A NOTE ON CATOPTRONS

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The suggestion that Palindromes may be enriched must be a traumatic statement to practitioners of that artful craft, so we will just say that possibly its image may be changed. We ourselves have labored at the making of Palindromes (often to bring forth a mouse) and are aware of the beauty and difficulty of them. We are not damning with faint praise.

A Palindrome reverses letter-order or word-order, but not the letters themselves. Letter-reflection, and the sentences that can result, presents a large, little-exploited field of recreational wordplay. For this recreation we propose the word CATOPTRONICS; actual examples may then be called CATOPTRONS. Both terms are based on a Greek word for mirror.

For our purposes we divide Catoptrons into three categories: horizontal reflections, or H; vertical reflections, or V; and a combination of the two reflections, or HV. The H, V and HV refer to the direction of the line (or lines) across which a letter is reflected; these lines are shown dashed in the examples below. For instance, the letter B can be reflected horizontally without change:

\[
\begin{array}{c|c|c}
\text{B} & \text{B} \\
\end{array}
\]

The letter A reflects vertically into itself:

\[
\begin{array}{c|c|c}
\text{A} & \text{A} \\
\end{array}
\]

The letter Z can be reflected twice, HV, to give us back its original form. This double reflection is equivalent to rotating the letter around its center 180° in its plane:

\[
\begin{array}{c|c|c}
\text{Z} & \text{Z} & \text{Z} \\
\end{array}
\]

Of course, there are more letters in each category with these potentialities. The reader may easily discover them for himself.

In passing, we note that nomenclature seems far from stabilized in this field. The suggestion a Mangmann conceives of formation a Mangelmann Curiosities of the entire genre, which is added to all three of the Palindromic Trigga here.

The E reflects itself. But can it become a mouse?

One possibility is for the favor of the PALINDROME. The letters of the word may take center stage and wordplay to a new pleasure. The reader, and possibly the writing machine do not need to be divided. A letterer can then reflect the same letter as many times as he wishes without becoming unreadable.

For instance, the letter Z may be written as \( Z \), on hand, or if written on a machine, it is added to itself. All three of the letters may be written together, and the reader may discover other electronic transformations of the word.

In passing, we note that nomenclature seems far from standardized and HV may take the
The typewriter yields only a few exact mirror-images. Capital E reflects horizontally; capital A reflects vertically, as does Y. But capital M reflects horizontally to capital W, and lower-case b becomes d in V and p in H.

One finds rather scant pickings when he explores the catoptronic possibilities of the typewriter. Frankly, we would eliminate it in favor of longhand -- if we break with the tyranny of the machine and take certain liberties, we can enlarge the stockpile of usable letters and words, and generally have more fun. Too, there is an aesthetic pleasure to be derived from the use of pen or pencil which the machine does not give -- and one does not have to be a professional letterer, either, to obtain rewarding results. The only thing we need ask ourselves is, Are our compositions in longhand easily readable? If not, the liberties taken are not justified.

For reasons that will become clear, we suggest the following letters be done in longhand. Write a as :, which reflects in HV as e. We think $\exists$ is legible -- and e is a very useful letter to have on hand, with its high frequency occurrence! N is the same in HV; if written N it becomes $\exists$ in V, and $\exists$ in H. Another useful letter is added by this small liberty. T, if written $\top$, is reflectable in all three categories; as $\top$ it is only usable in the V category. E, written $\exists$, may be used in V reflections, as can Y for R. Readers may discover other letter-adaptations which will enlarge the catoptronic stockpile. One's conscience, or communication-sense, will test their validity.

We are composing, for instance, a vertically-reflected sentence, and need a B. B does not properly reflect vertically into itself. But if written as b, which reflects vertically as d, we will perhaps succeed in our effort. And we do believe that upper and lower case may be combined in Catoptronics: legibility is the only criterion.

A few words and sentences from the three categories of V, H and HV are presented below. They are printed in longhand and take the liberties spoken of above.
VERTICAL This is the letter-ordering of the Palindrome, and there are a number of letters which reflect vertically. Individual words which fulfill catoptronic requirements are not too difficult to find:

```
brow | word   tol | biot
p|q   p|q
```

However, sentences are harder to discover:

```
you | d | buoy

A | p | drapay

animal | no | bqqyar | yapped | on | lamina

live | on | time | xmit | no | evil
```

and we must not forget the well-known palindrome and catoptron TOOHOTTOOOT. This is one of the few examples of Catoptrons obtainable on the typewriter alone; OHM, which reflects HV to WHO, is another.

HORIZONTAL Using the longhand N and the + for T, many sentences present themselves in this category:

```
HEXED_COOK_HID_IN_ICEBOX
HEXED_COOK_HID_DICED_CHICKEN
+IDBI+IN_ICEBOX
INHIBITED_HE_EXHIBITED_IONIC_CODEX_IN
_HIDDEN_NOOK_COOKBOOK_I_THINK
```

and that is quite enough of that cook, with his troubles! On other subjects, we may make:

```
EXCI+ED_BEE_BI+_BE+H_ON_NECK
```

and

```
+OKIO_CHICK_IN_OBI-NICE_CIB1133
```

with its questionable overtones.
which translated means Faith Says She's Thief. (But, knowing her, we don't believe it.)

Finally, sentences can be written vertically instead of horizontally, and then subjected to a V reflection or a H reflection. We give two examples; the left-hand one vertically reflected and the right-hand one horizontally reflected:

Now no sex at the sex on wood
pie on spoons; spoons no egg

To test the validity of the following, turn the magazine upside down.
The reader who has gone along with us this far is now in a position to consider the truth or falsity of the following mathematical statements:

\[ 9 + 9 < 18 \]
\[ 88 - 66 = 11 \]
\[ 0 > \infty \]

I hope that you will have pleasure reflecting on my reflections about reflections, and that you will agree that they do change the image of the Palindrome. It is hoped that you will attempt the composition of Catoptrons in all three categories. The field has not been deeply explored, we think, and there is room for everyone.

QUERY

Can the readers of Word Ways find a word (or name) of n letters long and ending with the nth letter of the alphabet, varying n from 1 to 26? The best results of Darryl Francis are given below; the only missing words are those ending in V, W, X and Z. Unasterisked words come from Webster's Unabridged, and asterisked words from references such as Dorland's Medical Dictionary and the Times Index-Gazetteer.


Similarly, can one find a word (or name) of n letters ending with the \((27 - n)\)th letter of the alphabet?

*hemangioendothelioblastoma, -----, *methylene-citryl-salicylic, -----, isonicotinoylhydrazine, -----, slaughter-threatening, ballistocardiograph, labyrintheticbranchial, *Ancoquishchayoj, undersheriffwicks, noninstrumental, libertarianism, vaccination, whillaballoo, thunderclap, qaraqalpqaq, godmother, slowness, content, bureau, sclav, slow, box, my, z

LOGOMAIA

This color can match these words below, can be be

CAN YOU SCORE 57

The best results of Rod's quest of Rocked Cal. came up, that its E prince, times 88 of double and time with an.

Besides some TA and COST, one obtained by playing words GO, WOB and right so that formed along a slight possibility.

The word LODGEER or constructed lands on a blue 88-point solution.

Josefa B.

Using any score (if desired), if one is restricted, can be achieved T is above the.