## **CONTENTS IN DETAIL**

PREFACE	xix
1 HOW CAN I BREAK AN ENCRYPTED MESSAGE? AND OTHER INTRODUCTORY QUESTIONS	1
What is this book about?  Which technical terms do I need to know?  How can I break an encrypted text?  How do I know what kind of encryption I am dealing with?  I have found an encrypted text in the attic; can you decipher it for me?  I have encrypted a text myself; can you break it?  I have invented a new encryption method; can you take a look at it?  I have solved a famous unsolved cryptogram; what should I do?  What tools do I need for codebreaking?  How can I encrypt my files and email?  I have a comment on this book; what should I do?  Who contributed to this book?	. 4 . 5 . 7 10 11 12 12 13 14 14
2 THE CAESAR CIPHER	1 <i>7</i>
How the Caesar cipher works  How to detect a Caesar cipher  How to break a Caesar cipher.  Success stories.  A prison inmate's cipher  A spy's encrypted sheet  An encrypted journal from the movie The Prestige.  Challenges  Herbert Yardley's first challenge  A series of newspaper advertisements from 1900	20 22 23 23 25 26 26 26
3	
SIMPLE SUBSTITUTION CIPHERS	29
How simple substitution ciphers work.  How to detect a simple substitution cipher.  Example of a cipher that is not a simple substitution cipher.  Index-of-coincidence technique.  How to break a simple substitution cipher.  Performing a frequency analysis.  Guessing frequent words.  Guessing words with unusual letter patterns.	34 36 37 38 39 39

Succes	s stories  How Gary Klivans broke a prison inmate's code  How Kent Boklan broke encrypted diary entries from the Civil War	. 41
	Beatrix Potter's diary	
Challe	nges	
	A prison code	
	A postcard	
	Another postcard	
	An Aristocrat from the ACA	
Unsolv	ed cryptograms	
	An encrypted newspaper ad from 1888	. 48
	The Zodiac Celebrity Cypher	. 49
	The Furlong postcard	. 50
4		
	LE SUBSTITUTION CIPHERS WITHOUT SPACES	
BETW	/EEN WORDS: PATRISTOCRATS	51
How a	Patristocrat, a simple substitution cipher without spaces, works	. 52
	detect a Patristocrat	
How to	b break a Patristocrat	
	Frequency analysis using digraphs	
Succes	s stories	
	A prison message	
	The Cheltenham Number Stone	. 59
Challe	nges	
	Rudyard Kipling's encrypted message	. 60 . 61
Unsolv	ed cryptograms	. 61
	The Dorabella cryptogram	
	The Chinese gold bars mystery	
	James Hampton's notebook	. 03
5		
	LE SUBSTITUTION CIPHERS IN NON-ENGLISH LANGUAGES	65
	ng the language used	
How to	break a non-English simple substitution cipher	
	Frequency analysis and word guessing	
Succes	s stories	
	A girl's pigpen cipher (Spanish)	. 72
	The La Buse cryptogram (French)	. 73
	A postcard with a love message (German)	
CI "	A Mafia message (Italian)	
Challe	nges	
	The third NSA Monday Challenge	
	Christlieb Funk's challenge cryptogram	

Unsolved cryptograms	80
The Voynich manuscript	80
The cigarette case cryptogram	81
NSA's fourth Monday Challenge	
The Moustier altar inscriptions	
'	
6	
HOMOPHONIC CIPHERS	85
How homophonic ciphers work	
How to detect a homophonic cipher	
How to break a homophonic cipher	
Success stories	
The first Zodiac message (Z408)	
The Zodiac Killer's second message (Z340)	
Ferdinand III's letters	
A postcard from Hawaii	
Challenges	
A message to the Zodiac Killer	
Edgar Allan Poe's second challenge	
Unsolved cryptograms	10/
Beale Papers #1 and #3	
The Zodiac Killer's third message (Z13)	
The Zodiac Killer's fourth message (Z32)	
The Scorpion cryptograms	
Henry Debosnys's messages	110
, , , , , , , , , , , , , , , , , , ,	110
7	
7 CODES AND NOMENCLATORS	113
7	113
7 CODES AND NOMENCLATORS	<b>113</b> 115
7 CODES AND NOMENCLATORS Codes	<b>113</b> 115
7 CODES AND NOMENCLATORS Codes. Nomenclators Terminology. The history of codes and nomenclators	113 115 120 120
7 CODES AND NOMENCLATORS Codes. Nomenclators Terminology.	113 115 120 120
7 CODES AND NOMENCLATORS Codes. Nomenclators Terminology. The history of codes and nomenclators	113 115 118 120 120
7 CODES AND NOMENCLATORS  Codes. Nomenclators Terminology. The history of codes and nomenclators Superencryption of codes and nomenclators	113 115 118 120 123 124
CODES AND NOMENCLATORS  Codes.  Nomenclators  Terminology.  The history of codes and nomenclators.  Superencryption of codes and nomenclators.  How to detect a code or nomenclator.	113 115 118 120 123 124
Codes AND NOMENCLATORS  Codes.  Nomenclators  Terminology.  The history of codes and nomenclators  Superencryption of codes and nomenclators  How to detect a code or nomenclator.  How to break a code or nomenclator  Finding the nomenclator table or codebook	113 115 118 120 123 124 126
CODES AND NOMENCLATORS  Codes.  Nomenclators  Terminology.  The history of codes and nomenclators  Superencryption of codes and nomenclators  How to detect a code or nomenclator.  How to break a code or nomenclator.	113 115 120 120 123 124 126 126
CODES AND NOMENCLATORS  Codes.  Nomenclators  Terminology.  The history of codes and nomenclators  Superencryption of codes and nomenclators  How to detect a code or nomenclator.  How to break a code or nomenclator  Finding the nomenclator table or codebook  Exploiting weaknesses of codes and nomenclators	113 115 118 120 123 124 126 126 127
CODES AND NOMENCLATORS  Codes.  Nomenclators  Terminology.  The history of codes and nomenclators.  Superencryption of codes and nomenclators.  How to detect a code or nomenclator.  How to break a code or nomenclator.  Finding the nomenclator table or codebook.  Exploiting weaknesses of codes and nomenclators.  Solving codes and nomenclators with cribs	113 115 120 120 123 124 126 126 129 133
CODES AND NOMENCLATORS  Codes.  Nomenclators  Terminology.  The history of codes and nomenclators.  Superencryption of codes and nomenclators.  How to detect a code or nomenclator.  How to break a code or nomenclator  Finding the nomenclator table or codebook  Exploiting weaknesses of codes and nomenclators  Solving codes and nomenclators with cribs  Success stories.  A telegram sent to Tel Aviv.	113 115 118 120 123 124 126 126 129 133 133
CODES AND NOMENCLATORS  Codes.  Nomenclators  Terminology.  The history of codes and nomenclators.  Superencryption of codes and nomenclators.  How to detect a code or nomenclator.  How to break a code or nomenclator  Finding the nomenclator table or codebook  Exploiting weaknesses of codes and nomenclators  Solving codes and nomenclators with cribs  Success stories.  A telegram sent to Tel Aviv  Encrypted messages by Mary, Queen of Scots	113 115 120 120 124 126 126 133 133 134
CODES AND NOMENCLATORS  Codes.  Nomenclators  Terminology.  The history of codes and nomenclators.  Superencryption of codes and nomenclators.  How to detect a code or nomenclator.  How to break a code or nomenclator.  Finding the nomenclator table or codebook.  Exploiting weaknesses of codes and nomenclators.  Solving codes and nomenclators with cribs.  Success stories.  A telegram sent to Tel Aviv.  Encrypted messages by Mary, Queen of Scots.  Collinson's search expedition.	113 115 120 120 124 126 126 133 133 134 138
CODES AND NOMENCLATORS  Codes.  Nomenclators  Terminology.  The history of codes and nomenclators.  Superencryption of codes and nomenclators.  How to detect a code or nomenclator.  How to break a code or nomenclator  Finding the nomenclator table or codebook  Exploiting weaknesses of codes and nomenclators  Solving codes and nomenclators with cribs  Success stories.  A telegram sent to Tel Aviv  Encrypted messages by Mary, Queen of Scots	113 115 120 120 124 126 126 133 133 134 138
CODES AND NOMENCLATORS  Codes.  Nomenclators  Terminology.  The history of codes and nomenclators  Superencryption of codes and nomenclators  How to detect a code or nomenclator.  How to break a code or nomenclator  Finding the nomenclator table or codebook  Exploiting weaknesses of codes and nomenclators  Solving codes and nomenclators with cribs  Success stories.  A telegram sent to Tel Aviv  Encrypted messages by Mary, Queen of Scots  Collinson's search expedition  The Japanese JN-25 code  Challenges	113 115 120 120 124 126 126 133 133 134 138
CODES AND NOMENCLATORS  Codes.  Nomenclators  Terminology.  The history of codes and nomenclators.  Superencryption of codes and nomenclators  How to detect a code or nomenclator.  How to break a code or nomenclator  Finding the nomenclator table or codebook  Exploiting weaknesses of codes and nomenclators  Solving codes and nomenclators with cribs  Success stories.  A telegram sent to Tel Aviv  Encrypted messages by Mary, Queen of Scots  Collinson's search expedition  The Japanese JN-25 code	113 115 120 123 124 126 126 133 133 134 138 140 142
CODES AND NOMENCLATORS  Codes.  Nomenclators  Terminology.  The history of codes and nomenclators  Superencryption of codes and nomenclators  How to detect a code or nomenclator  How to break a code or nomenclator  Finding the nomenclator table or codebook  Exploiting weaknesses of codes and nomenclators  Solving codes and nomenclators with cribs  Success stories.  A telegram sent to Tel Aviv  Encrypted messages by Mary, Queen of Scots  Collinson's search expedition  The Japanese JN-25 code  Challenges  The Mount Everest telegram	113 115 120 120 123 124 126 133 133 133 134 138 140 142 143
Codes AND NOMENCLATORS  Codes. Nomenclators Terminology. The history of codes and nomenclators Superencryption of codes and nomenclators How to detect a code or nomenclator How to break a code or nomenclator Finding the nomenclator table or codebook Exploiting weaknesses of codes and nomenclators Solving codes and nomenclators with cribs  Success stories.  A telegram sent to Tel Aviv Encrypted messages by Mary, Queen of Scots Collinson's search expedition The Japanese JN-25 code  Challenges The Mount Everest telegram  Unsolved cryptograms The silk dress cryptogram. The train station robbery cryptogram.	113 115 120 120 123 124 126 133 133 133 134 140 142 143 143
Codes AND NOMENCLATORS  Codes .  Nomenclators  Terminology .  The history of codes and nomenclators .  Superencryption of codes and nomenclators .  How to detect a code or nomenclator .  How to break a code or nomenclator .  Finding the nomenclator table or codebook .  Exploiting weaknesses of codes and nomenclators .  Solving codes and nomenclators with cribs .  Success stories .  A telegram sent to Tel Aviv .  Encrypted messages by Mary, Queen of Scots .  Collinson's search expedition .  The Japanese JN-25 code .  Challenges .  The Mount Everest telegram .  Unsolved cryptograms .  The silk dress cryptogram .	113 115 120 120 123 124 126 133 133 134 138 140 142 143 143

8 POLYALPHABETIC CIPHERS 14	<b>17</b>
How a polyalphabetic cipher works	48
	49
	50
	51
	52
	53
	53
	55
Using the index of coincidence	57
	59
	59
0	60
	60
	61
3	61
/ 1	63
, ,	65
71 0 71	69
,	71
	73
	73
0	73
71 3	74
Wood's cryptogram from the crypt	74
9	
COMPLETE COLUMNAR TRANSPOSITION CIPHERS 17	<b>7</b> 5
How complete columnar transposition ciphers work	76
How to detect a complete columnar transposition cipher	
	79
	80
Vowel frequencies and multiple anagramming	82
Success stories	88
	88
The Pablo Waberski spy case	92
Challenges	93
	93
	94
An encrypted "agony" ad	94
	95
	95
An IRA message	96
10	
INCOMPLETE COLUMNAR TRANSPOSITION CIPHERS 19	7
How an incomplete columnar transposition cipher works	98
How to detect an incomplete columnar transposition cipher	

Success stories	
Kryptos K3	206
Antonio Marzi's radio messages	
Challenges	
Yet another IRA message	
The Double Columnar Transposition Reloaded challenge	
Unsolved cryptograms	216
The Calokwacopa aa series	
11	
TURNING GRILLE TRANSPOSITION CIPHERS	219
How turning grille encryption works	221
How to detect a turning grille encryption	
How to break a turning grille encryption	
Success stories	227
Paolo Bonavoglia's turning grille solution	227
André Langie's turning grille solution	229
Karl de Leeuw's turning grille solution	
The Mathias Sandorf cryptogram	
Challenges	
The Friedmans' Christmas card	
Jew-Lee and Bill's Cryptocablegram	
A MysteryTwister challenge	
A Refermions dryphogram	241
12	
DIGRAPH SUBSTITUTION	243
	_
DIGRAPH SUBSTITUTION         How general digraph substitution works          How the Playfair cipher works	244
How general digraph substitution works	244
How general digraph substitution works	244 245 248
How general digraph substitution works  How the Playfair cipher works  How to detect a general digraph substitution  How to detect a Playfair cipher  How to break a digraph substitution	244 245 248 250
How general digraph substitution works  How the Playfair cipher works  How to detect a general digraph substitution  How to detect a Playfair cipher  How to break a digraph substitution  Frequency analysis	244 245 250 252
How general digraph substitution works  How the Playfair cipher works  How to detect a general digraph substitution  How to detect a Playfair cipher  How to break a digraph substitution  Frequency analysis  Dictionary attacks	244 245 250 252 253
How general digraph substitution works  How the Playfair cipher works  How to detect a general digraph substitution  How to detect a Playfair cipher  How to break a digraph substitution  Frequency analysis  Dictionary attacks  Manual attacks	244 245 250 253 253
How general digraph substitution works  How the Playfair cipher works  How to detect a general digraph substitution  How to detect a Playfair cipher  How to break a digraph substitution  Frequency analysis  Dictionary attacks  Manual attacks  Success stories	244 245 250 253 253 253
How general digraph substitution works How the Playfair cipher works How to detect a general digraph substitution How to detect a Playfair cipher How to break a digraph substitution Frequency analysis Dictionary attacks Manual attacks Success stories Thouless's first message	244 245 250 253 253 267 267
How general digraph substitution works  How the Playfair cipher works  How to detect a general digraph substitution  How to detect a Playfair cipher  How to break a digraph substitution  Frequency analysis  Dictionary attacks  Manual attacks  Success stories  Thouless's first message  Thouless's third message	244 245 250 253 253 267 267 268
How general digraph substitution works  How the Playfair cipher works  How to detect a general digraph substitution  How to detect a Playfair cipher  How to break a digraph substitution  Frequency analysis  Dictionary attacks  Manual attacks  Success stories.  Thouless's first message  Thouless's third message  Challenges	244 245 250 253 253 267 268 270
How general digraph substitution works  How the Playfair cipher works  How to detect a general digraph substitution  How to detect a Playfair cipher  How to break a digraph substitution  Frequency analysis  Dictionary attacks  Manual attacks  Success stories  Thouless's first message  Thouless's third message  Challenges  The cryptogram in National Treasure: Book of Secrets	244 245 250 253 253 267 268 270
How general digraph substitution works How the Playfair cipher works How to detect a general digraph substitution How to detect a Playfair cipher How to break a digraph substitution Frequency analysis Dictionary attacks Manual attacks Success stories Thouless's first message Thouless's third message Challenges The cryptogram in National Treasure: Book of Secrets Unsolved cryptograms	244 245 250 253 253 267 268 270 270
How general digraph substitution works  How the Playfair cipher works  How to detect a general digraph substitution  How to detect a Playfair cipher  How to break a digraph substitution  Frequency analysis  Dictionary attacks  Manual attacks  Success stories  Thouless's first message  Thouless's third message  Challenges  The cryptogram in National Treasure: Book of Secrets	244 245 250 253 253 267 268 270 270
How general digraph substitution works How the Playfair cipher works How to detect a general digraph substitution How to break a digraph substitution Frequency analysis Dictionary attacks Manual attacks Success stories. Thouless's first message Thouless's third message Challenges The cryptogram in National Treasure: Book of Secrets Unsolved cryptograms The world record digraph challenge The world record Playfair challenge	244 245 250 253 253 267 268 270 270
How general digraph substitution works How the Playfair cipher works How to detect a general digraph substitution How to break a digraph substitution Frequency analysis Dictionary attacks Manual attacks Success stories Thouless's first message Thouless's third message Challenges The cryptogram in National Treasure: Book of Secrets Unsolved cryptograms The world record digraph challenge The world record Playfair challenge	244 245 250 253 253 267 267 270 270 270
How general digraph substitution works How the Playfair cipher works How to detect a general digraph substitution How to detect a Playfair cipher How to break a digraph substitution Frequency analysis Dictionary attacks Manual attacks Success stories Thouless's first message Thouless's third message Challenges The cryptogram in National Treasure: Book of Secrets Unsolved cryptograms The world record digraph challenge The world record Playfair challenge	244
How general digraph substitution works How the Playfair cipher works How to detect a general digraph substitution How to detect a Playfair cipher How to break a digraph substitution Frequency analysis Dictionary attacks Manual attacks  Success stories Thouless's first message Thouless's third message Challenges The cryptogram in National Treasure: Book of Secrets Unsolved cryptograms The world record digraph challenge The world record Playfair challenge The world record Playfair challenge  13 ABBREVIATION CIPHERS How abbreviation ciphers work	244
How general digraph substitution works How the Playfair cipher works How to detect a general digraph substitution. How to detect a Playfair cipher How to break a digraph substitution. Frequency analysis Dictionary attacks Manual attacks  Success stories. Thouless's first message Thouless's third message Challenges The cryptogram in National Treasure: Book of Secrets Unsolved cryptograms The world record digraph challenge The world record Playfair challenge The world record Playfair challenge  13 ABBREVIATION CIPHERS How abbreviation ciphers work How to detect an abbreviation cipher.	244
How general digraph substitution works How the Playfair cipher works How to detect a general digraph substitution How to detect a Playfair cipher How to break a digraph substitution Frequency analysis Dictionary attacks Manual attacks  Success stories Thouless's first message Thouless's third message Challenges The cryptogram in National Treasure: Book of Secrets Unsolved cryptograms The world record digraph challenge The world record Playfair challenge The world record Playfair challenge  13 ABBREVIATION CIPHERS How abbreviation ciphers work	244

Challenges	281
A birthday card	
Unsolved cryptograms	
The Tamám Shud mystery	
Two unsolved postcards	283
14	
DICTIONARY CODES AND BOOK CIPHERS	285
How dictionary codes and book ciphers work	286
How to detect a dictionary code or book cipher	
How to break a dictionary code or book cipher	290
Identifying the book or dictionary	290
Reconstructing the dictionary	290
Treating a book cipher like a simple substitution cipher	293
Success stories	204
Nicholas Trist's key book	
How William Friedman broke a Hindu conspiracy encryption	296
A dictionary code message sent to Robert E. Lee	
Challenges	
Dan Brown's book cipher challenge	
A dictionary code challenge	
Unsolved cryptograms	
Two encrypted newspaper advertisements from 1873	301
15	
ADDITIONAL ENCRYPTION METHODS	303
Cipher tools	304
Voice encryption	
Code talking	
Shorthand (stenography)	307
Hidden messages (steganography)	
Success story: How Elonka found a hidden message on a tombstone.	
Success story: Deciphering Steganographia	
Success story: Mysterious Stranger message	
Challenge: Another steganographic message by the Friedmans Cipher machines	
Cipiler machines	322
16	
SOLVING CIPHERS WITH HILL CLIMBING	329
Solving simple substitution ciphers with hill climbing	
Simulated annealing	
Success story: Bart Wenmeckers's solution to the Baring-Gould crypto	
Success story: The Florida murder case cryptogram	
Solving a homophonic cipher with simulated annealing	
Success story: Dhavare, Low, and Stamp's Zodiac Killer solutions Solving a Vigenère cipher with hill climbing	
Success story: Jim Gillogly's solution to IRA Vigenère cryptograms	
Solving a columnar transposition with hill climbing	
Success story: Iim Gillogly's solution to IRA transposition cryptograms	344

Success story: Richard Bean's solution to the last unsolved IRA cryptogram Success story: George Lasry's solution of the double columnar	. 346
transposition challenge	348
Solving a turning grille cipher with hill climbing	349
Success story: Bart Wenmeckers's solution to a turning grille cryptogram	
Success story: Armin Krauss's solution to a turning grille challenge	
Solving a general digraph substitution with hill climbing	
Success story: Some digraph challenges	353
Solving a Playfair cipher with hill climbing	
Success story: Dan Girard's solution to the Cheltenham Letter Stone	
Success story: Playfair world records	
Solving machine ciphers with hill climbing	
Success story: Breaking original Enigma messages	. 338
17 WHAT NEXT?	361
More unsolved cryptograms	
The fourth Kryptos message (K4)	
The Rubin cryptogram	
Ricky McCormick's encrypted notes	. 364
The carrier pigeon message from World War II	
The encrypted NKRYPT pillars	
Even more unsolved cryptograms	
Codebreaking tools	
Other books about codebreaking	
Websites about codebreaking	
Journals and newsletters	
Events	
Events	. 3//
A KRYPTOS	379
RRIPIOS	3/9
В	
USEFUL LANGUAGE STATISTICS	389
c	
GLOSSARY	395
D	
MORSE CODE	403
E	
FIGURE SOURCES	405
F	
REFERENCES	417
INDEX	447
<del></del> -	