The Bliss Classification Bulletin

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FOREWORD

Most of this Bulletin consists of substantial additions to the BC in four technical fields, for the expansion of two of which (Electronics and Automatic Control) the Editor has received request. These additions take the form of four complete schedules, each providing detail almost totally absent so far in the BC.

It is our intention to provide in future Bulletins similar new and enlarged schedules for a wide variety of topics, with particular emphasis on those areas of the BC which have so far been most lacking in up-to-date detail, i.e., the physical sciences and technologies.

In the provision of these new schedules we are greatly endebted to the British National Bibliography from whose set of Supplementary Schedules (London, BNB, 1963) we are drawing most of them. These schedules have been devloped by the BNB to supplement those areas of the Dewey Decimal Classification which are inadequate for specific classification of modern literature as encountered by BNB. The latter classifies and catalogues all current literature published in the U.K.

(some 25,000 items annually at present) and it is emphasised here, lest it be thought that the detail provided is excessive, that the terms appearing in the Supplementary Schedules are all based firmly on 'literary warrant' in the sense that books specifically on all these subjects have actually appeared in the past decade.

Should any user of the BC find the detail more than he requires, he is under no compulsion to use it. This has always been the underlying argument -- and a perfectly valid one -- for providing detail in a classification. Those who want precision in their indexing can have it, those who do not, needn't bother. But the detail should be there, otherwise the first group can never be served adequately.

As subscribers to the BNB are aware, the classes of the supplementary schedules carry a notation of lower-case letter, marking them off clearly from the DDC class numbers. Generally speaking we will provide a new notation in order to fit each class as neatly as possible into the existing local situation in the BC. In the case of the Electronics schedule (BNZ) we have retained the BNB notation substantially as it is used in BNB (except that we use capitals instead of lower case, of course).

A brief explanation of the main features of these schedules is given below. Here, we wish to thank Mr. A. J. Wells, Editor of the BNB, for his generosity in allowing us to use the schedules and Mr. E. J. Coates (now Editor of the British Technology Index) and other members of the BNB staff who have been largely responsible for the

working out of the schedules.

Since the last Bulletin was published the following libraries have been reported as adopting the BC, and we are pleased to welcome them to the growing body of BC users and to invite them to contribute suggestions for the improvement of the system:

Bangor, Normal College (changing to BC).
Froebel Educational Institute, Grove House,
Roehampton Lane, London, S. W. 15
(changing to BC).
Institute of Education, University of Keele
(new library).
Malvern Girls' College, Malvern, Worcestershire
(changing to BC).
Milham Ford School, Oxford.
Royal Belfast Academical Institution, Belfast.
Sedgley Park Training College, Manchester.
University College, Oxford (changing to BC).
University of Lancaster (new library).
Whalley Range Grammar School for Girls,
Manchester, 16.

The working out of schedules for a School Edition of the BC is progressing well and serious thought is now necessary about ways and means of printing or otherwise reproducing it and distributing it. Any suggestions from BC users will be very welcome.

The new schedules

There are five distinct features of these to be noted:

1. They are completely faceted; i.e., the different facets, or categories of concepts, in the subject concerned have been clearly distinguished and only the 'elementary' terms in each facet are given. Compound classes (those reflecting more than one facet) are obtained by synthesis (or 'composite specification' as Bliss called it); e.g., in

DRS Oceanography a document on Measurement of surface currents is classified by taking Surface from the Part facet, Current from the Properties and Phenomena facet, and Measurement from the Operations facet, to give DRSYPG. Again, in URAB Automatic control, a document on Hydraulic servomechanisms is classified by taking Servomechanisms from the Types of Control System facet and Hydraulic from the Parts and Components facet (it implies the actuator) to give URASNS.

The principle of faceted classification is, of course, implicit in much of the BC and can be seen very clearly in the separation of the Systematic Schedules from the tables proper. Here, the principle of analysis for subsequent synthesis is made explicit throughout each schedule.

2. They each have a definite citation order; i.e., compound numbers are constructed according to a definite rule, which is that when the indexer is combining two terms, the one appearing later in the schedule is cited first; e.g., Transistor -- Circuits, not Circuits -- Transistors; or, Hydraulic -- Servomechanisms, not Servomechanisms -- Hydraulic.

The effect of this is to collect material where it generally will be most helpful; e.g., in Electronics and in Automatic Control the particular application is regarded as the primary facet. If any user prefers some other citation order, this may be achieved by combining in the order required (so long as it is done consistently), but he cannot expect the same notational convenience as when following the preferred order (for which the notation is especially designed). It is advisable

in such a case to link the part with a comma; e.g., BNZ is Electronics (BNZ constituting the 'base number' -- the part common to the whole class) BNZG is Circuits and BNZRS Transistors. Preferred citation order for a compound would be Transistors -- Circuits BNZRSG; no linking device is required -- the letter(s) following the 'base number' are removed from the facet above and added straight onto the facet below. If however the opposite citation order is chosen (to give Circuits --Transistors) it would be BNZG, RS.

3. They are 'inverted' schedules; i.e., the primary facet files after the secondary, tertiary facets, etc. This device secures a consistent order of general before special; e.g.

Circuits (i.e., Circuits in general)
Transistors (i.e., Transistors in general)
Transistor Circuits

The subclass Transistor circuits is, of course, subordinate to both Circuits and to Transistors and here it follows both these containing heads. Were the schedule order not inverted (if the primary facet filed first, the secondary facet second, and so on) the following sequence would result:

Transistors
Transistor Circuits
Circuits

In this case, the subclass Transistor circuits does not follow, but precedes, the more general class Circuits. It is not claimed that an order of general before special is of crucial importance in a classification system, but Bliss certainly advocated the principle of progressive subordination and it seems to be widely expected by librarians and

users and it adds to the predictability of class location.

4. The notation is 'retroactive'; i.e., the class symbols have been allocated in such a way as to allow any class to be qualified by another class directly, without any notational link (such as a comma) so long as the correct citation order is observed -- i.e., the qualifying class is taken from <u>above</u>. An example is given in (2) above; another example is:

BNZ	Electronics
BNZM	Materials for circuits (divided by name, arranged alphabetically)
BNZRY	Capacitors
BNZRYM	Materials
BNZRYM, Ce	Ceramic dielectric capacitors
BNZRYM, Pa	Paper dielectric capacitors

5. The notation is purely 'ordinal'; i.e., no attempt is made to convey relations between the classes symbolized by adding another digit for every step of division. A class which normally gets more literature than its theoretical containing head may even get a <u>shorter</u> number; e.g., BNZT Amplifiers is a subclass of BNZSZ Circuits by function.

It is emphasised here that all the features described above are perfectly consistent with the rest of the schedules and with Bliss's view of the needs of a bibliographic classification.

These additional points may be noted:

(a) Indentation is used to show subordination; although Bliss generally restricted this aid in the display of relationships to his synoptic tables preceding each class, it is a useful device, particularly

in view of the fact that the notation is non-hierarchical. For example, in the hierarchy

AMUJ	Electronic (computers)
AMUJP	Programming
AMUN	Digital
AMUP	Programming

AMUJP means Programming of electronic computers (all kinds) whereas AMUP means Programming of Digital computers.

(b) The first expanded class (2) accommodates some material which, although not very common, causes trouble when classifying by an 'aspect' system like the BC. For example the forms of presentation may themselves appear as subjects, as in the Bulletin of the British Institute of Recorded Sound, and this would go at 2U.

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ADDITIONS AND CORRECTIONS

1Z Insert: General knowledge and activity
Preferred in Class 2 (for libraries not using 2 for Bibliology, etc.)

/For subdivisions of this class, see next entry./

2	General knowledge and activity	Alternative is 1Z (for
2C	Controversies	libraries using 2 for
2D	Curiosities	Bibliology, etc.)
2F	Deceptions	
2H	Fallacies, Delusions	
2J	Mysteries	
2L	Scholarship and learning. See also Education for culture JAK Renaissance Humanism J3F	
2N	General organisation and activity	
2P	Communications. Information theory (general) See also Information theory in Electrical Engineering BOAC	
2PT	Time	
2PV	Images	
2Q	Cybernetics. Control theory (General works only here; for Engineering aspects, see URAC)	
2R	Recorded knowledge	
2S	Visual records	
2SF	Films	
2SFL	Loop films	
2SS	Strips	
2SV	Illustrations	
2SVP	Aerial photographs	
2T	Microtexts, microrecords,	
2TM	Microfilms	
2U	Sound records	
2UM	Magnetic	
2UT	Tape	

AMU Delete existing subclasses and references and replace by:

AMU Instruments for mathematical calculation, Computing machines. See also Integraph ARK

AMUC Analogue (alternative, not recommended, at ARK)
AMUD Digital

AMUF Mechanical
AMUG Slide rule
AMUI Electromechanical
AMUJ Electronic, Automatic
AMUJP Programming
AMUL Analogue computers
AMUN Digital computers
AMUP Programming
AMUPC Analogue-digital conversion
AMUPO Automatic programming
AMUQ Individual standard programmes (Algol, Fortran, etc., A/Z)
AMUR Individual computers (A/Z) e.g., Atlas AMUR.A

ARK Insert: Analogue computers (alternative; preferred at AMUC)

BEJ Delete subheading 'Electronics' (line 2)
Add note: See also Electronics, Electronic Engineering BNZ

BFYM Insert: Masers, Lasers

BNZ Insert new schedule:

BNZ Electronics, Electronic Engineering. See also Electronic Theory BEJ

FK Measurement
FN Resistance
FP Impedance
FS Current
FT Voltage
FXY Wave form
FXZ Frequency
FY Noise
G Circuits See also BKE
GG Mathematics. Divide like AM/AY e.g., GGRJ Signal flow graphs (integral calculus)

BNZ Electronics ...

GH Transmission lines
GK Apparatus
GP Testing
GR Environmental testing
H Faults
HP Physical dimensions
J Shape
JM Film
K Construction, Manufacture
KM Forming
KN Joining
KP Brazing
KZ Materials
M Particular materials
Elements, Inorganic compounds, inorganic binary alloys.
Indicate elements by chemical symbols e.g., Silicon MSi
Indicate compounds by chemical formula without subscript figures e.g., Sulphuric acid MHSO, Sulphurous acid MHSO.
Note that the symbols for compounds mean all compounds of the elements quoted. Final specification will be by verbal feature.
Indicate binary alloys by joining symbols for substances with the digit 9, e.g., Lead-tellurium alloy MPb9Te. When it is necessary to combine a material symbol with notation F-K the latter should be enclosed in parentheses.
M7 Organic compounds. Divide like CO-CR
M8 Other materials. Arrange alphabetically.
N Components
NS Embedment packages
P Tubes
PN Phenomena
PQ Fittings
PQQ Shields
PR Electrodes
PRQ Cathodes
PRR Hot cathodes
PRS Cold cathodes
PRT Oxide-coated cathodes
PRU Anodes
PRV Grids
PRX Tubes by number of electrodes
PRX2 Diodes

BNZ Electronics ...

PS Tubes by type
PSS Gas discharge
PST Arc. See also BNM
PSU Glow. See also BNO
PT Cathode ray tubes. See also BFU
PU Storage tubes
PUY Crossed-field tubes
PV Magnetrons. See also BOW
PW Resonant cavity magnetrons
Q Photocells
QC Photoconductive cells
QR Photoemissive cells
QRS Multiplier tubes
QRU Image intensifiers
QS X-ray tubes. See also BFT
R Solid state devices
RQ Semi-conductors. See also BFK
RR Diodes
RS Transistors
RSV Junction transistors
RSY Relays
RU Magnetic and dielectric devices
RW Conductors
RX Insulation
RY Capacitors
S Resistors
SQ Variable
SQV Inductors
SQW Cores
SR Transformers
SS Switches
SST Wafer switches
ST Power supply units
STT Voltage regulators
STU Corona discharge tubes
SU Printed circuits
SV Microminiature circuits
SZ Circuits by function
T Amplifiers
TV Attenuators
TX Convertors
TY Waveform generators
TZ Oscillators
U Multivibrators
V Rectifiers
VX Time bases

BNZ Electronics ...

VY	Pulse techniques
VZ	Very high frequency
W	Microwaves
WX	U.H.F.
WXQW	Klystrons
WY	S.H.F.
WZ	Applications
X	Measuring devices
XY	Control devices
Y	Electron microscopes. See also BFR
YX	Emission electron microscopes
YY	Electronic heating. See also BNP
YZ	Dielectric
YZX	Induction

BOAC Insert: Information theory. See also Information theory (general) 2P

DRS/DRT Delete and change to

DRS	Oceans and Seas, Oceanography, Oceanology
B	Operations
C	Equipment
CR	Radar
CT	Ultrasonic wave generators
DRSD	Vehicles
S	Ships
DRSE	Expeditions
DRSF	Observations
DRSG	Measurements
DRSH	Surveying
DRSI	Plotting
DRSJ	Sounding
DRSJL	Sea level datums
DRSJZ	Properties and Phenomena
DRSK	Physical
DRSL	Dimensions: depth, density
DRSM	Dynamic
DRSN	Waves
DRSO	Tides
DRSP	Currents
DRSR	Thermal
DRSS	Temperature

DRS Oceans and Seas ...

DRST Chemical
DRSTG Analysis
DRSTZ Determination of special materials
DRSV Determination of metals
DRSW Determination of non-metals
DRSX Layers
DRSY Surface
DRT Sea bed. Submarine topography, Ocean floor
DRTZ Coastal waters

JO Add heading: Further Education (this should be part of the note on p. 6 of Bulletin Vol. II, No. 3)

UEC Delete, and replace by:
Automatic control devices Alternative, preferred at URAB

URAB Insert following schedule:

URAB Automatic control and control devices
URAC Cybernetics
URAE Mathematical theory. Divide like AM/AY
URAF Properties and behaviour of systems. System engineering
URAFT Static behaviour
URAFV Stability
URAFX Hunting
URAG Dynamic behaviour
URAGK Frequency response
URAGP Transient response
URAGR Reliability
URAGW Open loop
URAH Closed loop (systems with feedback)
URAHK Feedback
URAHN Simple
URAHQ Meshed
URAHT Positive
URAHV Negative
URAK Linear system
URAM Non-linear system
URAMW Parts, Components
URAMX Gears
URAN Actuator
URANQ Mechanical
URANS Hydraulic
URANT Pneumatic

URAB	Automatic control and control devices ...
URANU	Electrical
URANV	Electronic
URAP	Amplifier
URAPR	Magnetic amplifiers
URAPT	Governor
URAPW	Types of control system
URAQ	Proportional
URAQT	Derivative
URAQV	Integral
URART	Continuous systems
URARU	Discontinuous systems
URARW	Sampled-data
URARY	Regulators
URAS	Servomechanisms
URASW	Attributes, operations upon which control is exercised
URAT	Mechanical movement
URATU	Fluid level
URATV	Vacuum or pressure
URAU	Time
URAV	Electrical variation

A/Z Index

AMU	Programmes (Digital computers)	AMUQ
	Programming (Electronic computers)	AMUJP
	Programming (Digital computers)	AMUP
	Slide rules (Mathematics) change to:	AMUG
BFYM	Lasers	BFYM
	Masers	BFYM
BNZ	Amplifiers (Electronics)	BNZT
	Anodes (Electronics)	BNZPRU
	Arc (Gas discharge tubes, Electronics)	BNZPST
	Attenuators (Electronics)	BNZTV
	Brazing (Electronic circuits)	BNZKP
	Capacitors (Electronics)	BNZRY
	Cathode ray tubes (Electronics)	BNZPT
	Cathodes (Electronic components)	BNZPRQ
	Circuits (Electronics)	BNZG
	Apparatus	BNZGK
	Construction	BNZK
	Materials	BNZM
	Cold cathodes (Electronic components)	BNZPRS
	Conductors (Electronics)	BNZRW
	Control devices, Electronic	BNZXY
	Convertors (Electronics)	BNZTX
	Cores (Electronics)	BNZSQW
	Corona discharge tubes (Electronics)	BNZSTU
	Crossed field tubes (Electronics)	BNZPUY
	Current (Electronics)	BNZFS
	Dielectric devices (Solid state devices, Electronics)	BNZRU
	Dielectric heating (Electronics)	BNZYZ
	Diodes (Electron tubes)	BNZPRX2
	Diodes (semi-conductors, Electronics)	BNZRR
	Electrodes (Electronic components)	BNZPR
	Electron microscope change to:	
	Electron microscope (Electronics)	BNZY
	Electron microscope (Photoelectricity)	BFR
	Electron tubes change to:	
	Electron tubes (Electronics)	BNZP
	Electron tubes (Radio engineering)	BUS
	Electronics change to:	
	Electronics (Technology)	BEJ
	Electronics (Theory)	BNZ
	Embedment packages (Electronics)	BNZNS
	Emission electron microscopes	BNZYX
	Faults (Circuits, Electronic)	BNZH
	Film circuits (Electronics)	BNZJM
	Frequency (Electronics)	BNZFXZ

BNZ	Gas discharge tubes (Electronics)	BNZPSS
	Grids (Electronics)	BNZPRV
	Hot cathodes (Electronic components)	BNZPRR
	Image intensifiers (Electronics)	BNZQRU
	Impedance (Electronics)	BNZFP
	Induction heating (Electronics)	BNZYZX
	Inductors (Electronics)	BNZSQV
	Insulation (Electronics)	BNZRX
	Joining (Electronic circuits)	BNZKN
	Junction transistors (Electronics)	BNZRSV
	Magnetic devices (Solid state devices, Electronics)	BNZRU
	Magnetrons (Electron tubes)	BNZPV
	Mathematics of electronic circuits	BNZGG
	Measurement (Electronics)	BNZFK
	Microminiature circuits (Electronics)	BNZSV
	Microscope, Electron (Electronics)	BNZY
	Multiplier tubes (Photoemissive cells)	BNZQR
	Multivibrators (Electronics)	BNZU
	Noise (Electronics)	BNZFY
	Oscillators (Electronics)	BNZTZ
	Oxide-coated cathodes (Electronics)	BNZPRT
	Photocells (Electronics)	BNZQ
	Photoconductive cells (Electronics)	BNZQQ
	Photoemissive cells (Electronics)	BNZQR
	Power supply units (Electronics)	BNZST
	Printed circuits (Electronics)	BNZSU
	Pulse techniques (Electronics)	BNZVY
	Rectifiers (Electronics)	BNZV
	Relays (Semi-conductors, Electronics)	BNZRSY
	Resistance (Electronics)	BNZFN
	Resistors (Electronics)	BNZS
	Resonant cavity magnetrons (Electron tubes)	BNZPW
	S.H.F. (Microwaves, Electronics)	BNZWY
	Semiconductors (Electronics)	BNZRQ
	Shape (Electronic circuits)	BNZJ
	Shields (Electron tubes)	BNZPQQ
	Solid state devices (Electronics)	BNZR
	Storage tubes (Cathode ray, Electronics)	BNZPT
	Super high frequency (Microwaves, Electronics)	BNZWY
	Switches (Electronics)	BNZSS
	Testing (Electronic circuits)	BNZGP
	Time bases (Electronics)	BNZVX
	Transformers (Electronics)	BNZSR
	Transistors (Electronics)	BNZRS
	Transmission lines (Electronic circuits)	BNZGH
	Tubes, Electron (Electronics)	BNZP
	U.H.F. (Microwaves, Electronics)	BNZWX
	Ultra high frequency (Microwaves, Electronics)	BNZWX

BNZ

V.H.F. (Electronics)	BNZVZ
Variable resistors (Electronics)	BNZSQ
Very high frequency (Electronics)	BNZVZ
Voltage (Electronics)	BNZFT
Voltage regulators (Power supply units, Electronics)	BNZSTT
Wafer switches (Electronics)	BNZSST
Waveform (Electronics)	BNZFXY
Waveform generators (Electronics)	BNZTY
X-ray tubes (Electronics)	BNZQS

BOAC

Information theory (Electrical communications)	BOAC

DRS/DRT

Chemical properties and phenomena (Oceanography)	DRST
Coastal waters (Oceanography)	DRTZ
Currents in oceans and seas Change to	DRSP
Density of oceans and seas	DRSL
Depth of oceans and seas	DRSL
Layers in oceans and seas	DRSX
Marine deposits ... change to	DRSV
Marine formations ... change to	DRT
Metal, Metals ... Insert subheading:	
In oceans and seas	DRSW

Oceanology, Oceanography Insert subheadings:

Chemical deposits, properties	DRSV
Equipment	DRSC
Expeditions	DRSE
Measurements	DRSG
Observations	DRSF
Plotting	DRSI
Properties and phenomena	DRSJZ
Surface	DRSY
Surveying	DRSH
Vehicles	DRSD

Radar (Equipment, Oceanography)	DRSCR
Sea, Seas ...	
Deposits in change to	DRSV
Soundings in change to	DRSJ

Insert note: for further subclasses, see Oceanology

Sea-bed (Oceanography)	DRT
Sea-level data (Oceanography)	DRSJL

DRS/DRT

Ship, Ships ... Insert subheading	
Oceanography	DRSDS
Temperature of oceans and seas	DRST
Thermal properties and phenomena (Oceanography)	DRSS
Tides (Oceanography)	DRSO
(and delete existing entry Tide, Tides ... DRT)	
Waves (Oceanography)	DRSN

URAB/C

Actuators (Automatic control devices)	URAN
Amplifiers (Automatic control devices)	URAP
Automatic control and control devices	URAB
Closed loop automatic control systems	URAH
Continuous control systems, Automatic	URART
Control and control devices, Automatic	URAB
Cybernetics (Automatic control)	URAC
Derivative control systems, Automatic	URAQT
Discontinuous control systems, Automatic	URARU
Electrical actuators (Automatic control devices)	URANU
Electrical variation, Automatic control of	URAV
Electronic actuators (Automatic control devices)	URANV
Feedback (Automatic control)	URAHK
Fluid level, Automatic control of	URATU
Frequency response (Automatic control devices)	URAGK
Gears (Automatic control devices)	URAMX
Governors (Automatic control devices)	URAPT
Hunting (Automatic control devices)	URAFX
Hydraulic actuators (Automatic control devices)	URANS
Integral control systems, Automatic	URAQV
Linear systems (Automatic control)	URAK
Magnetic amplifiers (Automatic control devices)	URAPR
Mathematics of Automatic control	URAE
Mechanical actuators (Automatic control devices)	URANQ
Mechanical movement, Automatic control of	URAT
Meshed closed loop systems (Automatic control)	URAHQ
Negative closed loop systems (Automatic control)	URAHV
Non-linear systems (Automatic control)	URAM
Open loop systems (Automatic control)	URAGW
Pneumatic actuators (Automatic control devices)	URANT
Positive closed loop systems (Automatic control)	URAHT
Pressure, Automatic control of	URATV
Proportional control systems, Automatic	URAQ
Regulators (Automatic control systems)	URARY
Reliability (System engineering)	URAGR
Servomechanisms (Automatic control systems)	URAS
Simple closed loop systems (Automatic control)	URAHN

URAB/C

Stability (Automatic control systems)	URAFV
Static behaviour (Automatic control systems)	URAFT
System engineering	URAF
Time (Automatic control devices)	URAU
Transient response (Automatic control devices)	URAGP
Vacuums, Automatic control of	URATV