval Res Lab, 74. Res: Theoretical plasma physics; transport theory. Mailing Add: Sci Appl Inc 934 Pearl St Boulder CO 80302

AARON, CHARLES SIDNEY, b Jonesboro, La, Feb 17, 43; m 64; c 2. MOLECULAR GENETICS, MUTAGENESIS. Educ: La Tech Univ, BS, 68; La State Univ, Baton Rouge, PhD(biochem), 72. Prof Exp: Teacher chem, Episcopal High Sch, Baton Rouge, 71-72; RES ASSOC CHEM MUTAGENESIS, LA STATE UNIV, BATON ROUGE, 72- Mem: Am Chem Soc; Sigma Xi; Environ Mutagen Soc; Genetics Soc Am; AAAS. Res: Development of quantitative chemical mutagen dosimetry methods for assessing environmental hazard to man; theoretical-practical aspects of distinction of exposure to mutagen from dose-to-target; experimental determination of dose-to-

target vs genetic response correlation using *Drosophila melanogaster*. Mailing Add: Dept of Zool Life Sci Bldg La State Univ Baton Rouge LA 70802

AARON, HERBERT SAMUEL, b Minneapolis, Minn, Jan 12, 29; m 59; c 2. ORGANIC CHEMISTRY. Educ: Univ Minn, BA, 49; Univ Calif, Los Angeles, PhD(chem), 53. Prof Exp: Res chemist, Yerkes Res Lab, E I du Pont de Nemours & Co, 53-54; CHEMIST, CHEM RES LABS, EDGEWOOD ARSENAL, 56- Mem: Am Chem Soc. Res: Stereochemistry; conformational analysis; organo-phosphorus chemistry. Mailing Add: Chem Res Labs Edgewood Arsenal MD 21010

AARON, RONALD, b Philadelphia, Pa, June 14, 35; m 62; c 2. THEORETICAL PHYSICS. Educ: Temple Univ, AB, 56; Univ Pa, PhD(physics), 61. Prof Exp: Res assoc physics, Univ Md, 61-62; res assoc, Ind Univ, 62-63; physicist, Goddard Space Ctr, NASA, 63; asst prof physics, 63-72, PROF PHYSICS, NORTHEASTERN UNIV, 72- Concurrent Pos: Consult, Lawrence Radiation Lab, Univ Calif, Livermore, 64-67; vis staff mem, Los Alamos Sci Lab, NMex, 67- Mem: Am Phys Soc. Res: Theoretical high energy physics and scattering theory. Mailing Add: Dept of Physics Northeastern Univ Boston MA 02115

AARONOFF, BURTON ROBERT, b Brooklyn, NY, July 4, 35; m 66; c 2. ORGANIC CHEMISTRY. Educ: Brooklyn Col, BS, 56; Johns Hopkins Univ, MA, 59, PhD(chem), 62. Prof Exp: Res assoc chem, Lever Bros Co, 62-63; sr chemist, Merck, Sharp & Dohme Labs, 63-66; asst to vpres res & develop, Block Drug Co, 66-68, assoc res dir, 68-73; DIR EXPLOR RES, PFIZER CONSUMER OPERS, 73- Mem: Am Chem Soc; Am Pharmaceut Asn. Res: Organic and medicinal chemistry; proprietary drugs and toiletries; pharmaceutical dosage forms; research administration. Mailing Add: Pfizer Inc 100 Jefferson Rd Parsippany NJ 07054

AARONS, JULES, b New York, NY, Oct 3, 21; m 43; c 2. IONOSPHERIC PHYSICS. Educ: City Col, NY, BS, 42; Boston Univ, MA, 49; Univ Paris, PhD, 54. Prof Exp: Physicist, Air Force Cambridge Res Labs, 46-55, chief radio astron br, 55-72, CHIEF TRANS-IONOSPHERIC PROPAGATION BR & SR SCIENTIST, IONOSPHERIC PHYSICS LAB, AIR FORCE CAMBRIDGE RES LABS, 72- Concurrent Pos: US panel coordr adv group for aerospace res & develop, Electromagnetic Propagation Panel, 73-; secy comm III, US Sect Int Sci Radio Union. Mem: Fel Inst Elec & Electronics Engrs; Am Astron Soc; Am Geophys Union. Res: Upper atmosphere physics; ionospheric propagation, solar radio astronomy, solar terrestrial relationships. Mailing Add: Air Force Cambridge Res Labs Hanscom AFB Bedford MA 01731

AARONS, MELVIN WOLF, physics; see 12th edition

AARONSON, DAVID ANDREW, physics, mathematics, see 12th edition

AARONSON, SHELDON, b New York, NY, Oct 9, 22; m 48; c 4. MICROBIAL BIOCHEMISTRY. Educ: City Col New York, BS, 44; Univ Pa, MA, 48; NY Univ, PhD(protozoology), 53. Prof Exp: Lectr biol, City Col New York, 48-53; from instr to assoc prof, 53-64, PROF BIOL, QUEENS COL, NY, 65- Concurrent Pos: Res assoc, Haskins Labs, Inc, 49-65, sr staff mem, 65-68; pres fel, Am Soc Microbiol, 57; NSF sci fac fel, 59-60. Mem: Fel AAAS; Am Soc Microbiol; Soc Protozool; Am Soc Cell Biol; Phycol Soc Am. Res: Biochemistry of microorganisms; biochemical phylogeny; cellular action of drugs; microbial ecology. Mailing Add: Dept of Biol Queens Col Flushing NY 11367

AASE, JAN KRISTIAN, b Stavanger, Norway, Nov 21, 35; US citizen; m 65; c 4. SOIL SCIENCE. Educ: Brigham Young Univ, BA, 58; Univ Minn, MS, 60; Colo State Univ, PhD(soil physics), 67. Prof Exp: RES SOIL SCIENTIST, NORTHERN PLAINS SOIL & WATER RES CTR, AGR RES SERV, USDA, 67- Mem: Am Soc Agron; Soil Sci Soc Am; Soil Conserv Soc Am. Res: Soil-plant-water relations; plant water use efficiency and microclimatology research on agronomic crops and native rangeland. Mailing Add: Agr Res Serv US Dept of Agr PO Box 1109 Sidney MT 59270

AASLESTAD, HALVOR GUNERIUS, b Birmingham, Ala, Sept 6, 37; m 60; c 4. VIROLOGY. Educ: La State Univ, BS, 59, PhD(microbiol), 65; Pa State Univ, 61. Prof Exp: Nat Acad Sci-Nat Res Coun fel, US Army Biol Ctr, 65-66, prin investr microbiol, 66-68; asst prof, Univ Ga, 68-70; asst prof, Wistar Inst, 70-73; sr scientist, Cancer Res Ctr, Nat Cancer Inst, Frederick, Md, 73-76; EXEC SECY DIV RES GRANTS, NIH, 76- Mem: Am Soc Microbiol. Res: Virology; virus and phage biochemistry and genetics. Mailing Add: Div of Res Grants Nat Inst of Health Bethesda MD 20014

ABADI, DJAHANGUIR M, b Tehran, Iran, Sept 1, 29; US citizen; m 60; c 2. CLINICAL CHEMISTRY. Educ: Doane Col, BA, 52; Univ Nebr, MS, 55; Univ Wash, PhD(biochem), 58; Am Bd Clin Chem, dipl, Prof Exp: Biochemist, Swed Hosp, Seattle, Wash, 59-61; clin chemist, Good Samaritan Hosp, Portland, Ore, 61-64; CLIN CHEMIST, VET ADMIN HOSP, IOWA CITY, 64- Mem: Fel Am Asn Clin

ABADI

Chemists. Res: Proteolytic enzymes; protein chemistry. Mailing Add: Vet Admin Hosp Iowa City IA 52240

ABADIE, STANLEY HERBERT, b New Orleans, La, Nov 13, 25; m 62; c 2. MEDICAL PARASITOLOGY, MEDICAL EDUCATION. Educ: Loyola Univ, La, BS, 55; La State Univ, New Orleans, MS, 58, PhD (med parasitol), 63. Prof Exp: Grad asst med microbiol & parasitol, 56-58, from instr to assoc prof med parasitol, 58-72. MEM GRAD FAC MED PARASITOL, LA STATE UNIV MED CTR, 60-. PROF MED PARASITOL & MICROBIOL, 72-. DEAN, SCH ALLIED HEALTH PROFESSIONS, 75-. Concurrent Pos: La State Univ Interam Training Prog fel trop med, Costa Rica, 64; Schleider Educ Found res grant Chagas' dis, 74-77; consult mycol, Touro Infirm, New Orleans, 63-64; scientist, Vis Staff, Charity Hosp, New Orleans, 63-; consult parasitol, Vet Admin Hosp, New Orleans, 70-; lectr parasitic dis, Sch Dent, La State Univ, New Orleans, 71-; contribr, Manual of Microbiol & Manual of Trop Med. Mem: AAAS; Am Soc Trop Med & Hyg; Am Soc Parasitol. Res: Hookworm disease; heartworm; filarial infections. Mailing Add: Dept Trop Med & Med Parasitol La State Univ Med Ctr New Orleans LA 70112

ABAIDOO, KODWO-JAMES R., b Saltpond, Ghana, Feb 8, 40; m 69; c 2. HEMATOLOGY, PHYSIOLOGY. Educ: Univ Freiburg, BSc, 62, cert anat, biochem & physiol, 62-66; Thomas Jefferson Univ, PhD (hemat, physiol), 72. Prof Exp: Asst physiol, Univ Hamburg, 66; instr gen physiol, 71-72, lectr physiol & pharmacol, 72-73. ASST PROF PHYSIOL & PHARMACOL, PHILADELPHIA COL OSTEO MED, 73-. Concurrent Pos: Fel Hemopath, Path Inst, Kiel, 73-74; consult pathophysiol, Metrop Hosp, 73. Mem: Am Asn Univ Prof. Res: Erythrokinetics of bone marrow; erythropoietin and its inhibition; enzyme-cytochemical reactions of normal and abnormal hemopoietic tissues. Mailing Add: Hematal Res Lab Evans Hall 418 Philadelphia Col of Osteop Med Philadelphia PA 19131

ABAJIAN, PAUL G., b Framingham, Mass, Aug 4, 41; m 63; c 3. PHYSICAL CHEMISTRY. Educ: Worcester Polytech Inst, BS, 63; Univ Vt, PhD (chem), 67. Prof Exp: Asst anal chem, Univ Vt, 63-67; asst prof chem, Southern Conn State Col, 67-69; ASST PROF CHEM, JOHNSON STATE COL, 69-. Res: Solution calorimetry of transition metal compounds and also polarographic studies of rare earth metals. Mailing Add: Dept of Chem Johnson State Col Johnson VT 05656

ABARBANEL, ABRAHAM ROBERT, b Jersey City, NJ, Aug 8, 12; m 41; c 4. PHYSIOLOGY. Educ: Cornell Univ, AB, 32; Long Island Col Med, MD, 36. Prof Exp: Resident obstet & gynec, Morrisania Hosp, 39-40; resident gynec, Harlem Hosp, 41-42; instr, 45-48, asst clin prof, 48-51, ASST PROF OBSTET & GYNEC, LOMA LINDA UNIV, 52-. Concurrent Pos: Res fel, Mt Sinai Hosp, 40-41; fel obstet & gynec, Sch Med, George Washington Univ, 42-44; med dir, Fertil Inst. Mem: Am Geriatr Soc; AMA; Am Fertil Soc; Endocrine Soc; fel Int Col Surg. Res: Disturbances of menstruation; anovulation; biology of human cervical mucus; transvaginal pelviscopy; myomectomy; psychosomatic aspects of gynecology. Mailing Add: Suite 9 6515 Wilshire Blvd Los Angeles CA 90048

ABARBANEL, HENRY D I., b Washington, DC, May 31, 43; m 65. THEORETICAL PHYSICS. Educ: Princeton Univ, PhD (physics), 66. Prof Exp: Res assoc physics, Princeton Univ, 66, vis fel, 66-67; res assoc, Stanford Linear Accelerator Ctr, 67-68; asst prof, Princeton Univ, 68-72; PHYSICIST, FERMI NAT ACCELERATOR LAB, 72-. Concurrent Pos: NSF fel, Princeton Univ, 67-68, A P Sloan res fel, 69-. Res: High energy collision phenomena of elementary particles. Mailing Add: Fermi Nat Accelerator Lab Batavia IL 60510

ABASHIAN, ALEXANDER, b Binghamton, NY, Mar 11, 30; m 57; c 3. NUCLEAR PHYSICS. Educ: Purdue Univ, BS, 52; Johns Hopkins Univ, PhD, 57. Prof Exp: Tech engr, Air Force Develop, Int Bus Mach, 52; jr instr physics, Johns Hopkins Univ, 52-55; jr res assoc high energy physics, Brookhaven Cosmotron, 55-57; instr physics, Univ Rochester, 57-59; res assoc, Radiation Lab, Univ Calif, 59-61; from asst prof to prof, Univ Ill, Urbana-Champaign, 61-74; PROG DIR ELEM PARTICLE PHYSICS, NSF, 72-. Mem: AAAS; Am Phys Soc. Res: Pion interactions; nuclear polarization; invariance tests; weak interactions; resonances; muon scattering. Mailing Add: Physics Div Nat Sci Found Washington DC 20550

ABASHIAN, STEVEN, b Binghamton, NY, Mar 11, 25; m 54; c 4. ORGANIC CHEMISTRY. Educ: Rensselaer Polytech Inst, BS, 50; Johns Hopkins Univ, MA, 52, PhD (chem), 54. Prof Exp: Jr instr chem, Johns Hopkins Univ, 50-53; SR RES CHEM, E I DU PONT DE NEMOURS & CO, INC, 54-. Mem: Am Chem Soc. Res: Polymers; polymerization processes; synthetic fibers; organo-metallics; organic syntheses. Mailing Add: 2200 Emerson Rd Kinston NC 28501

ABBAS, MIAN MOHAMMAD, b Pakistan, June 22, 33; US citizen; m 60; c 2. INFRARED ASTRONOMY, SPACE PHYSICS. Educ: Panjab Univ, BS, 55; Laval Univ, MS, 60; Univ RI, PhD, 67. Prof Exp: Lectr elec eng, WPakistan Eng Univ, 55-57; electronics engr, Electronics Lab, Canadair Ltd, 60-62; res fel, Univ RI, 64-68; asst prof, Ohio Univ, 68-70; assoc prof, Univ Ky, Lexington, 70-74; NAT ACAD SCI-SR RES ASSOC, GODDARD SPACE FLIGHT CTR, NASA, 74-. Mem: Inst Elec & Electronics Engrs; Am Geophys Union. Res: Observation and analysis of astronomical infrared sources; planetary atmospheres; stratosphere. Mailing Add: Code 692 Lab Extraterr Physics Goddard Space Flight Ctr Greenbelt MD 20771

ABBASI, QAMAR ALI, b Amroha, India, July 8, 41; m 70; c 1. SYSTEMATIC ENTOMOLOGY. Educ: Aligarh Muslim Univ, India, BS, 59, MS, 62; Karachi Univ, Pakistan, PhD (zool), 75. Prof Exp: Res asst entom, Indian Agr Res Inst, New Delhi, 62-67; res fel, Dept Zool, Univ Karachi, 67-71, lectr zool, 71-73; RES ASSOC BIOL SCI, UNIV ILL, CHICAGO CIRCLE, 73-. Res: Morphotaxonomy of super family Pentatomidae with reference to phylogeny of the group; biological control of insect pests and taxonomy of Chalcidoidea, Hymenoptera. Mailing Add: 2422 N Sawyer Ave Chicago IL 60647

ABBATE, FRANKLIN WILLIAM, organic chemistry, polymer chemistry, see 12th edition

ABBATELLO, MICHAEL JAMES, b New York, NY, June 19, 21; m 45; c 1. ZOOLOGY, BIOLOGY. Educ: Hofstra Col, BA, 54, MA, 57; St John's Univ, NY, PhD (zool), 66. Prof Exp: Tech asst hort, 47-53, from jr instr to assoc prof biol, 53-66, PROF BIOL, STATE UNIV NY AGR & TECH COL FARMINGDALE, 66-. Mem: AAAS; Entom Soc Am; Nat Asn Biol Teachers. Res: Biology and ecology of oribatid mites. Mailing Add: Dept of Biol State Univ of NY Agr & Tech Col Farmingdale NY 11735

ABBE, ERNST CLEVELAND, b Washington, DC, Aug 21, 05; m 30; c 2. BOTANY. Educ: Cornell Univ, BS, 28, MS, 30; Harvard Univ, AM, 31, PhD, 34. Prof Exp: Asst bot, Cornell Univ, 27-30 & Harvard Univ, 31-32; Nat Res Coun fel biol, Columbia, Harvard & Cornell Univs, 33-35; from instr to prof, 35-74, chmn dept, 44-47 & 62-67, EMER PROF BOT, UNIV MINN, MINNEAPOLIS, 74-. Concurrent Pos: Botanist, Grenfell-Forbes exped, Labrador, 31; mem, Arnold Arboretum Exped, BC & Alta,

Can, 32; leader, Univ Minn Expeds to Hudson Bay, 39, Southeast Asia, 59-60 & Mt Kinabalu, 62; res assoc & Guggenheim fel, Harvard Univ, 41-42; Fulbright prof, Univ Singapore, 61-62; vis investr, Forest Dept, Sarawak, 64. Mem: Bot Soc Am; Linnean Soc London. Res: Phylogeny of Amentiferae; phytogeography of Eastern Subarctic; morphogenesis in relation to genetical constitution. Mailing Add: Dept of Bot 220 Bio-Sci Ctr Univ of Minn St Paul MN 55108

ABBE, WINFIELD JONATHAN, b Cleveland, Ohio, Feb 27, 39; m 66; c 1. THEORETICAL HIGH ENERGY PHYSICS. Educ: Univ Calif, Berkeley, AB, 61; Calif State Col, Los Angeles, MS, 62; Univ Calif, Riverside, PhD (physics), 66. Prof Exp: Asst prof, 66-70, ASSOC PROF PHYSICS, UNIV GA, 70-. Concurrent Pos: Res fel, Univ Mich, 66-67. Res: Elementary particle theory; S-matrix theory of strong interactions; Regge Pole theory; dispersion relations. Mailing Add: Dept of Physics Univ of Ga Athens GA 30601

ABBEY, ANTHONY ALFRED, b Brooklyn, NY, Apr 11, 17; m 39; c 2. BACTERIOLOGY. Prof Exp: Asst dept bact & immunol, LI Col Med, 36-39; asst biol control dept, Schering Corp, 39-43; bacteriologist, Antibiotics Res & Develop Div, Heyden Chem, 43-54; SUPVRY GROUP LEADER, MICROBIOL LAB, AGR DIV, AM CYANAMID CO, 54-. Mem: AAAS; Am Chem Soc; Am Soc Microbiol. Res: Microbiological evaluation and application of antibiotics; chemotherapy; foods; bioassay and quality control. Mailing Add: 18 School St Milltown NJ 08850

ABBEY, HELEN, b Ann Arbor, Mich, Sept 1, 20. BIOSTATISTICS. Educ: Battle Creek Col, BS, 40; Univ Mich, MA, 42; Johns Hopkins Univ, ScD, 51. Prof Exp: From instr to assoc prof, 51-69, PROF BIostatist, JOHNS HOPKINS UNIV, 69-. Concurrent Pos: Mem epidemiol & dis control study sect, Div Res Grants, NIH, 72-76. Mem: Am Statist Asn; Pop Asn Am; Am Soc Human Genetics; Am Pub Health Asn; Biomet Soc. Res: Application of statistics in medicine; biological sciences; epidemiology; human genetics; demography. Mailing Add: Sch of Hyg & Pub Health Johns Hopkins Univ Baltimore MD 21205

ABBINK, HENRY C, physical chemistry, see 12th edition

ABBISS, JOSEPH WILLIAM, b Tivdiale, Eng, Oct 4, 16; US citizen; m 63. CLINICAL PATHOLOGY. Educ: Univ Birmingham, MD, 42. Prof Exp: Lectr path & bact, Univ Birmingham, 46-47; assoc prof, Dalhousie Univ, 47-50; pathologist & dir labs, Mem Hosp, 51-67; DIR LABS, ST FRANCIS HOSP, 67-. Mem: Am Soc Clin Path; Col Am Path. Res: Cytology and hematology. Mailing Add: St Francis Hosp Eighth & DuPont Sts Wilmington DE 19805

ABBOT, CHARLES GREELEY, astrophysics, deceased

ABBOTT, AGATIN T, geomorphology, deceased

ABBOTT, ANDREW DOYLE, b Waterville, Wash, Nov 20, 13; c 3. PHYSICAL CHEMISTRY. Educ: Univ Wash, BS, 37, PhD (phys chem), 42. Prof Exp: Res chemist, Procter & Gamble Co, 42-46 & Calif Res Corp, 46-66; res chemist, 66-70, SR RES CHEMIST, CHEVRON RES CO, 70-. Mem: Am Chem Soc. Res: Fatty oil chemistry; colloidal chemistry; petroleum chemistry. Mailing Add: Chevron Res Co 576 Standard Ave Richmond CA 94802

ABBOTT, BERNARD C, b Yeovil, Eng, Oct 13, 20; m 44; c 1. BIOPHYSICS. Educ: Univ London, BSc, 41 & 48, PhD (biophys), 50. Prof Exp: Lectr biophys, Univ Col, Univ London, 46-53; prin sci officer, Marine Biol Asn, UK, 53-57; assoc res zoologist, Univ Calif, Los Angeles, 57-58, assoc prof zool, 58-62; prof biophys & physiol, Univ Ill, Urbana, 62-68; PROF PHYSIOL, SCH MED, CHMN DEPT BIOL SCI & DIR, ALLAN HANCOCK FOUND, UNIV SOUTHERN CALIF, 68-. Mem: Am Physiol Soc; Biophys Soc; Soc Gen Physiol; Am Soc Zoologists; NY Acad Sci. Res: Muscle physiology; thermodynamics of bioelectric phenomena; toxins present in poisonous red tides. Mailing Add: Allan Hancock Found Univ of Southern Calif Los Angeles CA 90007

ABBOTT, BETTY JANE, b Roanoke, Va, Oct 13, 31. CANCER. Educ: Radford Col, BS, 52; Va Polytech Inst, MS, 55. Prof Exp: Instr high schs, Va, 52-57, chmn dept biol, 53-57; asst biol, Va Polytech Inst, 57-59; biologist, Va Agr Res Sta, Agr Res Serv, USDA, 59-60; biologist, 60-67, HEAD SCREENING SECT, DRUG EVAL BR, DRUG RES & DEVELOP, NAT CANCER INST, 67-. Honors & Awards: Sustained High Qual Performance Award, Nat Cancer Inst, 66 & 72. Mem: AAAS; Am Asn Cancer Res; NY Acad Sci. Res: Development and selection of new drugs for trial as potential cancer chemotherapeutic agents; ways to increase effectiveness of agents of established clinical usefulness. Mailing Add: Drug Eval Br Drug Res & Develop Nat Cancer Inst Bethesda MD 20014

ABBOTT, DONALD CLAYTON, b Lincoln, Kans, Nov 11, 23; m 45; c 3. BIOCHEMISTRY, CEREAL CHEMISTRY. Educ: Kans State Univ, BS, 49, MS, 51, PhD, 64. Prof Exp: Asst to head exp baking lab, Fleischman Labs, Standard Brands, Inc, NY, 51; cereal technologist, Soft Wheat Qual Lab, Ohio Agr Exp Sta, 51-54; PROF BIOCHEM, OKLA STATE UNIV, 54-. Mem: Am Asn Cereal Chem; Am Chem Soc. Res: Baking quality of wheat varieties; immunological properties of wheat proteins; development of wheat proteins during maturation. Mailing Add: Dept of Biochem Okla State Univ Stillwater OK 74074

ABBOTT, DONALD PUTNAM, b Chicago, Ill, Oct 14, 20; m 43; c 1. INVERTEBRATE ZOOLOGY. Educ: Univ Hawaii, BA, 41; Univ Calif, MA, 48, PhD (zool), 50. Prof Exp: Instr educ, Univ Hawaii, 42-43, instr zool, 46; from instr to assoc prof biol, Stanford Univ, 50-64, PROF BIOL, STANFORD UNIV, 64-. ASSOC DIR HOPKINS MARINE STA, 66-. Concurrent Pos: Mem & later leader, Pac Sci Bd Ifaluk Atoll Exped, W Carolines, 53; Sulu Sea Exped, 57; Galapagos Int Sci Proj, 64; chief scientist, Te Vega Exped Cruise 5, Indian Ocean, 64, Cruise 18, East Trop Pac, 68, Cruise 22-2, Queen Charlotte Strait, 70, mem Cruise 23-2, Hawaii, 71; asst dir, Hopkins Marine Sta, 62-66, Mem: Am Soc Zool; AAAS; Soc Syst Zool; Ecol Soc Am. Res: Budding and taxonomy of ascidians; functional anatomy, behavior and autecology of marine invertebrates. Mailing Add: Hopkins Marine Sta Stanford Univ Pacific Grove CA 93950

ABBOTT, EDWIN HUNT, b New York, NY, Dec 28, 41; m 64; c 2. INORGANIC CHEMISTRY. Educ: Tufts Univ, BS, 64; Tem A&M Univ, PhD (chem), 69. Prof Exp: Fel chem, Tex A&M Univ, 69-70; asst prof, 70-73, ASSOC PROF CHEM, HUNTER COL, 74-. Concurrent Pos: Mem doctoral fac, City Univ New York, 70-. Mem: Am Chem Soc; fel NY Acad Sci; Sigma Xi. Res: Coordination chemistry; homogeneous catalysis; bioinorganic chemistry; catalysts for water pollution abatement; nuclear magnetic resonance of metal chelate compounds; automation. Mailing Add: Dept of Chem Hunter Col 695 Park Ave New York NY 10021

ABBOTT, FRANK SIDNEY, b Ottawa, Ont, Apr 12, 28; m 63; c 3. ANIMAL PHYSIOLOGY. Educ: Carleton Univ, Ont, BSc, 53; Univ Toronto, MA, 57; Univ Alta, PhD (zool), 66. Prof Exp: Tech officer, Geol Surv Can, 53-56, admin officer,

Dept Northern Affairs & Nat Resources, 58-63; from asst prof to assoc prof biol, Sir George Williams Univ, 66-74; SCI PROC MGR, SCI CTR, DEPT SUPPLY & SERV, GOVT CAN, 74- Concurrent Pos: Nat Res Coun Can res grants-in-aid, 67-70. Mem: Can Soc Environ Biologists; AAAS; Am Inst Biol Sci; Can Soc Zoologists; Can Physiol Soc. Res: Physiology of melanophore response to background tint in Fundulus heteroclitus. Mailing Add: 33 Moorcroft Rd Ottawa ON Can

ABBOTT, HERSHEL GEORGE, b Woodstock, Maine, May 4, 21; m 43. FORESTRY. Educ: Univ Maine, BS, 43; Harvard Univ, MF, 52, MA, 59. Prof Exp: Forester, Chadbourn Lumber Co, Maine, 46-50; from instr to assoc prof forestry, 53-70. PROF FORESTRY & WILDLIFE MGT, UNIV MASS, AMHERST, 70- Concurrent Pos: Vpres & treas, Rich Tree Farms & Forestry Corp, 64- Honors & Awards: Distinguished Serv Award, Soc Am Foresters, 75. Mem: Soc Am Foresters. Res: Silviculture. Mailing Add: Dept of Forestry & Wildlife Mgt Univ of Mass Amherst MA 01002

ABBOTT, ISABELLA AIONA, b Hana, Hawaii, June 20, 19; m 43; c 1. PHYCOLOGY, MARINE BIOLOGY. Educ: Univ Hawaii, AB, 41; Univ Mich, MS, 42; Univ Calif, Berkeley, PhD(bot), 50. Prof Exp: Lectr bot, Univ Hawaii, 43-46; res assoc & lectr phycol, 60-70. PROF BIOL, STANFORD UNIV, 71- Honors & Awards: Darbaker Award, Bot Soc Am, 69. Mem: Int Phycol Soc (treas, 67-71); Phycological Soc Am; Bot Soc Am; Brit Phycological Soc. Res: Life histories, development and systematics of marine red algae, particularly Pacific marine algae. Mailing Add: Hopkins Marine Sta Stanford Univ Pacific Grove CA 93950

ABBOTT, JOAN, b Newton, Mass, Aug 5, 32. DEVELOPMENTAL BIOLOGY. Educ: Conn Col, BA, 54; Wash Univ, MA, 57; Univ Pa, PhD(develop biol), 65. Prof Exp: Asst prof biol, Barnard Col, Columbia Univ, 65-67, asst prof dept biol sci, Columbia Univ, 67-72; ASSOC, MEM SLOAN-KETTERING CANCER CTR, 72- ASST PROF BIOL, SLOAN-KETTERING DIV, GRAD SCH MED SCI, CORNELL UNIV, 73- Mem: AAAS; Am Soc Cell Biol; Soc Develop Biol; NY Acad Sci. Res: Definition of precursor cell compartments in murine lymphocyte ontogeny using serological assays for cell surface markers; analysis in vitro of molecular events associated with sequential passage through these compartments. Mailing Add: Sloan-Kettering Inst Cancer Res 1275 York Ave New York NY 10021

ABBOTT, JOHN RICHARDS, b Geneva, NY, Dec 9, 32; m 54; c 4. ORGANIC CHEMISTRY. Educ: Hobart Col, BS, 55; Brown Univ, MS, 57. Prof Exp: Org chemist, 58-73, LAB HEAD ORG CHEM, COLOR PHOTO DIV, RES LABS, EASTMAN KODAK CO, 73- Mem: Am Chem Soc. Res: Organic synthesis for color photographic systems. Mailing Add: Res Labs Eastman Kodak Co Kodak Park Rochester NY 14650

ABBOTT, LYNN DE FORREST, JR, b Ithaca, NY, Nov 23, 13; m 40; c 3. BIOCHEMISTRY. Educ: Wayne Univ, BS, 36, MS, 37; Univ Mich, PhD(biochem), 40. Prof Exp: Asst chem, Wayne Univ, 35-36, asst biochem, 36-37; asst, Univ Mich, 37-40; res assoc, 40-43, from asst prof to assoc prof, 43-48, PROF BIOCHEM, MED COL VA, 56-, CHMN DEPT, 62- Concurrent Pos: Ed, Va J Sci, 68-73. Mem: AAAS; Am Chem Soc; Am Soc Biol Chemists; Soc Exp Biol & Med; Am Soc Clin Nutr. Res: Blood chemistry and amino acid metabolism; enzyme chemistry; isotopic nitrogen. Mailing Add: Dept of Biochem Med Col of Va Richmond VA 23298

ABBOTT, MARIE BOHRN-LAMBERT, b Buenos Aires, Arg, Dec 30, 22; US citizen; m 66. MARINE ZOOLOGY. Educ: Hunter Col, AB, 42; Columbia Univ, AM, 45; Univ Conn, PhD(zool), 71. Prof Exp: Instr geol & paleont, Mt Holyoke Col, 47-49; geologist, US Geol Surv, Washington, DC, 49-52; instr geol & paleont, Mt Holyoke Col, 55-56; instr geol, Smith Col, 56-57; spec consult biol & geol, Niskayuna Schs, NY, 64-66; lectr geol, Russell Sage Col, 66; CUR GRAY MUS, MARINE BIOL LAB, WOODS HOLE, 71- Concurrent Pos: Consult, Normandeau Assoc, NH, 72- Mem: Am Soc Zoologists; Geol Soc Am; Soc Syst Zoologists; Soc Econ Paleontologists & Mineralogists; Sigma Xi. Res: Autecology of Cheilostome Bryozoa; systematics of colonial animals, particularly Bryozoa; structure and diversity of marine epibenthic communities. Mailing Add: RD 2 Box 18 High St Coventry CT 06238

ABBOTT, MAXINE LANGFORD, b Carpenter, Tex, Oct 31, 15; m 39; c 2. PALEOBOTANY. Educ: Tex Tech Col, BS, 37, MS, 39, PhD(paleobot), 56. Prof Exp: Asst bot, Univ Cincinnati, 49-54, inst, 57-58; cur, J H Hoskins Mem Paleobot Collections, 58-64; instr paleobot, Univ Cincinnati, 64-66; assoc prof biol, Western State Col Colo, 66-69; PROF BIOL, SUL ROSS STATE UNIV, 69- Concurrent Pos: NSF grant, 59-64. Mem: AAAS; Int Org Paleobot; Int Union Biol Sci; Torrey Bot Club; Bot Soc Am. Res: Paleozoic paleobotany; compression floras of Pennsylvanian period. Mailing Add: Dept of Biol Sul Ross State Univ Alpine TX 79830

ABBOTT, MITCHEL THEODORE, b Los Angeles, Calif, June 6, 30; m 62; c 3. BIOCHEMISTRY. Educ: Univ Calif, Los Angeles, BS, 57, PhD(biochem), 63. Prof Exp: Fel biochem, Sch Med, NY Univ, 62-64; asst prof, 64-71, PROF BIOCHEM, SAN DIEGO STATE UNIV, 71- Concurrent Pos: Vis scientist, Roche Inst Molecular Biol, 72-73. Mem: Am Soc Biol Chem. Res: Intermediary metabolism of nucleic acids and of their components. Mailing Add: Dept of Chem San Diego State Univ San Diego CA 92182

ABBOTT, NORMAN JOHN, b Toronto, Ont, Nov 14, 18; m 44; c 3. TEXTILE PHYSICS. Educ: Univ Toronto, BA, 40. Prof Exp: Elec engr, Amalgamated Elec Corp, 40-41; spec instr armed forces dept physics, Univ Toronto, 41-43; tech writer, Radar Div, Res Enterprises Ltd, 43-45; fel textile dept, Ont Res Found, 45-47; asst dir appl physics, 57-69, ASSOC DIR, FABRIC RES LABS, 69- Mem: AAAS; Fiber Soc; Can Asn Physicists (secy, 45-46, treas, 47); fel Brit Textile Inst; Inst Textile Sci. Res: Mechanical properties of textile structures; behavior of textiles under extreme conditions; coated fabric mechanics; characterization, utilization of high temperature, high performance, nonflammable fibers; design of mechanical structures containing such fibers. Mailing Add: Fabric Res Labs 1000 Providence Hwy Dedham MA 02026

ABBOTT, OKRA JONES, b Ritner, Ky, Feb 11, 21; m 67. POULTRY NUTRITION, BIOCHEMISTRY. Educ: Berea Col, BS, 49; Univ Ky, MS, 52; Univ Wis, PhD(nutrit, biochem), 56. Prof Exp: Pub sch teacher, Ky, 49-50; asst poultry nutrit, Univ Ky, 51-52 & Univ Wis, 52-55; asst prof poultry prod tech, Univ Del, 55-60; assoc prof poultry sci, Univ Ky, 60-67; assoc prof, 67-73, PROF ANIMAL & VET SCI, W VA UNIV, 73- Concurrent Pos: Instr, US Armed Forces Inst, 54-55; vis sr scientist pharmacol, Univ Ky, 64-65; AID sr lectr, Makerere Univ, Uganda, 67-73. Mem: AAAS; Am Chem Soc; NY Acad Sci; Poultry Sci Asn; Am Soc Animal Sci. Res: Nutrition and metabolism in animals with emphasis on effects of intestinal microorganisms. Mailing Add: Div of Animal & Vet Sci W Va Univ Morgantown WV 26506

ABBOTT, PATRICK LEON, b San Diego, Calif, Sept 30, 40; m 61; c 3. SEDIMENTOLOGY. Educ: San Diego State Col, BS, 63; Univ Tex, Austin, MA, 65, PhD(geol), 73. Prof Exp: Lectr geol, 68-69, asst prof, 71-73, ASSOC PROF GEOL, SAN DIEGO STATE UNIV, 73- Mem: AAAS; Geol Soc Am; Soc Econ

Paleontologists & Mineralogists; Am Asn Petrol Geologists. Res: Hydrogeology of carbonate rock terrane, particularly south-central Texas; Paleogene paleosols and paleoclimates, especially western North America; petrology and provenance of Mesozoic and Cenozoic sandstone and conglomerates, particularly Baja and Alta California. Mailing Add: Dept of Geol Sci San Diego State Univ San Diego CA 92182

ABBOTT, RICHARD LEIGH, organic chemistry, see 12th edition

ABBOTT, ROBERT CLASSIE, b Syracuse, NY, June 7, 26; m 62; c 2. COMPUTER SCIENCES, STATISTICAL ANALYSIS. Educ: Syracuse Univ, BEE, 50, MS, 58, PhD(physics), 59. Prof Exp: Elec engr, Wright Air Develop Ctr, Ohio, 50; elec engr, Navy Ord Div, Eastman Kodak Co, NY, 50-51; asst physics, Syracuse Univ, 51-59; res physicist, Cornell Aeronaut Lab, Inc, 59-61, prin physicist, 61-62, head solid state physics sect, 62-66; assoc prof fac eng & appl sci, State Univ NY Buffalo, 66-73; VPRES RES, MULTITECH RES & INVESTMENT CORP, 73- Mem: Am Phys Soc. Res: Surface physics and biophysics: ion-metal surface interactions; metallic adsorption systems; macromolecular information storage mechanisms, especially by field emission and field ion microscopy; digital signal processing for biological and economic systems. Mailing Add: Multitech Res & Investment Corp 5225 Sheridan Dr Buffalo NY 14221

ABBOTT, ROBERT TUCKER, b Watertown, Mass, Sept 28, 19; m 46; c 3. MALACOLOGY. Educ: Harvard Univ, BS, 46; George Washington Univ, PhD, 55. Prof Exp: From asst cur to assoc cur, Div Mollusks, US Nat Mus, 46-54; Pilsbry chair malacol, Acad Natural Sci, Philadelphia, 54-69; DUPONT CHAIR & ASST DIR, DEL MUS NATURAL HIST, 69- Concurrent Pos: Zoologist, Harvard-Archbold Exped, Melanesia & Polynesia, 40-41 & Pac Sci Bd, EAfrica, 51; assoc ed, Johnsons, Harvard Univ, 42-69; ed, Indo-Pac Mollusca, 59- & Nautilus, 68-; trustee, Bermuda Biol Sta. Mem: Fel AAAS; Am Malacol Union; Soc Syst Zool. Res: Marine mollusks; medical malacology; popular conchology. Mailing Add: Del Mus of Natural Hist Box 3937 Greenville DE 19807

ABBOTT, ROBINSON SHEWELL, b Philadelphia, Pa, June 23, 26; m 56; c 4. ECOLOGY. Educ: Bucknell Univ, BS, 49; Cornell Univ, PhD(biol), 56. Prof Exp: Teacher pub sch, LI, 50-51; asst bot, Cornell Univ, 53; asst, Wiegand Herbarium, 53-54, econ bot, 55-56; instr bot, Smith Col, 56-61; from asst prof to assoc prof biol, 61-71, chmn div sci & math, 64-68, PROF BIOL, UNIV MINN, MORRIS, 71- Mem: Bot Soc Am; Ecol Soc Am; Phycol Soc Am; Int Phycol Soc. Res: General ecology, especially beach and salt marsh ecology; use of filamentous algae as ecological indicators; environmental effects of the growth and development of algae. Mailing Add: Dept of Biol Univ of Minn Morris MN 56267

ABBOTT, ROSE MARIE SVELKOUK, b Chaska, Minn, Feb 7, 31; m 56; c 4. PLANT MORPHOLOGY. Educ: Univ Minn, BA, 53, MS, 55; Cornell Univ, PhD(plant morphol), 59. Prof Exp: Instr biol, Smith Col, 57-58; instr plant morphol, 64-, INSTR GENETICS, UNIV MINN, MORRIS, 66- Mem: Bot Soc Am. Res: Developmental anatomy of primary xylem elements; development of shoot apices; developmental anatomy of Berberidaceae. Mailing Add: Div of Sci & Math Univ of Minn Morris MN 56267

ABBOTT, ROYAL K, JR, organic chemistry, see 12th edition

ABBOTT, SETH R, b Brooklyn, NY, Mar 14, 44; m 68; c 2. CHEMICAL INSTRUMENTATION, SPECTROSCOPY. Educ: Brooklyn Col, BS, 64; Mass Inst Technol, PhD(chem), 69. Prof Exp: Res chemist anal & polymer chem, Memorex Corp, 69-72; SR RES CHEMIST LIQUID CHROMATOGRAPHY, VARIAN ASSOCS, 72- Res: Liquid chromatography; emission and Raman spectroscopy; mass spectroscopy; electrochemistry. Mailing Add: Varian Assoc 2700 Mitchell Dr Walnut Creek CA 94598

ABBOTT, SUSAN, b Seattle, Wash, Feb 27, 45. ANTHROPOLOGY. Educ: Idaho State Univ, BS, 69; Univ NC, Chapel Hill, MA, 71, PhD(anthrop), 74. Prof Exp: ASST PROF ANTHROP & BEHAV SCI, UNIV KY, 74- Mem: Fel Am Anthrop Asn; Soc Cross Cult Res; Soc Med Anthropol. Res: Socialization and sex roles in cross-cultural perspective; modernization and culture change in East Africa; comparative social organizations; Kikuyu social organization. Mailing Add: Dept of Anthropol Univ of Ky Lexington KY 40506

ABBOTT, THOMAS B, b Pa, June 27, 24; m 45; c 2. SPEECH PATHOLOGY. Educ: Muskingum Col, BA, 43; Western Reserve Univ, MA, 48; Univ Fla, PhD, 57. Prof Exp: Asst prof speech & hearing, St Cloud State Col, 49-53; instr, Univ Fla, 54-57; dir speech ther prog, Los Angeles County Soc Crippled Children, 57-58; from assoc prof to prof speech path, Baylor Univ, 58-63, dir speech clin, 58-63; asst prof speech path & head speech & hearing clin, 63-66, ASSOC PROF SPEECH PATH & DIR DIV, UNIV FLA, 66- Concurrent Pos: Lectr, Univ Southern Calif, 57-58. Mem: Fel Am Speech & Hearing Asn; Speech Asn Am. Res: Stuttering; language. Mailing Add: 436 ASB Bldg Dept of Speech Univ of Fla Gainesville FL 32611

ABBOTT, THOMAS PAUL, b Peoria, Ill, Sept 26, 42; m 61; c 3. POLYMER CHEMISTRY. Educ: Univ Akron, BS, 64, MS, 68, PhD(polymer chem), 72. Prof Exp: Chemist polymer anal, Cent Res, Gen Tire & Rubber Co, 64-69; RES CHEMIST ELASTOMERS & PLASTICS, USDA, 71- Mem: Am Chem Soc. Res: Modifying starch to make elastomers, plastics and composites of modified starch with synthetic elastomers. Mailing Add: 1815 N University St Peoria IL 61604

ABBOTT, URSULA K, b Chilliwack, BC, July 30, 27; m 54; c 2. DEVELOPMENTAL GENETICS. Educ: Univ BC, BSA, 49, MSA, 50; Univ Calif, PhD(genetics), 55. Prof Exp: Asst poultry, Univ BC, 48-50; res asst poultry genetics, Univ Calif, Berkeley, 50-54; prin lab tech, 54-55, lectr & asst specialist, 55-56, instr & jr poultry geneticist, 56-57, from asst prof & asst geneticist to assoc prof & assoc geneticist, 57-67, PROF AVIAN SCI & GENETICIST, UNIV CALIF, DAVIS, 67- Concurrent Pos: Prog dir develop biol, NSF, 68-69, Honors & Awards: Hon prof, Univ BC, 67. Mem: Am Genetic Asn; Poultry Sci Asn; Am Physiol Soc; Soc Study Develop & Growth; NY Acad Sci. Res: Experimental embryology and teratology. Mailing Add: Dept of Avian Sci Univ of Calif Davis CA 95616

ABBOTT, WILLIAM HAROLD, b Atlanta, Ga, Mar 23, 44; m 69; c 1. MICROPALAEONTOLOGY, OCEANOGRAPHY. Educ: Ga State Univ, Atlanta, BS, 69; Northeast La Univ, MS, 70; Univ SC, Columbia, PhD(geol), 72. Prof Exp: Asst prof geol & oceanog, Univ SC, Beaufort, 72-74; STAFF GEOLOGIST, SC STATE GEOL SURV, 74- Concurrent Pos: Geol Soc Am Penrose Bequest grant, 73; adj prof, Univ SC, Columbia & researcher, Belle W Baruch Marine Inst, 73-74. Mem: Geol Soc Am; Paleont Soc; Paleont Res Inst. Res: Stratigraphic relationships of marine Cenozoic sediments utilizing fossil diatoms, particularly southeastern United States coastal plain. Mailing Add: State Develop Bd Geol Div Harbison Forest Rd Columbia SC 29210

ABBOUD

ABBOUD, FRANCOIS MITRY, b Cairo, Egypt, Jan 5, 31; US citizen; m 55; c 4. INTERNAL MEDICINE. Educ: Ain Shams Univ, Cairo, MB, BCh, 55; Am Bd Internal Med, dipl, 64. Prof Exp: Intern, Demerdash Govt Hosp, Cairo, 55; resident, Milwaukee County Hosp, Wis, 55-58; res assoc & instr med & cardiol, Marquette Univ, 58-60; from asst prof to assoc prof internal med, 61-68, PROF MED, UNIV IOWA, 68-; PROF PHYSIOL & BIOPHYS, 75-; DIR CARDIOVASC DIV, DEPT INTERNAL MED, 70-; DIR CARDIOVASC CTR, 75- Concurrent Pos: Am Heart Assn res fel, 58-60, adv res fel, 60-62; adv res fel cardiol, Cardiovasc Res Labs, Univ Iowa, 60-61; USPHS res career develop award, 62-71. Mem: Am Fedn Clin Res (pres, 71-72); Am Heart Assn; AMA; Am Physiol Soc; Soc Exp Biol & Med. Res: Cardiovascular physiology and pharmacology; peripheral circulation; vascular reactivity. Mailing Add: Dept of Internal Med Univ of Iowa Iowa City IA 52240

ABBRECHT, PETER H., b Toledo, Ohio, Nov 27, 30; m 57; c 2. PHYSIOLOGY, BIOENGINEERING. Educ: Purdue Univ, BS, 52; Univ Mich, MS, 53, PhD(chem eng), 57, MD, 62. Prof Exp: Sr chem engr, Minn Mining & Mfg Co, 56-58; intern med, Univ Calif Hosp, Los Angeles, 62-63; from asst prof to assoc prof physiol, 63-72, resident internal med, 70-72, PROF PHYSIOL & CHMN BIOENG PROG, UNIV MICH, ANN ARBOR, 72- Concurrent Pos: NIH career develop award, 69-; fel pulmonary dis, Med Ctr, Univ Mich, Ann Arbor, 74-75; instr, Wayne State Univ, 57-58. Mem: Am Physiol Soc; Am Soc Artificial Internal Organs; Soc Exp Biol & Med; Biomed Eng Soc. Res: Cardiopulmonary and renal physiology and modeling; hemoglobin regulation; use of systems theory in medical diagnosis and therapy. Mailing Add: Dept of Physiol Univ of Mich Ann Arbor MI 48104

ABDALI, SYED KAMAL, b Patna, India, Mar 10, 40; Pakistani citizen; m 65; c 2. COMPUTER SCIENCES. Educ: Am Univ Beirut, BE, 63; Univ Montreal, MSc, 68; Univ Wis-Madison, PhD(comput sci), 74. Prof Exp: Lectr elec eng, Govt Eng Col, Karachi, Pakistan, 63-64; jr engr, Tel Indust Pakistan, Haripur, 64-65; design engr, Int Tel & Tel, Montreal, 65-66; consult, All-Tech Assoc, Montreal, 66-67; teaching asst comput sci, Univ Wis, 68-71; asst prof, NY Univ, 71-73; ASST PROF MATH SCI, RENSSLAER POLYTECH INST, 73- Mem: Asn Comput Mach; Asn Symbolic Logic. Res: Semantics of programming languages; validation methods for programs and machine designs; combinatory logic. Mailing Add: Dept of Math Sci Rensselaer Polytech Inst Troy NY 12181

ABDEL-GAWAD, MONEM, b Edku, Egypt, Dec 5, 30; US citizen; m 60; c 3. GEOLOGY. Educ: Univ Alexandria, BSc, 51; Columbia Univ, MA, 58, PhD(geol, mineral), 60. Prof Exp: Anal & indust chemist, Egyptian Fertilizer & Chem Indust Co, 52-55; geologist, Sahara Petrol Corp, 55-56; asst prof mineral, Egypt Atomic Energy Estab, 60-65, assoc prof, 65-66; staff mem geochem, Am Univ Cairo, 66; sr scientist, Space Sci, Rockwell Int Sci Ctr, Thousand Oaks, Calif, 66-75; DIR MINERAL RESOURCES DIV, THE ADAR CORP, 75- Mem: Fel Geol Soc Am; Am Geophys Union. Res: Mineral resources development and exploration; application of remote sensing and space technology in geology, hydrology, soil surveys, with emphasis on developing countries. Mailing Add: Dir Mineral Resources Div Adar Corp 1156 15th St Suite 410 Washington DC 20005

ABDEL-LATIF, ATA A., b Beitunia, Palestine, Jan 22, 33; US citizen; m 57; c 4. BIOCHEMISTRY, NEUROCHEMISTRY. Educ: DePaul Univ, BS, 55, MS, 58; Ill Inst Technol, PhD(biochem, physiol), 63. Prof Exp: Control chemist, Nilot Chem Labs, 55-56; med res assoc, State of Ill Pediat Inst, 63-67; assoc prof, 67-74, PROF BIOCHEM, MED COL GA, 74- Concurrent Pos: Fel psychiat, Col Med, Univ Ill, 63-65; State of Ill Dept Ment Health fel, 63-67; NIH grants, 65-; asst prof, Ill Inst Technol, 65-67. Mem: AAAS; Am Soc Biol Chem; Am Physiol Soc; Am Chem Soc; Am Soc Neurochem. Res: Metabolism of synaptic nerve endings during development of the brain, especially phospholipids, transport of ions and metabolites and effect of drugs and neurohormones on those processes associated with the synapse; mechanism of action of adrenergic and cholinergic neurotransmitters at the molecular level in brain and iris muscle. Mailing Add: Dept of Cell & Molecular Biol Med Col of Ga Augusta GA 30902

ABDEL-MONEM, MAHMOUD MOHAMED, b Cairo, Egypt, June 7, 38; m 64. MEDICINAL CHEMISTRY. Educ: Cairo Univ, BS, 59; Univ Minn, Minneapolis, PhD(med chem), 66. Prof Exp: Instr plant chem, Cairo Univ, 60-61; head res, Nile Co Pharmacut, Cairo, 65-68; res specialist med chem, Univ Minn, Minneapolis, 68-70; asst prof, Univ Ill Med Ctr, Chicago, 70-71; ASST PROF MED CHEM, COL PHARM, UNIV MINN, MINNEAPOLIS, 71- Concurrent Pos: Assoc ed, J Med Chem, 72-; consult, Zinpro Corp, Excelsior, Minn, 72- Res: Study of distribution and metabolism of drugs; structure activity correlation and chemical mechanisms in drug metabolism. Mailing Add: Col of Pharm Univ of Minn Minneapolis MN 55455

ABDOU, NABIH I., b Cairo, UAR, Oct 11, 34; m 67. MEDICINE, IMMUNOLOGY. Educ: Cairo Univ, MD, 57; Univ Pa, MSc, 67; McGill Univ, PhD(immunol), 69. Prof Exp: Asst prof med, Univ Pa, 69-75, ASSOC PROF MED, UNIV KANS, 75- Mem: Am Asn Immunol; Am Acad Allergy; Transplantation Soc; Am Fedn Clin Res. Res: Cellular immunology. Mailing Add: Med Ctr Univ of Kans Kansas City KS 66103

ABDUL-BAKI, AREF ASAD, b Apr 9, 32; US citizen; m 62; c 1. PLANT PHYSIOLOGY. Educ: Am Univ Beirut, BSc, 56; Univ Ill, Urbana, PhD(plant physiol), 64. Prof Exp: Asst prof plant physiol, Eastern Mich Univ, 64; res assoc, Univ Mich, Ann Arbor, 65-66 & Univ Calif, Santa Cruz, 66-67; res plant physiologist, 67-75, CHIEF SEED QUAL LAB, AGR RES SERV, USDA, 75- Honors & Awards: Nat Canners Asn Award, 72. Mem: Am Soc Plant Physiol; Am Soc Agron; Crop Sci Soc Am; Am Soc Hort Sci. Res: Physiology and biochemistry of agronomic seeds as they relate to marketing quality attributes such as vigor, deterioration, dormancy, hard seed coat and stress tolerance. Mailing Add: Seed Qual Lab Beltsville Agr Res Ctr-West Beltsville MD 20705

ABE, RONALD KURASO, b Hilo, Hawaii, Sept 17, 39. ANIMAL NUTRITION. Educ: Univ Hawaii, BS, 62; Kans State Univ, MS, 65, PhD(animal nutrit), 70. Prof Exp: ASSOC PROF ANIMAL SCI, FT VALLEY STATE COL, 68- Mem: Am Soc Animal Sci; Am Dairy Sci Assn. Res: Calf and ruminant nutrition. Mailing Add: Div of Agr Ft Valley State Col Ft Valley GA 31030

ABEGG, ROLAND, b Perth Amboy, NJ, Dec 14, 14; m 38; c 3. ZOOLOGY. Educ: Univ Mich, BA, 36; La State Univ, MS, 39, PhD(zool), 48. Prof Exp: Supt La State Univ quail farm, La Dept Wildlife & Fisheries, 37-42; analyst, Cities Serv Ref Corp, 43-45 & Esso Standard Oil, 45-46; assoc prof biol, Northwestern State Col La, 48-50; from assoc prof to prof biol, Southeastern La Col, 50-59; PROF ZOOL & HEAD DEPT, LA TECH UNIV, 59- Mem: Am Heart Assn. Res: Waste control and pollution in relation to game fishes; cytology and genetics. Mailing Add: Dept of Zool La Tech Univ Ruston LA 71270

ABEGG, VICTOR PAUL, b Torrance, Calif, Feb 14, 45. ORGANIC CHEMISTRY, HISTORY OF SCIENCE. Educ: Loyola Univ Chicago, AB, 67; Mass Inst Technol, PhD(chem), 70; Univ Toronto, MDiv, 73. Prof Exp: Teaching fel, 74-75, SESSIONAL LECTR CHEM, YORK UNIV, 75- Mem: Am Chem Soc. Res: An

examination of new synthetic pathways to small-ring carbon compounds is continuing with emphasis on photochemical methods; these species are subsequently subjected to strong-acid-catalyzed rearrangement and product behavior determined. Mailing Add: 226 A St George St Toronto ON Can

ABEL, ALAN WILSON, b Wilkinsburg, Pa, Mar 7, 39. PHYSICAL CHEMISTRY. Educ: Univ Pittsburgh, BS, 61, PhD(chem), 67. Prof Exp: Asst ed, 67-69, assoc indexer, 69-70, SR ASSOC INDEXER, GEN SUBJ INDEXING DIV, CHEM ABSTR SERV, 70- Mem: Am Chem Soc. Res: Indexing of chemical literature; magnetic properties of metals, alloys and intermetallic compounds; gas-metal reactions. Mailing Add: 3015 Stadium Dr Apt 2 Columbus OH 43202

ABEL, ERNEST LAWRENCE, b Toronto, Ont, Feb 10, 43; m 71. PSYCHOPHARMACOLOGY. Educ: Univ Toronto, BA, 65, MA, 67, PhD(psychol), 71. Prof Exp: Psychologist, Dept Pub Health, City of Toronto, 68; SR RES SCIENTIST, RES INST ALCOHOLISM, NY STATE DEPT MENT HYG, 73- Concurrent Pos: Med Res Coun Can fel pharmacol, Univ NC, Chapel Hill, 71-73; United Way grant, 74-75. Res: Psychology; pharmacology. Mailing Add: Res Inst on Alcoholism 1021 Main St Buffalo NY 14203

ABEL, FRANCIS LEE, b Iowa City, Iowa, Apr 12, 31; m 54; c 3. CARDIOVASCULAR PHYSIOLOGY. Educ: Univ Kans, BA, 52; Harvard Med Sch, MD, 57; PhD(physiol), 60. Prof Exp: Intern pediat, Children's Hosp, Los Angeles, 60-61; res instr, Univ Wash, 61-62; from asst prof to prof physiol, Sch Med, Ind Univ, Indianapolis, 72-75; chmn dept physiol & pharmacol, 75-76, PROF PHYSIOL, SCH MED, UNIV SC, 75-; INTERIM DEAN, 76- Concurrent Pos: USPHS trainee physiol, Univ Wis, 59-60; NIH career develop award, 69-73; vis prof, Ind Univ-USAID at Jinnah Postgrad Med Ctr, Karachi, 64-65; vis prof, Univ Southern Calif, 70. Mem: AAAS; Biophys Soc; Inst Elec & Electronics Engrs; Am Physiol Soc; Am Fedn Clin Res. Res: Cardiovascular physiology; biophysical instrumentation; blood flow studies; reactions to hemorrhage; electro-magnetic flowmeters; shock; venous return; arterial pressure; regulation; cardiac function. Mailing Add: Sch of Med Univ of SC Columbia SC 29208

ABEL, JAMES EDWARD, b New York, NY, Apr 26, 15; m 50; c 1. X-RAY CRYSTALLOGRAPHY, EXPLOSIVES. Educ: Univ Wash, BS, 48; Stevens Inst Technol, MS, 55. Prof Exp: Insecticides chemist, Boyle-Midway Div, Am Home Prod, 43-46; EXPLOSIVES RES CHEMIST, FELTMAN RES LAB, SOLID STATE BR, PICATINNY ARSENAL, 49- Mem: Am Crystallog Assn; Am Chem Soc; Am Inst Chemists. Res: Propellants; primary and secondary explosives; crystal structure of explosive solids using x-ray diffraction. Mailing Add: 265 West Shore Trail Sparta NJ 07871

ABEL, JOHN H. JR., b Painesville, Ohio, Feb 25, 37; m 58; c 3. CELL BIOLOGY. Educ: Col Wooster, BA, 59; Brown Univ, MA, 64; PhD(cell biol), 66. Prof Exp: Chmn dept high sch, Ohio, 59-61; teacher high sch, Ill, 61-62; instr cell biol, NY Med Col, 66-67; from asst prof to assoc prof, 67-75, PROF CELL BIOL, COLO STATE UNIV, 75- Concurrent Pos: Consult, Ciba Chem & Dye Co, 66-68; ed consult, McGraw-Hill Bk Co, 66-; guest prof, Univ Bonn, Fed Repub Ger, 74-75. Honors & Awards: Sr US Scientist Award for Res & Teaching, Alexander von Humboldt Stiftung, Fed Repub Ger, 73. Mem: Am Soc Cell Biol; Am Assoc Anatomists; NY Acad Sci; Soc Study Reproduction & Fertil; AAAS. Res: Endocrine and neuroendocrine control of ovarian and adrenal function; osmoregulation in euryhaline birds. Mailing Add: Dept of Physiol & Biophys Colo State Univ Ft Collins CO 80523

ABEL, ROBERT BERGER, b Providence, RI, July 21, 26; m 53; c 2. SCIENCE ADMINISTRATION. Educ: Brown Univ, BS, 47; George Washington Univ, MEA, 62; American Univ, PhD(polit sci), 72. Prof Exp: Chemist, Woods Hole Oceanog Inst, 47-50; oceanogr & head, Oceanog Surv Br, 50-55; asst to dir, Hydrographic Off, US Navy, 55-60, asst res coordr, Off Naval Res & exec secy, Inter-agency Comt Oceanog, 60-67; DIR NAT SEA GRANT PROG, NAT OCEANIC & ATMOSPHERIC ADMIN, 67- Concurrent Pos: Instr, US Naval Res Off Sch, 62-67; adj instr oceanog, Fairleigh Dickinson Univ; chmn US deleg UNESCO working group on educ & training in marine sci. Honors & Awards: Super Serv Award & Distinguished Serv Award, US Govt; Gold Medal, US Dept of Commerce, 73. Mem: Am Chem Soc; Am Geophys Union; Sigma Xi; Am Soc Oceanogr; Marine Technol Soc (past vpres, pres elect, 70, pres, 74-75). Res: Oceanography; public administration. Mailing Add: 821 Braeburn Dr Oxon Hill MD 20022

ABEL, WILLIAM ROBERT, b Spencer, Wis, June 3, 27; m 50; c 1. MATHEMATICS. Educ: Morningside Col, BA, 49; Univ SDak, MA, 51; Univ Mo, PhD, 57. Prof Exp: Instr math, Univ Mo, 52-57; asst prof, Univ Nebr, 57-64; assoc prof, 64-67, PROF MATH, WESTERN WASH STATE COL, 67- Mem: Am Math Soc; Math Asn Am. Res: Geometry of metric arcs. Mailing Add: Dept of Math Western Wash State Col Bellingham WA 98225

ABEL, WILLIAM T., b Marion, Ind, Feb 16, 22; m 49; c 4. FUEL SCIENCE, PHYSICAL CHEMISTRY. Educ: Franklin Col, BA, 44; Univ Ill, Urbana, MS, 47. Prof Exp: Res asst chem, Ill Geol Surv, 44-47; res asst, Mound Lab, Ohio, 47-53; chemist, Dowell Inc, Okla, 53-56; chemist, Elec Auto-Lite Co, 56-58; supvy chemist, US Bur Mines, 58-60, chem res engr, 60-74; CHEM ENGR, ENERGY RES DEVELOP ADMIN, 74- Mem: AAAS; Am Chem Soc. Res: Corrosion inhibition; gas-solid reaction; dry processes for removal of pyrite from coal; coal liquefaction. Mailing Add: 564 Killarney Dr Morgantown WV 26505

ABELES, ANN LINDSTROM, b Tracy, Minn, Sept 23, 42; m 62; c 2. BIOPHYSICS. Educ: Univ Minn, BA, 63; Univ Md, PhD(biophys), 69. Prof Exp: Asst prof, 70-74, ASSOC PROF SCI, FREDERICK COMMUNITY COL, 75- Mem: Am Chem Soc. Res: Study of tree growth to determine the possible effects of air pollution from a generating system station on the growth of surrounding trees. Mailing Add: Dept of Biophys Frederick Community Col Frederick MD 21701

ABELES, BENJAMIN, b Vienna, Austria, June 23, 25; m 58; c 1. SOLID STATE PHYSICS. Educ: Prague Tech Univ, MS, 49; Hebrew Univ, Israel, PhD, 56. Prof Exp: Res tech, Meteorol Serv, Israel, 49-51; researcher, Weizmann Inst, Israel, 51-56; Radio Corp Am, 56-69, RESEARCHER, RCA LABS, 69- Mem: Am Phys Soc. Mailing Add: RCA Labs Princeton NJ 08540

ABELES, FRANCINE, b New York, NY, Oct 19, 35; m 57; c 3. MATHEMATICS. Educ: Barnard Col, Columbia Univ, AB, 57; Columbia Univ, MA, 59, EdD(math), 64. Prof Exp: Teacher high schs, NY & Ger, 57-63; from asst prof to assoc prof, 64-72, PROF MATH, KEAN COL NJ, 72- Mem: Am Math Soc; Math Asn Am. Res: Affine geometry; linear algebra; convex sets; history of mathematics. Mailing Add: 351 E 19th St New York NY 10003

ABELES, FRED BERNARD, botany, biochemistry, see 12th edition

ABELES, ROBERT HEINZ, b Vienna, Austria, Jan 14, 26; nat US; m 48.

- BIOCHEMISTRY.** Educ: Univ Chicago, MS, 50; Univ Colo, PhD(biochem), 55. Prof Exp: Asst dept pediat, Univ Chicago, 50-51; fel, Nat Found Infantile Paralysis, 55-56; fel chem, Harvard Univ, 56-57; asst prof chem, Ohio State Univ, 57-60; from asst prof to assoc prof biochem, Univ Mich, 60-64; assoc prof, 64-67. **PROF BIOCHEM.** **BRANDEIS UNIV.** 67-. **CHMN GRAD DEPT.** 72- Concurrent Pos: Ed, J Biol Chem, Am Soc Biol Chem, 67-72. Mem: Nat Acad Sci; Am Chem Soc; Am Soc Biol Chem; Am Acad Sci. Res: Mechanism of enzyme action; biological oxidations. Mailing Add: 415 Ward St Newton Centre MA 02159
- ABELING, EDWIN JOHN,** b Amsterdam, NY, Oct 4, 15; m 45; c 3. **BACTERIOLOGY.** Educ: Univ Ky, BS, 44. Prof Exp: Med technologist, Montgomery County Lab, NY, 39-41; med technologist, St Joseph's Hosp, Lexington, Ky, 41-44; bacteriologist, Beech-Nut Packing Co, NY, 44-47, head, San Jose Lab, Calif, 47-50, food lab, Canajoharie, NY, 50-54, assoc dir res, Beech-Nut Life Savers, 54-57, dir res & develop, Quality Control, 57-61; dir, 61-68, V PRES RES & DEVELOP, PETER PAUL, INC, 68- Concurrent Pos: Mem, Exec Prog Bus Admin, Grad Sch Bus, Columbia Univ, 60. Mem: Inst Food Technologists. Res: Development of new products; food, packaging and market research; quality control. Mailing Add: Ansonia Rd Woodbridge CT 06525
- ABELL, CREED WILLS,** b Charlottesville, Va, July 8, 34; m 56; c 2. **BIOCHEMISTRY, ONCOLOGY.** Educ: Va Mil Inst, BS, 56; Purdue Univ, MS, 58; Univ Wis, PhD(oncol), 62. Prof Exp: Chemist, Chem Sect, Carcinogenesis Studies Br, Nat Cancer Inst, 62-67; from assoc prof to prof biochem & molecular biol, Sch Med, Univ Okla, 67-72; **PROF HUMAN BIOL CHEM & GENETICS, UNIV TEX MED BR GALVESTON.** 72- Mem: Am Asn Cancer Res; Am Soc Biol Chemists; Sigma Xi. Res: Hydrocarbon carcinogenesis; alkylating agent carcinogenesis; protein biosynthesis and coding; alteration in coding by chemicals and carcinogens; induction of lung tumors in mice by alkylating agents; regulation of division of normal and leukemic lymphocytes and enzyme therapy of neoplasia. Mailing Add: Dept Human Biol Chem & Genetics Basic Sci Bldg Univ Tex Med Br Galveston TX 77550
- ABELL, DANA LEROY,** zoology, aquatic biology, see 12th edition
- ABELL, GEORGE OGDEN,** b Los Angeles, Calif, Mar 1, 27; m 51, 72; c 2. **ASTRONOMY.** Educ: Calif Inst Technol, BS, 51, MS, 52, PhD(astron), 57. Prof Exp: Observer, Nat Geog Soc-Palomar Observ Sky Surv, 53-56; from instr to assoc prof, 56-67, chmn dept, 68-75. **PROF ASTRON, UNIV CALIF, LOS ANGELES.** 67- Concurrent Pos: Planetarium lectr, Griffith Observ, Los Angeles, 53-61; guest investr, Hale Observ, 57- & Max Planck Inst Physics & Astrophys, 65-66. Mem: AAAS; Int Astron Union; Am Astron Soc. Res: Problems relating to organization, structure and distribution of clusters of galaxies; planetary nebulae. Mailing Add: Dept of Astron Univ of Calif Los Angeles CA 90024
- ABELL, JARED,** b Los Angeles, Calif, Sept 5, 28; m 50; c 3. **ORGANIC CHEMISTRY.** Educ: Calif Inst Technol, BS, 50; Univ Calif, Los Angeles, PhD(org chem), 54. Prof Exp: Sr res chemist, Chevron Res Co, 54-66; res chemist, Ortho Div, 66-68, MGR PROD RES & SERV, DIV RES & DEVELOP, ORTHO DIV, CHEVRON CHEM CO, 68- Mem: Am Chem Soc. Res: Pesticide formulation and agricultural chemicals in general. Mailing Add: Chevron Chem Co Ortho Div 940 Hensley St Richmond CA 94804
- ABELL, LIESE LEWIS,** b Frankfurt, Ger, Aug 17, 09; nat US. **BIOCHEMISTRY.** Educ: Univ Frankfurt, PhD, 35. Prof Exp: Chemist, Flower & Fifth Ave Hosp, New York Med Col, 40-42; chemist, Wyeth Int Appl Biochem, Pa, 45-47; asst prof biochem, Columbia Univ, 47-68; sr res scientist, Bur Labs, Pub Health Labs, New York City Dept Health, 68-74. Concurrent Pos: Res fel, Columbia Univ, 38-40 & 42-45; mem coun arteriosclerosis, Am Heart Asn. Mem: AAAS; Am Heart Asn; Am Soc Biol Chemists. Res: Lipid metabolism in connection with arteriosclerosis. Mailing Add: 7 Peter Cooper Rd New York NY 10010
- ABELL, MURRAY RICHARDSON,** b Aylmer, Ont, Oct 14, 20; nat US; m 44; c 4. **MEDICINE, PATHOLOGY.** Educ: Univ Western Ont, MD, 44, PhD(path), 51; Am Bd Path, dipl; FRCP(S), 51. Prof Exp: From instr to assoc prof, 52-59. **PROF PATH, UNIV MICH, ANN ARBOR.** 59- Concurrent Pos: Trustee, Am Bd Path. Mem: Am Asn Path & Bact; Int Acad Path; Am Soc Clin Path. Res: Hepatic disease; mediastinal tumors; neoplasms of female reproductive tract; antigen-antibody reactions in tissues; testicular neoplasms. Mailing Add: Dept of Path Univ of Mich Ann Arbor MI 48104
- ABELL, PAUL IRVING,** b Pelham, Mass, July 24, 23; m 51; c 1. **ORGANIC CHEMISTRY.** Educ: Univ NH, BS, 48; Univ Wis, PhD(chem), 51. Prof Exp: From instr to assoc prof, 51-64. **PROF ORG CHEM, UNIV RI.** 64- Concurrent Pos: Petrol Res Fund Int Award, Univ Wales, 60-61 & Univ Bristol, 69-70; Fulbright lectr, UAR, 65-66; mem, Omo River Res Exped, 67 & Lake Rudolf Res Exped, 68-74. Mem: Am Chem Soc; NY Acad Sci; Brit Chem Soc; Faraday Soc. Res: Stereochemistry and kinetics of free radical reactions; organic geochemistry; paleontology. Mailing Add: Dept of Chem Univ of RI Kingston RI 02881
- ABELLA, ISAAC D,** b Toronto, Ont, June 20, 34; m 66. **EXPERIMENTAL PHYSICS, QUANTUM OPTICS.** Educ: Univ Toronto, BA, 57; Columbia Univ, MA, 59, PhD(physics), 63. Prof Exp: Asst physics, Columbia Univ, 57-63, res assoc, 63-65; asst prof, 65-72. **ASSOC PROF PHYSICS, UNIV CHICAGO.** 72- Concurrent Pos: Mem laser apparatus comt, Am Inst Physics, 65, vis scientist, 66-71; consult, Mithras, Inc, Mass, 65-70 & Sanders Assoc, NH, 70-; mem laser adv comt, Ill Dept Pub Health, 68-72; vis fel, Joint Inst Lab Astrophys, Univ Colo, Boulder, 72-73. Mem: AAAS; Am Phys Soc; fel Optical Soc Am. Res: Experimental physics, especially nonlinear optics, photon echoes, quantum beats, atomic physics and lasers. Mailing Add: Ryerson Phys Lab Univ of Chicago Chicago IL 60637
- ABELMANN, WALTER H,** b Frankfurt, Ger, May 16, 21; nat US; m 58; c 5. **MEDICINE.** Educ: Harvard Univ, AB, 43; Univ Rochester, MD, 46. Prof Exp: Asst, 51-53, instr, 53-55, assoc, 55-58, asst prof, 58-64, assoc clin prof, 64-69, assoc prof, 69-72. **PROF MED, HARVARD MED SCH.** 72- Concurrent Pos: Res fel, Thorndike Mem Lab, Boston City Hosp, 51-; Am Heart Asn res fel, 53-55; estab investr, Am Heart Asn, 55-60. Mem: AAAS; Am Fedn Clin Res; Am Heart Asn; Asn Univ Cardiol; Am Soc Clin Invest. Res: Clinical cardiovascular physiology. Mailing Add: 330 Brookline Ave Boston MA 02215
- ABELS, LARRY L,** b Freeport, Ill, Feb 16, 37; m 60; c 3. **PHYSICS.** Educ: Knox Col, Ill, BA, 59; Ohio State Univ, MSc, 61, PhD(physics), 65. Prof Exp: ASST PROF PHYSICS, UNIV ILL, CHICAGO CIRCLE, 65- Mem: Optical Soc Am. Res: Studies of infrared transmission through synthetic atmospheres; infrared line parameter determinations. Mailing Add: Dept of Physics Univ of Ill at Chicago Circle Chicago IL 60680
- ABELSON, JOHN NORMAN,** b Grand Coulee Dam, Wash, Oct 19, 38. **MOLECULAR BIOLOGY, MOLECULAR GENETICS.** Educ: Wash State Univ, BS, 60; Johns Hopkins Univ, PhD(biophys), 65. Prof Exp: Fel, Lab Molecular Biol,
- Cambridge Univ, Eng, 65-69; asst prof, 69-73. **ASSOC PROF CHEM, UNIV CALIF, SAN DIEGO.** 73- Mem: Am Soc Biol Chemists; Am Chem Soc. Res: Genetic control mechanisms; nucleotide sequences of DNA and RNA; RNA synthesis and post-transcriptional processing. Mailing Add: Dept of Chem B017 Univ of Calif La Jolla CA 92093
- ABELSON, PHILIP HAUGE,** b Tacoma, Wash, Apr 27, 13; m 36; c 1. **PHYSICAL CHEMISTRY.** Educ: Wash State Univ, BS, 33, MS, 35; Univ Calif, PhD(nuclear physics), 39. Hon Degrees: DSc, Yale Univ, 64, Southern Methodist Univ, 69; DHL, Univ Puget Sound, 68. Prof Exp: Asst physics, Wash State Univ, 33-35; asst, Univ Calif, 35-38, asst, Radiation Lab, 38-39; asst physicist, Carnegie Inst, 39-41; from assoc physicist to prin physicist, Naval Res Lab, 41-45; chmn biophys sect, Dept Terrestrial Magnetism, 46-53, dir geophys lab, 53-71. PRES, CARNEGIE INST, 71- Concurrent Pos: Mem, Nat Defense Res Comt, 40-42; chmn radiation catafact comt, Nat Res Coun, 49-57; mem biophysics & biophys chem study sect, NIH, 56-59, phys biol training grants comt, 58-60; plowshare adv comt, AEC, 59-63, gen adv comt, 60-63; sci counsr, Nat Inst Arthritis & Metab Dis, 60-63. Honors & Awards: Distinguished Civilian Serv Medal, US Navy, 45; Mod Med Award, 67; Mellon Inst Award, Carnegie-Mellon Univ, 70; Joseph Priestley Award, Dickinson Col, 73; Kalinga Prize, UNESCO, 73; Sci Achievement Award, AMA, 74. Mem: Nat Acad Sci; AAAS; Am Nuclear Soc; fel Am Phys Soc; fel Am Acad Arts & Sci. Res: Nuclear physics; radioactive tracers; fission products of uranium; characteristic x-rays emitted by radioactive substances; neptunium; separation of uranium isotopes; mechanisms of ion transport into living matter; biosynthesis in microorganisms; plasma volume expanders; petrology; paleobiochemistry; geochemistry. Mailing Add: Carnegie Inst of Washington 1530 P St NW Washington DC 20005
- ABEND, PHILLIP GARY,** b Washington, DC, Aug 9, 30; m 52; c 5. **ORGANIC CHEMISTRY.** Educ: George Washington Univ, BS, 51; Univ Pittsburgh, PhD(chem), 58. Prof Exp: Res chemist, Gulf Res & Develop Co, Pa, 58-59; sr res chemist, Armour & Co, Ill, 59-62 & B F Goodrich Res Ctr, 62-65; group leader, Harchem Div, Wallace & Tiernan, Inc, NJ, 65-68, Pennwalt Corp, 68-70 & Standard Chem Prod, Inc, 70-74; SUPVR ORG RES LAB, HENKEL INC, 74- Concurrent Pos: Lectr eve div, Fairleigh Dickinson Univ, 68- Mem: Am Chem Soc; Am Oil Chemists Soc; Soc Cosmetic Chemists. Res: Surfactants; fatty acids; cosmetic chemicals. Mailing Add: 1332 Taft Rd Teaneck NY 07666
- ABERCROMBIE, JAY,** b Akron, Ohio, Sept 10, 42; m 68. **ENTOMOLOGY.** Educ: Univ Akron, BS, 64; Cornell Univ, PhD(parasitol), 70. Prof Exp: Entomologist, Walter Reed Army Inst Res, 71-72; chief entomologist, Mil Asst Command, Vietnam, 72-73; entomologist, Walter Reed Army Inst Res, 73-75; **ENTOMOLOGIST, US ARMY ENVIRON HYG AGENCY.** 75- Concurrent Pos: Taxonomist, Med Entom Proj, Smithsonian Inst, 73- Mem: Entom Soc Am; Asn Trop Biol. Res: Taxonomy and biology of aquatic Diptera, especially Culicidae, Sciomyzidae and Simuliidae. Mailing Add: US Army Environ Hy Agency Regional Div North Ft George G Meade MD 20755
- ABERCROMBIE, WARREN FULTON,** b Leeds, Ala, June 8, 11; m 43; c 4. **ZOOLOGY.** Educ: Howard Col, AB, 31; NY Univ, MS, 33, PhD(entom), 35. Prof Exp: Asst biol, NY Univ, 31-35; asst prof, Howard Col, 35-41; asst prof & head dept, Erskine Col, 41-42; tech ed & actg chief info sect, Med Div, Army Chem Ctr, MD, 46-48; pub ed in-chg tech reports & libr sect, Commun Dis Ctr, USPHS, 48-56, training officer, Training Br, 56-57; training officer in-chg radiol defence sch, Off Civil Defense Mobilization, 58-59; dep chief, Training Br, Div Emergency Health Serv, USPHS, 59-74, actg chief, 65-67. **EDUC SPECIALIST, PERSONNEL TRAINING & DEVELOP BR, BUR MED SERV, USPHS.** 74- Mem: AAAS; Am Micros Soc; Am Asn Anat; Am Pub Health Asn. Res: Effects of iodine compounds on the thyroid gland; growth of Japanese beetle larvae; effects of chemicals on the cockroach. Mailing Add: Personnel Training & Develop Br Bur of Med Serv USPHS 6525 Belcrest Rd Hyattsville MD 20782
- ABERE, JOSEPH FRANCIS,** b New York, NY, Mar 30, 20; m 44; c 7. **POLYMER CHEMISTRY.** Educ: Queens Col, NY, BS, 41; Polytech Inst Brooklyn, MS, 43, PhD(high polymers), 48. Prof Exp: Tutor chem, Queens Col, NY, 43-44, instr, 46-47; res chemist, 48-53, head appl res sect, Cent Res, 53-57, proj mgr chem div, 57-62, assoc mgr tape res, 62-67, mgr pioneering res, Indust Spec Prod Dept, 67-72, tech mgr composites, 70-72. **TECH MGR OVERSEAS OPERS, MINN MINING & MFG CO.** 72- Mem: AAAS; Am Chem Soc; Am Inst Chemists; Am Inst Aeronaut & Astronaut. Res: High polymers; fluorine containing polymers; vulcanization; adhesives and adhesion; resins; plastics; chemical development; imine chemistry; composites; reinforced plastics. Mailing Add: Indust Spec Prod Dept 3M Co 2501 Hudson Rd St Paul MN 55119
- ABERHART, DONALD JOHN,** b St John, NB, Oct 20, 41. **ORGANIC CHEMISTRY.** Educ: Univ Western Ont, BSc, 63, PhD(org chem), 67. Prof Exp: NATO sci fel, Glasgow Univ, 67-68; fel, Worcester Found Exp Biol, 69-70; res assoc, Mass Inst Technol, 70-71; **ASST PROF CHEM, CATH UNIV AM.** 71- Mem: Am Chem Soc; NY Acad Sci. Res: Natural products chemistry; biosynthetic studies. Mailing Add: Dept of Chem Cath Univ of Am Washington DC 20064
- ABERLE, DAVID FRIEND,** b St Paul, Minn, Nov 23, 18; m 55; c 1. **ETHNOLOGY.** Educ: Harvard Univ, AB, 40, Columbia Univ, PhD(anthrop), 50. Prof Exp: Inst social anthrop, Harvard Univ, 47-50; vis assoc prof, anthrop, Walter Hines Page Sch Int Rels, Johns Hopkins Univ, 50-52; from assoc prof to prof, Univ Mich, 52-60; Simon vis prof social anthrop, Univ Manchester, 60-61; prof anthrop & chmn dept, Brandeis Univ, 61-63; prof, Univ Ore, 63-67; **PROF ANTHROP, UNIV BC.** 67- Concurrent Pos: Res assoc, Harvard Sch Pub Health, Harvard Univ, 48-50; Soc Sci Res Coun grant, Navajo Reservation, Johns Hopkins Univ, 51; NIMH res grants, Navajo Reservation, Johns Hopkins Univ & Univ Mich, 51-53; fel, Ctr Advan Study Behav Sci, 55-56; mem behav sci study sect, NIMH, 57-60; hon res fel social anthrop, Univ Manchester, 61; NSF res grant, Navajo Reservation, Univ Ore, 65-72; Can Coun res grants, Univ BC, 67-; adj res assoc anthrop, Univ Ore, 67-72. Mem: Am Anthropol Asn; Am Sociol Asn; Royal Anthropol Inst Gt Brit & Ireland; Can Sociol & Anthropol Asn; Soc Appl Anthropol. Res: Cultural evolution and cultural ecology; development and underdevelopment; kinship, including lexical reconstruction of kinship terminology of protolanguages; religious movements; Athapaskan Indians and especially Navajo Indians. Mailing Add: Dept of Anthropol & Sociol Univ of BC Vancouver BC Can
- ABERLE, ELTON D,** b Sabetha, Kans, Aug 30, 40; m 65; c 2. **MEAT SCIENCES, FOOD SCIENCE.** Educ: Kans State Univ, BS, 62; Mich State Univ, MS, 65, PhD(food sci), 67. Prof Exp: From asst prof to assoc prof, 67-76. **PROF ANIMAL SCI, PURDUE UNIV.** 76- Concurrent Pos: Mem NC-91, Tech Comt Regional Res Proj, Agr Res Serv, USDA, 68-74, NC-131, 75-; assoc, Univ Minn, 75. Mem: Am Soc Animal Sci; Inst Food Tech; Am Meat Sci Asn. Res: Muscle biochemistry and physiology and muscle growth and differentiation in meat animals relating to use of muscle as food; adipose tissue growth in animals; meat processing. Mailing Add: Dept of Animal Sci Purdue Univ West Lafayette IN 47907