source of strife by the wilfulness of men. Churchmen can only say in this matter with the venerable Council of Nicœa, "Let the ancient customs prevail." C.

GENESIS AND SCIENCE.

THE statement of Genesis that 'the earth was without form and void, and darkness was upon the face of the deep,' Hebraists agree in interpreting, as meaning that the earth was in a state of chaos not of cosmos, that it was waste and empty. The first verse told us of the creation of the materials out of which the worlds were to be elaborated; this second verse tells us that the original condition of the material elements of which the earth is composed was one in which they were all confused together, and without organisation, definite form and life. That it may not be suspected that such an interpretation is at all affected by a desire to facilitate its adaption to the requirements of modern science, it is sufficient to point out that it agrees with St. Augustine's notions. He did not think that the first verse signified that the worlds were created at the first in a fully organized condition, but "potentially." He says, 'For as if we consider the seed of a tree we may say that there are in it the roots, the branch, the fruit, and the leaves—not because they exist already, but because they are to come into existence from that seed—so it is said, 'In the beginning God created the heavens and the earth,' as if this were the seed of the heaven and the earth, although as yet all the materials of heaven and earth were in confusion; but because it was certain that from this the heaven and earth would be, therefore the material itself is called by that name.' So far as the earth is concerned, then, the Scripture represents its component parts or primal elements as being originally confused or blended together as an indeterminate, unorganized mass of matter, without life and without light.

Science can tell us nothing certain about the primal condition of the earth, how the material constituents of which it is composed came into existence, and what was their first state or condition. Scientists have made guesses and constructed theories on this question, but they have no means of proving which is right and which is wrong. There is one theory which has gained more general acceptance than any other, because it seems to accord better than others with established facts, and that is the theory of Leplace. As Professor Haughton says, 'There is a high probability that Laplace's nebular hypothesis is the nearest approach that we are capable of making to an astronomical history of the origin of the globe.' This theory offers a very close harmony between the scientific account of creation as at present understood and the Scriptural account. But we must remember that it is but a hypothesis after all, and that, if it should have to give place to another more satisfactory, the truth of the Scriptural account of creation does not depend on its acceptance or rejection. As Professor Young points out, 'Laplace offered his theory, be it remembered, with all becoming hesitation and humility;' to use his own words, "with that distrust which everything ought to inspire that is not the result of observation or calculation." Nevertheless the later researches of the most eminent astronomers, physicists and chemists, since Laplace's time, have tended to give confirmatory evidence in favor of his nebular hypothesis. Before going further, then, it will be necessary to understand what Laplace's notions were.

This wonderful man conceived that all the elemental constiuents of our solar system originally existed in a highly attenuated, gaseous, or vaporous condition, similar to that in which some of the nebulæ appear to be. He conceived that, by some means or other, a revolving motion round one common central nucleus was communicated to this mass of diffused elemental world-matter; that, as the vaporous material revolved, it gravitated more and more towards the central nucleus, leaving at various distances several concentric rings of its matter, which gradually became spheroidal bodies or planets. This theory claims to explain why the orbits of all the planets are circular, why they all travel round the sun nearly on the same plane (that of the sun's equator), and in one direction (that of the sun's rotation), why they also rotate on their own axes in the same direction, and also why all their satellites (except those of Saturn and Uranus) revolve in the same direction; all of which remarkable coincidences could not have been fortuitous, but must have resulted from the operation of a common cause. Such is a brief sketch of this theory, but as it is so important and interesting a subject, it may be well to quote a popular explanation of it by the eminent Astronomer-Royal of Ireland, Sir Robert Stawell Ball. He writes, 'As far as our present knowledge goes, we are bound to suppose that the sun must have been larger and larger the further our retrospect extends. There was a time when the sun must have been twice as large as at present; it must once have been three times as large; it must once have been ten times as large. How long ago that was no one can venture to say. But we cannot stop at the stage when the sun was even ten times as large as it is at present. Looking back earlier still, there was a time when the sun was once swollen to such an extent that the mighty orbit of Neptune itself would be merely a girdle around the stupendous globe. At that time the sun must have been a gaseous mass of almost inconceivable tenuity. We are not to suppose that the earth and the other planets were solid bodies, deeply buried in the vast bulk of the sun. It seems evident that the planets were gaseous masses in those ancient days, and undistinguishable from the sun, which gave them birth. It seems to be generally thought that this great nebula must have been originally endowed with a certain rotation. As the nebula began to radiate heat, so it must have begun to contract; and as it began to contract, it began to rotate more rapidly. But, as the nebula spins more and more rapidly, the cohesion of its parts is lessened by centrifugal force. The moment at length arrives when the centrifugal force detaches a fragment of the nebula. The process of condensation still continues, both in the fragment and in the central mass; the fragment changes from the gaseous to the liquid, perhaps even from the liquid to the solid, and thus become a planet. Still the central mass condenses, and spins more and more rapidly, until a rupture again takes place, and a second planet is produced. Again, and still again, the same process is repeated, until at length we recognize the central mass as our great and glorious sun, diminished by incessant contraction, though still vast and brilliantly hot.

'One of the lesser fragments which he cast off has consolidated into our earth, while other fragments, greater and smaller, have formed the rest of the host of planets. There are many features in the planets which seem to corroborate this view of their origin. They all revolve round the sun in the same direction; they all revolve on their own axis in the same direction, that direction being also coincident with the sun's rotation on its axis. Most astronomers are agreed that the history of the solar system has been something of the kind that I have ventured to describe.

'At its first separation from the shrinking central nebula our earth was probably a mass of glowing gas, of incredibly greater volume than it is at present. Gradually the earth parted with its heat by radiation, and commenced to shrink also. The temperature was so high that iron, and other still more refractory substances, were actually in a state of vapour; but, as the temperature fell, these substances could not remain in the gaseous form; they condensed first into liquids, these liquids coalesced into a vast central mass, and still that mass went on cooling until it sank at length to a temperature comparatively cool. Still the earth was swathed with a deep and dense mantle of air, charged with an enormous load of watery vapour; but, as the temperature of the surface gradually decreased, at length the watery vapours were condensed, and descended to form the oceans with which our earth is so largely covered. At this point the functions of the astronomer are at an end; he has traced in outline the manufacture of the earth from the primeal nebula; he has accounted for the earth and for its internal heat. His work being done, he now hands over the continuance of the history to the biologist.'

Such is the explanation of the theory of Laplace as given by an eminent scientist of the day, not as adapted or colored by a 'harmoniser;' and a comparison of it with the Scriptural history of the genesis of the world will be found to present such a remarkable agreement as makes it perfectly astounding that Professor Huxley could conclude his reply to Mr. Gladstone by saying that 'until some further enlightenment comes to me I confess myself wholly unable to understand the way in which the nebular hypothesis is to be converted into an ally of the Mosaic writer.' Of course, from our point of view, we do not need it or call it in as 'an ally;' but, taking it as the latest and most reasonable theory Science has