

Peter can decode this with a **TRACY** Secret Code Maker by setting the slide with "P" under the arrow, finding each letter of the coded message on the slide and writing the letter above on the body of the Code Maker. When he comes to the numbers he finds them on the lower edge of the slide and writes the ones below on the body of the Code Maker, just the opposite of what was done in coding the message.

To make things a little harder we can use the reversed alphabet in the center of the slide instead of the one at the top of the slide. With the slide set at the same place, finding the letters of the message as before at the top of the body of the Code Maker but writing the letters in the reversed alphabet at the center of the slide the same message will look like this:

"XPRQ CJOF UJUF SR IL 7796 QVWBDCQ."

TRANSPOSITION CODES. In this type of code the letters of the message are moved about or scrambled instead of being replaced by other letters. This must be done by some plan that is known to the one for whom the message is intended. Suppose we write the same message in blocks or squares of sixteen letters like this:

MUST	1130
HAVE	TONI
PAPE	GHTa
RSBY	bcd e

The letters a, b, c, d, and e are used only to complete the square. Now we write the message from these squares reading from top to bottom, one line at a time, like this:

"MHPR UASS SVPB TEEY 1TGB 1OHC 3NTD OIAE"

This can be decoded by putting it back into squares of sixteen letters and writing it off in the direction it was originally written by anyone knowing the original plan.

COMBINATION SUBSTITUTION and TRANSPOSITION CODES. If we first code this message by substitution using "P" as the key we have, as in our first example: "CKIJ XQLU FQFUHI RO 7796 JEDYWXJ." Now we write this in a rectangle like this:

CKIJXQLUF
QFUHIRO77
96JEDYWXJ

and writing from top to bottom as with the squares gives:

"CQ9 KF6 IUJ JHE XID QRY LOW U7X F7J."

By changing the spacing it can be made to look like a plain substitution code—"CQ9K F 6IUJJ HEXIDQRYL OWU 7XF7J." This change of spacing makes it no harder to decode if you have a **TRACY** Secret Code Maker and know the key and the transposition plan.

WORD KEYS. A more difficult type of substitution code uses a word or several words as a key. Let's code the same message using "PETER" as the key. The easiest way is to write the message first with the key above it like this:

Pete rPet erPete rP eter PeterPe
"MUST HAVE PAPERS BY 1130 TONIGHT"

Then set the Code Maker to the first letter of the key "P" and code all the letters in the message that are directly under a "P" in the key like this:

Pete rPet erPete rP eter PeterPe
"MUST HAVE PAPERS BY 1130 TONIGHT"
C Q F O J X

Now move the slide of the Code Maker to the second letter of the key "E" and code all the letters of the message under "E" in the key. It will look like this:

Pete rPet erPete rP eter PeterPe
"MUST HAVE PAPERS BY 1130 TONIGHT"
CZ Y QA U FJ X 0 6 8 JT N XY

Next set the slide to the third key letter "T" and code all the letters under "T," thus:

Pete rPet erPete rP eter PeterPe
"MUST HAVE PAPERS BY 1130 TONIGHT"
CZMY QAY U FJLX 0 618 JTHN XY

Continue this way until the whole message has been coded. It will then look like this:

Pete rPet erPete rP eter PeterPe
"MUST HAVE PAPERS BY 1130 TONIGHT"
CZMY ZQAY USFJLX TO 6188 JTHNYXY

It takes a Secret Code Maker to change "CZMYZ QAYUSFJLXTO 6188 JTHNYXY" back to "Must have papers by 11:30 tonight," and even the Code Maker won't help if you don't know the code word "Peter."

OTHER KEYS. There is no limit to the number of keys that can be used with **TRACY** Secret Code Maker. The street address or telephone number of the sender or a birthday or other date or any word or words or number or combination can be used. The alphabet itself could be used as the key by writing it above the message to be coded and coding each letter of the message with the letter above it as the key, this way:

abcd efgh ijklmn op qrst uvwxyza
"MUST HAVE PAPERS BY 1130 TONIGHT"
NWVX MGC M YKAQWK UA 8920 OKKGFHU

The message itself could be used as a key by starting with a single known key letter. Using "Q" as the first key letter it would look like this:

Qmus thav epaper sb yll3 Otonigh
 "MUST HAVE PAPERS BY 1130 TONIGHT"
 DHNM BIWA UQQUWK UA 6243 DICWPOB

In decoding this each letter as decoded becomes the key for decoding the next letter.

Any of these substitution codes can be mixed up further by the use of a transposition pattern. This does not have to be a square or rectangle or of any particular size. The last coded message above could be arranged like this:

D H N M B	A 6 2 4 3
I W A U	D I C W
Q Q U	P O B
W K	a b
U	c

and written off from upper left to lower right, diagonally, like this: "DIQWU HWQK NAU MU B ADPAC 6IOB 2CB 4W 3," then by changing the spacing we could make it look like it had been arranged in a 3 by 10 rectangle, thus:

"DIQWUHWQKN AUMUBADPAC 6IOB2CB4W3."

Another possible pattern would be diagonal squares—

D	6
H N	2 4
M B I	3 D I
W A U Q	C W P O
Q U W	B z y
K U	x w
A	v

written off diagonally from upper right to lower left thus: "DHMW NBAQ IUUK QWUA 623C 4DWB IPZX OYWV."

You and your friends can have loads of fun with **TRACY** Secret Code Makers. You can have secret clubs, keep a secret diary and have still more fun trying to figure out or decode messages you are not supposed to read. Be sure all your friends get these **TRACY** Secret Code Makers.

More Code Makers mean more fun.