

TASTE.

Geschmack und Chemismus. Von WILHELM STERNBERG. *Zeitschrift für Psychologie und Physiologie der Sinnesorgane* 20, 385-407, 1899. Also *Archiv für Anatomie und Physiologie (Physiologische Abteilung)*, 1899. 367-371.

The author holds that there are only two kinds of taste sensations—sweet and bitter—and that all other forms of taste are ‘heterogeneous sensations of touch or combinations of such with taste.’ Disregarding for the present the intensity of the sensations produced, he seeks to answer the following questions from a consideration of the composition of various chemical compounds and the taste they produce: (1) Why do certain substances possess taste and why are others that are not less soluble tasteless? (2) Why do some substances taste sweet and others bitter? (3) The psychophysical question: Why is sweet agreeable and bitter disagreeable?

Briefly stated, the general conclusion reached is that taste-producing substances have a ‘double nature,’ and that when the particular saporific groups contained in the molecule are arranged ‘harmoniously’ with regard to their number sweet taste results, when this ‘harmony’ is lacking bitter taste is produced.

In the case of organic substances the saporific groups are considered to be OH and NH₂. The former must be in combination with an alcoholic radicle and the latter with a carboxyl group; but “in order that sweet taste may result, the alcoholic radicle and the OH group must be harmoniously linked with respect to their number.” Again, the amido and the carboxyl groups must be in *a* or *o* position with respect to each other to preserve this ‘harmony’ and so produce a sweet taste. As special examples for illustration are cited the following facts: polyatomic alcohols are sweet. If in them methyl or more hydroxyl groups are introduced they still remain sweet, but the introduction of phenyl results in the formation of a bitter compound. The introduction of carbonyl or aldehyde groups in the polyatomic alcohols, forming sugars, increases the sweet taste. But if in the sugars phenyl is introduced bitter substances result; thus the glucosides which are largely phenyl derivatives of glucose are bitter. Resorcine and hydroquinone are sweet, and pyrocatechin and pyrogallic acid are bitter. The amido acids are sweet as are also dulcine, the condensation product of urea and phenetol, and especially saccharine. Quinine is the bitterest substance, but by introducing ethyl carbonic ester into its molecule a tasteless compound results.

The inorganic compounds of those elements that are in the middle of the periodic or natural system and that have neither strongly pronounced positive nor negative characteristics are sweet, and compounds of the elements of the other groups are bitter.

The paper contains no data of special experiments. The author bases his theory—if it may be so termed—upon a collection of facts largely well known. Many of the additional allusions, etymological explanations, etc., that the article contains may be interesting, but they are hardly to the point and do not serve to strengthen the author's theory.

As far as the 'double nature' is concerned upon which, according to the author, saporific power depends, it may with propriety be held that all chemical compounds (except the molecules of the elements themselves) have a dual nature, since, speaking in general terms, it is *unlike* elements that combine to form chemical compounds. Again the author explains only in a vague, indefinite way what he means by the 'harmony' in the compound upon the existence of which sweet taste depends. By his arbitrary assumption that there are only two taste sensations, he eludes the insurmountable difficulties of explaining the taste of salty, sour and alkaline substances by means of his theory.

Though the article under consideration is interesting to read, the reviewer must confess that in his humble judgment it has not answered in any satisfactory manner the three important questions that it has raised.

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TOUCH.

Ueber die Function der Tastkörperschen. M. VON FREY and F. KIESOW. *Zeitsch. f. Psych. u. Phys.*, XX., p. 126.

This is a very careful investigation of the stimulus to touch sensation. The following facts "necessitate the assumption that, as in the field of the other senses, so also for the sense of touch, the external stimulus acts only as a liberator of energy (auslösend); that the energy in the nerve-fibers peculiar to the excitation-process arises, not from the activity of the stimulant, but from chemical transformations in the end-organ, of which the stimulant is merely the occasion."

1. The depression-energy necessary to excite the peripheral nerves is several hundred times greater than that of the weakest touch-