ELSEVIER'S ENCYCLOPÆDIA
of
ORGANIC CHEMISTRY

Edited by F. RADT

Series III

CARBOISOCYCLIC CONDENSED COMPOUNDS

Volume 12 B

NAPHTHALENE

A. Compounds Containing One Naphthalene Nucleus

Pages 345—1052

Nitrogen Compounds

ELSEVIER PUBLISHING COMPANY, INC.
NEW YORK - AMSTERDAM - LONDON - BRUSSELS
1949

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of

ORGANIC CHEMISTRY

FOUNDED BY

E. JOSEPHY † AND F. RADT

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PREFACE TO VOLUME 12

Bicyclic carboisocyclic compounds are dealt with in Volume 12. Owing to the enormous number of compounds with the naphthalene skeleton, the volume is divided into two parts: Vol. 12A includes all bicyclic compounds except those with the naphthalene skeleton, which are contained in Vol. 12B.

Because of post-war difficulties concerning the availability of many original papers, the literature for Vol. 12A could only be compiled up to and including 1941. For Vol. 12B, the first part of which will appear in 1948, the closing date for the inclusion of references is the 31st December 1944. In all cases, publications relating to the structure of compounds are considered right up to the date of printing.

Amsterdam, December, 1947 F. RADT

FROM THE PREFACE TO VOLUME 13

The present volume was almost ready for the press when further work was rendered difficult, if not impossible, by the war and the German occupation of Holland. Before all else, we must place on record here the fate of one of the founders of the Encyclopaedia, Dr. EDITH JOSEPHY, whose faithful devotion to this publication has ended fatally; seized by the Nazis and deported, she shared the fate of the thousands who never returned. The loss of her untiring energy, her vast experience, and her organizing ability could only gradually be compensated for by obtaining new collaborators and by increased efforts of the total editorial staff.

Amsterdam, December, 1946 F. RADT

FROM THE PREFACE TO VOLUME 14

The enormous and increasing output of chemical literature makes it desirable to have a comprehensive account of all the facts known in the field of organic chemistry up to the present, elaborated in such a way that completeness is assured, erroneous data are excluded, and the facts coordinated in a clear and critical way.

The development of our knowledge of the various branches of natural science during the last few decades has taken organic chemistry out of its isolated position and has emphasized the close relationship of organic chemistry particularly to physics and biology.

Organic chemistry has become a sphere of interest not only for those working in pure and applied chemistry but also for physicists and biologists who need the organic compounds for their investigations.

Appreciative of these facts, the Editors planned to arrange the Encyclopaedia of Organic Chemistry as a complete survey of all the organic compounds including not only purely chemical but also physical and physiological data.

Bearing in mind that the value of the Encyclopaedia to workers in various branches of science will depend largely on the simplicity of the system employed for the arrangement of the compounds, it was decided to use a system based on the structure of the compounds so that compounds which are most closely related are placed together. Within each of the three series (aliphatic, carbocyclic, and heterocyclic) the structural skeleton determines the arrangement. The carbocyclic compounds are divided into compounds with non-condensed and such with condensed rings; the first group is further subdivided according to the number of carbons atoms forming the ring; e.g., compounds with cyclopropane, cyclobutane, cyclo-

pentane, benzene rings, etc. For the condensed polycyclic compounds the natural division is given by the number of the condensed rings leading to classification as bicyclic, tricyclic compounds, etc. In each group with the same number of condensed rings, the compounds with the smallest ring are placed first. In this way the whole chemistry of all the compounds with, for instance, a naphthalene skeleton is to be found in one section. This enables the user to find any compound with the minimum of trouble, especially as the compounds within each section are always arranged in the same order, hydrocarbons, halogen-, nitrogen-, hydroxy-, keto-compounds, carboxylic acids, sulphur compounds, etc.

In connection with each compound its derivatives (additive compounds, esters, ethers, phenylurethan, hydrazones, etc.) are described. It has been our endeavour to keep the system as simple as possible and to avoid separation of compounds which are most closely related chemically. Thus, anhydrides of dicarboxylic acids and lactones of hydroxy acids are dealt with directly after the corresponding acid, exceptions to this arrangement having been made only in cases where these derivatives belong to a very important heterocyclic ring system as, for instance, phthalides.

All the chief systems are introduced by a detailed schematic survey about the various formations of the nucleus concerned and that in the first place about the occurrence in nature and in technical products (coal tar, lignite tar, etc.), next about the syntheses from the systems with less carbon atoms, about the rearrangement from systems with an equal number of carbon atoms, and finally about the degradation from the more complicated systems.

We have intentionally refrained from introducing new systems of nomenclature. In cases where different methods of nomenclature and numbering exist in the literature the method which appears to be the most suitable one has been chosen.

Particular attention was paid to the composition of the index. Each volume contains a subject index as well as a formula index; they contain not only every separate compound described in that volume, but the subject index has also groups of compounds with a similar structural or functional character, e.g. compounds with

acetylene linking, fluoro-, seleno-, metal-, deuterio-compounds, mustard oils ketenes, etc., hormones, vitamins, etc. The great value of such summaries will only become clear in the general index that will be composed after completion of the whole work, but we beg to draw attention to the keywords "Carcinogenic compounds", "Hormones", "Naturally occurring compounds", "Vitamins and provitamins", which occur in this volume.

All the data from the periodicals listed below have been taken directly from the original papers. For papers from a few journals not listed Chemical Abstracts and Chemisches Zentralblatt have both been consulted.

The accomplishment of this work was greatly assisted by the kind supply of the rarer periodicals by the following libraries and we wish to express our thanks to the authorities concerned: *Koninklijke Akademie van Wetenschappen*, Amsterdam, *Technische Hoogeschool*, Delft, *Universiteit*, Amsterdam, *Universiteit*, Leiden, *Universiteit*, Utrecht, *Koloniaal Instituut*, Amsterdam, Laboratoria voor *organische*, voor *physiologische*, voor *propaedeutische* en *anorganische*, voor *analytische Chemie*, voor *Kristallographie* en *Mineralogie*, voor *Artsenijbereidkunde*, *Physiologisch Laboratorium*, *Pharmacotherapeutisch Laboratorium*, *Histologisch Laboratorium*, *Kanker Instituut* and *Hortus Botanicus*, Amsterdam.

It is a pleasure to acknowledge our indebtedness to many authors who helped us to clear up contradictions in the literature.

Amsterdam, March, 1940 E. JOSEPHY. F. RADT

GENERAL SURVEY

SERIES I. ALIPHATIC COMPOUNDS

Vol. 1. Hydrocarbons, halogen, and nitrogen compounds
,, 2. Hydroxy and keto compounds
,, 3. Carboxylic acids, S-, Se-, Te-, P-, As-, and metal compounds

SERIES II. CARBOISOCYCLIC NON-CONDENSED COMPOUNDS

Vol. 4. Compounds with 3, 4, 5, 7 or more ring-members
,, 5-11. Compounds with 6 ring-members

A. Monocyclic six-membered ring compounds

,, 5. Hydrocarbons and halogen compounds
,, 6. Nitro-, nitroso-, hydroxylamino-, amino-, hydrazino-, diazo-, azo-, azoxy-, triazeno-, triazo-, and other nitrogen compounds
,, 7. Hydroxy compounds
,, 8. Keto compounds
,, 9. Carboxylic acids
,, 10. S-, Se-, Te-, P-, As-, and metal compounds

B. Polycyclic non-condensed six-membered ring compounds

,, 11. Biphenyl, diphenylmethane, etc.; terphenyl, triphenylmethane, etc.; compounds with 4 phenyl groups, etc.

SERIES III. CARBOISOCYCLIC CONDENSED COMPOUNDS

Vol. 12. Bicyclic compounds
,, 13. Tricyclic compounds
,, 14. Tetra- and higher-cyclic compounds

SERIES IV. HETEROCYCLIC COMPOUNDS

Vol. 15. Heterocyclic compounds with 1 N
,, 16. Heterocyclic compounds with 2 and more N
,, 17. Heterocyclic compounds with 1 and more O
,, 18. Heterocyclic compounds with N and O; with S, Se, or other elements

GENERAL INDEXES

Vol. 19. General Subject Index and Group Index
,, 20. General Formula Index

GENERAL OUTLINE OF THE PLANNING OF THE ENCYCLOPÆDIA AND INDICATIONS TO FACILITATE ITS USE

Elsevier's Encyclopaedia of Organic Chemistry has been compiled on the basis of the carbon skeleton. Compounds whose carbon-skeleton is broken by other atoms*, e.g., esters, ethers, alkyl-, and acyl-derivatives of amines, hydrazines, etc., are described as derivatives of the corresponding carboxylic acid, hydroxy-, amino-, and hydrazino-compounds, etc., generally under the component which is latest in order of systematic sequence; acetyl-, benzoyl-, phthaloyl-, toluenesulphonyl-, and similar derivatives, however, are dealt with under the corresponding hydroxy- or N-compound. As far as possible, derivatives of any given substance have been grouped together, maintaining at the same time the systematic classification by cross references, or by repetition where necessary. Compounds which contain a six-membered ring as well as one of the rings described in Vol. 4 are dealt with in the latter volume. Thus, for example, phenylcyclopropane will be found with the homologues of cyclopropane in Vol. 4, and not, as a cyclopropyl derivative of benzene, in Vol. 5.

Aliphatic compounds (Vols. 1–3) and compounds with the ring systems described in Vols. 4 and 12–18 have been arranged in the same manner as the compounds with six-membered rings in Vols. 5–10. The polycyclic non-condensed compounds of each ring system are also arranged in the same manner as those of the 6-ring range (see Vol. 11), and immediately follow the respective metal compounds of the ring system in question. Accordingly,

* This does not refer to heterocyclic compounds.

examples for the following general rules can be limited to benzene compounds.

1. Compounds differing only in their degree of saturation are described in immediate succession.

2. Functional groups in the side chain have precedence over similar functional groups in the nucleus; e.g., benzyl alcohol, bis-hydroxymethyl-benzene, etc. precede phenol.

3. Hydrocarbons and compounds having the same functional groups are arranged according to the number of side chains, compounds with one side chain preceding those with two side chains, etc.

4. Compounds containing the same functional group only once are followed by those compounds which, in addition, contain a functional group treated earlier in the system. After these substances are listed the compounds in which the first-named functional group is represented twice. Hence we have the sequence: phenol and its homologues — monohalogenophenols — dihalogenophenols, etc. — nitrophenols — halogenonitrophenols — aminophenols — halogenoaminophenols — nitroaminophenols — halogenonitroaminophenols — hydroxybenzyl alcohol, etc.; dihydroxybenzenes — halogenodihydroxybenzenes, etc. In accordance with this, phenolsulphonic acid will be found in Vol. 10, and not with the hydroxy-compounds in Vol. 7.

5. In the case of tautomers preference has been given to that formulation which most adequately interprets the principal reactions of the compound. In each case, however, a cross reference was inserted, at that place where the alternate tautomeric form belongs in the system.

6. Anhydrides of dicarboxylic acids should be looked for under the latter, not under the heterocyclic compounds with 1 O. Methylene ethers of dihydroxy-compounds are considered as derivatives of the latter, not as heterocyclic compounds with 2 O; thus, piperonal, for example, will be found in Vol. 8.

7. Natural products whose constitution has not been elucidated completely but whose carbon skeleton is known to some extent are dealt with immediately following all other compounds with

the same skeleton. Other natural products are described in connection with the first product of known composition obtained in their degradation. These natural products which are scattered through the various volumes of the Encyclopaedia are systematically collected in the Group Index in Vol. 19.

The above instructions, if carefully followed, will in every case ensure a quick decision as to the volume in which to look for a particular compound. Once the right volume has been chosen, it is easy to find the compound wanted, either by consultation of the alphabetical index and the formula index at the end of the volume, or with the aid of the table of contents of the volume or of the individual skeleton systems. After the completion of the whole work, every compound described in the literature may be found irrespective of its systematic location by means of the General Subject Index (Vol. 19) and the General Formula Index (Vol. 20).

Finally, the following points should be observed:

a. The year of publication and the name of the first author are given after each item of information; in cases where several statements regarding one compound are taken from the same paper, the reference is given after the last statement. The full references are listed at the end of short sections.

b. The more important systems are preceded by a detailed survey of the various methods of formation of the nucleus concerned. First their occurrence in nature and in technical products (coal tar, lignite tar, etc.) is dealt with. This is followed by syntheses from systems with fewer carbon atoms, and then by methods of formation by degradation of more complicated systems.

TABLE OF ABBREVIATIONS EMPLOYED IN THE TEXT

$[\alpha]$	specific rotation ($[\alpha]_D^{20}$, for 20° and sodium light)
abs.	absolute
absorpt.	absorption
Ac	acetyl (AcCl, acetyl chloride; Ac_2O, acetic anhydride)
addn.	addition
alc.	alcohol, alcoholic
alk.	alkaline
alkali	caustic alkali
Am	amyl
amp.	ampere(s)
amt.	amount
anh.	anhydrous
approx.	approximate, approximately
aq.	aqueous
assoc.	associate(s)
assocd.	associated
assocn.	association
asym.	asymmetrical
at.	atom, atomic
atm.	atmosphere(s), atmospheric
Å	Ångström unit(s)
av.	average
b.	(followed by a figure denoting temperature) boils at, boiling at
bacteriol.	bacteriological
biol.	biological
b.p.	boiling point
Bu	n-butyl
Bz	benzoyl (BzCl, benzoyl chloride)
ca.	about
cal.	calorie(s)
calcd.	calculated
c.c.	cubic centimetre(s)
cf.	compare
cm.	centimetre(s)
coeff.	coefficient
compd.	compound
compn.	composition
conc.	concentrated
concn.	concentration
cond.	conductivity
condens.	condensation
const.	constant
contg.	containing
cor.	corrected
corresp.	corresponding
crit.	critical
cryst.	crystalline, crystals
crystd.	crystallized
crystn.	crystallization
D	Debye unit (10^{-18} e.s.u. × cm.)
d	density (d_4^{13}, specific gravity at 13° referred to water at 4°)
dec.	decomposed, decomposition
deriv.	derivative
det.	determine
detd.	determined
detn.	determination
dextroroty.	dextrorotatory
diazotd.	diazotized
diazotn.	diazotization
dil.	dilute

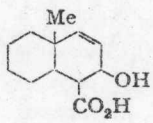
dild.	diluted
diln.	dilution
dispn.	dispersion
dissoc.	dissociate(s)
dissocd.	dissociated
dissocn.	dissociation
distd.	distilled
distg.	distilling
distn.	distillation
elec.	electric, electrical
e.m.f.	electromotive force
equil.	equilibrium
equiv.	equivalent
Et	ethyl (Et_2O, ethyl ether)
evap.	evaporate
evapd.	evaporated
evapg.	evaporating
evapn.	evaporation
evoln.	evolution
examn.	examination
expt.	experiment
exptl.	experimental
extrd.	extracted
extrg.	extracting
extrn.	extraction
fluoresc.	fluorescence
fmn.	formation
f.p.	freezing point
fwd.	followed
g.	gram(s)
H_2SO_4	conc. sulphuric acid
hr.	hour
hydrol.	hydrolysis
hydrold.	hydrolysed
inorg.	inorganic
insol.	insoluble
isold.	isolated
isoln.	isolation
°K	°Kelvin
kg.	kilogram(s)
kg.-cal.	kilogram calorie(s)
kv.	kilovolt(s)
kw.	kilowatt(s)
l.	litre(s)
laevoroty.	laevorotatory
lb.	pound(s)

M.	molar
M	(with subscript) molecular refraction
m.	(followed by a figure denoting temperature) melts at, melting at; also metre(s)
ma.	milliampere(s)
max.	maximum, maxima
Me	methyl (MeOH, methanol)
meth.	methyl alcoholic
mg.	milligram(s)
min.	minimum; also minute(s)
mixt.	mixture
ml.	millilitre(s)
mm.	millimetre(s)
mμ	10^{-6} mm. (10 Å)
mmt.	moment
mol.	molecule, molecular, mole
m.p.	melting point
mutarotn.	mutarotation
mv.	millivolt(s)
n	index of refraction (n_D^{20}, for 20° and sodium light)
N	normal (as applied to concn.)
neg.	negative
no.	number
obtd.	obtained
occ.	occurrence
opt. act.	optically active
org.	organic
oxid.	oxidized
oxidn.	oxidation
p.	page
pathol.	pathological
petrol.ether	petroleum ether
Ph	phenyl
pharmacol.	pharmacological
phys.	physical
physiol.	physiological
pos.	positive
powd.	powdered
pp.	pages
ppt.	precipitate
pptd.	precipitated
pptg.	precipitating
pptn.	precipitation

Pr	propyl
prepd.	prepared
prepg.	preparing
prepn.	preparation
prim.	primary
priv. comm.	private communication
prod.	product
pyr.	pyridine
qual.	qualitative
quant.	quantitative
rac.	racemic
recrystd.	recrystallized
recrystn.	recrystallization
red.	reduced
redn.	reduction
ref.	references
resoln.	resolution
resp.	respectively
rn.	reaction
rotn.	rotation
roty.	rotatory
sapon.	saponification
sapond.	saponified
sapong.	saponifying
satd.	saturated
satg.	saturating
satn.	saturation
sec.	second(s), secondary
sepd.	separated
sepg.	separating
sepn.	separation
sol.	soluble
soln.	solution
soly.	solubility
sp.	specific
sp. gr.	specific gravity
spectr.	spectrum
subl.	sublimes
subln.	sublimation
subst.	substance
sym.	symmetrical
synth.	synthesis
temp.	temperature
tert.	tertiary
unsatd.	unsaturated
v.	volt(s)
vac.	vacuum
vol.	volume
w.	watt(s)
wt.	weight

REPRODUCTION OF STRUCTURAL FORMULAE

In the structural formulae a single line always means a single bond; e.g., the formula



represents

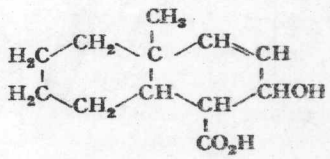


TABLE OF PERIODICALS

Abbreviated Title	Full Title
Abhandl. deut. Bunsen Ges.	Abhandlungen der deutschen Bunsen-Gesellschaft
Acta Acad. Aboensis, Math. Phys.	Acta Academiae Aboensis, Mathematica et Physica
Acta Brevia Neerland.	Acta Brevia Neerlandica de Physiologia, Pharmacologia, Microbiologia, e.a.
Acta Dermatol.	Acta Dermatologica (Dermatologia, Syphilidologia et Urologia) (Japan)
Acta Forestalia Fennicae	Acta Forestalia Fennicae
Acta Lit. Sci. Univ. Hung. Sect. Chem. Mineral. Phys.	Acta Litterarum ac Scientiarum Regiae Universitatis Hungaricae Francisco-Josephinae. Sectio Chemica, Mineralogica et Physica. Acta Chemica, Mineralogica et Physica
Acta Lit. Sci. Univ. Hung. Sect. Sci. Nat.	Acta Litterarum ac Scientiarum Regiae Universitatis Hungaricae Francisco-Josephinae. Sectio Scientiarum Naturalium
Acta Med. Scand.	Acta Medica Scandinavica
Acta Physicochim. U.R.S.S.	Acta Physicochimica U.R.S.S.
Acta Phys. Polon.	Acta Physica Polonica
Acta Phytochim.	Acta Phytochimica (Japan)
Acta Univ. Latviensis, Kim. Fakult. Serija	Acta Universitatis Latviensis, Kimijas Fakultates Serija
Akust. Z.	Akustische Zeitschrift
Am. Ch. J.	American Chemical Journal
Am. Dyestuff Reptr.	American Dyestuff Reporter
Am. Gas Assoc., Proc.	American Gas Association, Proceedings of the Annual Convention
Am. Gas J.	American Gas Journal
Am. J. Cancer	American Journal of Cancer
Am. J. Med. Sci.	American Journal of the Medical Sciences
Am. J. Obstet. Gynecol.	American Journal of Obstetrics and Gynecology
Am. J. Pharm.	American Journal of Pharmacy
Am. J. Physiol.	American Journal of Physiology
Am. J. Sci.	American Journal of Science
Am. Mineralogist	The American Mineralogist
Am. Paint J.	American Paint Journal
Am. Perfumer Essent. Oil Rev.	The American Perfumer and Essential Oil Review
Anales asoc. quím. Argentina	Anales de la asociación química Argentina
Anales fís. quím.	Anales de física y química (Madrid)
Anales soc. españ. fís. quím.	Anales de la sociedad española de física y química
Analyst	The Analyst
Angew. Ch.	Angewandte Chemie; before 1932 Zeitschrift für angewandte Chemie
Ann.	Annalen der Chemie, Justus Liebigs
Ann. Acad. Sci. Fennicae	Annales Academiae Scientiarum Fennicae

ABBREVIATED TITLE	FULL TITLE
Ann. acad. sci. tech. Varsovie	Annales de l'académie des sciences techniques à Varsovie
Ann. Applied Biol.	The Annals of Applied Biology
Ann. Botany	Annals of Botany
Ann. chim.	Annales de chimie; before 1914 Annales de chimie et de physique
Ann. chim. anal. chim. appl.	Annales de chimie analytique et de chimie appliquée et Revue de chimie analytique réunies
Ann. chim. applicata	Annali di chimica applicata
Ann. combustibles liquides	Annales de l'office national des combustibles liquides
Ann. faculté sci. Marseille	Annales de la faculté des sciences de Marseille
Ann. fals.	Les annales des falsifications et des fraudes
Ann. inst. Pasteur	Annales de l'institut Pasteur
Ann. jardin bot. Buitenzorg	Annales du Jardin botanique de Buitenzorg
Ann. méd. légale	Annales de médecine légale de criminologie, police scientifique, médecine sociale, et toxicologie
Ann. Philosophy	Annals of Philosophy
Ann. phys.	Annales de physique
Ann. Physik	Annalen der Physik; before 1900 Annalen der Physik und Chemie (Poggendorff; Wiedemann)
Ann. sci. École normale	Annales scientifiques de l'École Normale Supérieure
Ann. sci. univ. Jassy	Annales scientifiques de l'université de Jassy
Ann. soc. sci. Bruxelles	Annales de la société scientifique de Bruxelles
Ann. Surgery	Annals of Surgery
Ann. univ. Lyon	Annales de l'université de Lyon
Ann. zymol.	Annales de zymologie
Annual Reports	Annual Reports on the Progress of Chemistry, London
Apoth. Ztg.	Apotheker Zeitung
Arb. biol. Reichsanstalt Land- u. Forstw.	Arbeiten aus der biologischen Reichsanstalt für Land- und Forstwirtschaft, Berlin-Dahlem
Arb. kais. Gesundh.	Arbeiten aus dem Kaiserlichen Gesundheitsamte
Arb. Pharm. Inst. Univ. Berlin	Arbeiten aus dem Pharmazeutischen Institut der Universität Berlin
Arb. physiol. u. angew. Entomol.	Arbeiten über physiologische und angewandte Entomologie aus Berlin-Dahlem
Arb. Reichsgesundh.	Arbeiten aus dem Reichsgesundheitsamte
Arbeitsschutz	Arbeitsschutz, Unfallverhütung, Gewerbehygiene. Sonderausgabe des Reichsarbeitsblattes
Arch. Dermatol. Syphilol.	Archives of Dermatology and Syphilology
Arch. Dermatol. u. Syphilis	Archiv für Dermatologie und Syphilis
Arch. exptl. Path. Pharmakol.	Archiv für experimentelle Pathologie und Pharmakologie
Arch. exptl. Zellforsch.	Archiv für experimentelle Zellforschung
Arch. farmacol. sper.	Archivio di Farmacologia sperimentale e Scienze affini
Arch. ges. Physiol.	Archiv. für die gesamte Physiologie des Menschen und der Tiere (Pflügers)
Arch. Internal Med.	The Archives of Internal Medicine
Arch. intern. pharmacodynamie	Archives internationales de pharmacodynamie et de thérapie
Arch. ital. biol.	Archives italiennes de biologie
Arch. Math. Naturvidenskab	Archiv for Mathematik og Naturvidenskab
Arch. néerland. physiol.	Archives néerlandaises de physiologie de l'homme et des animaux
Arch. Path.	Archives of Pathology
Arch. Pharm.	Archiv der Pharmazie

ABBREVIATED TITLE	FULL TITLE
Arch. phys. biol.	Archives de physique biologique et de chimie-physique des corps organisés; before 1930 Archives de physique biologique
Arch. Schiffs- u. Tropen-Hyg.	Archiv für Schiffs- und Tropen-Hygiene, Pathologie und Therapie exotischer Krankheiten
Arch. sci. phys. nat.	Archives des sciences physiques et naturelles, Genève
Arhiv Hem. i Farm.	Arhiv za Hemiju i Farmaciju
Arkiv Kemi Mineral. Geol.	Arkiv för Kemi, Mineralogi och Geologi
Asphalt u. Teer, Strassenbautech.	Asphalt und Teer, Strassenbautechnik
Astrophys. J.	The Astrophysical Journal
Atti accad. Italia, Rend.	Atti della reale accademia d'Italia. Rendiconti della classe di scienze fisiche, matematiche e naturali
Atti accad. Lincei	Atti della reale accademia dei Lincei
Atti accad. Torino	Atti della reale accademia delle scienze di Torino
Atti congr. naz. chim. pura applicata	Atti del congresso nazionale di chimica pura ed applicata
Australian Chem. Inst., J. & Proc.	The Australian Chemical Institute Journal & Proceedings
Automobiltech. Z.	Automobiltechnische Zeitschrift
Auto-Tech.	Auto-Technik
Beitr. ch. Physiol. Pathol.	Beiträge zur chemischen Physiologie und Pathologie
Ber.	Berichte der deutschen chemischen Gesellschaft; since 1947 Chemische Berichte
Ber. Afdeel. Handelsmuseum Ver. Kolon. Inst.	Berichten van de Afdeeling Handelsmuseum van de Koninklijke Vereeniging Koloniaal Instituut
Ber. deut. pharm. Ges.	Berichte der deutschen pharmazeutischen Gesellschaft
Ber. Ges. Kohlentech.	Berichte der Gesellschaft für Kohlentechnik
Ber. ges. Physiol. exptl. Pharmakol.	Berichte über die gesamte Physiologie und experimentelle Pharmakologie
Ber. K. Sächs. Ges. Wiss. Math.-phys. Kl.	Berichte über die Verhandlungen der Königl. Sächsischen Gesellschaft der Wissenschaften zu Leipzig, Mathematisch-physische Klasse
Ber. Schimmel & Co.	Bericht der Schimmel & Co. Aktien-Gesellschaft Miltitz Bz. Leipzig über ätherische Öle, Riechstoffe usw.
Berlin. tierärztl. Wochschr.	Berliner tierärztliche Wochenschrift
Berlin. u. Münch. tierärztl. Wochschr.	Berliner und Münchener tierärztliche Wochenschrift
Berzelius-Jahresber.	Jahresberichte über die Fortschritte der physischen Wissenschaften 1822-'41, Jahresberichte über die Fortschritte der Chemie 1842-'51 von Jacob Berzelius
Biochem. J.	The Biochemical Journal
Biochem. Z.	Biochemische Zeitschrift
Biol. Bull.	The Biological Bulletin
Boll. chim. farm.	Bollettino chimico-farmaceutico
Boll. lega Ital. lotta contro cancro	Bollettino della lega Italiana per la lotta contro il cancro
Boll. soc. adriatica sci. nat. Trieste	Bollettino della società adriatica di scienze naturali in Trieste
Boll. soc. ital. biol. sper.	Bollettino della società italiana di biologia sperimentale
Bot. Ztg.	Botanische Zeitung
Braunkohlenarch.	Das Braunkohlenarchiv
Brennstoff-Ch.	Brennstoff-Chemie
Brit. J. Expil. Path.	British Journal of Experimental Pathology
Brit. J. Ophthalmol.	The British Journal of Ophthalmology
Brit. Med. J.	British Medical Journal