

for the latter purpose; the manufacture of ammonia, coal-tar and aniline dyes from gas-wastes; of naphtha, benzine, lubricating oils and paraffine from petroleum wastes are all striking instances of this second element in modern industrial economy. It is obvious that this utilization could not have existed without the previous extensive development of chemical science.

This survey, while it shows the deep-rooted influence of chemistry upon nineteenth century civilization, also emphasizes the importance of chemistry as a factor in education. The claim of chemistry for a large share of attention from all students seeking a liberal education, not to mention those looking toward industrial and technical pursuits for a livelihood, is based upon the fact that chemical products and processes are used in the preparation of nearly all classes of materials used by man, that the history of many of our most fundamental ideas is imperfect without a knowledge of the chemical researches from which they take their origin; that by no study is a clear understanding of the experimental, as distinguished from the purely observational method of research so fully obtained; finally, and especially, that the study of chemical technology and the application of chemical methods in the laboratory, promote habits of accuracy, and of seeking for a practical application of facts discovered by observation and experiment, which are highly beneficial, whatever may be the life-work of the individual thus disciplined.

CO-EDUCATION.

ABOUT twenty years ago a large number of American colleges opened their doors to both sexes. But already, a great many of these have abandoned the plan. It is not a question as to whether women are as strong minded as men, nor is it a question whether they should have the same advantages for an education as men. But it is questioned whether

women should be educated in the classes and take the same courses of instruction as men in college.

The minds of human beings of both sexes are fundamentally alike, yet in each sex distinctive qualities are developed. Each sex may, in particular cases, have points of superiority. But we speak of the average natural endowment of each, not of masculine women, nor of effeminate men. There is in the normal man a physical and mental robustness not normal to the gentler sex, and there is in woman a grace, a delicacy, a fineness of sensibility, a tenderness and quickness of insight not natural to the stronger sex. These points are indicated by their respective natural gifts and tendencies. They are also shown in the spheres of life which they are to fill.

The principal and leading qualities of the mind being so different, is it natural that they should be given exactly the same course of mental culture? The fundamentals of the mind, being the same in each, should undoubtedly receive the same elementary education. But should not the advanced education be varied to suit the mind of the student? Every one will say that a young man should study for that occupation or profession for which he has a natural aptitude. Should then a woman study those branches that are specially selected for men and which are wholly against her nature? While the opportunities of young ladies should be equal in every respect to those of young men, the peculiarities of the female mind and constitution, and the sphere in life to which woman is normally adapted, make it that the educational opportunities of women can not be equal to those of men unless they are different. When the sexes are educated together, the man has a great advantage over the woman and he gets more out of his education, because their line of study was selected especially for his mental qualities. A woman needs what will make her a queen of the household and of society, while man needs what will