

that no son or daughter will ever be lost from the house where the father and mother bow to their God in humility and ask Him for His aid and seek to exhibit in their lives consistency and action in keeping with the prayers that they offer; that step by step they will move onward, and should their son or daughter wander away for a season from the home, they will come back, and by the fireside where they were wont to bow will remember in gratitude that that father and that mother taught them to lisp a prayer to their Maker and sought to instill into them by example everything that tended to ennoble and make man respected among his fellows as well as with His Father in Heaven.

My testimony to you, my brethren and sisters, is that the instructions which have fallen from the lips of God's servants are the words of eternal truth to everyone that has listened to them, and should go forth from this assembly and create such a revolution in favor of everything that is good and pure and true, that a condition would be brought about in which every man, woman and child would rejoice. We will rejoice when no longer the fumes of whisky and tobacco are upon the breath of our brethren. We will rejoice in the victory of that man who can say, "I hold God and His laws in advance of a cigarette, in advance of a drink of liquor, in advance of a chew of tobacco, or in advance of any of those things which He has designated as improper for us to use." We should seek by every means in our power to lay these things aside, and observe to keep His commandments.

May the Lord bless us with faith. May He bless us with a proper comprehension of the doctrines we have espoused. Above all, may He bless us with the moral courage to be what we decided we would be when we entered the waters of baptism and received our confirmation in His Church, believing and sensing by the witness He gave that it was true. Amen.

ALCHEMY.

If the question were asked you what one thing in the civilized world is sought after most, it is probable that the substance of nearly all your replies would be very much the same, namely,—wealth, money. And to most people, especially those who live in the West, the idea of money at once suggests gold and silver. It is of these metals that people think, talk, and perhaps at times dream. It is for these that men toil plan, scheme, and too often stake love, honor, all. And without inquiring into the question whether or not the mania for gold is more prevalent now than formerly, it is enough for our present purpose to say that it has perhaps always been the chief desideratum of civilized men.

The original source to which men now turn for wealth in the form of gold and silver is in the bowels of the earth. But these metals have not always been sought for here exclusively. There was a time in the history of the world, not long since past, when men thought they could create gold and silver, called noble metals, from lead, copper, tin, mercury, etc., usually spoken of as base metals. And it is the purpose of your speaker to ask your indulgent attention for a short time, while an outline of the

history of such attempts is presented, together with a brief consideration of the reasons which led to the attempts.

The art by which the noble metals, gold and silver, were to be made from the base ones such as lead and copper is known as alchemy. It may be well to say, however, that this art was nothing but a division of chemistry, and, indeed, for centuries it was considered to be almost identical with chemistry; that is to say chemistry was then regarded as the art of making the noble metals. It is customary now, however, to call the subject alchemy, during the time that making gold and silver was regarded as its chief aim. That very important science which we call chemistry may be said, therefore, to have had its origin in the efforts to make the precious metals, gold and silver. Hence in following the history of alchemy, we will be following in a general way the history of chemistry until near the close of the alchemistic period, when chemistry and alchemy parted company. But we shall find that alchemy did not long survive the separation.

From what has been said it will be readily understood that the problems of alchemy were regarded as the problems of chemistry. But the problems and aims of chemistry have not always been the same; and it is due to differences in aim that the history of the science may be divided into periods, five of which are recognizable. The alchemistic period, however, extending from the first centuries of our era to the sixteenth, is longer than all the others combined.

If now we seek the source from which originated the idea that base metals like lead and copper can be changed, or transmuted, into the noble ones, gold and silver, we shall first of all have to look the speculations of ancient Grecian philosophers relative to the material world, and especially to the ultimate constitution of matter. Though their views upon the elements and the composition of substances were various, we need, perhaps, consider here only those bearing the name of Aristotle, who lived in the fourth century B. C., for the so-called Aristotelian doctrine of the elements,—which doctrine, however, was originated by Empedocles nearly a century before Aristotle's time—was the one which was universally accepted and which continued to be regarded as the highest expression of scientific truth throughout the Middle Ages. According to this view, all kinds of substances are made up of four elements, earth, air, fire, and water. Aristotle himself did not look upon these so-called elements as different kinds of matter, but as different properties carried about by one original matter. The chief qualities of the elements he held to be those apparent to the touch; namely, warmth, coldness, dryness, and moisture. Each of the four elements is characterized by the possession of two of these properties, air being warm and moist, earth cold and dry, fire dry and warm, and water moist and cold.

Every material substance, according to this view, is composed of the same kind of matter, but with these four properties, represented by the four elements, present in various proportions in different substances; that is to say, for any one substance the amount of these different properties present is constant for that substance in a particular condition, but the amounts in one substance

differ from the proportions in another. Afterwards it was pointed out that every substance has a property peculiar to itself. This, Aristotle then said, is due to the *quinta essentia*, or fifth essence, which he regarded as being immaterial in its nature. The difference, then, between one substance and another are due solely to different proportions of these properties contained in the substances. But it was assumed that these properties can alter, therefore it follows that one substance can be changed into another. Thus water represents moisture and coldness; air warmth and moisture; these elements have the property moisture in common, and coldness, the individual property of water, can be changed by heat into warmth, the individual property of air. Hence water can be changed into air. From speculations of this kind, it is easy to see how the belief became firmly fixed that one substance can be changed into another. Indeed, such changes were thought to be a matter of every day occurrence.

Before proceeding further it may be well to digress in order to glance at the position of modern science in reference to the elements. An element is now defined as being a substance that cannot by any means be decomposed into simpler substances. Thus defined, gold, silver, copper, lead, in short, all the metal, are elements; for the application of all known means, such as heat, electricity, solvents, and others, of splitting substances up into simpler bodies, has failed to produce simpler products from these metals. So far as known, the world is composed of about seventy elements, either free or combined one with another. But many of these elements are rare, the common ones, or those that make up the bulk of the world almost entirely, being about twelve in number. As a rule, the elements are combined, one substance consisting, in general, of from two to five elements chemically united. Water, for example, consists of but two elements, oxygen and hydrogen; marble, if pure, of three; quartz of two, and air of a mixture of two, nitrogen and oxygen. A new element is occasionally discovered, so that the exact number of elements of which the world is composed is not known. Further, it is entirely possible that some of our elements may some day be found to be compounds, being decomposed by means as yet unknown. For many substances that were formerly thought to be elements have been proved since to be chemical compounds by decomposing them into simpler bodies.

But since an element cannot be decomposed, it follows that it cannot be changed into another element. It may, however, unite with other elements to produce chemical compounds. Hence since gold and silver are elements (to anticipate somewhat) they cannot possibly be made from other elements, such as lead and copper. The task of the alchemist, therefore, was a fruitless one so far as transmutation of metals was concerned, but his work was not entirely without valuable results, for it brought to light many important chemical facts.

But it may be asked how the ancients obtained such erroneous ideas of the elements. We do not have to look long for the answer; it is because their method was purely speculative. Their theories were not founded upon long and painstaking experiments, such as are now-a-