The Beginnings of Applied Chemistry

Origins and Development of Applied Chemistry
By Prof. J. R. Partington. Pp. xii+597.
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Green and Co., Ltd., 1935.) 45s. net.

THE evolution of an idea or event usually makes a very interesting story, and probably none more so than the origins of some of the industrial applications of chemistry. Indeed, several of the modern chemical arts have been practised for thousands of years in forms which become more and more primitive and obscure as they are traced backwards, until at last their humble origins are lost in the haze of prehistoric antiquity.

Many charming stories have been written about one or other of those chemical industries the origin of which antedates all books and writings; although, in some cases, industries have passed through many strange vicissitudes in their development, and have been ultimately abandoned, for, as Lucretius has said:

The rolling years bring on a change of things;
What once was valued loses all worth,
And what was worthless rises in its stead.

In the work under notice, Prof. Partington has presented a wonderful and valuable account of the sources, production and uses of materials in Egypt, Babylonia, Assyria, the Ægean, Asia Minor, Persia, Syria and Palestine, from the earliest times to the end of the Bronze Age—"wonderful" because of the painstaking care in handling so large a mass of evidence involving, we are informed in the preface, 7,000 references; and "valuable" because it supplements so effectively and pleasantly our general knowledge on the historical side of industrial chemistry.

Each territory is treated as one unit, so that the origin, occurrence, manufacture and use of a given material, say, iron, are described country by country. Some might consider that it would have been better to have collated the data with reference to each material, as E. O. von Lippmann did towards the end of his "*Entstehung und Ausbreitung der Alchemie*" (Berlin, 1919-31). I think that Prof. Partington has adopted the better plan; the alternative would probably have been preferable had the narratives extended through the Middle Ages.

The materials treated in Prof. Partington's book include the metals and alloys: copper, silver, gold, zinc, brass, mercury, tin, bronze, lead, arsenic, antimony, iron and steel, cobalt, nickel, and platinum; and various chemical compounds—

common salt, natron, sal ammoniac, nitre, alum and vinegar—as well as sulphur; the gem-stones—natural and artificial; building materials—plaster, stucco and bricks; pigments and paints; ink for writing; oils—expressed and distilled; pomades and ointments; incense and perfumes; products derived from plants; medicinal preparations; and fermented drinks and other beverages. There is a temptation to select one or two items in the list to illustrate in detail how thoroughly the work has been done, and to compare that work with evidence collated in other ways.

Operations connected with the arts of metallurgy, dyeing, weaving textiles, tanning leather, brewing, baking, embalming, pottery, glass-making and the imitation of gem-stones, are also described. Here we can see the beginnings of many an industry practised in modern times; and that not always to the credit of the later workers, judging by what they have accomplished with their heritage—*St. Matthew* xxv, 25.

The data confirm M. Berthelot's belief that chemistry is founded on knowledge slowly accumulated by practical discoveries in metallurgy, medicine and other arts; and the opinion of J. B. A. Dumas when he said:

Let us confess at once, without going round the subject, that practical chemistry took its rise in the workshops of the smith, the potter, the glass-blower, and in the shops of the perfumer.

Of course, the mere mechanical practice of operations, essentially chemical in their nature, does not make the early artisans into chemists in anything but name. Otherwise, the first man to light a fire, stew a rabbit, or roast a pig might have been styled the father of chemistry. In the words of A. F. de Fourcroy (1782):

It is vain and ridiculous to attempt to trace the origin of chemistry to the first men who worked in the metals, cut and polished stones, fluxed sand, or dissolved and crystallized the salts. This would be analogous to an attempt to trace the elements of geometry in the efforts of the savage to trim irregular fragments of rock to a more regular form in order to adapt them to his first needs.

The index is worthy of the book; it is singularly complete, occupying as it does 65 pages, three columns per page. It is difficult to see how those interested in the subject can carry on economically without the assistance of the "Origins and Development of Applied Chemistry".

J. W. MELLOR.