It was in 1828 that Wöhler (1800–1882) succeeded in building up the characteristic organic waste product urea from inorganic substances. This step in "chemical synthesis" not only gave an impetus to the study of other organic substances of physiological importance, but it was fatal to at least one form of the prevalent "vital-force theory", according to which organic substances were supposed to be only producible by living organisms. The term "organic chemistry" began to be replaced by "the chemistry of the carbon compounds", which, if longer, has no theoretical implication. Wöhler's synthesis has been followed by many others equally remarkable, *e.g.* of sugar; and various announcements, such as Lilienfeld's, still requiring corroboration, lead us to expect that the synthesis of proteids is not far off.

Another pioneer was Justus von Liebig (1803–1873), the first to attempt a systematic survey of the chemical processes in living organisms. His great work, *Chemistry in its Applications to Agriculture and Physiology* (1840; 8th ed., 1865), is still a classic, and has had an influence only second to that which the author himself had upon a large body of students.

To appreciate the change which has taken place since Liebig began his work, one has only to take an old physiological text-book, with its minimum of chemistry, and compare it with a good modern book such as Bunge's or Halliburton's.

For many years what was done was in the main *physiological chemistry*—analysing, naming, and recording the distribution of organic substances in the body, all very well in its way, but not very definitely physiological. More recently, however, what has been done has been more clearly *chemical physiology*, that is to say, an association of the chemical composition of the substances studied, with the vital phenomena in which they are, to say the least, implicated.

For another line of physiological progress it is more difficult to find a name. By analogy it should be called physical physiology, or physiological physics, but both seem absurd. We mean the study of the physical aspects of vital phenomena, the trans-

Physical Aspects.