SYMBOLISM AND SYNÆSTHESIA.

By F. L. WELLS, PH. D.,
McLean Hospital, Waverley, Mass.

An idea becomes a symbol of another idea through some similarity and the association attendant on such similarity. "No form of association is too narrow a bridge to allow of the passage" (Ernest Jones).^{*} In such manner and to such extent as a symbol represents its primary idea, it is "identified" therewith. In so far as a certain symbol always represents the same primary idea and no other, it is "constant." In so far as a symbol is shared by many persons, it is "pervasive." Symbolisms also differ in their relations to consciousness. There may be full or no consciousness of connection between a symbol and its primary idea. Those with no such consciousness have been classified as "dissociative symbols." Some psychoanalytic writers consider that the term symbol should itself be restricted to such cases.

A high degree of constancy and pervasiveness is ascribed by psychoanalytic writers to symbolisms of this class. It has been questioned if these features should be wholly accounted for in terms of individual experience, or if some conception of inherited or otherwise extra-experiential associations should be considered to underlie these particularly constant and pervasive symbolisms. The latter view makes comparatively little headway so far as psychoanalytic symbolisms are concerned. There has been indicated, however, a mechanism of extra-experiential associations, occasionally having the character of symbolisms, not excluded by the more accepted experiential mechanism, which it may at times reinforce.

Pathological studies give evidence of definite associations between two ideas not associated in previous experience. This is indicated when, *e. g.*, the sound of a tuning fork elicits hallucinations of different words or phrases. The hallucinations are not confounded with the tone of the fork, but are strictly associations thereto. The content is often complex, consisting of many

^{*} "Why, gentlemen, who *does* trouble himself about a warming-pan? Why is Mrs. Bardell so earnestly entreated not to agitate herself about this warming-pan, unless (as is no doubt the case) it is a mere cover for hidden fire. . . ."

vocables, or words, and elaborate pictures. In these cases the stimulus does not regularly elicit the same hallucination, the latter being inconstant. Their status appears that of psychotic symptoms only. Goldstein¹ alludes to happy and melancholy misperceptions induced by the same stimulus according to the condition of a manic-depressive case. Such constant relations as do appear between the hallucinations and the inducing stimuli are, as Goldstein points out, of a formal character. The hallucination comes when the stimulus comes and does not, as a rule, persist longer than the stimulus lasts. Correspondence in the rhythm of stimulus and hallucination is noted by both Goldstein² and Sokolow.³ In the observations of Chvostek⁴ and of Goldstein,⁵ the quality of the hallucinated voice is also affected by the quality of the inducing stimulus. In Sokolow's⁶ case cold stimuli elicited sound hallucinations of higher pitch than warm ones, which he thinks may be because the cold differed more from the body temperature than the warm stimuli he used. Auditory hallucinations have also been induced through direct application of electric current, as observed by Moravcsik⁷ and Jolly. Here belong also the visual hallucinations (induced in alcoholic cases by pressure on the eyelids with fingers) to which Liepmann⁸ called attention. Bechterew⁹ reports similar observations with the interrupter of a coil.

These induced hallucinations have scarcely the status of symbolisms, not being identified in any way with the inducing stimulus. They appear to be kept separate, which also takes them out of the category of illusions. They simply show coercive association between two mental processes, independently of special connection experienced between them.

The synæsthesias proper are more relevant. Bleuler¹⁰ finds that like the induced hallucinations, the synæsthesias begin and end with the primary sensation. In the case reported by Downey,¹¹ the synæsthesia appears to last longer than the primary sensation. Synæsthesias differ from the above induced hallucinations in that while the induced hallucinations are very inconstant, the synæsthesias are very constant. This is indicated by Bleuler's¹² reinvestigation of his material, 13-15 years after the original observations. There was only some decrease in the facility and intensity with which the phenomena appeared, in which agreement with Flournoy is cited. The synæsthesias offer groups of associations which persist with hallucinatory coerciveness in those

subject to them. Bleuler³⁸ remarks that he can sometimes recall names from the visual synæsthesia (photism), when he has forgotten the auditory impression.

Bleuler generalizes from his material, 76 cases in all, to observe the continuity of the photism series, corresponding to the continuity of the inducing sounds. The musical scale gives such a series, for example, from black to white through red or gray. Transition forms of vowels give transition forms of colors. Overtones, which certainly form no regular color associations through conscious experience, may appear in the photism even though not consciously perceived in the inducing stimulus. A scale from yellow through red and brown to black is especially frequent for musical tones. For noises, red is nearly absent, blue and green are very rare. In general, high notes induce sharply defined photisms with pointed forms. A whistle beginning low and rapidly becoming high may thus appear in the photism as a wedge whose base represents the low period of the tone. In the photisms not from sound, but from skin and general sensibility, violet is absent, brown and green are very rare.

The following examples of synæsthetic phenomena are noted by observers of individual cases: Among complex sensations of taste induced by vocal complexes of spoken words, Pierce³⁴ reports the word *parlor* to represent honey on bread; *loud*, a boiled new potato; *grin*, French toast, or fried bread. Among nonsense syllables, *zaf* is a meat flavor, salty, hard, like corned beef. *Hes* is small particles, minced meat. *Dep* is roast beef well done. More elementary stimuli induce sensations as follows:

Tuning-fork of 256 vibrations, as if warm air were resting upon the tongue.

Tuning-fork of 512-1024 vibrations, warm and clear, sweet.

On the piano, A₂-E₁, like toast soaked in hot water.

E₁-F, sweet, rather strong, like licorice, a troche.

F-g, mild, gravy-like.

g-c⁴, banana, smooth, slippery.

c⁴-c⁵, thin, insipid.

On the violin, lowest three notes, troche flavor.

From there up, grows sweeter, loses strength, becomes clear, delicate and sweet in flavor. The rubbing of a nail or file evoked a temperature experienced in the mouth, this being hot or cold according to the kind or degree of scraping.

In the case reported by Downey¹⁸ the following may be noted:
Liminal bitter (.0003 quinin), dull orange red, becoming more pronounced as the solution increases in intensity.

Anise, brilliant black.

Sour solution, occasional flashes of green, which sometimes alternate with red.

Lemon-pineapple sherbet, very green, persistent.

Vanilla, tan or brown.

Lime-candy wafer, golden.

Myers¹⁹ reports a case in which the synæsthesias are stated to be non-imaginal, though they must have had a clear perceptual character to have given rise to findings like these, with tuning-forks of different vibration rates:

256 brown.

300 brown to vermillion or pink.

400 brownish-pink.

500 rosy brown, brown or pink, becoming blue.

600 rich, dark blue.

700 mixed pink and blue, lilac.

800 light blue.

900 light blue.

1000 very light blue.

1100 very light blue.

1200 blue, shading off to gray.

1300 thinnish blue.

At 3000 vibrations with the Galton whistle, a greenish tinge appeared in the blue. It was definitely green between 4000 and 12,000, but above 12,000 passed into a colorless gray.

Different color tones appeared according to whether the instrument used was a tuning-fork, a tone-variator or a *Tonmesser*, due, as would be inferred from Bleuler, to differences in overtones. As the fork "rings off" the induced colors become "higher," that is, shading towards gray.

A case reported by Myers²⁰ some years later gives the following colors to the tuning-fork:

256 Prussian blue, clear blue.

300 blue streaked with violet.

400 clear dark violet—clear purple.

500 deeper than red, very deep golden, transparent.

600 opaque, streaky, perhaps black and flame color.

700 perhaps light green.

800 blue.

900 rather like 800.

1200 might be yellow, very translucent.

2048 getting yellow.

A Galton whistle tone of 6000 vibrations appeared green, higher tones becoming increasingly colorless.

A "spectral octave" in the case of an accomplished musician is reported as follows: "

Red.	Orange.	Yellow.	Green.	Blue.	Violet.
C G	D	A	E	B	F ♯

A case in which pain sensations evoke color perceptions is noted by Coriat.²⁸ Testing pain spots with a hair æsthesiometer showed an increase in the intensity of a red sensation as the stimuli were increased by shortening the hair. The subject reported different colors to be evoked by different types of pain. A "hollow" pain gives a blue color; a shooting neuralgic pain, a white color.

There is observed a tendency of the synæsthesias to run in scales, which are proportional to the scales of the primary stimulation. This argues against their originating in associations of adult or infantile experience. Other evidence of the same probable import is that they may have different affective quality from the primary, inducing sensation, as noted by both Bleuler and Downey. To the former, words with *io* are unpleasant in sound, but agreeable in their induced photisms. Bleuler observes that the photisms are generally localized not in the visual, but in the auditory field. Downey's case of colored gustation localizes the photisms in the mouth.

Bleuler²⁹ regards the synæsthesias as originating endogenously, but not in associations. He considers them rather as cases in which the specific energy of the sensory nerves is not wholly "specific." He rejects the supposition that activities of one sensory center are transmitted to another sensory center. The regularity of the synæsthesias speaks rather for a general property of the cerebral substance to respond with all its various specific qualities to the stimuli through different end-organs. As a rule,

only one of these (the primary sensation) is in the foreground; the others come to awareness not at all or as synæsthesias.

Under these conditions, association would be promptly established between a sound and a color always perceived with it, as well as separately. Such association, while not innate, is governed by innate factors, and not by external experience.

Downey²¹ comments in another paper on expressions in language that counterfeit synæsthesia, but differ therefrom in being inconstant, unsystematic, and having rational associations near the surface. It is not synæsthesia to speak of red war, black looks, weather clear as a bell, clear blue optimism. Sometimes these counterfeit synæsthesias, *synopsies secondaires, provoquées* of Flournoy, acquire relative constancy. Bleuler mentions how a black and yellow pattern symbolizes Wednesday to him, through the pattern of the travelling bag of an aunt who visited his home on Wednesdays. On the other hand, the English use of *blue* to denote melancholy is contrary to the commoner associations of the color in life. A synæsthetic origin might be ascribed thereto, as Bleuler seems to think. Bleuler's²² observation that the photism of bitter is almost always "dark brown to black" may be the essential determinant of the figure "dark brown taste."

A tendency has been variously observed for numbers to arrange themselves in a definite pattern of visual imagery. Sometimes learned associations, as of the clock-face, appear to govern these. Again, these so-called "number forms" appear to resemble synæsthesias, in that a connection between the ideas is established independently of the will, extending as far back as memory, and constant. Bleuler²³ speaks of them as "instinctive." Heredity for number forms is postulated by Galton²⁴ and for synæsthesia by Calkins.²⁵ This is good evidence of innateness if the same secondary sensations are inherited. Myers²⁶ brings out that this is not always evident with synæsthesia, members of a family disagreeing in the color attaching to a given sound.

Lowie²⁷ has connected this general class of phenomena with the facts of pervasiveness in the symbols of myths and legends. He is impressed with the hereditary character of the number forms. Since primitive communities are made up largely of blood-relatives, symbolic meanings could grow upon numbers in this way. The same naturally applies to the more strictly synæsthetic phenomena.

Both synæsthesias and mechanisms of autistic thinking form associations foreign to the waking consciousness of ordinary life. The associations of synæsthesia, however, are restricted to the more elementary patterns of sensory qualities. They are not adequate to account for the types of symbolism common to mythology, dreams and psychoses. Brown may represent bitter, vanilla may represent green, but the gulf between these associations and such complex symbolisms as snake for phallus, air for male principle, water for female principle, is greater than most imaginations are prepared to leap. And it is only for the synæsthetic type of association that even slight evidence for hereditary transmission is adduced. If such transmission operated on higher levels, evolution would be expected to transmit, in consciousness, useful ideas, such as of mathematical relations, rather than an unconscious full of ideas generally harmful if acted upon. Autistic mechanisms are capable of accounting for the entire body of "archeopathic" symbols on an experiential basis, and there is evidence for but little of it being accounted for in other ways.

It is a growing conception that a great deal of "higher mental process" goes on in the mind of which the main personality is as little aware as it is of many normal organic processes. This thought, below the level of awareness, consists, like the thought of which we are aware, in the association and elaboration of experiences. But, whereas the thought of awareness is, in the normal mind, mainly governed by the logic of experience, that below the level of awareness is quite free from these restrictions and is "autistic" in Bleuler's²⁸ sense of the term. In this way, associations and symbolisms are formed which are not present to the conscious level of the mind. In the psychoses, these ideas do come to consciousness, dominate it, and give rise to delusions. They also come to the surface in the dream, where they give rise to symbolism that has been amply recorded. The two levels of thought are less distinct in the savage and in childhood than in more developed life. Whatever community exists between psychotic and primitive ideas (how much one sees depends a good deal on the selection of material) is due to regression in *modes* of thought. There is a regression to modes of thought which more characterize primitive man, but not to special topics of thought. If the topics of thought, the precise ideas associated, do happen

to correspond, this is because the primitive kinds of association (similarity, contiguity) lead in like directions for everyone. The ideas which are associations by similarity for the savage or child are associations by similarity for all. The community appears, not from a transmission of definite ideas through the ages, but because the same associative laws are operating upon the same general class of experiences."

REFERENCES.

1. Goldstein: Arch. f. Psychiat., 1908, 43, 499-500.
2. *Ibid.*, pp. 497-500.
3. Sokolow: Arch. f. Psychiat., 1915, 55, 465.
4. Chvostek: Jahrb. f. Psychiat., 1893, 11, 274, 282.
5. Goldstein: Arch. f. Psychiat., 1908, 43, 497, 498.
6. Sokolow: Arch. f. Psychiat., 1915, 471.
7. Moravcsik: Centralblatt f. Nervenhk. u. Psychiat., 1906, 29, 210, 211.
Cf. also Chvostek, *op. cit.*
8. Liepmann: Arch. f. Psychiat., 1895, 27, 203 ff.
9. Bechterew: Centralblatt f. Nervenhk. u. Psychiat., 1897, 20, 505.
10. Bleuler: Zt. f. Psychol., 1913, 65, 16. Further references by this name only are to this article.
11. Downey: Am. J. Psych., 1911, 22, 528.
12. Bleuler, p. 13.
13. *Ibid.*, p. 12.
14. Pierce: Am. J. Psych., 1907, 18, 341-352.
15. Downey: Am. J. Psych., 1911, 22, 530-535.
16. Myers: Brit. Journ. Psychol., 1911, 4, 231, 232, 235.
17. *Ibid.*, 1914-1915, 7, 115.
18. *Ibid.*, p. 114.
19. Coriat: Journ. Abnorm. Psychol., 1913-1914, 8, 110, 111.
20. Bleuler: p. 35.
21. Downey: Journ. Phil. Psych. Sci. Met., 1912, 9, 440-448.
22. Bleuler: p. 28.
23. *Ibid.*, p. 6.
24. Galton: Inquiry Into the Human Faculty, 1883, 118.
25. Calkins: Am. J. Psychol., 1895-1896, 7, 97.
26. Myers: Brit. Journ. Psychol., 1911, 4, 238.
27. Lowie: Am. J. Sociol., 1915, 31, 217-229.
28. Bleuler: Jahrb. f. psa. u. psp. Forsch., 1912, 4, (1), 1-39.
29. "Because the sleeping mind looks at things in the same . . . relatively simple, naive way as the waking mind of primitive man" (Silberer). "The stereotypy is due to the uniformity of the fundamental and perennial interests of mankind" (Ernest Jones).