THE DOROTHY CRAIN SERIES

Ciphers
For the Little Folks

A Method of Teaching
The Greatest Work of Sir Francis Bacon
Baron of Verulam, Viscount St. Alban

Designed to Stimulate Interest in Reading, Writing and Number Work,
by Cultivating the Use of an Observant Eye

With an
Appendix on the Origin, History and Designing of the Alphabet
By Helen Louise Ricketts

RIVERBANK LABORATORIES
EDUCATIONAL DEPARTMENT
DOROTHY CRAIN, *Director of Kindergarten*
GENEVA, ILLINOIS

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GEORGE FABYAN

INTRODUCTION

These lessons are presented as suggestions with the idea that the teacher or parent will adapt, lengthen, shorten, or remake, as the needs of the little folk demand. Their value will depend on the way in which they are brought before the children.

The aim is not to impose on children adult knowledge and accomplishments, but to afford

them experiences that on their own account appeal to them, and at the same time have educational value and significance.

Children should have a great deal of handwork; they do their best thinking when they are planning something to do with their hands. Their attention is much more easily focused upon something they are doing with their hands than upon something which they hear or read. Building with the blocks, paper folding and cutting, painting and drawing, and what is known as constructive work, are all means of self-expression.

An explanatory paragraph will accompany each lesson. In order that the workings of the Biliteral Cipher, from which these lessons were derived, may be more readily understood, a short explanation will follow for the guidance of the teacher or parent, to whom it is left to choose the best methods of explaining the Cipher to the children, step by step.

The Biliteral Cipher devised by Francis Bacon and explained in detail in his Advancement of Learning (see Spedding's English edition of Bacon's Works, Vol. IV, pages 444-447) is based upon the mathematical fact that the transposition of two objects (blocks, letters, etc.) will yield 32 dissimilar combinations, of which only 24 would be necessary to represent all the letters in our alphabet (*i* and *j*, *u* and *v* being used interchangeably in the 16th Century). Lesson I of this series shows the 24 combinations used by Bacon, and constitutes the "Code" or "Key."

By reference to Lesson I it will be seen that variations in the grouping of *a*'s and *b*'s, five at a time, are made to represent each letter of the alphabet, except that *i* and *j* and *u* and *v* are regarded as interchangeable. In all the succeeding lessons, objects are chosen to represent *a* or *b*, and the order or succession of their grouping, when compared with the code (Lesson I), will determine the letter they represent.

Words in a language being made up simply of combinations of letters, it is clear that as long as only two differences are available, words can be built up by making the proper combinations according to the code. Any differences will do, and to this fact are due the possibilities for the exercise of the thinking powers, imagination, and skill on the part of children in this work. Lesson VI, for example, combines elements of instruction and play in an interesting manner. The transmission of words and sentences can be accomplished even without the use of objects, for two different motions of the fingers or hands will do; likewise two different sounds—in fact any differences perceptible to any of the five senses can be used. "Wig-wagging" as used by the U. S. Army Signal Service is based upon this Cipher. Thus many games can be planned which will have an educational value in training to a higher efficiency every faculty the child possesses.

The lessons have been arranged in a sequence according to their increasing order of complexity, leading up gradually to the presentation of the possibility of sending hidden messages in an open communication without arousing any suspicion as to the presence of anything secret. In Lesson XIV the phrase "Biliteral Cipher" is made to contain the hidden word "Key" by the use of a capital letter for the *a* form and a small letter for the *b* form. Of course the differences between the *a* form and the *b* form can be made much less apparent than the differences between capital and small letters; in fact the differences can be made so small that they would be imperceptible to the casual observer, but it still would be possible to distinguish them. It is in this phase of the work that accuracy and care in the formation of letters may be taught, not only in script or handwriting, but also in printing, both of which are now fast becoming lost arts. Cipher writing, if properly taught, will give practice in penmanship that will be interesting and not onerous to children.

The adaptability of the Biliteral Cipher to the manifold uses to which it can be put makes its pedagogical possibilities far-reaching; and the field for the exercise of the faculties of both teacher and pupil, parent and child, is one of the broadest, most instructive and entertaining that has ever been opened to the little folks of primary age.

Any further information which the instructor may care to secure will be furnished on application to the Riverbank Laboratories.

Dorothy Crain

TRAINING THE EYE TO SEE

That the faculty of sight needs training will be admitted by every reasonable person, but

how best to give the eye this advantage is a question which has never been settled. An English hunter, the author of a book on Norway, gives some interesting hints upon the matter:

> The reason that the different characteristics of tracks are not observed by the untrained eye is not because they are so very small as to be invisible, but because they are—to that eye—so inconspicuous as to escape notice. In the same way the townsman will stare straight at a grouse in the heather, or a trout poised above the gravel in the brook, and will not see them; not because they are too small, but because he does not know what they look like in those positions. He does not know, in fact, what he is looking for, and a magnifying glass would in no wise help him. To the man who does not know what to look for, the lens may be a hindrance, because it alters the proportions to which his mind is accustomed, and still more because its field is too limited.—Youth's Companion.

LESSON I

This lesson is intended to teach the code or key. Attention is called to the mathematical regularity of its construction, which will enable the teacher to demonstrate it in a very simple manner. First write the column of numbers from 1 to 24. Then opposite number 1 place five red circles in a row. Under the last one in this row, and on a line with number 2 place a blue circle, and continue alternating red and blue down the column. Then under the 4th red circle in the 1st row place another red one, then two blue ones, alternating 2 reds with 2 blues down the column. In the 3rd column the reds and blues alternate in sets of four; in the 2nd column, in sets of eight, and in the 1st column, in sets of 16. Since only 24 combinations are necessary, the last eight of the possible 32 have been omitted. Now opposite these 24 combinations place the letters of the alphabet in regular order, remembering that I and J, U and V are used interchangeably.

To facilitate the use of the code the red and the blue circles may be designated by small *a* and small *b* respectively. The right hand section of this lesson gives the code worked out on this plan and makes future reference easy. In all the succeeding lessons one form (whether it be blocks, beads, yarn or what not) will be called the *a* form, and the other will be called the *b* form. On account of the nature of the code, the *a* forms always predominate; and in getting together materials for this work, the teacher should be guided accordingly.
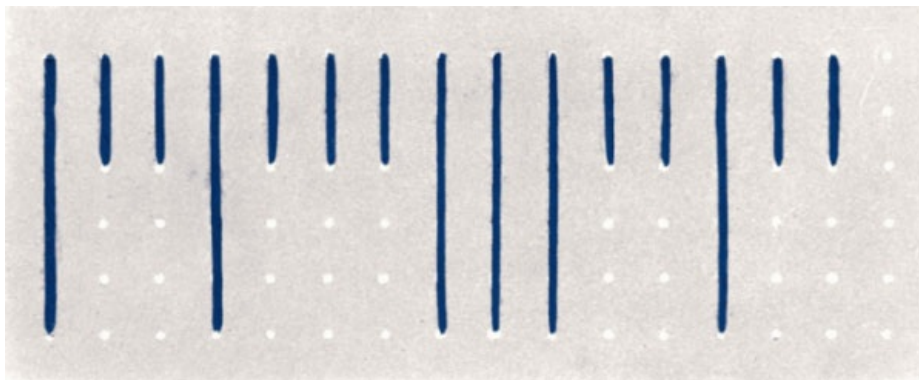
|							
1	● ● ● ● ●	A	= a a a a a
2	● ● ● ● ●	B	= a a a a b
3	● ● ● ● ●	C	= a a a b a
4	● ● ● ● ●	D	= a a a b b
5	● ● ● ● ●	E	= a a b a a
6	● ● ● ● ●	F	= a a b a b
7	● ● ● ● ●	G	= a a b b a
8	● ● ● ● ●	H	= a a b b b
9	● ● ● ● ●	I–J	= a b a a a
10	● ● ● ● ●	K	= a b a a b
11	● ● ● ● ●	L	= a b a b a
12	● ● ● ● ●	M	= a b a b b
13	● ● ● ● ●	N	= a b b a a
14	● ● ● ● ●	O	= a b b a b
15	● ● ● ● ●	P	= a b b b a
16	● ● ● ● ●	Q	= a b b b b
17	● ● ● ● ●	R	= b a a a a
18	● ● ● ● ●	S	= b a a a b
19	● ● ● ● ●	T	= b a a b a
20	● ● ● ● ●	U–V	= b a a b b
21	● ● ● ● ●	W	= b a b a a
22	● ● ● ● ●	X	= b a b a b
23	● ● ● ● ●	Y	= b a b b a
24	● ● ● ● ●	Z	= b a b b b

Larger Image

LESSON II

Short lines represent the *a* form, long lines, the *b* form. The cipher word is "the." Various forms of sewing cards, or yarns of different colors may be used.
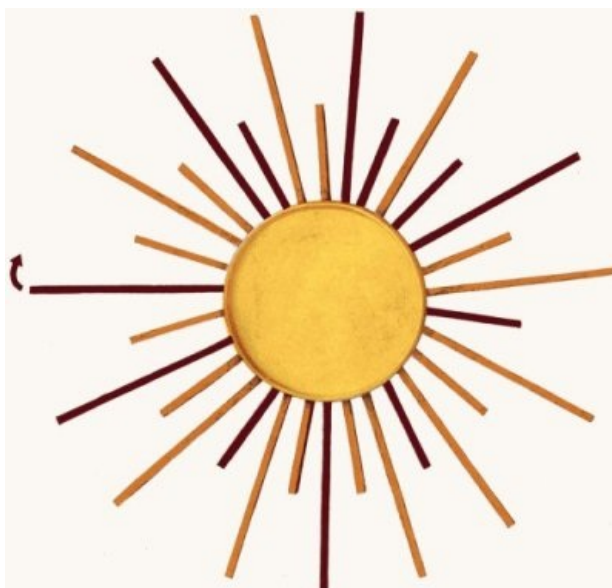
LESSON III
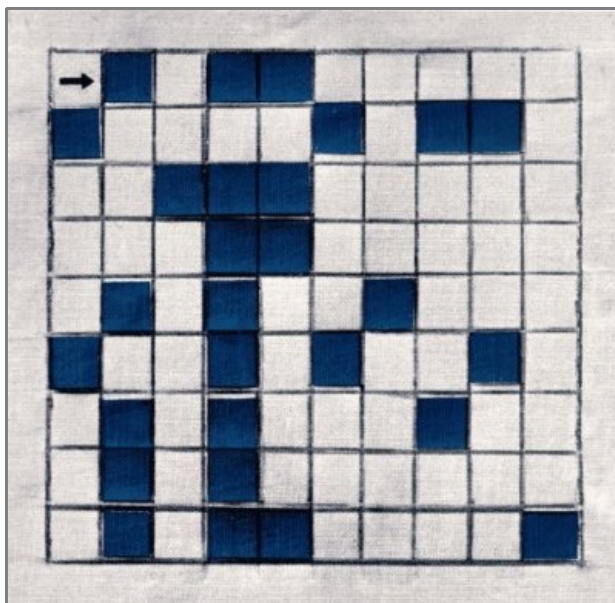
In this weaving mat the light squares represent the *a* form, the dark ones, the *b* form. The arrow marks the starting point, and the reading proceeds from left to right in each line. The cipher message is "Mary had a little lamb." Any sentence containing the requisite number of letters can be inserted on the same principle.
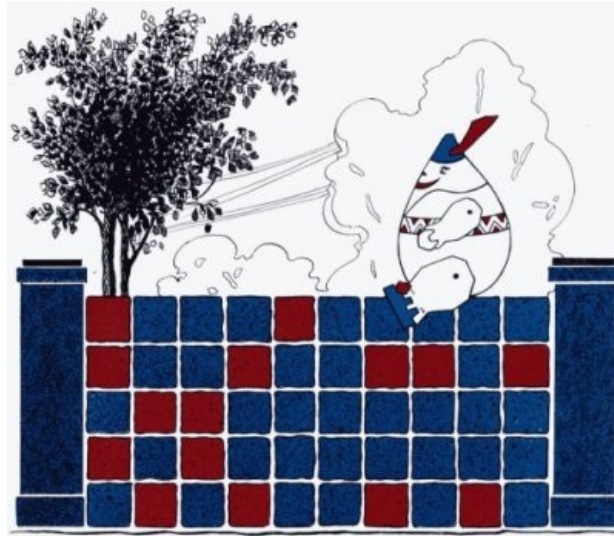
LESSON IV

This lesson embodies what may be designated as a symbolic cipher design. This design conveys the idea of the setting sun, and hence the cipher word contained within is "sunset." Red sticks represent the *b* form, orange sticks, the *a* form. The arrow marks the starting point, and the reading proceeds in a clockwise direction.
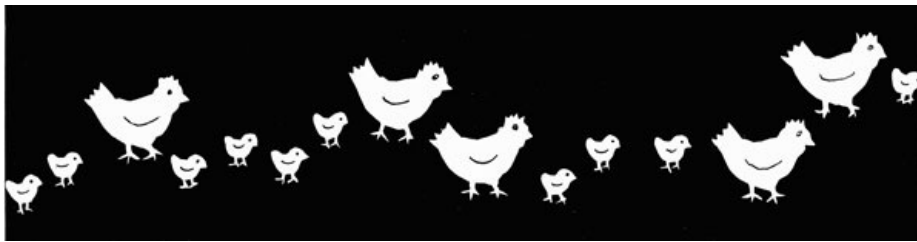
LESSON V

This is another symbolic cipher design picturing "Humpty-Dumpty." The blue squares represent the *a* form, the red squares the *b* form. The cipher message is "sat on a wall." The blank squares can be filled by colored crayons or blocks, and the children can thus practice the building of the message by referring to the code in Lesson I.

LESSON VI

Another symbolic cipher design in which the hens represent the *b* form, the chicks the *a* form. The cipher word is "egg," reading from left to right.

This sort of symbolic cipher designing is susceptible of endless variation, and gives a hint of the possibility of drawing cipher pictures.

A sufficient supply is furnished so that when cut out, the hens and chicks may be utilized to spell out various words under the direction of the teacher.

LESSON VII—THE TIME-TEACHING CLOCK

In this clock the movable colored dots indicating the minutes are used to spell out the time in cipher. In the working cards to be provided for the child the colored dots are to be inserted in the holes made for the purpose around the face of the clock. There being sixty dots, any phrase expressive of time not exceeding twelve letters in length (that is, twelve times five dots for each letter equals 60) is available for indicating the time in cipher. That is to say, any phrase such as "half-past ten," "nine-thirty," etc., can be indicated on the clock by using five times as many dots as there are letters in the phrase selected. Should there be less than twelve letters in the phrase, the holes remaining are to be left blank.

This lesson is extremely flexible in respect to the many combinations which it makes possible. The teacher or parent should bear in mind that the most effective use of the clock is to be attained by first choosing a phrase designating some time of the day which is significant in the daily experience of the child—such as the opening or closing hour of school, the play hour, the dinner hour, or "bed-time." This phrase is converted into cipher by having the child place the dots representing the letters of the phrase, beginning at the figure twelve, around the clock face. After this has been done the child should be asked to "decipher" the phrase by naming the letter which each group of five dots stands for. When this is accomplished, the ability to read the time becomes an unconscious achievement, since the hands of the clock are then placed by the parent or teacher, or by the child under her direction, in the proper position to indicate the deciphered phrase. If, for example, the phrase "half-past nine" is selected and the child has extracted this from the colored dot combination, the hands of the clock are moved to nine-thirty. The child, with the phrase fresh in his mind, learns from this the position of the hands of the clock representing the time, since the mental image of the clock face with the hands in the required position

establishes an association which becomes indelibly impressed on the child's mind.

The method here described is the best for young children. With children of more advanced age and greater ability to use their own minds, the reverse practice may be followed. The teacher may name the phrase designating the time, and direct the child to put in place the colored dots representing the letters of the phrase by referring for each letter to the code. This requires an intelligence of a higher order than the method first described.

"WHAT TIME IS IT?"
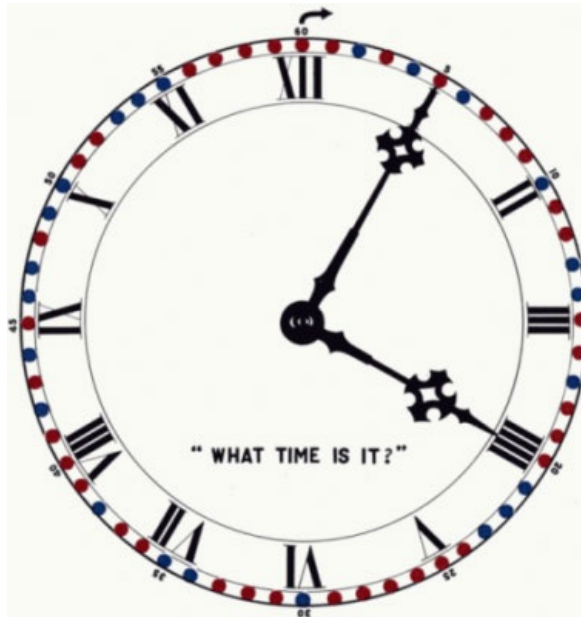
By reference to the code the arrangement of the dots on the clock will be found to spell the time indicated by the hands, i. e., "five past four." The red dots represent the *a*, the blues the *b*.

LESSON VIII

On this cipher necklace the square beads represent the *a* form, the round beads the *b* form. The cipher words are "Yankee Doodle." For working this or any other appropriate phrase, the child should string the beads on one of the laces provided.
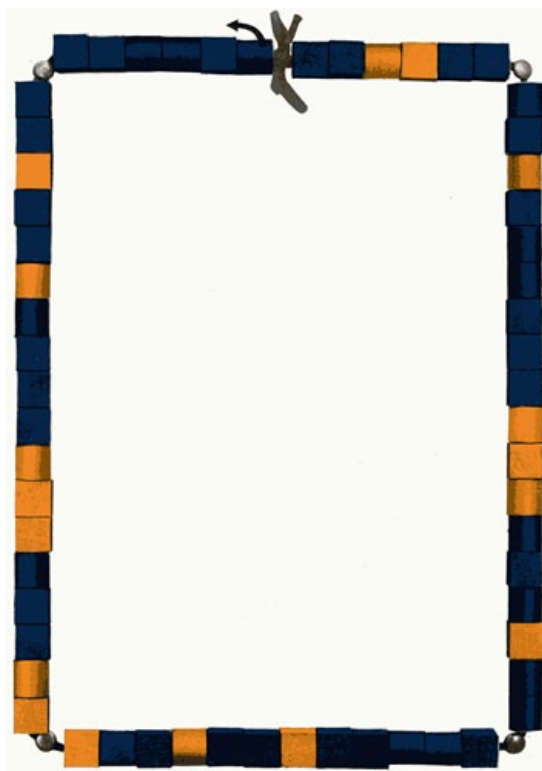
LESSON IX

This is similar to the preceding lesson except that in this case the blue beads represent the *a* form, the orange beads, the *b* form. The cipher words are "A Cipher Chain."

LESSON X

This cipher necklace combines both Lessons VIII and IX, and shows how two ciphers may be infolded at once. Reading the beads first as regards their shape and using the same system as in Lesson VIII, the necklace still spells out the word "Yankee Doodle." Then reading the beads as regards color, the words "A Cipher Chain" are deciphered, as in Lesson IX. This lesson gives a hint of the possibility of enfolding three, four, or five cipher messages at once.
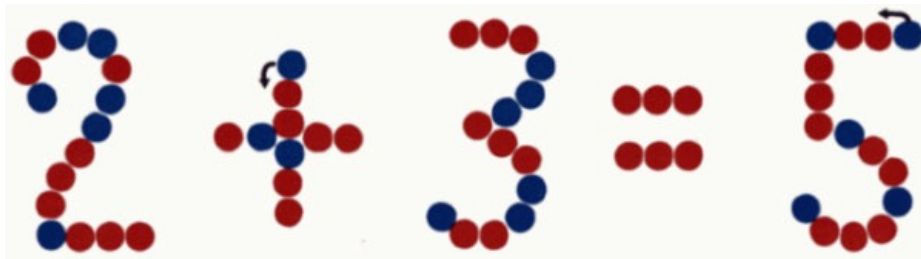
LESSON XI

In this lesson comes the first step in showing how a cipher message may be hidden within an ordinary architectural example. The red circles represent the *a* form, the blue ones the *b* form; the reading proceeds in exactly the same way in which the figure is written. The cipher phrase is "United States." Any figures can be selected for the children to form, provided, when formed, they contain the requisite number of circles of each color.
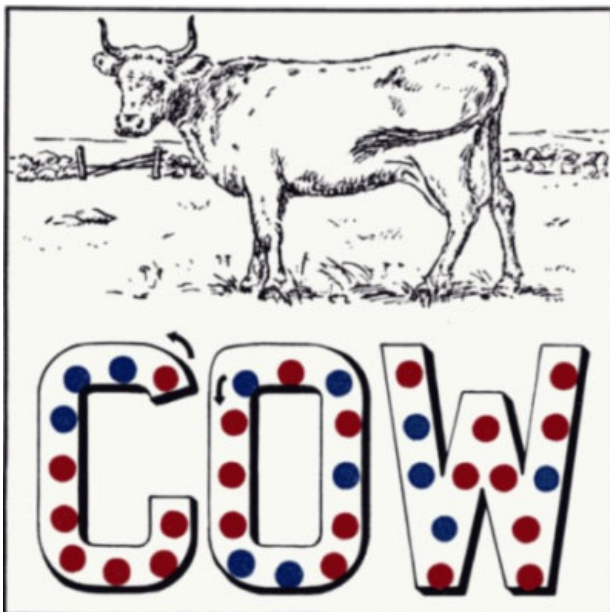
LESSON XII

The cipher word is "pasture," the red circles being the *a* form, the blue ones the *b* form.

LESSON XIII

The cipher word is "Barking," the red circles being the *a* form, the blue ones the *b* form.

LESSON XIV

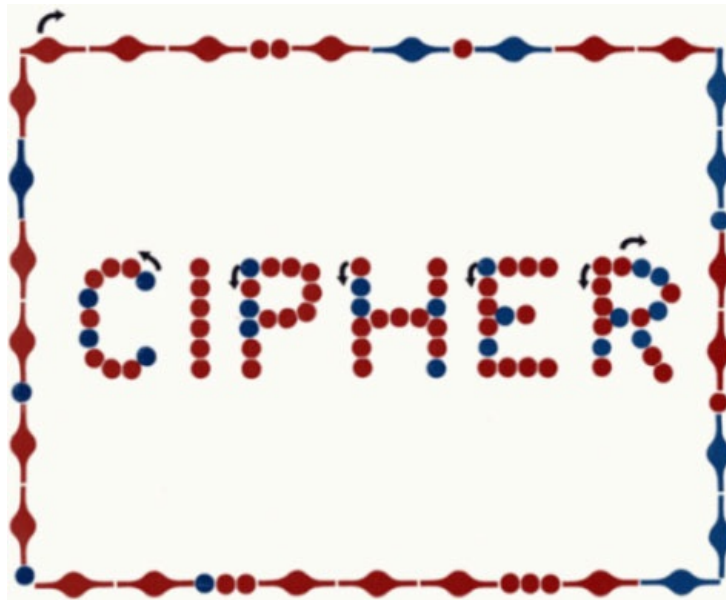The word "CIPHER" contains the hidden name "Sir Francis Bacon," the red circles being the *a* form, the blue ones, the *b* form. The reading proceeds in the same manner as the strokes of the letters would be made by the hand. The design in the margin contains a double cipher, similar in construction to the necklace in Lesson X. The red and blue pieces still represent the *a* and the *b* forms respectively, as before, and the cipher word is "alphabet." This constitutes the first cipher. The second cipher is based upon the difference in shape of these pieces, the long ones being the *a* form, the circles, the *b* form. The cipher word is "decipher."

LESSON XV

The phrase "Biliteral Cipher" is made to contain the hidden word "key" by the use of a capital letter for the *a* form, and a small letter for the *b* form. The borders to the lines contain the cipher word "letter," the blue sticks being the *a* form, the red ones the *b* form. The reading proceeds from left to right in each line, beginning with the line at the top. The children may be directed to cut out any set of letters of appropriate size to form any desired phrase, using capital and small letters on the same principle as in the example.

LESSON XVI

*Design for Peacock Lodge.
For Col. George Fabyan.*

CIPHER CODE	Explanation
a a a a a = A	This architect's sketch presents an
a a a a b = B	interesting method of making use of
a a a b a = C	the Biliteral Cipher. The white bricks
a a a b b = D	are supposed to represent the *a* form
a a b a a = E	letters, the shaded bricks the *b* form.
a a b a b = F	Begin with the top of the wall, at the
a a b b a = G	left-hand, below the tower, read the
a a b b b = H	lines from left to right, and assign an *a*
a b a a a = I-J	or *b* to each brick on that principle,
a b a a b = K	dividing off the resultant *a*'s and *b*'s
a b a b a = L	into groups of five. Then refer to the
a b a b b = M	accompanying cipher code which will
a b b a a = N	show you for which letter of the
a b b a b = O	alphabet each group stands. The result
a b b b a = P	will be amusing as well as interesting
a b b b b = Q	and instructive.
b a a a a = R	
b a a a b = S	
b a a b a = T	
b a a b b = U-V	
b a b a a = W	
b a b a b = X	
b a b b a = Y	
b a b b b = Z	

The Origin, History and Designing of the Alphabet

By Helen Louise Ricketts

THE STORY OF THE ALPHABET

Chapter I

I want to tell you a story about something you use every day, something you could not get along without, and yet that you never think about or are glad to have. I do not believe that even after I tell you several things about it you can guess what it is.

It is one of the oldest things in the world, so old that no one knows when it was first used.

It is a more wonderful thing, a great many people think, than the invention of steamboats and steamcars, or of airships and submarines.

It is so important that you could not have any books without it, and if there were no books, you would not go to school, and then how could you learn all the things you want to know?

It is so common that you see it and hear it and use it almost every minute of the day.

It is made of twenty-six different parts. You can make me know what these are with a pencil or crayon. With them you speak and write and read. There are machines which hold these parts separately or form them in groups, and then leaving their likeness on paper give us books and stories to read.

Now I am afraid that I have told you too much! Have you guessed what these twenty-six little tools are called? We call them, and so did your grandfather and greatgrandfather and all the people that lived hundreds and hundreds of years ago—the *Alphabet*.

You never knew before that the Alphabet was such a wonderful thing, did you? Would you like now to hear the story about it?

Long, long ago in a country called Egypt, which is far across the sea (you may find it on your map, and that will make it more interesting for you) they had a very curious way of writing. They had no letters like our A, B, C's, but did what we call picture writing; that is, they drew pictures instead of writing letters and words as we do today. Their writing looked like this—


That does not look much like writing, does it? You do not know what it means, either, do you? Yet the people at that time could read their picture writing just as easily as we can the Alphabet writing. This is the way they sent messages to each other and wrote down the things they wanted to remember. Do you know that they did not have any paper in those days long ago, either? What do you think they used? They cut their pictures on stone, on walls of buildings, and sometimes on wood and the bark of trees. They also had a material called papyrus, which was made from reeds growing in the swamps of Egypt. Think what a long time it must have taken them to write in this way, and how much easier and quicker it is for you and me today!

To the north of Egypt there is a small country called Phœnicia. If you will look on your map you will find that the sea comes to the very shores of this country. In Phœnicia there were many beautiful things that people in other countries wanted to buy. So the Phœnicians built big ships and filled them full of the beautiful things and sailed away. Across the water they came to a land by the name of Greece, the country you know about where Hercules and Ulysses lived, and here they unloaded their ships. Of course the Phœnicians brought the picture writing they had learned from the Egyptians with them. By this time they were beginning to think pictures took too long to draw, and they gradually changed the pictures into signs so that they could write easier and quicker. So the writing they brought to Greece was quite different from the picture writing they had learned from the Egyptians. It looked like this—
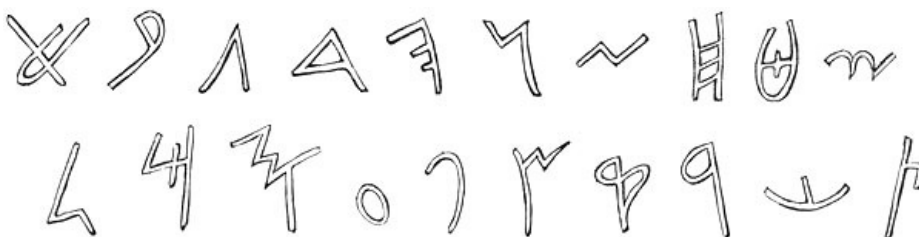
We cannot understand this either, can we? But you can see it is much better than the way they wrote before.

The Greek people were very happy that the Phœnicians brought such a wonderful way of writing with them and soon began to copy it, and use it in their country, too. When the Phœnicians went back to their own country the Greeks continued to use the sign writing, but changed it and made it more beautiful. They gave it a name, too, and called it by the names of the first two signs, *Alpha* which means "ox," and *Beta* which means "house." If you put these two words, *Alpha* and *Beta*, together, what do you have? ALPHA-BET—the word we use today.

Now the Greeks were an adventurous people, and one day they set sail in their ships, and went to the land of the Romans, which is now called Italy. They liked this new country, and some of them settled there. Like the Phœnicians long ago, they brought their new Alphabet with them. The Romans were a great and wonderful people, but they did not know the easy way of writing by signs that the Greeks used. They saw right away what a fine thing this

Alphabet was, and began to use it for their writing, too. At first they wrote the signs exactly the way the Greeks did, but soon they changed them, and made them simpler and better.

Chapter II

You know the story of the Alphabet from its beginning so long ago in far Egypt to the time when it came to the Romans and how it changed from pictures to signs and from signs at last to the letters of the Alphabet. You know, too, how hard it was for the people to write in those days when they had no better material than papyrus, wood and stone. That was a long, long time ago. Would you like to hear a story about what has happened to writing since the time of the Romans and the changes that have taken place in the Alphabet in its travels through the countries of Europe?

The first great thing of importance was the discovery of a new material to write on. What do you think it was?—the skins of sheep and calves! That seems strange to us and we like the paper we use today better, but think what a great improvement this discovery was then and how much easier writing could be done on the smooth surface of the skin with a pen and ink. In all of the countries except Italy this change of writing material brought about a change in the style of lettering too. The Romans alone kept to the simple form of lettering they had always used and did not change it when writing on the skins. The other European countries gradually came to vary this style and make the letters more pointed, heavier and blacker and in some cases more elaborate. This style of lettering was called the Gothic. Do you see the difference between these two alphabets?

The Alphabet had not been in these countries long enough yet for all the people to have learned to write. Only a very few knew the letters, and as all the writing was done by hand, it took a long time to write a whole book. The few books that were written were so precious that they were chained in the churches and monasteries and the people were only allowed to read them there. At last in the country of Germany a man by the name of Gutenberg thought of a way to make more books and make them faster. And this way was by printing. Just as the Alphabet spread to the different countries so this new way of writing spread, until all of the people of Europe were using printing machines and making many books.

In Germany the Gothic lettering had been used when the writing was done by hand and Gutenberg copied this style in printing the first book. When the art of printing spread to the different countries the Gothic alphabet, of course, came with it and was accepted as the correct style of letter. The Romans, however, still believed their Alphabet to be the better and cut their printing type after the Roman model. So a great quarrel sprang up between the different countries as to which Alphabet should be used, the Roman or the Gothic. In Italy a man called Manutius tried to settle the quarrel by making a letter which all the printers would use and he called his style of lettering the Italic. The printers who used the Gothic and Roman letters also used these Italic letters, but were not willing to give up their own style and use the Italic entirely.

We are so used to seeing and using the Alphabet today that we never ask ourselves how the letters came to look the way they do now. Look at Plate I, which shows a beautiful Alphabet of Gothic letters made by a famous German artist, Albert Dürer. There are twenty-nine of them, all entirely different, but still you can see that they are all brothers and sisters in one big family. Do you wonder how this came about? Look at Plate II and you will learn. The first letter *i* is made by putting together a number of small squares in a certain way. Can you see the way the other letters are made from this letter *i*?—the *n* is made by putting two *i*'s together; the *m*, three *i*'s, and the *r*, one *i* and an extra square at the top. Go through the rest of the Alphabet and see if you can find out the way it is made.

Now look at Plates III, IV, V, VI, and VII showing another Alphabet by the same artist, which he patterned after the Roman letters. He found that they were made according to a certain rule and proportion, and it was these he worked out in making his Alphabet. Here you see the pattern is a large square, and the letters are drawn very carefully in them. Did you know before there was as much figuring and measuring done in the making of the Alphabet as there is in building a house? Look at the letter *E*, for example, and all the circles and squares that have been measured and drawn to make it. You will find that every letter is made just as carefully.

Here are the three *A*'s that you see in Plate III. You will find that they are not exactly alike. Can you see the difference between them?—*A*, 1, is cut off in a curve at the top, *A*, 2, goes straight up in a sharp point, and *A*, 3, is cut off flat. Do you notice, too, the difference in the

thickness of the letters?

Look at the other letters in this Alphabet (Plates III, IV, V, VI, and VII) and see if you can tell me about them in the way I have told you about the *A*'s.

For many, many years, the printers in the different countries used Alphabets the artists had made for them, without being able to decide which they liked the best, the Roman, Gothic or Italic. On Plate VIII you will find a little poem by Shakespeare printed in these three Alphabets. Which one do you like the best? I am sure you will choose the one that is the simplest, the easiest to read and at the same time the most beautiful—the Roman. In the quarrel which had been going on for so many years, the Roman alphabet won the victory, and that is how it came about that the Roman is used in printing all our newspapers and books today. At last after so many hundreds of years it has traveled through the other countries to us. Many times you cannot recognize the letters, and they look very different from the Roman models from which they were patterned, but that is because we are not as careful with the measurements and proportions as were Albert Dürer and the other Masters in that time long ago.

CHAPTER III

You know now the beginning of the Alphabet, the careful way it was planned and made, and how finally after so many years it has come to be used in the form in which we have it today. Do you remember that when Albert Dürer made his Alphabet of Roman letters he made more than one form of each letter—there were three *A*'s, for example. Would you like to know why he did this? Plate IX shows you two other kinds of Alphabets made long ago by a Spanish artist, Francisco Lucas. Look at the Italic capital letters in the upper part of this Plate. You can easily see that there are two different forms of the same letters, can you not? But now look at the small letters. You still see that there are two examples of each letter, but they are so much alike that you will have to look very carefully to see the difference between the two forms. Why do you suppose this artist went to the trouble to make these letters so much alike, and yet different? Do you not think that this would be a very strange thing to do unless there was a good reason for it? Look at the lower part of the Plate and you will see that there are two different forms of the small Roman letters also. Now turn back to Lesson XV. You see that by using a capital letter for the *a* form and a small letter for the *b* form you were able to hide within the phrase "*Biliteral Cipher*" the word, "*key*." You can easily see that this would not be a good way to hide a secret, for the difference between the large and small letters is not only easy to see, but looks so strange that it is the first thing you notice. Now suppose that instead of using a capital letter for the *a* form and a small letter for the *b* form you use for each letter of the Alphabet, both capital and small, two forms which were very much alike but still were different. In the following line—

you see the same phrase "*Biliteral Cipher*," but it does not look strange to you, does it? Still, if you will study it carefully you will see that the first *i* is different from the second, and that the first *l* in "*Biliteral*" is different from the second *l*. You have guessed by this time that the phrase "*Biliteral Cipher*," as it stands here, also contains a hidden word. The word is "*the*." This phrase was made to contain the word "*the*" by using the two forms of letters which you see in the upper part of Plate IX and which were called "*doubles*" by the printers who used them several hundred years ago. Now do you begin to see how important these two forms are?
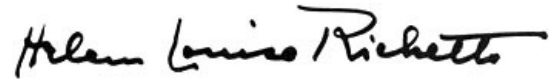
Look again at the little Shakespeare poem in the Italic alphabet on Plate VIII. Now that you know about *doubles* you can see, if you have learned to use your eyes, that we have hidden a secret within this poem too. Would you like to know what it is? We will help you to work it out by giving you what is called a *Classifier* which will make it easy to *decipher* the verse. On this Classifier, which you will find on Plate X, the very same Italic letters that you saw in Plate IX have been arranged so that all the *a* form letters are above the shaded part and all the *b* form letters below. Now if you will tear out this whole page and carefully cut out these shaded parts you can place this page over the lines of the poem in italic letters. This will help you to decide to which form the letters of the poem belong. Place the Classifier over the

poem so that the first letter, the capital **H** of *Have*, is between the *a* form and the *b* form capital **H** on the Classifier. You will see that this capital **H** of *Have* is the *a* form. Now below the Classifier has been placed something which will help you still more. All the words of the poem have been divided and have been placed into groups of five letters. As we decided that the **H** of *Have* belongs to the *a* form, we have placed an *a* beneath the **H** in the first group of five letters. Now move the Classifier so that the **a** in *Have* comes between the *a* form **a** and the *b* form **a** on the Classifier. You will see that this letter also belongs to the *a* form. If you will do the same to the rest of the letters of this first group you will find that they are all *a* form letters. Now what letter of the Alphabet does a group of five *a*'s stand for?—**A**, does it not? So the first letter in our secret is **A**. Now place the Classifier over the rest of the letters of the poem and see to what form they belong, just as we have done for you in the first group. If you do your work carefully you will find the hidden secret.

[Pg 53]

If we can hide one word in "*Biliteral Cipher*" and a sentence in a short poem, do you not see how a whole story could be hidden so carefully within a book that it might not be discovered for many, many years?
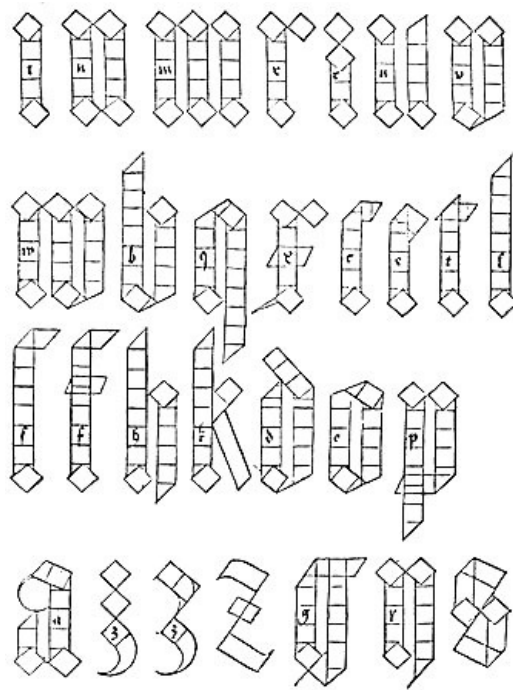
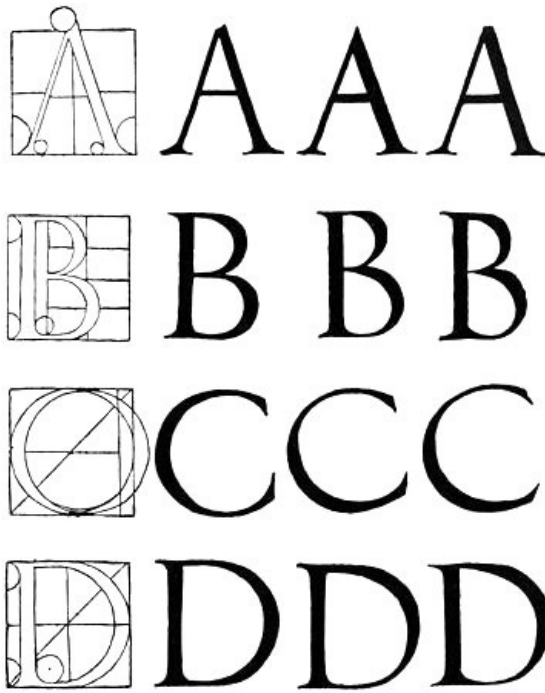*Helen Louise Ricketts*

PLATE I

ALPHABET by ALBERT DÜRER (A. D. 1525)

PLATE II

CONSTRUCTION OF ALPHABET

PLATE III
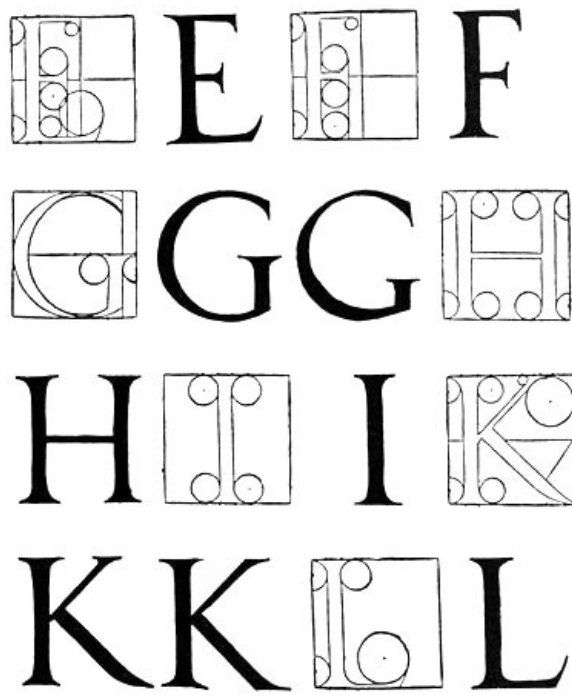

ALPHABET, with construction: A. DÜRER (A. D. 1525)

PLATE IV

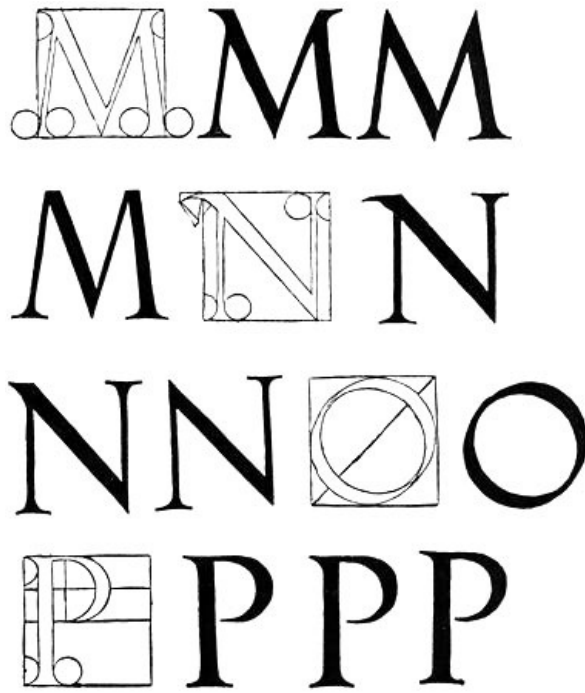ALPHABET, with construction: A. DÜRER (A. D. 1525)

PLATE V

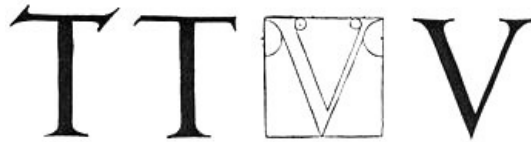ALPHABET, with construction: A. DÜRER (A. D. 1525)

PLATE VI

ALPHABET, with construction: A. DÜRER (A. D. 1525)

PLATE VII

ALPHABET, with construction: A. DÜRER (A. D. 1525)

PLATE VIII

Have more than thou showest,
Speak less than thou knowest,
Lend less than thou owest,
Learn more than thou trowest,
Set less than thou throwest.

— Shakespeare.
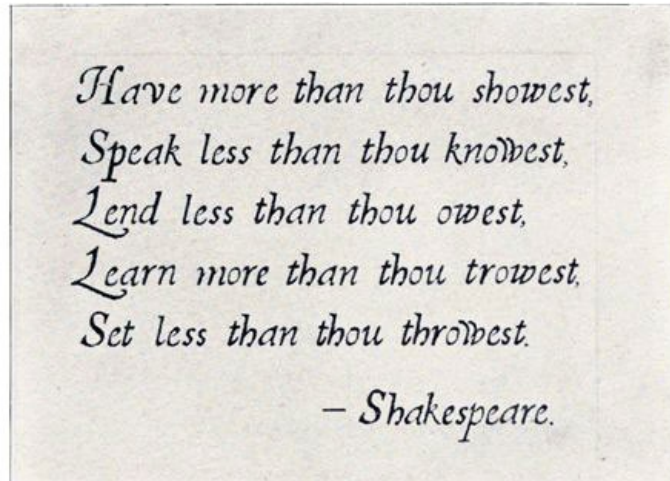
Have more than thou showest,
Speak less than thou knowest,
Lend less than thou owest,
Learn more than thou trowest,
Set less than thou throwest.

— Shakespeare.

Have more than thou showest,
Speak less than thou knowest,
Lend less than thou owest,
Learn more than thou trowest,
Set less than thou throwest.

—SHAKESPEARE.
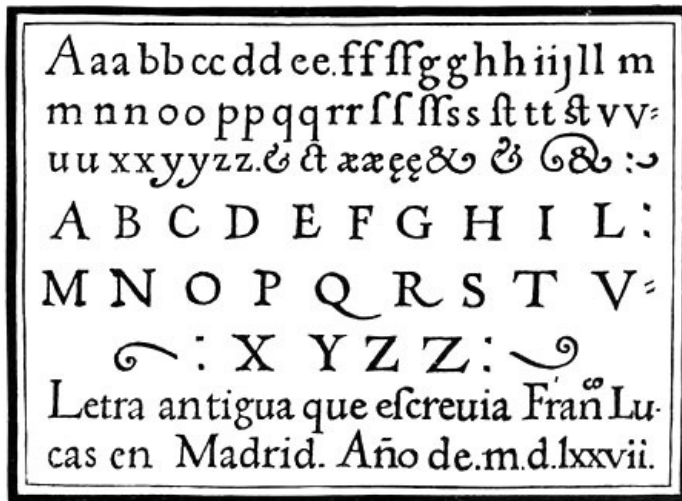
PLATE IX

ITALIC ALPHABET, BY FRANCISCO LUCAS

ROMAN ALPHABET, BY FRANCISCO LUCAS

PLATE X

THE BI-FORMED ALPHABET CLASSIFIER
For Use with the Lucas Alphabets, 1577
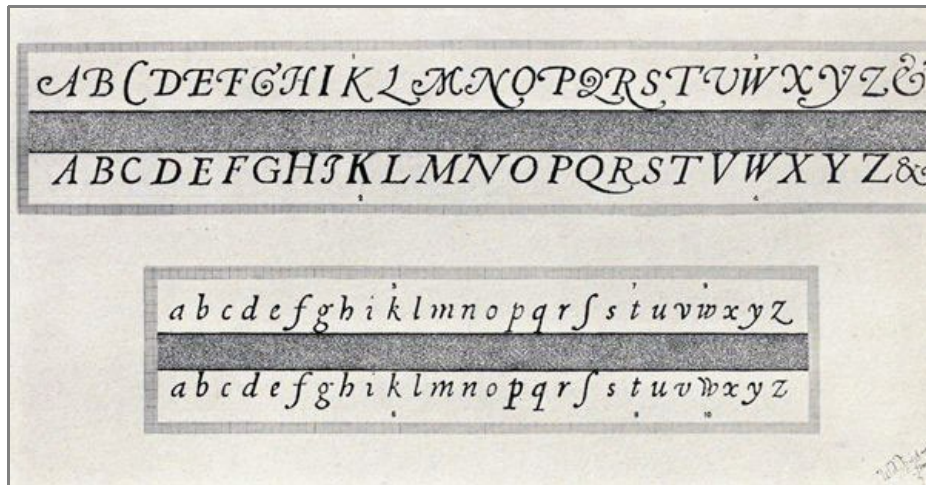
a forms above the shaded parts, *b* forms below

COPYRIGHTED, 1916. GEORGE FABYAN   CUT OUT SHADED PART WITH SHARP KNIFE

TRANSCRIPTION

Havem	oreth	antho	ushow	estSp	eakle	sstha	nthou	knowe

aaaaa
 A

stLen	dless	thant	houow	estLe	arnmo	retha	nthou	trowe

stSet	lesst	hanth	outhr	owest	Shake	spear	e

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