

trichloroacetic acid, depend upon the number of such foreign groups and their arrangement,¹ it is evident that the hydrocarbon radicals have a constancy of influence upon the properties of the molecule which is not shared by other radicals.

The indifference of effect of hydrogen and carbon, when linked to carbon, upon the properties of the molecule is undoubtedly a principal cause of the stability of complex organic substances. Through this peculiarity of the two elements the integrity of the valence energy of carbon is preserved, and the long carbon chains are stable. Whenever the molecule becomes overloaded with radicals of other kinds the strength of the tie between carbon atoms diminishes and the compound becomes unstable. The properties of the carbohydrates, which will be later discussed, admirably illustrate such instability. In short, organic compounds are in some respects properly to be regarded as compounds of carbon and hydrogen jointly, for it is not the properties of carbon alone, but those of carbon and hydrogen together which chiefly make them possible.

¹ Henderson, *Journal of Physical Chemistry*, IX, 40, 1905; Proceedings of the American Academy of Arts and Sciences, XLII, 639, 1907; *Zeitschrift für Physikalische Chemie*, LX, 413, 1907.