Solved problems from *Elementary Cryptanalysis: A Study of Ciphers and Their Solution* by Helen Fouché Gaines, American Photographic Publishing Co., Boston, 1943.

1. By Piccola.
On peut être Napoleon sans être son ami, mes enfants!
Solution: Take the first letter of each word: *open sesame.*

2. By B. Natural.
FOR SALE! Spring coats. All fine Scotch serge, for ensembles. Stoat trimmed, fashioned right. Black shirred lining, striped. Effective for brides. Act quickly. - Abraham Batz, 552 Broad, Telephone Exchange 7104–R.
Solution: (By G. Sadowski) Take the second letter of every word: *oa police on trail hit for cuba 5rex1.*

5. By Piccola.
Do not send for any supplies before Monday, at earliest. Order once only, as men in charge are feeling sore about your threat to encourage the mutiny at Ford's. - Wilson.
Solution: Take every third word: *send supplies at once men are about to mutiny - Wilson.*

6. By Piccola.

```
AWITH ANYSE NDFOR ITYOU MUSTB EFEAR
THECA NHITT RYABO UREOU TISEC HIYOU
ANDMY TIONC UPCRE ASKTO CNADQ.
```

Solution: Take every third letter: *why not use a hair brush on your son.*

7. By Titogi.

```
TSSNI HAYST INTPI SEROO IAASN.
```

Also this:

```
SHCVI EOLEA EWERM.
```

Solutions: Arrange in a five by five square:

t	s	s	n	i
h	a	y	s	t
i	n	t	p	i
s	e	r	o	o
i	a	a	s	n

And read by columns: *this is an easy transposition.*

The second is arranged in a three by five square:

s	h	c	v	i
e	o	l	e	a
e	w	e	r	m

And read by columns: *see how clever i am.*

8. By G. A. Slight. Hint: "Something fond in every school-book, IF found!"

```
TGHMR RIAYE XNUEE SDEXS HMTID EQUOA YROAU
NPUET GTITE SYSNO AQNXA TUADS ISHX.
```

Solution: Arrange by diagonals in an eight by eight square:

t	h	r	e	e	h	u	n
g	r	y	e	s	q	u	i
m	a	u	x	e	a	t	n
i	n	e	d	o	g	s	x
x	d	i	r	t	y	n	a
s	t	y	e	s	q	u	i
m	a	u	e	a	t	s	h
o	p	t	o	a	d	s	x

And read by rows.

9. By Piccola.

```
WINTA HDAES WHLET YLWAI LHOQL ASSSA SQ.
```

Solution: Arrange in a eight by four:

w	i	n	t	a	h	d	a
e	s	w	h	l	e	t	y
l	w	a	i	l	h	o	q
l	a	s	s	s	a	s	q

And read by columns: *well is wan was this all she had to say.*

10. By Nemo. (Magic Square)

```
LEASU  LTSGM SLOEI EOIME ARNSA SRCDE KIUSU
HEMAQ LYSPR MEOA.
```

Solution: Write into a 7 by 7:

l	e	a	s	u	l	t
s	g	m	s	l	o	e
i	e	o	i	m	e	a
r	n	s	a	s	r	c
d	e	k	i	u	s	u
h	e	m	a	q	l	y
s	p	r	m	e	o	a

and read off by this magic square:

20	11	2	49	40	31	22
12	3	43	41	32	23	21
4	44	42	33	24	15	13
45	36	34	25	16	14	5
37	35	26	17	8	6	46
29	27	18	9	7	47	38
28	19	10	1	48	39	30

That is: *Magic Squares are simple to make. Shall I send you some rules?*

11. By THE ADMIRAL.

```
BSPNT EAEFT VVOAN EYAPU ZSETP THMNA TAEER
SDSSK PSJES TYSEA LRHIA SKSNT TEYWO FTHMW
YKEFE NNHCI EHHUM IHITE OHGES UCGDI OOWEA
SASNE RHMAA SSLER GSMNE DTHKE MLUAE TVMFO
RAIWP AYAMA EYAD.
```

Solution: (By Mr. Who) Write by rows into a 22 by 8:

```
bspnt eaeft vvoan eyapu zs
etpth mnata eersd sskps je
styse alrhi asksn tteyw of
thmwy kefen nhcie hhumi hi
teohg esucg dioow easas ne
rhmaa ssler gsmne dthke ml
uaetv mfora iwpay amaey ad
```

and read by columns:

Best trust the happy moments, what they gave

Makes man less fearful of the certain grave.
And gives his works compassion and new eyes,
The days that make us happy, make us wise.
yz John Masefield.

12. By THE ADMIRAL.

```
AAFRS RTNEA RBNEE OHSRL TIAPD UEOSI ITTAT
GLFOT SOUSH HEPNY.
```

Solution: (By Mr. Who) Write by rows into a 10 by 5:

```
aafrs rtnea
rbnee ohsrl
tiapd ueosi
ittat glfot
soush hepny
```

and read by columns: *Art is a bit of nature passed through the lens of personality.*

13. By DAN SURR (Received from General Headquarters following a skirmish).

```
FAATR MNOAT ILVIS YGUCF FIOOE PSNKL TOINV
RTTOA HNDNE ERENN BMPUN PORRK AUOME ANAIE
TSSBN RGTGS TTIEE ICTHR.
```

Solution: (By Mr. Who) Write by rows into a 10 by 9:

```
faatr mnoat
ilvis ygucf
fiooe psnkl
toinv rttoa
hndne erenn
bmpun porrk
auome anaie
tssbn rgtgs
ttiee icthr
```

and read columns: *Fifth battalion must avoid position number seven. Enemy preparing strong counterattack on right flank esr.*

16. By PICCOLA (Ordinary columnar).

```
OEEHE ATFLS VASYC IOAED QOHDF MCMTC POGEO
REUGM IEFUO GCYWG DQUUI ALSIE RNORN RRATO AQ.
```

Solution: (By Mr. Who) Write by rows into an 8 by 9 then permute rows according to 4 1 8 2 3 7 6 9 5:

```
4  fmcm tcpo
1  oeeh eatf
8  lsie rnor
2  lsva syci
3  oaed qohd
7  wgdq uuia
6  iefu ogcy
9  nrra toaq
5  geor eugm
```

Reading columns: *Following message received from headquarters quote: Can you go up to chicago friday? qm*

17. By Kris Krost Hint: "Nihilist."

```
TCIGR HNLAG TLISA AOMOR NRIMN NETRN KSAOE
ISDLE IKHHH ERDFT ASOIE TIHNE BTKE.
```

Solution: Arrange in an eight by eight by northeast (up and rightwards) diagonals. Then permute the columns according to 2 6 4 7 3 5 1 8:

	2	6	4	7	3	5	1	8
1	i	n	g	t	h	a	t	i
2	r	e	s	e	a	r	c	h
3	l	o	o	k	i	n	g	f
4	l	i	n	d	m	a	n	i
5	o	r	s	o	m	e	t	h
6	i	s	l	i	k	e	a	b
7	n	t	h	e	d	a	r	k
8	s	n	t	t	h	e	r	e

then read rows, permuting by same as columns.

20. By Titogi. Hint: "Ordinary columnar."

```
TWEIS IAHOD SPODE RITON JEUTA LASYS HNTST
```

Solution: Write words by column into a seven by six then permute columns according the key word "adjust", that is: 1 2 3 6 4 5:

1	2	3	6	4	5
t	h	e	k	e	y
w	o	r	d	u	s
e	d	i	n	t	h
i	s	t	r	a	n
s	p	o	s	i	t
i	o	n	w	a	s
a	d	j	u	s	t

21. By Piccola. (Ordinary columnar).

```
TEEPH BMEFE BNTUX AVEHA RDWXI ELNCV EVROI
TAFUL BORON THMTM UEFSH OETTL EDAKE EGDNL
EENNI OOEBE EERST NRYDC NXONO ENEX.
```

(And now try this, Probable word: EXAMPLE).

```
HELKL TIPNW HSESI AXSRR EEACM CPLTL TEOSD
RAOEE XTIHY EUHNG EMYTA SLMAA DSC.
```

Solution: (By Mr. Who) Write by rows into an 11 by 9 and permute rows according to 2 6 3 9 4 5 1 7 8:

```
2  ntuxa vehar d
6  oettl edake e
3  wxiel ncvev r
9  dcnxo noene x
4  oitaf ulbor o
5  nthmt muefs h
1  teeph bmefe b
7  gdnle ennio o
8  ebeee rstnr y
```

And read: *Now, don't get excited but in the next example all of the even numbered columns have been taken off in reverse order x, Oh Boy!*

Following this advice, write into a 7 by 9, using the same permutation, reversing even rows:

```
2  pnwhs es =R=> se shwnp
6  raoee xt =R=> tx eeoar
3  iaxsr re ===> ia xsrre
9  lmaad sc ===> lm aadsc
4  eacmc pl =R=> lp cmcae
5  tlteo sd ===> tl teosd
1  helkl ti ===> he lklti
7  ihyeu hn ===> ih yeuhn
8  gemyt as =R=> sa tymeg
```

Reading: *Still this example has exactly the same keyword columnars as the preceding.*

22. BY PICCOLA. Hint: "Probable word: CRYPTOGRAMS", also that it is a turning grille.

```
TSTHE TTUSH OEDGF RDOEO GRISA AMSNM QEUGI
BRIEL NOSTH SICLS ETSWA THABR YPAE.
```

SOLUTION: First write words by rows into a eight by eight:

t	s	t	h	e	t	t	u
s	h	o	e	d	g	f	r
d	o	e	o	g	r	i	s
a	a	n	s	n	m	q	e
u	g	i	b	r	i	e	l
n	o	s	t	h	s	i	c
l	s	e	t	s	w	a	t
h	a	b	r	y	p	a	e

then read with the four positions of the following grille (and "X" marks a hole):

		X	X	X			
X			X	X		X	
				X			
		X				X	
	X		X	X			X
X						X	

giving the solution: *the dog insists tha-t the same grille wa-s used for both cryptograms quien sabe.* Hyphens mark a one-quarter clockwise turn of the grille.

45. By Piccola.

```
SCYJT OPNRM JTUEA WSROR OAEPQ RJCRO ARMPH
QKJQS RSJHA XPFKE AQRMY SRPQP MPSEC AHGAW
SROPE EESHA QOPVS HIROA QPFAE AHIRO PHNPQ
RJHTF UAMCJ MRYRO MAAWA EEBTQ RWMSR ASRJH
AIMJT KUAEJ WPHJR OAMPH NQAAW OPRYJ TQAAL.
```

Solution:

```
ciphtertext: P U G N A C I O S B D E F H J K L M Q R T V W X Y Z
plaintext:   a b c d e f g h i j k l m n o p q r s t u v w x y z
```

```
IFYOU HADTR OUBLE WITHT HELAS TOFTH ETRAN
SPOSI TIONE XAMPL ESTRY ITASA RAILF ENCEW
ITHAL LLINE SHAVI NGTHE SAMEL ENGTH ANDAS
TONUM BERFO RTYTH REEWE LLJUS TWRIT EITON
EGROU PBELO WANOT HERAN DSEEW HATYO USEEQ
```

49. By Piccola.

```
PBKLABEI CDJ DBI LYPK LD OIX LYI PK VYAL?
AGFYAMILK LYIKI DC AGG LD OIX-VDJRK LYI CPBRPBN
XDQ AJI? QK JISPBRK LYAL ABR MX QF PL FPEO LD
IBR VYPEY OBDV XDQ PC EGIAJ FIJCIELGX PK
SIABPBN PLK. AJPKLDEJAL AB BDL PK LYPK BD!
```

Solution: This is a simple substitution using the key-word *American Cryptogram Association,* but then you have to read it backwards! The unreversed text is:

```
instance for one this to key the is what?
alphabets these of all to key-words the finding
you are? us reminds that and by up it pick to
end which know you if clear perfectly is
meaning its. aristocrat an not is this no!
```