mous and complicated teloscopes had been invented, and observatories and instruments of precision placed at man's disposal and brought into common use, man knew but very little of the magnitude and of the colossal scale of the visible creation.

PRESENT KNOWLEDGE—THE EARTH.

By the help of the refracting and reflecting telescopes, and through the general advance along the whole line of science, we have now come to correct our views. We are no longer living in the mine, but have reached the light of scientific day. We find that the earth, our dwelling place, is not the important planet that was once supposed. So far from being the centre of the universe, the chief among the myriad celestial orbs moving in space, we are compelled to admit that it is a very small and an extremely insignicant object. Compared to the rest of creation it is but a tiny mote, a mere gram of dust, an inappreciable point. We may speak of the sun as "a lamp to illuminate our earth," but we now know that this lamp is considerably more than a million times the bulk of the earth which it illuminates. So small in comparison is the earth, that we might take matter enough from the sun to fashion a thousand earths the size of ours, and the sun would seem as large, as bright, and as beautiful as before, and its glory be hardly diminished. Nay, if the globe of the sun were to be sliced up into a million equal parts, each one of these million parts would be appreciably larger than the bulk of our earth, so inconceivably great is the sun—yet if the sun and the earth and the whole of our solar system, together with all which it contains, were to be suddenly effaced and utterly obliterated, the effect in the universe at large would merely be that a tiny star had ceased its twinkling. The myriad host of stars which stud our sky has been elevated into vast importance. "Each one of those stars is itself a mighty sun actually rivalling and in many cases surpassing our own luminary. We thus open up a majestic conception of the vast dimensions of space, and of the dignity and splendour of the myriad globes by which that space is tenanted" (Ball.)

VASTNESS OF THE UNIVERSE.

As a living writer has well expressed it: "Of those celestial bodies which gravitate in majestic harmony through infinite space, some are suns first bursting into flame, others are suns well-nigh burnt out. Here are worlds which are the cradles of life; there are worlds which are its tombs—vast, nameless sepulchres, black and frozen, minatory of the end to which our terrestrial home is surely hastening. This earth is but a diminutive islet in the boundless celestial archipelago, which has its centre everywhere and its circumference nowhere; one of the least considerable planets of our vast solar system, which, again, is a mere speck in the illimitable ocean of space." To destroy the whole of our earth would produce no more effect upon the universe itself than the destruction of a single leaf would produce upon a great forest; it would leave no more appreciable gap than the destruction of a single grain of sand would in the immense bed of the ocean.

WEAKNESS OF MAN.

What a poor, weak and foolish thing is man in the presence of the great and irresistible Power who has spread out the heavens above and around us, and has filled all space with such innumerable and such wonderful worlds. When we issue forth into the night and peer fearfully into those fathomless interstellar depths; when we gaze with reverential admiration at those distant stars, which we know are enormous suns, and yet look but as mere grains of golden splendor owing to their stupendous and measureless distances, do not feelings of reverence and awe steal over us: and do we not feel inclined like the child first issuing from the dark mine into gladsome day, to throw ourselves on our faces, and to worship and adore the Lord and Master of all that glorious creation. To break out with the prophet into words of wonder and of praise; "The heavens and the earth are full of Thy glory. They are but the works of Thy hands. They shall perish, but Thou shalt endure, they shall all grow old as a garment, and as a vesture Thou shalt change them and they shall be changed, but Thou shalt be the selfsame, and Thy years shall not fail." Yet, though the boundless extent, the exceptional beauty, and the perfect order and symmetry and proportion of the material creation is a perfect revelation of God: though we see the perfections of the Divine Artist shining, as it were, through his work, and reflected in every part of creation, yet He is still more clearly manifested in man himself.

MAN'S WONDERFUL NATURE.

Man is a far more wonderful and a far higher creation than the whole material universe; and he affords a still more incontestible proof of both the power and the wisdom of God. To look upon that microcosm man is to look upon a work divine. His whole being speaks of God, and demands God for its Author. Indeed, it would be far easier to suppose that such a complicated and beautiful piece of machinery as a steam engine or a chronometer sprang into existence without any exercise of thought or reason, and without rational artificer to conceive and fashion it, than it would be to suppose that man, with all his parts and organs and faculties of mind, could exist without a divine intellect to conceive him, and an omnipotent power to produce him. And, what I wish to lay special stress on is that—not revelation only, not scripture or tradition, or theological teaching only—but science itself compels us, unless we are to stultify ourselves and to deny the clearest dictates of reason—science compels us to admit an all powerful and an all-wise Creator.

SCIENCE.

In these days men pin their faith upon science. Science is their teacher, their instructor, their only reliable authority. Men, who in their pride and self-sufficiency, reject revelation, denounce the Church, and ridicule the Bible, and all that savours of the supernatural, make science the basis and the source of their belief.

SCIENCE THE HANDMAID OF THEOLOGY.

Are we, as Catholics, afraid of Science? Do we reject her teaching? Do we close our eyes to her discoveries and investigations? No! Most emphatically no! Is not the Author of nature as of grace? Is not all truth from God, whether physical truth or moral truth, whether scientific or theological? And can God contradict Himself? Never! Why, then, should we fear the advance and the promulgation of science and physical research? We have no cause to fear it. It is an ally; a handmaid of theology. Does science deny God? Quite the contrary. If we go to science, science takes us by the hand and leads us back to God. Science proclaims the necessity of God, and cannot itself do without Him. Thus, to give one particular instance, what science teaches us about man, and his history supposes, as a necessary postulate, the existence of God.

GEOLOGY POSTULATES GOD.

Indeed, we cannot accept the scientific account of the history and development of the earth, without admitting the necessity of God. To make this clear let me briefly state, at least in outline, what scientific men tell us of the history of our little earth. We have a fairly accurate idea of the condition and configuration of the earth as it now exists. It is partly rock and soil and partly water. Forests, fields, cities, towns, hamlets, rivers, lakes, seas, mountains and valleys cover it from pole to pole. We might, if left to ourselves, have imagined that it had always been much in the same condition. But science rises, puts on its gown and wig, and proceeds to instruct us. Science may be represented by the geologist, the chemist, and the astronomer. The geologist diligently and carefully investigates the nature of the rocks, the formation of the different layers and strata. He determines, or attempts to determine, how they were formed, when, and where, and so forth. The chemist enters upon an elaborate analysis of matter, and applies all kinds of chemical tests, in order to extract the true process and methods of terrestrial formation. The astronomer studies the heavens, and by a process of analogy, determines the history of this earth by what he sees actually taking place in other and more distant worlds. It would take far too long to describe their labors, or even to give an outline of the contents of the big volumes and learned tomes they have published. We must be satisfied with some of their more interesting results.

BIRTH OF THE EARTH.

They tell us that the earth we now know so well was once in a very different condition. They bring forward proofs to show that there was once a time, far distant indeed, when there were no human beings whatever upon the earth. A period—a very remote period of course—when there was no life of any kind. No animal life; no vegetable life, no muscular movement; no beat of heart or pulse, no sound of hurrying feet, or of flapping wings, or of feathering fins, either in sea, or air, or forest, or fen. And why? Well, for this very good reason—because the earth was once in a condition in which it could not have supported life. Even to-day, if we descend down deep enough into the interior of the earth the temperature is found to rise. Could we approach the centre we shoud probably find heat intense enough to liquify *metals. Yet, the earth has been cooling* for thousands of years. Well, scientists teach that at one time the entire earth was of a higher temperature than even its centre is at present.

THE EARTH A BALL OF FIRE.

Go back, they say, to a sufficiently remote period. Put it as far back as you please—for we may draw without limit on the Bank of Time—let us say, then, 100,000 years, or, if you prefer it, let it be a million or ten million years, and then look at the earth. The earth is, as now, floating in space, but it is as a ball of fire; the heat is so fierce that the earth glows like a sun. It is in a state of incandescence; it fills the heavens with dazzling splendour wherever it goes, and moves along a path of glory. The iron and copper and brass, and silver and gold, and in a word, all other metals included in its composition, are all in a liquid or molten or possibly even in a gaseous state. The intensity of the heat will not allow these substances to cool and harden. Even did man exist he could not approach within a hundred miles of its surface without being instantly reduced to a cinder. Even if—to suppose an impossibility—he could endure this heat, compared to which the centre of a brick kiln would be cool and comfortable, he would be destroyed by the fumes and scorching gas and fiery vapours and agitated molten metals. In fact, it would be far easier to live in the middle of a furnace seven times heated than to live anywhere upon this earth at that period of its history.

SCIENCE SUPPORTS THE TEACHING OF FAITH.

Observe; this is not Scripture, nor theology, nor revelation—it is pure, simple, unadulterated science. Now, to what conclusion does this point? Two facts may clearly be set down. 1st. There was a time when no man existed upon this earth. *Fact number one.* 2nd. Man now does exist and live upon this earth. *Fact number two.* Here are two plain facts. Now comes the question; how came the *first* man? We may trace man back from son to father; from father to grandfather, and so on, up to a certain point—but not very far. Not to the time when the earth was a ball of liquid fire. Between that period and now man must have been introduced into the world; but how? Are we to believe that as soon as the earth had sufficiently cooled and solidified that man appeared? That he came from nowhere, and was made by no one?

SCIENCE CONFESSES HER IGNORANCE.

How can science help me? Science cannot answer. Science is silent. Science hangs down her head. All science can say is, "I don't know." "I can't explain." The utmost that unaided science can tell me is, that *once man was not, and that now he is.* But as to how he came; or where he sprang from, it can say nothing. Science is dumb. Did the hardened metals or the solid rock give birth to man? Impossible. Did man make himself? Still more impossible. He must first be before he can act at all, and before he can make anything; how then could he have made himself? Then, who *did* make him? I am forced to use my reason, and my common sense, and both oblige me to believe that some superior and intelligent Power made man, and this Power we call "God." That once granted all is clear and reasonable. But until you admit God as the author and originator you must remain puzzled, befogged, and dissatisfied. Thus, at the very outset of our investigations, we are, I might say, almost in spite of ourselves, constrained to acknowledge and to postulate the existence of God; for, without that, we are confronted with the impossible supposition that though man began to be, yet that no one made him—in other words, that an effect—and a stupendous and remarkable effect exists, without any cause—which, of all absurd things, is the most absurd.

THE HUMAN BODY.

The absurdity of ascribing his existence to any but God becomes more apparent the more closely we consider his nature and composition. Consider for a moment even his body, which is, after all, the lowest and inferior part of him. What a marvellous creation it is. How wondrously put together how wisely contrived, and how miraculously formed. The parts are innumerable and yet all are co-ordinate and adapted to serve a common end; and each organ fulfils a special function. Though we each possess a body, though we are constantly using it, though it is a part of our very selves yet, even we don't half understand its mechanism and functions. Not only the first man; but every man is a living testimony to the power and wisdom of God.

BIRTH AND LIFE.

Take the newly-born babe. Take the child of a day old. How can we explain its existence save by referring to God. The mother herself knows not how her child was formed. She is but an instrument in the hand of God, from her blood is moulded the new creature—from her blood is fashioned in a manner all divine, the hands and the feet, the heart, the lungs, and every other portion of the infant form. How is each joint and bone manufactured, and how are all so beautifully and so skilfully arranged and connected together; what power places the muscles and ligaments and sinews in position; who constructs the various and complicated organs whether external or internal?