

upon any reliable observations. And nothing was taught except by the consent or authority of the Church, and most of their education had more or less relation to Church dogmas.

The Hindoos and the Arabians in the meantime kept alive the sacred fire of Greek geometry and astronomy; they did more—they advanced the science of arithmetic, invented the decimal system—one of the greatest inventions ever made, in so far as its effects upon the world are concerned—and they made considerable advances in algebra and algebraical analysis. In fact the very name algebra is Arabic, and the names of all the bright stars are either Greek or Arabic.

But Europe slumbered on in her theological lethargy in almost total ignorance of what was being done in science by her Asiatic neighbors.

For although the decimal system was invented and came into use about the year 600 A.D., it was yet unknown in Western Europe in the days of Bernellinus, who lived after the year 1000 A.D.

The Moors in Spain were in constant touch with their Musselmen brethren in Arabia, and in their three great universities at Granada, Cordova and Seville, they read and studied the Arabic translations of Euclid, Archimedes, Ptolemy, and other Greeks, works totally unknown to the Christians of Western Europe.

And if the Christian was too fanatical to profit by the science that had been developed by Pagans, the Moor was equally so in concealing with jealous care the names and contents of their books from the dogs of Christians.

Thus things went on, until an English monk of Bath, Adelhard, disguised himself as a Mahomedan student, got into the University of Cordova in 1120, and carried off a Moorish copy of Euclid's elements, which he afterwards translated into Latin, and this translation remained the standard text of Euclid for more than 300 years.

The presence of a book like Euclid's, the product of the ancient and despised Greeks, dealing with a range of mathematics so far in advance of anything they had hitherto known, created in the minds of Europe's scholars an intense desire for closer acquaintance with the product of Greek thought.

Shortly after this Abraham Ben Ezra, a Jew, began to introduce Moorish learning into Europe, and other Greek works being obtained from the East, the European scholars began seriously to study the ancient Greek. And we are told that it came to these men as a revelation, that an ancient, despised and Pagan people should so far have transcended the best European and middle-age scholars, not only in the domain of science, but also in that of poetry and speculative thought.

This naturally led after a little time to the establishment of the great European Universities of Bologna, Paris, Oxford, Cambridge and Salerno.

In all these universities the secular subjects included grammar, logic and rhetoric forming what was called the Trivium, and music, arithmetic, geometry and astronomy forming the Quadrivium.

In this state, with a few minor changes in the comprehensiveness of the curricula, these universities came down to nearly the present time.

In this brief sketch we see that we have had universities, as those of Egypt and Greece, basing their whole courses of study on mathematics, and especially geometry; that we have had universities, such as those of the dark ages of Europe, where science was at a discount and theological scholasticism was at a premium; and we have had universities, those founded after the revival of learning in Europe, which widened their scope sufficiently to include all the subjects of the trivium and the quadrivium. And these universities were clearly expressions of the state of education and of the main lines of thought of the people in these countries at these respective times.

Until a few years back the leading universities confined their curricula of studies to the subjects of mathematics, classics, logic, rhetoric and metaphysics, the last of these being, however, limited in quantity. And even in English universities Latin and Greek were looked upon as essentials to a university course, while the English language itself was only an accidental.

It was said, and it is said by some people still, that these subjects give a man the most culture, and best prepare him for being a citizen of the world; and that this is the function of a university.

Well, that depends upon what meaning is to be given to the word culture, and as to how the other citizens of the world have been prepared.

A man with merely this culture would be as much out of place in a meeting of the British Association for the advancement of science as a Savonarola or a John Huss would be among the seven sages of Greece. Culture is a very indefinite term, and I think that it is an experiment which is not yet concluded, as to what lines of education are most fully adapted to produce the best citizen and build up the best national type.

The universities, at first, striving after the purely intellectual, were opposed to anything like experiment and observation, as being somewhat beneath their high dignity and aim. But the fact that workers with different ideas, outside the universities, frequently did more for the welfare of the people than men within, forced the universities to take up a different position. They admitted, at first, experimental physics, and although it was sparingly