

and there will probably be many more bones broken and many more lives lost before the world will have its practicable 'valor.' So it has been with the many who (as Joaquin Millar hath it)

'Blazed out new ways for worlds to come,
And mourned not, but bravely dumb,
So died, full trusting God and time.'

Of the pioneers of the new locomotion, many may yet pass, but in so far as each may have gone a little further than his predecessors in the path of achievement, the world is the better that they have lived and wrought and dared.

The One Thing Needful

When Calverley—he of the nonsense verses—went to school, and his companions 'never heard of Mrs. Grundy,' all the theology they knew was that they 'mightn't play on Sunday';

'And all the general truths, that cakes
Were to be bought at four a penny,
And that excruciating aches
Resulted if we ate too many.'

That sort of thing represents about as much of moral truths and principles as a purely secular system of public instruction, left to itself, can well instil into the mind of girl or boy or hobbledohoy. It may impart a passable or sufficient measure of intellectual training. But that is not enough. The multiplication table or quadratic equations will not train the heart or develop the moral faculties or form the character. 'You said well,' said Vice-President Fairbanks (non-Catholic) to the faculty and students of the Jesuit College in Chicago a few weeks ago, 'that the education of the intellectual faculties, and the instilling of morality into the heart is the purpose of the school body. Yes, my friends, education, no matter how grand and how splendid it is, is a dangerous element if there does not go hand in hand with it the cultivation of the moral virtues in us. The permanence of our institutions does not rest alone upon the law; does not rest alone upon the virtue of constitutions and of statutes, no matter how wisely they may have been framed or how well they may be expressed. In the final analysis, the permanence must rest upon the honesty, upon the education and upon the morality of the great body of our countrymen.'

Cardinal Logue

We live and learn. The recent cable message about Cardinal Logue's alleged prediction as to the dissolution of the Empire furnishes a fresh evidence of a crying need so often emphasised by us—the need of a live Catholic News Agency. With such an institution in operation, and working in, so far as possible, with the secular news agencies, the full facts of the matter might have been placed before the Australasian public within four-and-twenty hours. Yes; we live and learn. And, where outside views and news of our religion, its persons, and its institutions are concerned, we often learn in a hard school. But we are not in all respects apt scholars. For it seems to take a long, long course of hard knocks to make us realise in a practical way the extent to which the great world-channels of journalistic information are monopolised by agencies that are unfriendly to the Old Faith.

SCIENTIFIC FACTS AND SCIENTIFIC THEORIES

CHRISTIAN FAITH V. SHIFTING HYPOTHESES

AN ARTICLE THAT EVERY CATHOLIC SHOULD READ

(Concluded from last week).

Everybody, one may presume, will have heard of the alchemists and of their search for

The Philosopher's Stone,

which was supposed to possess the power of transmuting one substance into another; of making, for example, gold out of lead.

This search was based upon the underlying theory that there was a 'materia prima' of which all substances were different manifestations, and the search itself was valuable in that it led to the emergence of the great science of chemistry.

Robert Boyle—'the Father of Chemistry, and the Brother of the Earl of Cork,' as his tombstone describes him—a very distinguished exponent of his science, wrote, in 1681, a work called 'The Skyptical Chemist,' which was the commencement of the movement which displaced the view of the alchemists that there was a 'simple, perfect essence,' and replaced it by the theory that there existed some seventy or eighty elements which were unchangeable and undecomposable. It is fair to say that the view that these elements were unchangeable was always guarded by careful men of science with the proviso that they were unchangeable so far as could be seen. Thus Davy stated in 1811 that 'to inquire whether the metals be capable of being decomposed and composed is a grand object of true philosophy,' and Faraday, in 1815, that 'to decompose the metals, to reform them, and to realise the once absurd notion of transmutation, are the problems now given to chemists for solution.' But in spite of assertions such as this, it is fair to say that all chemical work for more than two hundred years proceeded upon the assumption that the simplicity of the elements was a scientific fact. And yet recent discoveries seem to show that the fact was in reality only a theory, and that theory not an accurate one; nay, more, that the alchemists in their underlying assumption were nearer to the truth than the many generations of chemists which succeeded them. To justify this statement it must be explained in the first place that some twenty-five years ago Sir Norman Lockyer showed, by spectroscopic methods, that a certain element, which he called helium, at that time not known to exist upon the earth, was to be found in abundance in the atmosphere of the sun. Now recent research seems to show that this helium is a disintegration product of radium, and if that is the case, then one form of matter has been caught in the act of transmuting itself into another. Moreover, there is some evidence that radium itself is a disintegration product from some other substance, perhaps the hitherto called element uranium, or, as others hold, of some unknown substance which accompanies uranium. Finally, the element thorium appears to be constantly engaged in generating from itself another solid element which again decays, its end-product being so far unknown. These facts, if they be facts, are the result of but a few years' investigations; for it is but yesterday that M. and Mme. Curie announced their discovery of radium. Yet they have rendered insecure the whole basis upon which chemists have been working for more than two hundred years, and strikingly illustrate the truth of the statement that great hesitation should be exhibited before scientific facts are regarded as being surely and irrefragably established.

But far beyond the points above dealt with is the view which is now being put forward that all matter is one in its last analysis. That the molecules of which any substance is made up are composed of certain factors called atoms has long been a dictum of science, and the atomic theory, so wonderful and so fruitful, is built upon it. But it is now urged that these atoms consist of corpuscles or electrons, and that each of these is made up of a moving unit of negative electricity together with the ether which is bound up with it. A collection of such corpuscles, surrounded and balanced by a sphere of positive electricity, is an atom. Hence in essence there is no difference between the corpuscles of any substances. It is their arrangement in the atom, their positions with regard to one another, perhaps the kinks or vortices which they produce in the ether surrounding them, or which exist in that ether, which produce the differences in the atoms and hence produce the differences in the substances of which they are the constituent parts. If all this be true then it is not too much to expect that some means may yet be found by which the arrangement of the corpuscles in the atom may be artificially altered, and one substance actually transmuted into another. Incidentally I may remark that besides rehabilitating the alchemists, this view, so far as I understand such matters, comes uncommonly close to the scholastic theory of matter and form. What I have said shows, I think I may claim, that even a theory of such respectable antiquity and such apparently unimpeachable validity as that of the chemical elements may turn out to have been inaccurate, and that, if such be the case, it is

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