

(1909)

confusing painfulness and disagreeableness, identified the pain consciousness as a peculiar 'feeling' and lightly posited the transmutation into pain of any specific sense quality or any specific nerve excitation—visual, auditory, temperature, or tactual. A concrete, specifically localizable aspect of pain is, we maintain, always present, and is sensory in the ordinary significance of the word.¹ Whether or not it is in many or all cases mediated by a specific end station and spinal pathway (*via* collateral connections in the cord), we are inclined to regard it as qualitatively alike in all senses and closely related to the indifferent prick.

In support of this concept of indifferent 'pain', certain theoretical considerations may be added. First, the facts of hyperalgesia and summation are hardly explicable upon the assumption of a high peripheral limen. Further, the concept enables us to account for the various sensations received from the viscera and inner tissues (painful, indifferent and pleasant) without a needless or difficultly intelligible duplication of nerve apparatus.

Summary. The net results of the above experimentation, so far as it bears upon the problems of organic sensation, may be summarized as follows:

1. The differentiation of external and internal sensation is less obvious, and the conditions of external or internal reference more complex than we at the outset imagined. A large number of internally referred sensations quite probably arise from the excitation of cutaneous nerves.

2. The texture or massing of sensation is as important in creating apparent qualitative differences (sharp and dull) as is the original sensory element itself.

3. Internal sensations may differ from external texturally rather than qualitatively, just as tickle differs from pressure merely from being so put together that it constitutes a 'feeling' rather than a sensation compact, is affectively vivid while perceptually vague.

4. The possibility of an indifferent beginning of the pain continuum offers a valuable suggestion for the solution of some of the problems of internal sensation.

¹That is, we assume that intense visual or auditory stimuli can evoke the pain reaction only when attended by veritable 'pain' sensations, by whatever mechanism aroused.

NOTES FROM THE PSYCHOLOGICAL LABORATORY OF VASSAR COLLEGE

I. SOME STATISTICS ON SYNÆSTHESIA

Collected by K. B. ROSE

Two hundred and fifty-four women students, mostly from the Junior and Senior college classes, were asked to report upon any associations they possessed between colors or forms and letters, numbers, days of the week, months, and so on. It was found that 23, or a little over 9%, had color associations. Of these, 6 showed the phenomenon in a very striking degree; 7 in a moderate degree, and 10 in a slight degree. The order of colors arranged according to the frequency with which they entered into associations of this sort was, beginning with the most frequent: brown, yellow, gray, red, blue, green, pink, white, orange, violet, lavender. The colors were associated oftenest with letters, next oftenest with names of persons; then came names of cities, and lastly musical tones. Of the letters associated with colors 40% were vowels: since the number of consonants in the alphabet is about four times the number of vowels, this means a decided preponderance of vowels in color associations. The letter *o* was most frequently found in such associations: *a* was a close second, then came *e*, while *i* and *u* stood together as the vowels least often occurring in association with colors.

The number of persons having form-associations was 32, about 12% of the number questioned. In 27 cases the year was associated with a form, and in 22 of these the figure was that of an ellipse or circle, an obvious suggestion from diagrams of the earth's orbit such as are often found in geographies. In 21 cases the numbers from 1 to 10 suggested a form; in 16 cases the days of the week had this sort of association, and in two instances centuries had a figure associated to them.

II. AN INSTANCE OF THE EFFECT OF VERBAL SUGGESTION ON TACTUAL SPACE PERCEPTION

Reported by M. F. WASHBURN

The observer in the experiments to be described was a young woman student of psychology, a good visualizer, and, according to her own statement, decidedly suggestible. The experimenters were the writer and Dr. Elsie Murray; probably the fact that they both, as members of the instructing staff, possessed prestige in the observer's mind, added to the effectiveness of their suggestions.

In the first set of experiments, the method was as follows. Rubber-tipped compass points, separated by a distance of 15 mm., were set down on the volar side of the observer's wrist, parallel to the long axis, and, after an interval of two seconds, set down again in the same region, being shifted only enough to avoid fatiguing the skin.