

chemistry at the Medical School of Paris in 1841. With him was associated Boussingault, the man who, next to Liebig, did most for the elaboration of the true principles of agricultural chemistry.

To Liebig, organic chemistry did not mean the chemistry of the carbon compounds as it is defined nowadays, and has largely become since Dumas himself introduced into science the fruitful method and idea of substitution. This idea extended the facilities of the laboratory chemist enormously,<sup>1</sup> but also marks the altered view which has since taken hold of organic chemistry, the alliance with arts and industries rather than with an understanding of the economy and the phenomena of living organisms. From the moment of that alliance dates the division of organic chemistry into the two great branches of the chemistry of carbon compounds and the chemistry

15.  
Change in  
organic  
chemistry.

<sup>1</sup> It is well known that organic chemistry during Liebig's lifetime outgrew the canons and the circle of ideas in which he moved, and that he complained of not being able to understand the papers in his own periodical, the 'Annalen,' &c. Liebig originally opposed Dumas' ideas on substitution, but in the end admitted himself defeated, when, through Hofmann, he became convinced "that the character of a chemical substance does not depend so much as he had supposed on the nature of its constituent atoms, and depends very largely also on the manner in which these atoms are arranged. Some years afterwards, at a dinner given by the French chemists to chemical visitors to the Exhibition of 1867, Liebig made his defeat on this occasion the source of a happy retort to Dumas, who had asked him why of late years he had devoted himself exclusively to agri-

cultural chemistry. "I have withdrawn from organic chemistry," said Liebig, "for with the theory of substitution as a foundation, the edifice of chemical science may be built up by workmen: masters are no longer needed" (Shenstone, 'J. von Liebig,' 1895, p. 61). Already, in 1838, Liebig and Wöhler, in their investigation on uric acid and its derivatives, prophetically suggested the twofold development which organic chemistry was destined to take: "From these researches the philosophy of chemistry must draw the conclusion that the synthesis of all *organic* compounds which are not *organised* must be looked upon not merely as probable, but as certain of ultimate achievement" ('Annalen,' &c., vol. xxvi. p. 242). In fact, we have now a chemistry of organic and one of organised substances.