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A NEW SERIES OF METRIC TEST-LETTERS FOR DETERMINING THE ACUITY OF DIRECT VISION FOR FORM.

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A NEW SERIES OF METRIC TEST-LETTERS FOR DETERMINING THE ACUITY OF DIRECT VISION FOR FORM.

(Based upon Snellen and DeWecker.)

By CHARLES A. OLIVER, M.D.,
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The accompanying sheet of test-letters has several advantages not possessed by any other single form of test-card. These are as follows:

First,—The Letter. In order to accurately fulfil the condition of Snellen's basis of letter formation, it was found that the nineteen letters,

A B G H I J K M N P Q R S U V W X Y Z

had to be expunged, leaving the letters

C D E F L O T

for employment. Each letter used embraces a square area included in a five minute angle for both height and breadth, and each stroke of the letter is exactly one minute angle in width: further, there is a one minute angle or more of spacing everywhere throughout the breaks and openings in each letter. It will be thus seen that the entire letter is confined to a vertical and a horizontal angle of five minute opening, and that its component strokes are comprised in visual angles of one minute each, whilst in all situations throughout the square, the free spaces are not less than one minute angle in width.

The regular block-letter has been used in preference to any other style of type, on account of its greater conformity to the average variety of character used in printing, which, as is well known, has a foot, head and tail piece; care having been taken to have each piece occupy a square of one minute visual angle.

Second,—The Sequence. Every line is so arranged that its letters follow each other in a certain definite order, though this is rendered incomprehensible to the patient by a system of irregular placing. Amongst the seven selected letters, there are four which are composed of vertical and horizontal strokes, and three which are made up of curved ones, thus

giving a series of letters which contain radii at all possible angles. Nearly every line of letters has a complete combination of such strokes situated upon it, so disposed as to make a series of vertical and horizontal strokes follow a series of curved ones; by this means allowing each line to serve as an important adjuvant in the detection and the correction of astigmatism.

Third,—The Interspace. Each letter is surrounded by a space which is greater, or at least equal to its own area. This has been accomplished first, by making each of the intervening spaces between the letters on the same line, of the same area as that occupied by the letter itself; and secondly, by separating the lines from each other by a space equal to the height of the lower letter. It might give the card a more æsthetic appearance to group the larger letters nearer together, but appearance has been sacrificed, and the letters kept at their proper distances, in order to preserve scientific unity throughout.

Fourth,—The Gradation. In a desire to avoid unnecessary mental effort by the use of irregular fractions, and by a wish to render computation easy and quick, $\frac{2}{3}$ instead of $\frac{4}{6}$ has been taken as $\frac{1}{2}$. The order is as follows:

$\frac{2}{1}$,	$\frac{1}{1}$,	$\frac{2}{3}$,	$\frac{1}{2}$,	$\frac{1}{3}$,	$\frac{1}{4}$,	$\frac{1}{5}$,	$\frac{1}{6}$,	$\frac{1}{7}$,	$\frac{1}{8}$,	$\frac{1}{9}$,	$\frac{1}{10}$.	Gradation In Fractions.
$\frac{V}{II\frac{1}{11}}$.	$\frac{V}{V}$,	$\frac{V}{VII\frac{1}{11}}$,	$\frac{V}{X}$,	$\frac{V}{XV}$,	$\frac{V}{XX}$,	$\frac{V}{XXV}$,	$\frac{V}{XXX}$,	$\frac{V}{XXXV}$,	$\frac{V}{XL}$,	$\frac{V}{XLV}$,	$\frac{V}{L}$.	Gradation in Dioptrics.

This mathematical scale was partially made use of by DeWecker, but, unfortunately, it never gained sufficient popularity to be universally employed. The advantages possessed by this change are almost incalculable, and can be justly compared with the superiority that the decimal system of coinage has over the various other methods of money naming and valuation.

Fifth,—The Reverse Order. By this arrangement, two objects of great consequence are gained. First, time is saved by the want of necessity to have the patient read a great many letters before the proper line is reached; and secondly, a

greater probability of correct answers by reason of the eye not having time to become fatigued.

It may be of interest to explain the mode of manufacture of these types. The size of number L type was carefully estimated, and accurate India-ink sketches of the seven letters were drawn to that scale. Photographic reductions to the variously chosen sizes were obtained, the correctness of these being verified by exact measurement. Reverse phototypes were now made of each letter. These were tacked on a large sheet of white pasteboard in the order as they appear on the regular card. They were now rephotographed and rephototyped exactly to the same size.[1]

For the conscientious and painstaking manner in which the card has been prepared, the writer desires to thank the Messrs. J. W. Queen & Co., of No. 924 Chestnut St., Philadelphia, of whom copies may be obtained.

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[1] Reading types based upon the same plan, comprising the same letters, arranged in a series of small words varying from 0.5 D. to 11 1-11 D., are now in the process of construction, and will be published shortly.