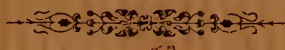


PRICE 25 CENTS.

“SUBSTANTIALISM”



THE PHILOSOPHY

OF

A. Wilford Hall

EXAMINED.



SCIENCE FALSELY SO CALLED. 1 Tim. vi, 20.

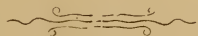
ERRATUM.

On page viii line 8, omit *not* before *alike*.

Misplacing of letters, omissions, and redundances with some misspelling have been noticed, but are not noted here as they do not effect the meaning and will be readily seen by the reader.

In apology for these mistakes the author desires to say, that an arrangement with the printer having been made to work on this when other work was not on hand. it is not surprising that mistakes were overlooked.

“SUBSTANTIALISM”



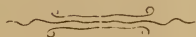
The Philosophy

—OF—

A. WILFORD HALL

EXAMINED.

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—BY—

✓
JOHN A. GRAVES.

WASHINGTON, D. C.
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PREFACE.

A controversy was opened two years ago that culminated in a paper entitled "Substantialism and Gnosticism Identified." This paper was favorably noticed by several scholars. The little book now presented, is a revision of that paper, which was hektographed but not printed. The alterations and additions were mostly suggested by substantialist attacks upon the former paper, as were also the references at the bottom of the pages.

Under these attacks, the idea of publishing has crystalized into a determination to publish.

INTRODUCTION.

The worship of the true God differs from all other religions in being a religion of faith. All cultivated heathenisms, as those of China, Japan and Hindoostan, among the moderns, and those of Persia, Egypt, Greece and Rome, among the ancients, have built their religions upon philosophical speculations. It is not a new thing for infidelity to claim that revelation must be tested by science, but any believer who admits such a claim is untrue to revelation. This claim was put forth in the apostles' days, though the attempt to actually antagonize revelation and science was reserved for a much later day. St. Paul in writing to St. Timothy, warns him to "beware of science falsely so called." Commentators very generally presume that the apostle does not mean by "science falsely so called," science that is false in itself, but *all* science that is *falsely substituted for faith in revelation*.

Infidelity did not endeavor to stir up science against revelation, until within the last few centuries. In early days the Gnostics would not have been ranked as heetics, unless they had professed a belief in Christianity. Looking at these facts, we cannot suppose that St. Paul's words would receive a literal interpretation, as some Substantialists claim. It was not because the Gnostic philosophies were in themselves false, that the early Church condemned them; for her members were at liberty to think as they pleased on such subjects. Their philosophies were not counted gnosticisms until they

became parts of their religion. It would have been very difficult for the Church to decide whether the philosophy were true or false, but their making it a part of their creed constituted it a gnosticism. Commentators have therefore, naturally, concluded that St. Paul has no reference to the truth or untruth of the science itself when he writes of "science falsely so called." It is noteworthy, however, that all philosophies that have been by professed Christians, made part of their religion, have been in themselves false. Thus, the false Ptolemaic system became a gnosticism when Pope Urbane compelled Galileo to retract his teaching against that system of astronomy.

If there be needed any proof of the personality of the Evil-one, it may be found in his persistent efforts, throughout the whole line of history, to obscure faith in revelation by substituting for it something else. In the Jewish dispensation the law was paramount—the law, however, taught faith through the works of the law. When in the fullness of time, Christ came to fulfil the law; though the bloody sacrifices and other ordinances of the Levitical law were superseded by Christian rites, still the moral law continued—faith being made more plain.

Time would fail me to point out the various efforts of the Evil-one to obscure faith under the old dispensation. Suffice it to say that when our Saviour came, these efforts had culminated in substituting for the Law of God the commands of the Talmud, to which Christ plainly refers when he says, "Thus have ye made the commandments of God of none effect by your traditions." One aim of this evil-spirit can be traced throughout both dispensations—namely, to obscure faith.

His first attempt upon Christianity was to make faith ridiculous, by doing away with works altogether. This heresy, no doubt, at one time made much disturbance in the church at Jerusalem. It received its final blow from St. James when he said; "Show me thy faith without works, and I will show thee my faith by my works." Next, we find the same purpose manifested in the various *Gnosticisms*, which in early days, tried to substitute *philosophical theories* for faith. By so doing they claimed to prove revelation, and drew away many of the most learned from that faith upon which revelation was founded.

When *Gnosticism* had run its course—a few centuries later, the same purpose is seen in his efforts to corrupt the Church by making works everything—teaching that "the end justifies the means." Such a doctrine was not at first proclaimed; but we see it at work—little by little the errors crept in—one by one, our arch enemy introduced them, but with the same unwavering object in view, to destroy faith in God and his revelation to man. After many centuries more, he overstepped the bounds of discretion, and sent Tetsel forth to jingle his coins for indulgences. The reformers were aroused. Satan for a moment stood aghast, but, recovering himself, he joined in the cry for faith—faith only. He even instigated Martin Luther to reject from the Inspired Canon, the truly catholic epistle of St. James, because it taught that "faith without works is dead." Thus, Satan again tried to revive his first heresy; but God had reserved to himself a remnant, who had refused to bow the knee to either Bael or Ashtaroth. During the last three centuries, catholic truth has had to fight errors on the right hand and on the left. Now the doctrines of Tetzal have been aban-

done; no one advocates them. The doctrine of "faith without works" is also practically abandoned.

The persistent Evil-one finds himself flanked, and in a fit of desperation he tries to revive gnosticism; but the old theories are dead, he must find a new one. Ernest Haeckel, professor in the University of Jena, says that sound, light, heat, electricity, magnetism, gravitation, life and mind, are not alike. Science and all scientists agree that they are not all alike; but Haeckel is professor in a German university and carries the weight of his university with him. Now if Satan can keep the teaching of science out of sight he may revive gnosticism on this assertion.

Prof. Drummond a well known Christian scientist says, "No definition of life that has ever been given can be said to be even approximately correct. Its mysterious qualities evade us." One of our best students of nature, the Rt. Rev. Bishop of Carlisle, says, "No definition or formula, deduced from the ordinary phenomena of life, goes nearly so deep into the mystery as the remarkable formula, '*omne vivum ex vivo*.' If life can only come from life, there must be behind life, as now manifested, an origin in the infinite past, of which we can speak only in figurative language, and which we may well describe as divine. The opening of the volume of Holy Scripture is essentially a revelation of life. St. John says, 'In him was life.' In the concluding chapter we read of 'a pure river of water of life', of the 'tree of life,' and of the book of life. Man continues the bishop, 'is the connecting link between the two extremities'; life as manifested in him has something in common with grass and creeping things, something also in common with those higher intelligences."

For more than two hundred years a large school of philosophers have tried to prove the spontaneous generation of life. The doctrine was recently revived by H. C. Bastian, M. D., F. R. S., who says, "Both observation and experiment unmistakably testify to the fact that living matter is constantly being formed, *de novo*."

Mr. Dallenger, F. R. S., found that many animal germs survive a higher temperature than Dr. Bastian had supposed; indeed that the life in some germs could hardly be destroyed. Prof. Tyndall, after numerous further tests, says, "I affirm that no trustworthy experimental testimony exists to prove that life in our day, has ever appeared independently of antecedent life." Prof. Huxley follows with this remark, "The doctrine of the biogenesis of life, only from life, is victorious along the whole line."

Haeckel probably made his assertion before Tyndall and Huxley made theirs; had he seen the assertions of these gentlemen, he could not have had the audacity to say that "life and mind are just like his other so called, forces of nature. "The father of lies", however, sees that in this assertion of Haeckel's there is a chance to renew his attack upon faith, and a lie to him has a peculiar charm; true science, he knows, is always on the side of revelation. He also knows that there is no need to deceive infidels. They have already deceived themselves; but perhaps, he may turn some Christians away from faith and make them trust in something else beside revelation. He therefore sugarcoats the falsehood, and turns it over to Dr. A. Wilford Hall, who at once accepts it, and brings forward his new *gnostic theory* of *substantialism* to combat Haeckel's minor premise, that "all the forces of nature, except life and mind, are proved to be only vibrations in matter." This second

falsehood needed no refutation. Scientists are universal in denying his major premise, *and not a few deny this also*. If both were admitted, the conclusion would only be a *probability*.

*“The leading principle in substantialism is, that motion is absolutely nothing, being the mere change in the position of matter in space, while that which causes motion, of a necessity, is a veritable *substantial entity*.” In this their philosophy advocates nothing that is not already established by science. Their error is in assuming that what Haeckel enumerates as forces, are *primary* forces, instead of being as they undoubtedly are, the results of other forces. No one disputes but what, if they be the primary cause of motion they must be entities. This argument has been well used in proof that *the mind of man must be a substantial entity*, because it moves matter as a primary agent. For the same reason, some, who are not substantialists, have thought that every animal life must be an *immaterial substantial entity*; but can any such argument be educed for sound, light, heat, electricity, magnetism or gravitation? It is not difficult to show that none of these, so called forces are primary, that they are all produced by something else. No wonder that Solomon, the scientific king of Israel, exclaimed, “Who knoweth the spirit of man that goeth upward and the spirit of the beast that goeth downward to the earth!” Revelation was silent and science threw but a dim light upon the subject. A substantialist said to the author, “There is no proof in the Bible that the soul of man is immaterial.” Instead of *substantialism* supporting revelation, this zealous champion tries to make the Bible support substantialism. He cannot mean that the Bible leaves the

* Scientific Arena Vol. I, page 45, quoted in text book on sound p. viii.

soul of man a nonentity, for then Christ would have died to save a nonentity; the Jewish and Christian churches were both established to save nonentities, the spirits of Samuel, Divies and Lazarus were nonentities, and Christ's "preaching to the spirits in prison," was a fiction. He must therefore mean that the Bible teaches no difference between *material* and *im-material* entities; but what do we mean by *im-material* entities, if not such *entities as are not subject to the laws that govern matter?* Is not the soul of man represented in the Bible as just such an entity? Is not the spiritual body so represented? When Christ had risen from the tomb with a spiritual body do we not find that body passing through doors that were locked and bolted? Before the crucifixion, when his body was a natural body, we see nothing of his ignoring the laws that govern matter, but this zealous advocate of *substantialism* has gone beyond his principal, for Dr. Hall says,* "The personal existence of the soul, separate from the material body, can only be assumed or maintained, on the supposition that the mental and spiritual part of man is a substantial entity. The only view practicable to harmonize the resurrection of the material body, as taught in I Cor. XV, is its change to immateriality, thus making a spiritual body by abrogating its material corruptibility and carnal properties." Dr. Hall certainly does argue well when not fairly mounted upon his gnostic hobby of *substantialism*.

There is, however, a difference between the *immaterial spirit* and the *spiritual body*. Christ says after his resurrection, "Handle me and see, for a spirit hath not flesh and bones as ye see me have;" and he ate before them to prove that he was not a spirit. The point has

* Microcosm Vol. VII, page 39, column 2, line 12.

been well taken, that the *spiritual body* is not *immaterial*, in the same sense, at least as the *spirit*. Some have thought that the *spiritual body* of our Saviour did not go through the doors that were locked and bolted ; but that the doors miraculously opened, just as the doors of the prison did on another occasion for St. Peter and the angel.

It is a law of error, that the farther it departs from apostolic teaching, or the demonstrated facts of science, the more do its votaries worship their leader, and the more arrogantly do they put forward his assumptions. It has always been thus with *gnosticism*. If we look over the history of the first three centuries we will see it. Leaving the anchors, distorts the mental vision. The cause of this phenomenon seems manifest. So long as people rely upon demonstrated truths they feel secure of their position ; and being in search of truth, they are willing to have their theories, if necessary, overturned. So long as they rely upon apostolic teaching they hold fast to promises that cannot fail, but when they leave these anchors for the lucubrations of philosophers, they become fierce and intolerant and make demands upon our faith that are never made by either religion or science.

From the beginning to the end, "the Bible is full of the evidences of the *immaterial substantiality* of the soul of man. Dr. Hall shows that the Bible does contain such evidence; but he does not attempt to show, nor could he show, that it contains any evidence whatever of the constitution of sound, light, heat, electricity, magnetism or gravitation ; nor any evidence of the constitution of the life of the beast ; so long, however, as metaphysicians do not make their theories parts of their re-

ligion, they keep within the province of philosophical speculation.

At the end of our last quotation, Dr. A. Wilford Hall asks this question: * "Is it not reasonable to assume that Infinite Intelligence, by calling to His aid other natural laws and forces, can destroy the properties of matter, and that He can substitute properties adapted only to im-material conditions?" Of course "it is reasonable" to assume "that Infinite Intelligence can" do whatever He pleases; but where is the evidence that Infinite Intelligence has done so with regard to light, heat, electricity, magnetism, gravitation or sound?

* Microcosm Vol. VII., page 39, column 2, line 3.

CREED.

Dr. A. Wilford Hall has formulated a *creed for his followers. Scientists, being seekers after truth in nature, and expecting to find out the same by deductions or inductions have no creeds. Philosophers have theories that are nearly the same. The theories of scientists are only working theories, to be abandoned if not proved. *Religions have creeds*, assumed by all worshippers of the true God, to be based upon revelation. The substantialist creed is too long and uninteresting to quote' but he has given us a †synopsis that may be quoted. Here it is. "The name *Substantialism* appropriately signifies, as the *Substantial Philosophy* teaches, that everything in the universe, of which the intellect can form a positive concept, is a real, entitive or substantial existence, whether such entity be material or im-material—whether it shall be subject to sensuous observation, or its existence can only be determined by the mental process of reasoning from cause to effect. Hence, that every form of physical, vital, mental or spiritual *force* in the universe, whose effect is in any degree the subject of our observation or shall come within the grasp of our reasoning powers, must be substantial; and not having the recognized properties of matter, and not being subject to material conditions, these forces must, therefore, properly and necessarily be regarded as immaterial substances." As we propose

* Scientific Arena, Vol. 1 pp. 6 and 21.

† Scientific Arena, Vol. 1 p. 1, verse 4.

to show that these, so called forces, *are* subject to material conditions, we call attention to this assertion, that they *are not*. Indeed, if they be im-material entities, as is here asserted, they cannot be subject to the laws governing matter; for it is just this difference which points out to us one as im-material and the other as matter.

This creed, like most substantialist writings, and indeed like most gnostic writings, is largely taken up with a glorification of those Christians, who have sense enough to see through and accept their theory. The ancient brethren did not hesitate to proclaim that "they were the scientific Christians." The substantialist creed is very well illustrated by one of their own writers in the Scientific Arena. **"Gravitation in physics"* says this writer, "bears some resemblance to principle morals. They are alike, invisible, both work noiselessly, work all the time, are never caught asleep. Both move material bodies and both are inherent in the organization of their respective hemispheres. Now while we are not ready to say that these principles are entitive substances, I think that we are prepared to say that they are not mere inanities. They are each something or nothing."

The ancient gnostics asserted that the attributes of the Deity are entities, but this writer goes further and thinks that all attributes are entities, for he goes on to to say, †*"We see no reason therefore, why a mother's love should not be listed with all the other substantial existences."* Reason is a thing and conscience is an entitative *substantial* reality." In commenting on this article, the editor says, "The mine of truth here pre-empted by Elder Munnell seems to us to conceal

* Vol. 1, page 10, col. 2.

untold wealth; though as he admits it, lies within the legitimate territory of *Substantialism*."

The * Microcosm says, "But what becomes of the light, the sound, the electricity, the magnetism or any other peculiar form of force thus generated, after serving the purpose thus designed in Nature, or after ceasing to manifest itself? It falls back from its definite into the same indefinite force element or reservoir from which it was evolved by the process appointed in nature; and *thus only* can the law of the conservation of the forces be true." *Is this not pantheism?* But let us go on. "Thus also, the founder of this *Substantial Philosophy* teaches in his Problem of Human Life, the vital and mental force of the lower animals, at death, falls back into the universal fountain of life and mentality, from which all substantial life and mind must have originally come, and which reaches back to God." *Here we certainly have pantheism*,—naked, bald PANTHEISM! † Can it be possible that the vagaries of ancient philosophers find advocates in the nineteenth century?—and yet it is the only goal at which *Substantialism* can arrive. This article goes on to insist that the father of substantialism has the same right to put forth his philosophy, that others have to put forth their theory of material luminiferous ether." It claims that "*substantial philosophy* explains more than ether explains." It instances "the flint and steel, which when struck, produce light, heat and sound;" all which, it says, "were there before, and are only liberated by the blow." But light, heat and sound, according to *substantialism*, are *im-material substantial entities*, and Dr. Hall tells us that "By im-material substantial

* Vol. III, page 307, quoted in Text Book on Sound page 165.

† Art. 14 of Creed, last sentence and Scientific Arena Vol. I page 21.

entities are meant such entities as are not limited or confined by material conditions." Are not the flint and steel "material conditions," that "confine" these entities?

The * Scientific Arena tells us that "*substantialism* has 25,000 adherants, and that nothing can stop its onward march." So thought the ancient Gnostics, but where are they? They numbered many—more than *substantialism* can count, and gloried in the assertion that "they were the intellectual Christians."

Science says that "*material force has in it two elements namely, a material entity and the velocity of that entity.*" The cannon ball is an entity, but exerts no force while lying still; but when velocity is given to it, we have a powerful force. Velocity itself, deduction proves, is composed of two elements, space passed over, and the time occupied in passing over said space; but it is sufficient for our purpose to consider force as composed of two elements, one of these elements being proved to be a compound element. Let us suppose that the propelling energy which gives force to the cannon ball is a spring, then that which imparts the energy is also an entity. The force depends upon the weight of the ball and the velocity imparted by the material spring. The velocity depends upon the elasticity of the spring. We may define *elasticity*, but with our definition we must stop—we cannot tell what elasticity is. There is, as we all know, another mode of propelling cannon balls, namely by the elasticity of the gases produced by burning gun powder; but here again, we see that the elasticity is inherent in a *material substantial entity*—we see that elasticity is a property of matter—not indeed of all

* Scientific Arena Vol. I. page 12 first col. next to last verse.

matter. A *Substantialist* says, that this, and all properties of matter are *im-material substantial entities*, but lovers of science ask for some proof. *Substantialists* start out by ignoring all material forces; and, against evidence, assert that force is, in itself an im-material substantial entity. Whatever substantialists cannot explain, they satisfy themselves by calling it an *im-material entity*. It was a common saying with the ancients that "much learning made a man mad". Learning never makes a man mad, but trying to find out what is unknowable does. It has, in all ages, driven philosophers into vagaries. We readily concede that *life* and *mind* are *immaterial substantial entities*, and we will unite with Dr. Hall in demanding of Prof. Ernst Haeckel proof to the contrary, for we can show proof that these two forces are entities. Who can define the mind? Of itself, as a primary agent, it exerts force through the nerves upon the muscles, and produces action.

Substantialism goes beyond the teaching of Science, when it asserts that sound, light, heat, electricity, magnetism and gravitation, about none of which it can show primary action, are also *im-material substantial entities*. Has it *revelation* to sustain such an assertion? If so we will listen to it. Human teaching can not be accepted unless it rests upon some source of knowledge and we can find only three sources; the observations of our senses, reasoning upon the observation of *our* senses, and divine teaching. The first source of knowledge we call *experience*, the second, *demonstration*; these both belong to science. The third source we call *revelation*. What have we in the philosophies of Professor Ernst Haeckel and Dr. A. Wilford Hall except their naked assertions to oppose to all our experience of

what they write about? Still anybody who does not accept the guess of substantialism, is "*quibbling*" or is an "*ignoramus*." Perhaps they would do better if they would "*quibble*" a little more, before putting forth their improved theories. The *Scientific Arena in likening *Substantialism* to "the little stone cut out of the mountain without hands," is, to say the least, very irreverent.

The problem of human life, will, no doubt, seem to the reader a treatise on sound. He will, however, discover that the problem to be solved is this—WHAT IS HUMAN LIFE? For over eighteen centuries Christians have solved this problem by referring to Revelation. The Jews solved it long before in the same way; but *gnostics* have always thought that it could be solved better by their philosophies. If the reader is looking through substantialist writings for arguments, he will often stop and ask, "What does all this rhetoric, arrogance and egotism amount to? He will feel relieved, if some one who has had the patience to plod through this mass of verbage will cull out here and there, what has the semblance of an argument. We have tried to do so; and some arguments that we think worth answering we will try to answer.

The author of the Problem of Human Life tells us that after this book was published, * "Others waited to see what Tindall, Helmholtz and Mayer, the representative authorities on sound, both in this country and Europe, would say to this startling assault upon so long established and universally accepted a theory of science. . But these great authorities, after having seen and read the book, called it '*funny*' and forever after

* Vol. I, page 12, verse 3.

* Scientific Arena, Vol. I, p. 2, Verse 7, col. 2

held their peace!" Reader! perhaps you would lay down the problem of human life, and all other *substantialist* writings with the same remark. We are not surprised that they laughed at it. Certainly no scientist, regarding *the book* only from a scientific point of view, would consider it worth answering; but when an attempt is made to connect its teaching with Revelation, Christians feel the ludicrous position in which it puts their religion before scientific men, and are constrained to speak in defense of their faith.

The Encyclopaedia Britannica, after saying that "St. Paul's cautions are presumed to refer to the Gnostics," uses these words: "It seems plainly against such *tendencies*, rather than against any special sects or schools, that the cautions of St. Paul are directed." Appelon's Cyclopedia says, "Gnosticism was the earliest attempt to construct a philosophical system of faith." Shaff says, "They were the first rationalists. They endeavored to harmonize Revelation and reason—They argued from effect to cause—The principal task which Gnosticism proposed for itself, was to lead men by speculative knowledge to salvation." How precisely some of these remarks apply so *substantialism*! The following remark by Dr. William Smith seems made for *substantialism*. He says, "They make the attributes of the Deity distinct entities." Substantialists go farther. They make all attributes human or divine "distinct entities." Dr. Smith also says that "St. Paul wrote of the Gnostics, when he wrote to St. Timothy of "Science falsely so called" and of the Talmud when he wrote of "old wives' fables."

It has been asserted that *St. Paul was a *Substantialist*. Dr. Adam Clark says, "The Gnostics claimed

* Scientific Arena, Vol I, page 23, top of 1st col.

that they taught the doctrines of the apostles." Dr. William Smith says, "They did profess to be able to trace their doctrines to the apostles." Both these authors must refer to Gnostics, who lived after the apostles, perhaps three centuries later, for those who lived during the days of the apostles could hardly have dared to make such assertions. Nevertheless, these authors, both show that the *Substantialists* are not original in this claim; for they are only reiterating what the ancient Gnostics asserted.



SCIENCE.

The theories that have been advanced to account for the forces of nature are; first the *Materialistic* or *Corpuscular*, which has never been applied to sound; second, the *im-material substantial* theory of Dr. A. Wilford Hall; third the *Wave Theory*, which was advanced five hundred years before our era; but which would never account for light, without *imaginary ether* —Haeckel's arrogance does not permit him to see that the theory of *ether* has always met with opposition, or he could not have asserted his first premise.

Fourth the *Impulse Theory*, a modification of the last. If we lay two long gutters upon a perfectly level table —fill one with croquet or any other balls, and put in the other gutter only one ball, at the end where a spring has been so arranged as to strike both gutters at once, with the same energy; then draw back this spring and allow it to strike both at once; namely, the single ball at the end of one gutter, and the end of the row of balls in the full gutter, we see an excellent illustration of the *impulse theory*. The ball at the far end of the full gutter jumps out immediately, without any perceptible motion in the other balls of the row; while the single ball in the other gutter takes time to roll the length of its gutter, and perhaps stops before it gets there. In the case of the full gutter, the impulse is communicated from ball to ball, and is seen acting only on the last of the row, with no percepti-

ble diminution of energy nor any consumption of time.

Tyndall tried this experiment, and put springs in place of each alternate ball, also put an upright near each end of the full gutter, thus pressing the balls and springs together. He made a hole in each upright through which the end ball projected, each end ball touching through these holes, another free ball outside the upright. He also fastened the uprights by a rod from the tops of each, this rod passing through a ring on the top of every ball. The balls in the row, he thus made more immovable; but when struck by the spring the result was the same--no movement could be detected between the uprights, in either springs or balls. Prof. Tyndall's experiment was made in 1870. The problem of human life was copyrighted in 1877, and yet we have been unable to find any reference to the *Impulse Theory* in any substantialist writings.

The materialistic theory has been abandoned by all scientists, and has never been revived by any one. Light, which has no perceptible weight, passes as well through the air, which has considerable weight, as through a vacuum. This ought not to be, if light be matter; for a heavier substance always stops one of less weight. The other theories, not having been abandoned, we will consider them.

A distinction should always be made between *scientific facts* and *philosophical theories*. The one has been demonstrated, the other has not. Newton demonstrated the law of universal gravitation, from the acknowledged facts of terrestrial gravitation, the discovered motions of the planets, and the already demonstrated law of falling bodies. The conception of *ether* is a *philosophical theory*, not a proved fact. It is a working theory. It has never been demonstrated, but it

serves to explain some phenomena connected with these so called forces of nature.

Of *Immaterial Substantialism*, science knows nothing. All that we do know about it is derived from revelation. There are very few deductions or inductions, that throw any light upon the subject. What we know of immaterial substantiality has been received upon faith—faith, supported indeed by such proofs of the truth of the Bible, as would convince any impartial examiner. Immateriality is so contrary to our experience that it would never have been conceived, as an explanation of the forces of nature had it not been found in the Bible. There it shows the condition of the spirit, and perhaps of the spiritual body also. Having obtained the idea from thence, Substantialism goes round the circle with the vain expectation of proving Revelation by its theory about the forces of nature. Perhaps it was also helped by those metaphysicians, who with Solomon, have concluded that the beasts are endowed with im-material entitive spirits as well as man. Solomon, however, confesses his ignorance about the immortality of such spirits; but substantialists are quite certain that they are immortal, albeit that such immortality is pantheistic; and that all the forces of nature, inanimate though they be, have the same kind of immortality.

Man, no doubt, has an intuitive idea of his own immortality—we read it in the dreamy philosophies of the ancients, and see it in the religions of the heathen of our own day. Accompanying such ideas, there is some idea of an immortal soul; but how different are the unproved theories of the wisest of philosophers, from the bright light of revelation. The demand which philosophy makes upon faith is far greater than that asked

by revelation. Philosophy gave to Cicero a faith in the immortality of the soul, but how he broke down at the death of his daughter, and grieved for his darling with a very indefinite hope of ever seeing her again.

Every entity must either be created or produced from what has been created. This is so self evident that it requires no proof. To create is an act of the Deity. Dr. Hall sees this and speaks of the forces as being *liberated*. Light and heat are always produced from entities, and the substances from which they are produced, are consumed in the production; we can easily conceive of their being entities, which may be *liberated* by the union of oxygen and carbon—such liberations are well known to the chemist. But when you strike the bell, is anything consumed in *liberating* sound? Do we consume anything when we speak? We force the air over the vocal cords, and fashion the sounds into words by the palate, tongue, teeth and lips. The air passes out of the mouth and all these organs remain the same. If these forces are entities, the conservation of energy does not explain what becomes of them.

Dr. Hall tells us "that * all human experience is against the annihilation of any substantial entity." His conclusion here is correct, but we cannot receive his pantheistic theory to account for what becomes of his forces, unless he can show that he has a revelation to support it. *Substantialism*, at the most, is only a philosophical theory, not a demonstrated scientific fact. Without a revelation, we cannot receive it. Let us look at the law, which Dr. Hall admits that revelation establishes about *immaterial substantialities*. Here he says, that "im-material entities are not subject to the

* Microcosm. Vol. VII page 39, verse 10.

laws that govern matter." Spirits and spiritual bodies he says ignore matter. Which of his other forces ignores the laws that govern matter? Try to get electricity through glass or heat through asbestos! Sound is stopped by anything that is unstable, as cushions or curtains; and the materials that stop the passage of light are too numerous to mention. With regard to some of these forces, the observed phenomena are incompatible with every theory that has been broached.

Looking at a bright spot renders the retina insensible for a time. If we then turn the eye suddenly upon a white surface we see a dark spot where the light spot fell upon the retina. If instead of a white spot, a colored spot fell upon the retina, we see the complement of that color upon the white surface. Now, if the difference in color be caused by a difference in the vibration of the rays of light, ought not the rapid rays to entirely obscure the less rapid? We do not so find it. If the eye had rested upon a red spot we see a green spot on the white surface, but if the spot on which the eye had rested were green we see a red spot. According to the ether theory one of these colors must have been made by more rapid vibrations or impulses than the other. Again light passes readily through the atmosphere, but should not the waves of light, in such an inconceivably light substance as ether, be stopped by the much heavier atmosphere. Does not a heavy matter always stop motion in a lighter matter? We must confess here that the action of impulses are not yet understood, but all these phenomena seem opposed to the theory of ether.

On the other side of the argument, if light be, as substantialists claim, an im-material substantial entity, how can it be shut out by blinds and curtains and

many other kinds of matter? Perhaps we are "quibbling", but substantialists would do well to "quibble" more. If they did, they would be more like scientists. They would see that what they call an im-material substance is here controlled by matter.

A smart blow on the back of the head causes us to see stars. Can substantialism explain this phenomenon? The vibratory and impulse theories both explain it. Surgeons know that the optic nerve shows none of the sensitiveness to pain of the nerves of feeling—in short the optic nerve is entirely insensible to anything but light; just as the auditory nerves are insensible to anything but sounds. The one nerve converts jars into sounds and the other nerve converts jars into light. These facts are strong points for the impulse theory of light. They are certainly not in accord with the substantial theory.

Dr. Hall says, correctly, that * "im-material entities are not subject to the laws governing matter"; but an awning or umbrella shades us from the heat of the sun; and the walls and windows of a house keep in artificial heat. Is not heat, here "subject to the laws governing matter"? Can matter impede what is im-material? Dr. Hall says that it cannot. Revelation says amen, and science is silent on the subject. I confess that I do not know what light and heat are.

Electricity can be conducted, but can matter conduct what is *im*-material? The conductor must confine the electricity to itself; but "can matter confine an *im*-material substantial entity?" Dr. Hall says it cannot. Electricity and magnetism can be converted into each other. Can an *entity* be changed into another entity? Is not such a change an act of creation? The chemist

* Scientific Arena Vol. I page 45, verse 3, quoted in Sound Book, page viii.

appears to do this miracle, but he only liberates elements from the union in which he finds them that he may, with these elements form new compounds.

The fact that magnetism can be increased by rubbing, looks like motion among the particles of the magnet; it certainly does not look as though magnetism were an entity. Faraday, who devoted years to the study of this subject, and tried to find out what electricity and magnetism are, was compelled to confess himself an "ignoramus". Haeckel, however knows that they are both caused by vibrations; and substantialists know that they are *im-material substantial* entities.

Ernst Haeckel and A. Wilford Hall, both omit from their list of forces *odor* and *flavor*. It seemed wise to do so, as these are admitted to be not only entities, but *material* entities. Dr. A. Wilford Hall, however, in the Scientific Arena says, * "Odor is that force in nature, which by entering the nose and coming in contact with the olfactory nerve, produces in our consciousness the sensation of smell; and *flavor* is that force in nature, which by contact with the palate and gustatory nerve produces in our consciousness, the sensation taste." Observe here, that unless the substance comes in contact with the nerves no sensation is produced. Should we compress the material nostrils by the material fingers we exclude odor. How can matter exclude what is im-material? Dr. Hall tells us correctly that "By im-material substances are meant such entities as *are not* limited or confined by material conditions."

No doubt but what scientists in their enthusiastic efforts to account for what is unaccountable, have also

* Vol. I page 73, also quoted in Text Book on Sound, page 157.

sometimes asserted working theories as though they were demonstrated scientific facts; but such assertions are errors wherever we find them.

If A. Wilford Hall would drop Substantialism, and devote his energies to the publication of a Christian Scientific Journal, he need not then make himself a laughing-stock to scientific men, by trying to build up his reputation with an endeavor to show that * Sir Isaac Newton was wrong about the earth's attraction upon the moon; a calculation that has since been repeatedly verified and which any mathematician can test for himself.

Science deals with proved facts and with *working* theories. Philosophy deals with theories and speculations; if these speculations concern the mind and the soul they are metaphysical. Revelation deals with what God has revealed. These branches of knowledge will not clash unless they are made to clash. Evolution, sound, light, etc., concern science and philosophy, *not religion*. They are all subjects that are more or less unsettled, and perhaps never will be settled. About the descent of man and other animals, one scientist yet contradicts another. In the front rank of biologists, stand the names of Louis Agassiz and St. George Mivart. I need not tell any American, who lays claim to scientific knowledge, how Agassiz, to the day of his death, fought against the development taught by Darwin and Spencer. Fought, not on religious but on philosophical grounds. In the Nineteenth Century, Mivart says, "the question of man's origin is a philosophical, not a scientific question." He further says "that the more deeply and thoroughly human nature is studied, the more

* Microcosmus for March and July, 1882.

clear and decisive will be the conviction arrived at, that the powers of mental abstraction, and of language which is its external sign, mark the most interesting and impassable *limit to evolution*."

Darwin, who was himself a *theist*, admits that the boundaries between the species are as distinctly marked in the rocks of by-gone epochs, as biologists find them now; and that "if species have descended by almost insensibly fine gradations, as he claims that they did, then it would seem necessary for us to expect the rocks to reveal innumeral transitional forms; but he says that the geological records are fragmentary. Other scientists have answered him that these fragments are counted by the thousands, are gathered from every part of the earth and from every epoch; and surely some connecting links would be found in the rocks, but the testimony of the rocks is, rather that the earthliest periods give the most perfect types of each dynasty. Few that have paid any attention to geology will gainsay the facts here given.

It matters not whether the creation was in six days or in longer periods; whether it was immediate or was slowly developed. Whichever way, science decides the Bible teaches that it was of God. Of course the ideas which the uneducated form of God and his works, differ from the ideas of the educated; but the Bible was written for both—the uneducated as well as the educated; and it is wonderful that when rightly interpreted, it does not clash with either. The notions of theologians are no part of the Bible. Hebrew scholars are agreed that the word which our version translates day, would be just as correctly rendered period.

Geologists agree that the earth was at first, "*without*

form and void," and that it was afterwards covered with water and wrapped in an impenetrable darkness. True, they do not say with Moses that "*the Spirit of God moved upon the face of the waters*"; but how did Moses know what he says preceded and followed this assertion. All which he gives just in the order which geologists record. The firmament, which always means the atmosphere, is mentioned just where the development of nature puts it. All scientists agree that the heavy atmosphere, composed mainly of carbonic acid gas, bore up the mists from off the sea, and formed dense clouds on the top of this atmosphere, thus, *dividing the waters that were under the firmament from the waters that were above the firmament.*" Does not the telescope show us that Jupiter and Saturn are in this same condition now? When the luxuriant vegetation of the Carboniferous Age had exhausted this carbonic acid gas, the clouds fell in copious rains, and the sun, moon and stars appeared, just as every scientist knows that they did; and, just as Moses, in language that accords with his visions, said that they did.

ANALOGY.

Dr. A. Wilford Hall says about im-materiality, "It is best illustrated by magnetism or gravitation which totally defies a material body to impede its progress." He says that "gravity and magnetism pass through a vacuum to grasp a body beyond. Very true, and they pass through many *substances* also. He does not see that by this assertion he points out a difference between these and other forces, and thereby destroy his much vaunted *analogy*. He wishes to show that gravitation and magnetism disregard the laws that govern matter; as they undoubtedly must do, if they be immaterial entities, but in so doing he admits the fact that the other forces do not disregard these laws; and thus demolishes *Haeckel's analogy* and his own *substantialism*. He truly says that "*gravitation differs from everything else in nature*"; but with these facts staring him in the face, as well as the published admissions of scientists; he with Haeckel, sees a perfect *analogy* between what they both call the forces of nature.

It would be difficult to find instances where *no analogy* appears, unless we select our examples, one from the mineral and one from the animal kingdom; and perhaps even then, analogies could be found. Let us take examples from the organic world, and compare with man, the lowest form of vegetable life—are there no analogies here? Each develops from a mere germ;

* Scientific Arena, vol. I, page 10, quoted in L. N. on Sound, p. viii

each springs from a similar life ; both develope gradually ; in each the embryo bears no resemblance to the adult. Here are *four analogies* where but few could be expected ; as we advance in the species, the analogies become more numerous. Between man and the bivalve, we will find more—still more between man and the crustacean—much more between man and the vertebrates ; while, between man and the highest type of the mammals, the analogies become innumerable. Thinkers in logic, seeing that few things can be selected where analogies are not found, have long ago decided that analogies prove nothing unless the analogies are complete, or at least unbroken.

The system of development is founded upon these analogies. It is admitted, however, that the analogies were incomplete ; though it is said that they had never been broken. Dallenger, Tyndall and Huxley, in their remarks upon biogenesis, which we have quoted, show that these analogies are not only incomplete but broken ; while Mivart in his remarks upon the lines of difference between the species of animals, *proves that they are worthless.*

Ernst Haeckel finds analogies, not only where *none exist*, but where eminent agnostics have reluctantly confessed that *they could find none*. Certainly but few selections could be made, where more broken analogies appear, than between life, mind, sound, light, heat, electricity, magnetism and gravitation. In this is Haeckel's greatest fallacy ; and upon this fallacy Dr. A. Wilford Hall builds his substantialism. *Analogies are a hobby with Materialists and Substantialists:*

Where, I would ask, is there any *analogy* between the personal immortality of the soul as taught by *revelation*, and the pantheistic immortality of sound, light,

heat, electricity, magnetism and gravitation as taught by *substantialism*? but no other immortality can well be advanced for these so called forces of nature. The life of the beast, Substantialism says is *pantheistically* immortal also, yet it finds *analogy* between such life and the soul of man. Was not Solomon's doubt more logical? *

Most philosophers have seen such a difference between *life or mind* and Haeckel's other forces, that they have not tried to put them in one class. "I affirm," says Prof. Tyndall, "that no shred or trustworthy testimony exists, to prove that life in our day has ever appeared independent of antecedent life; and Prof. Huxley says, "Biogenesis is triumphant along the whole line." Aye! triumphant in its proof that life, both vegetable and animal, is never developed, not even by the most scientific methods of modern chemistry, but always comes from a similar life. Ernst Haeckel and A. Wilford Hall are not scientists. They may be †philosophers; but a scientist is one who is seeking for truth, and when he finds it, he does not contradict it because it accords not with his preconceived ideas—his pet theory. In the face of universal testimony, to the contrary, Haeckel declares that *all of* what he calls the forces of nature are alike; and Dr. A. Wilford Hall accepts this assertion and brings forward his theory of *Substantialism* to combat Haeckel's other reckless assertion, that six of these forces are proved to be vibrations.

Leaving out life and mind, let us see what analogy we can find between the others. In producing light—*no!*

* Eccles., Chapter III. verse 21.

† The word philosopher is used here with a meaning that has been attached to it for the last 2,000 years. If we confine ourselves to the etymology of the word, it is no more applicable to these men, than scientist.

we will use the substantialist word—in “liberating” light, heat and galvanic electricity something must be consumed, but in *liberating* sound nothing is consumed. Gravitation, which is constantly being *liberated* by every particle of matter consumes nothing. Sound will not pass through a vacuum, it must have a material conductor; but light passes as well through a vacuum as through the air. If light has any conductor it must be *that imaginary ether*. Glass does not impede light of any kind, nor does it impede the heat of the sun, but it is almost a perfect barrier to artificial heat, and to sound. Do Haeckel and Wilford Hall not see anything here to break the *analogy* between their forces? Aye! even between the same force when it proceeds from different sources? This phenomenon of heat, science has never explained. Can substantialism explain it? Light, to the unaided eye, appears the same no matter from what it comes; but the spectro-scope shows that there is quite a difference. That lights are by no means homogeneous from burning gas, burning liquid, burning solids and the sun; but these philosophers say that there is analogy between them all.

Glass will not permit electricity to pass readily through it, but glass offers very little resistance to magnetism or gravitation, very little to light or the heat of the sun. Is there *analogy* between all these so called forces?

We can store light and heat. In the Leyden jar we store electricity; that is we can hold them by matter; which is contrary to Dr. Hall's correct assertion that “Immaterial entities are not subject to the laws that govern matter.” We can also store magnetism by an armature that connects the poles of the magnet. Gravitation is always stored in every particle of matter,

and no human ingenuity has ever "liberated" it. Has sound ever been stored? Can it be stored in any musical or other instrument? The phonograph reproduces sounds—the very notes, and the tones of the voice are reproduced by a vibratory diaphragm.

Magnetism is increased by imparting its properties to another body, but electricity is lost by doing so. Do Ernst Haeckel and Dr. A. Wilford Hall see *analogy* here? Magnetism is retained by closing the circuit; electricity can only be retained by leaving the circuit open. How exact the *analogy*! Gravitation and magnetism are both local; gravitation is in proportion to the matter that contains it, and which never parts with it. Can the same be said of sound, light or heat?

"Magnetism and gravitation," Dr. A. Wilford Hall asserts, (no doubt unwittingly,) "differ from everything else in nature." So they do, but still they are subject to the laws that govern matter. They are confined by matter "Limited by matter." We do not think we are assuming too much when we say that they are produced by matter.

Art. 6 * of the Substantialist creed tells us that "the materialist logically reaches the conclusion, from the principles of physic taught in our colleges, that life, soul and mind necessarily cease to exist." That, "if Christian scientists teach that sound, light, heat, electricity, magnetism and gravitation are modes of motion there is no rational ground to believe that the forces that cause mental and vital manifestations are anything else." All that we need say to this assertion, is, that scientists whether believers or not, see no such conclusion forced upon Christians. Even those who are unbelievers do not see the *analogy* that would make such

* Scientific Arena, Vol. I, page 7, last sentence.

a conclusion necessary or *probable* or even RATIONAL.

Substantialists beat furiously upon their gong, "*logical analogy*"; but what writer on logic has ever counted analogy as anything more than probability? The analogies may be so numerous, and unbroken, that the probability amounts to an inductive demonstration; but where do we find any two of these forces that present such an *unbroken analogy*? We challenge Ernst Haeckel and Dr. A. Wilford Hall to show one *analogy* between life or mind, and the other so-called "forces of nature." Do not agnostic scientists admit that there is *no analogy* here? Of what other force, save life or mind, can it be said, "that no shred of trustworthy testimony exists to prove that it has ever appeared, independently of a similar force?"

Substantialist publications constantly ring in our ears that "Haeckel proves, by the science of our schools, that *life* and *mind* are vibrations and must cease in the very necessity of the scientific analogy." Still our teachers and professors laugh at these assertions; made, not only without proof, but in the very face of proof to the contrary.

Both Jews and Christians have long believed that the soul of man is an *im-material substantial entity*. Not because science says so; but because their faith accepts what is revealed. Had the speculations of Socrates and Plato been continued to the present day, they would have demonstrated nothing—science throws but a dim light upon this subject, but what it does throw, helps revelation. That *life* and *mind* act as primary forces, goes far to establish what revelation teaches about man.

The Microcosm says * "If force be substantial it

* Vol. VI page 15, col. 1, line 44.

must be subject to the conditions of locality, intensity, divisibility, concentration and rarefaction." Is that so? Locality is conceded to be a property of existence. He reckons the soul of man as a force. Is *it* capable of "concentration, rarefaction and divisibility"? While much has been accomplished in science by studying phenomena, nothing has been accomplished by trying to find out the causes of such phenomena. Not that we would wish to stop modest theorising—much that is interesting and instructive comes of it. We can see where certain theories explain, and where they fail to explain.

Men whom science has placed in her highest niches whose fame will last while the world lasts, have seen their own littleness and have not been ashamed to own it. Sir Isaac Newton, not long before his death remarked; "I feel like a child who has been picking up shells upon the shore, while the ocean of science lies before me, unexplored." The elder Agassiz said "We ought to know the limit of our information. Those who have an answer for everything must make up answers. It is hard to say, 'I do not know,' especially for teachers, but I would trust no one, who has not the courage to say it." In another lecture Louis Agassiz said, "The lesson that there are limits to our knowledge is an old one; but it has to be taught again—it was taught by Buddha, it was taught by Socrates, it was taught by Max Muller, and it was taught by Kant." How different is all this from the remark made by a *substantialist* to the author. "If you do not know the cause of a phenomenon, *you simply confess yourself an ignoramus.*" Who tried harder than Prof. Faraday, to find out what electricity is? Who devoted more time to that and kindred subjects?

He was compelled however, to confess himself an ignoramus, but Ernst Haeckel and A. Wilford Hall are not "ignoramuses"; one is sure that it is nothing but vibrations, and the other knows that it is an *im-material substantial entity*. The arrogance of these men would not be so visible, if science had never blundered, but the path of science is strewn with exploded theories. Theories too, that had more advocates, in their time, than both these men can count.

No one objects to the legitimate use of analogy. By showing an analogy, we often answer an objection and prove the possibility of what is asserted. Analogy is thus used in 1 Cor. XV. 35-37. Many other books use analogy in the same way. This is Scientific analogy so much harped on by Substantialists, but seldom used by them. *Logic admits the force of Analogy when so used.* St. Paul and Bishop Butler understood the rules of logic too well, to use analogy in the unscientific manner of Ernst Haeckel and A. Wilford Hall, *in attempting to prove by analogy a necessity.* The persistent stupidity of these men, is very manifest in their trying to build up an *ontology* where none exists, as between *life or mind*, and their other so-called *forces of nature*; where scientists both believers and *non-believers*, say that they can find none. Like the evolutionist, the *substantialist* puts great faith in 'analogy'. Nothing is too hard for any of these philosophers to prove by "*Analogy*".

SOUND.

Dr. A. Wilford Hall says that the Wave Theory of *sound* is older and more plausible than the same theory applied to other forces; and therefore he makes his principal attack on SOUND, because, if the * “wave theory fails, *here*, the whole theory falls.” He, no doubt, shows that some of the explanations and calculations of eminent scientists are not supported by facts; but Prof. Tyndall had said so before. The IMPULSE theory is not open to the same strictures. We have seen, in the case of the croquet balls, how impulses can be communicated from one particle of matter to another, without perceptible loss in energy or time. We also know that, without the particles of material air, or some other matter to conduct it there is no sound.

† “The *substantial theory of sound*,” says Dr. A. Wilford Hall, “the same as the wave theory teaches that the tone of a musical instrument is produced or liberated by means of vibrations.” He admits that the vibrations of the strings produce, or as he puts it “*liberate*” sounds, and that if these vibrations be stopped the sound stops. Now we know that these strings will vibrate in a vacuum better than they do in the air. Why do they not *liberate* sounds in the vacuum? Dr. Hall says that the air or some other conductor is necessary to convey the sound to the ear after it is liber-

* Art 7 of Creed, last sentence, Scientific Arena, Vol I, page 7.

† Microcosm Vol. VII, page 33, verse 4.

ated; but again we ask, how matter can convey what is *im*-material? To convey the sound it must confine the sound to itself, it must limit the sound by "*material conditions*," which Dr. Hall says cannot be done to any immaterial entity.

Throw a ball, which is indisputably matter, against a hard wall and it rebounds—when sounds in the atmosphere strike the wall the sound impulses do the same; but Dr. Hall says that "*im*-material entities are not controlled by the laws that govern matter." Indeed our only reason for making a distinction between material and *im*-material entities is founded upon this difference. If these sounds be immaterial entities they disobey the law which Dr. Hall lays down. They are "controlled" by the material wall.

Substantialists admit that sound travels at different rates and loudness through different matter—in ordinary air, 1,090 ft. per second, where the air is very dense, as in a diving bell, the movement is quicker and louder—here a fire cracker sounds like a musket; but where the air is rare, as on a mountain, the musket sounds about as loud as a fire cracker does in ordinary atmosphere. Dry wood conducts stronger than wet wood. Make a string tight and it is a good conductor, but a loose string is no conductor of sound. We see from these and other phenomenon, that the more firmness and elasticity a body possesses, the better are its conducting powers. This phenomenon of *resonance* is well understood by manufacturers of musical instruments. The sounds of the harp, violin, guitar, piano and organ, would be faint without their very dry sounding boxes. Why is it necessary to dry the wood thoroughly before making it into these boxes? The manufacturer may be ignorant of the reason, but ex-

perience has taught him that it must be done. Long before science had studied out the reason, the manufacturers of musical instruments had learned that sounds are conveyed to the air and through the air to the ear, stronger and clearer by dry boxes than by damp boxes. The reason is, that dry wood is more elastic, and therefore communicates vibrations of every kind better than undried wood. A substantialist meets us here by saying that steel, which is firmer and more elastic than iron, does not conduct sound as well as iron. He simply illustrates what we have remarked, that much is gained by studying phenomena, and very little by trying to find out the cause of such phenomena. He also shows how flimsy arguments may be that are built upon analogy only. However, *one or several exceptions could not wholly invalidate a rule that is established by almost universal induction.* Such exceptions only show that there is some controlling influence that has not been discovered; but, if the rule were overthrown, *it would not effect our argument in the least, that sound travels better through some substances, than through others;* and that some substances augment sounds. These are facts which substantialists admit; but can a substance of any kind either conduct or retard what is im-material?

Stand a turning fork after striking it on one of these dry wooden boxes, and see how its sound is augmented. We can understand that the vibrations or impulses of the wood may be stronger than those of the metal; but, if sound be an *im-material substantial entity*, the box must create more of this entity, or as Dr. A. Wilford Hall puts it must "intensify" this *entity*. He says that the sound was there before and is only liberated by the stroke. It thus appears that the sound is not

a specific *entity* like man's soul, but a *quantitive entity*, capable of being liberated in quantities by the material box. But what, again we ask, does the matter in the wooden box, or the want of matter in a vacuum, have to do with that which is *im-material*? The manufacturer made the fork. If he makes it one way it has an A soul—if another way it contains a C soul. No matter how many times we strike the fork, we find just as much of this quantitive soul left as there was at first.

Sounds are reproduced in the phonograph so like the original that the voice can be recognized. If sounds be entities, the phonograph must have the power to re-create entities instead of vibrations or impulses. As sound has never been stored we cannot presume that the phonograph stores them; and, if it did, the sounds would become fainter as the stored sounds became exhausted. A *vibratory diaphragm seems to do the work*, much as we see a pair of *vibratory tympanums*, receiving and communicating the sounds, and even the tones of the voice, in the telephone.

The Rev. J. J. Swander A. M., D. D., a noted author in favor of *substantialism*, writes in his Text Book on Sound, as follows: * "The sound force of the voice, caused by the *vibration* of the vocal organs, may *shake* the intervening air and set the transmitting diaphragm of the telephone *into motion*; this communicates the tremor to the conducting wire, which takes up and communicates these various links of incidental *tremors*, to the air, thus conducting the *sound pulses* to the ear, all of which *vibrating* links conspire to keep up *reproducing* as well as conducting the original sound. Hence, let the *vibration* of such a mechan-

* Text Book on Sound, page 106, answer 15.

ical telephone wire be stopped off anywhere along the line, by a rigid vise, and no audible sound will be communicated to the receiving diaphragm, thus *showing how essential is vibration* to the usual methods of *generating* sonorus force." The italics are ours, but we are constrained to ask, did ever philosopher before state facts so well against his own theory? How is it possible that such a man, as Dr. Swander can be a *substantialist*? He says, however, that "motion is a nonentity and can produce nothing nor cause an effect." Now we admit that "a nonentity can produce nothing," but the motion of the diaphragms, and the wire of the telephone, which the doctor so beautifully illustrates, are not the producing causes of the sounds. The producing causes are the lungs and the vocal organs of the speaker.

As to motion it is always caused by an entity, but the motion when communicated to another entity sometimes produces tremendous effects. The motionless cannon ball is harmless; but, when motion is communicated to it by the firing of gunpowder, it strikes its object with terrific effect. We can hardly turn our eyes anywhere, without seeing how entities *in motion*, "cause effects"; which, without motion they would not cause. Dr. Hall says, "the atmosphere in its ordinary condition, conducts sound 1090 feet per second: water about 4 times as fast, pine wood ten times, and iron 17 times as fast." This is about correct. Now let our *substantialist* take his stand at one end of a brick or stone wall, and have a person to strike the wall at the other end with a hammer. He hears two distinct strokes from that one stroke of the hammer—the last from its time and loudness, came through the air; the other, from Dr. Hall's admission came through the

more solid wall. The experiment has often been tried and can be tried by anyone. Substantialists would say that two distinct entities are *liberated* by that one stroke. If so, these *im-material substantial* entities are queer things. How many such entities are in the wall? We cannot conceive of there being an indefinite number, but every stroke liberates one through the wall; another through the air—more if there be other conductors, as rods of wood or metal. The number of entities in that wall does seem infinite; for no stroke has failed to liberate all that the conductors call for, no matter how often the wall may be struck. The wave and impulse theories both teach that vibrations or impulses are given to any matter that is near enough to receive them, and are communicated from particle to particle of such matter, *until finally they reach the ear*.

Evidence against the *substantiality* of sound meets us everywhere—not philosophical theories, but demonstrated scientific facts. We will advance another argument against the *substantiality* of sound—one that is, we think, incontrovertible. Proof, positive that sound is caused by vibrations or impulses in another matter, and that, when these impulses follow each other in quick succession the tone is higher than when the succession is not so quick.

Take your stand upon the platform of a country railroad station, when an express train is about to pass, and notice the sound of the whistle as it comes towards you, as it passes the station, and as it goes from you. Most of our readers have probably observed this difference in the sounds of the whistle. As it passes the station you catch the true tone of the whistle, as you would hear it if the train were standing there; as the

train came towards you, the impulses being crowded together and following each other in quicker succession, the tone is perceptibly raised ; if the train be moving rapidly, the tone of the whistle may be raised a whole note. As the train recedes after passing the station, the tone of that same whistle is lowered just as much as it was raised before. Three distinct tones you hear ; but only one is heard by the people on the train who are moving with the whistle ; and that is the same tone that you heard when the train passed you. By either the vibration theory or the impulse theory this is all plain—the pulsations of the sound, to one moving with the whistle are neither crowded together, nor parted by the motion of the train.

According to the *Substantialist* theory, the steam in passing through the whistle, *liberates* to those on the platform three distinct entities, but to those on the train, moving with the whistle, the same entity is *liberated* constantly. A *Substantialist* answers us here, that the motion of the train alters the entity. As the motion of the train is the same when approaching, passing and receding, why does it not alter it the same in all these cases? Why does it not alter it to those on the train? What evidence have we that one entity is ever altered into another entity? Electricity and magnetism may be converted into each other ; but it is begging the question to say that they are entities, without some proof that they are.

Impulses are not a philosophical theory, but a demonstrated scientific fact. The croquet balls which we have cited, show that impulses can be communicated from one particle of matter to another, without any diminution of energy, nor any appreciable consumption of time. No ! nor any perceptible motion in the

intervening particles. Were impulses, like ether, an undemonstrated theory, still like ether, they would explain what *substantialism* cannot explain.

Until *Substantialism* makes some one phenomenon plainer, it cannot rank as high as the ether theory; which, though un-demonstrated and opposed by some phenomena, accords with other phenomena.



OPINIONS.

It has been asserted that *substantialism* is endorsed by learned men? Was it not admitted that the early Gnostics were more learned than the Catholic Christians? Was not Ptolemy a learned man? Was not his system of Astronomy supported by learned men for several generations? Tycho Brahe was a learned man—the leading astronomer of his age—the first man who had the charge of an observatory—the inventor of many astronomical instruments. Kepler acknowledges his indebtedness to Tycho Brahe's observations; from which he calculated his three great laws. Still, Brahe lived and died in error about the movements of the heavenly bodies. He lived after Copernicus, and labored to overthrow his system. He tried to prove that the sun moves around the earth. According to Dr. A. Wilford Hall, * Sir Isaac Newton and La Place, both fell into very ridiculous errors. Will he say that these men were not learned men?

The men, whom *substantialists* most delight to quote, are professors in colleges. Will they claim a majority of these, or even a considerable minority? *Haeckel is a professor in the University of Jena.* Dr. A. Wilford Hall says of an American professor, who has had the temerity to oppose *substantialism*, that † “Notwithstanding his evident incapacity of grasping the true relation

* Microcosm Vol. VII, page 50, col. 1, last verse.

† Microcosm Vol. I, page 139, 1st col., line 35, and p. 140, 2d col., line 3.

between cause and effect in physics and mechanics, he really does seem to catch a glimpse of the fact that this argument, "(referring to one of his own,) "kills the wave theory." "Really," (says the gentlemanly Dr. A. Wilford Hall,) "ones sympathy involuntarily goes out for such a superficial *ignoramus*."

"*Ingnoramus*" is a favorite word with *substantialists* when speaking of those who differ from them—so was its Greek equivalent a favorite word with the ancient gnostics. Dr. Hall says that this professor cannot "distinguish between cause and effect," and that he is "superficial". How true it is that people always see their own faults and failings reflected in others! This professor, however, "does catch a glimpse that the wave theory is killed," but not having *substantialist* eyes, he fails to see that killing the wave theory, necessarily establishes *substantialism*. Perhaps the *wave theory* was supplanted by the *impulse theory*, before *substantialism* was invented. However, these remarks and others with which *substantialist* writings teem, go far to lessen the endorsements, of the few learned professors whom they cite.

Among those whom the *Microcosm* cites most frequently are H. A. Mott, Ph. D., F. C. S.; and Capt. R. Kelso Carter A. M., Dr. Mott, grandson of the celebrated surgeon Valentine Mott, is known as a *Chemist*; and Capt. Carter is professor of *Mathematics* in the Pennsylvania Military Academy. These gentlemen are, no doubt, scholars. They write very well against some of the errors that have long been received as scientific facts. Rev. J. J. Swander A. M., D. D., to whom reference is frequently made, is more pronounced. He no doubt thinks himself a *substantialist*—but he speaks

of sound as * “generated,” while Dr. A. Wilford Hall says “*liberated*”. According to *substantialism* the sounds are *not* “generated”, they are there and only need to be “liberated”. He refers to the motion in bodies that is “generated,” by the sound in an adjacent body. He has the good sense in several instances to confess himself an “*ignoramus*”. He does not seem to think, as do some *substantialists*, that pulling down other theories is all that is needed to establish *substantialism*; however, much of his book does show, that he thinks that what is unknown, or beyond man’s comprehension favors *substantialism*. If he would throw away his *gnostic spectacles* he would not see that way. He raises a distinction between *sound* and the *phenomenon of sound*; which to our eyes appears to be a distinction where no difference exists, and which can have no influence with anyone not already a *gnostic*.

He has somewhat of the same harsh way of asserting his opinions that has ever clung to *gnostics*. He thinks that, † “a good smart schoolboy” or “a Hottentot, need not be led astray by undulatory nonsense.” Now we do not advocate the undulatory theory of light, heat, magnetism, electricity and gravitation; nor even the existence of *ether*.[•] We think that they are both unproved theories; and that some of the phenomena of the so called forces do not agree with these theories; but it is rather noticable, for a philosopher whose own theory explains nothing, to call that “nonsense” which *does* explain somethings. Like Substantialist writings generally, Dr. Swander’s are largely made up of rhetoric instead of logic—with flowery sentences, and ad captandum remarks that prove nothing.

* Text Book on Sound, page 158, answer 8.

† Microcosm Vol. VII, page 5, col 2, line 2.

The Microcosm copies and refers to the articles of George Ashdown Audsley F. R. I. B. A., published in the English Mechanic. Why he is claimed as a *substantialist* is not very evident. He attacks the wave theory of sound, but others had attacked it before *substantialism* appeared. Audsley attacks the calculations made by Newton and others, about the mathematical swing of sound waves, as one scientist attacks the theories and conclusions of another. He seems to be seeking truth, not arguing to support a pet theory. The Microcosm also quotes Prof. Tyndall's words that "Our reputed knowlege regarding the transmission of sound was erroneous." Why does it not class Prof. Tyndall as a *Substantialist* also?

There are articles in the Microcosm, that have no reference to *substantialism*, which are worth reading.



SOPHISTRIES.

Substantialists have collected many scientific facts, but their conclusions are worthless, sometimes because of their superficial knowledge, but oftener because of their peculiar views which, prevent their seeing other facts that are quite as potent.

In the writings of *substantialists* we generally see a confounding of cause and effect. The effect is easily seen by our senses; while the cause is found by a course of reasoning. For instance, they frequently assert that nothing can put matter in motion but an entity, which no one disputes. They say that motion cannot be a correct definition of force, because only *a substantial* existence can move inert matter. They are simply confusing terms. Force is sometimes used for the concrete substance; thus we say the national forces referring to the soldiers and sailors; but we also use the word in an abstract sense, as the force of circumstances. A scientist or philosopher may restrict the meaning of a word; and no one objects to Substantialists doing so; but they have no right to claim, that the word, whose meaning they thus restrict is susceptible of no other meaning. No scientist disputes but what the ultimate cause of any effect is an entity—generally a material entity. In most cases the intermediate cause is a material entity also; as the bell the organ, the drum, etc., ruled over and acted upon by

the material hands of man, which material hands are acted upon by the im-material *substantial* soul.

In the same verse in which we find this indisputable assertion we also find this * "as well might the carpenter call his chisels and saws modes and methods, in stead of real substantial entities." Such sophistries are not uncommon in substantialist writings. The Scientific Arena says † "If gravity pulls a stone to the earth, then gravity is the force that causes motion". Scientists see the effect, and call it gravity — by a figure of speech they often call gravity a force, nevertheless they recognize gravity as an attraction caused by matter.

If gravity were the primary cause of motion, *as life is*, it might be called an entity; but can gravity be separated from the matter which produces it? Is not gravity, clearly, a principle that resides in all matter? Can it be shown that the matter does not exert the force that pulls the stone? Gravity is an attribute of matter; but then some *substantialists* call *all* attributes entities. We always find gravity, in *exact* proportion to the mass of matter in the body from which the attraction proceeds, and we feel licensed to conclude that the mass of matter in that body is the cause of the gravity.

The Scientific Arena says ‡ "That the force which makes the steam effective is the heat," therefore that the heat is an entity; but is not heat, itself caused by the burning of fuel? Heat is not the primary cause.

The argument to which they give the most space, is one based upon the stridulations of the locust. They say, what is no doubt true, that "this tiny animal, pos-

* Micocosm Vol. VIII, p. 36, col. 2, line 13.

† Vol. I, p. 13, verse 12.

‡ Vol. I, page 13, top of 3d column.

sessing but little strength, is heard for half a mile, and if the wave theory be correct it must move a globe of atmosphere one mile in diameter"—a weight which a Durham ox could not budge. Dr. A. Wilford Hall then asks the question, "Can anything be more absurd?" Yes! we think that it is more absurd to suppose that this tiny locust *liberates* from his body a *substantial entity*, that fills such a globe. This objection having been advanced before this, by the Christian Standard, a writer in the Microcosm remarks that * "The Standard critic seems really to have struck a happy thought, and supposes he has effectually caught the *substantial philosophy* napping at last"; and he makes himself very merry over the stupidity of the Critic, who, he thinks, does not see the difference between a material and an im-material entity; but as neither revelation nor science has given us any hint that a living being can part with an *im-material* entity without a loss of strength, and as we know that depriving a living body of some things, which substantialists call *im-material* entities, does produce a loss of strength, the Critic, certainly, has quite as much right to assume one position, as our writer in the Microcosm has to assume the other. He can advance quite as much proof as the Substantialist can. The *impulse theory* is open to no such objection.

Substantialists tell us about "force elements existing in space and in all matter," with as much assurance as though they had some evidence of it. If they cannot explain force any better, why not acknowledge, with Faraday and others that "they do not know what it is." But then some of their *substantialist* friends would call them, as they have called others, "IGNORA-

* Vol. III, page 307, second column.

MUS"; and it is much better to know that the world rests upon the shoulders of Atlas, or on the back of a huge tortoise than to be "*an ignoramus*".

Dr. Hall says, that "we know nothing about *waves*, except as we see them in water, and that in water, when a wave strikes a post or any other object, it is not reflected, but goes around." He is, no doubt, right in both these assertions, but do not sounds do the same? Do they not go round small objects? And is not water, as well as sound, thrown back by an impassable barrier, as a solid wall or the beach? If he expects to establish *substantialism* by *analogy*, does he not see that *an analogy confronts him here*.

He tells us that * "cohesion", another of his im-material forces, interferes with the passage of electricity in glass." It is certainly an ingenious, if not an ingenious invention, to stop electricity, which is an im-material entity, by another im-material entity, and not by the material glass. As he admits that *im-material* substances are not subject to the laws governing matter, why did he not think of this sooner, and apply it to other things instead of *making matter stop im-material substances*; but what evidence has he that one *im-material* force can stop another? They do not seem to do so in telegraphing, as messages can be sent both ways on the same wire, by *im-material* electricity; but perhaps we are "quibbling" to ask such a question, still we cannot help asking it. Im-material light is not interrupted by this *im-material* cohesion, but if the *material* glass be ground, then the light is interrupted by the material surface of the glass being irregular. If *substantialists* would "quibble" a little more they would not put forth such arguments. They would see

* Scientific Arena, Vol. I page 45.

how the irregularity of the *material* surface of the glass throws what they call *im-material* light into so many criss-cross lines that what could be seen through this material glass before can be seen no longer. By Dr. Hall's correct definition of im-material bodies they could not be affected by grinding the glass.

A *substantialist* say that in the telephone the im-material sound of the voice is converted into im-material electricity and back again into immaterial sound. This is the purest kind of guesswork. What evidence has he that one entity is ever converted into another? Our whole experience is against such an assumption. The chemist may appear to do such a miracle, but he only causes elements, or *entities* to separate, and then to form new compounds by recombining these elements or *entities* differently. To change one entity into another is an act of creation. One kind of *motion* however, can be converted into another by man. We see it constantly done by machinery—horizontal motion is converted into vertical and vice versa. Both are converted into circular motion.

Electricity may be converted into magnetism and magnetism into electricity; but the *Substantialist*, who assumes that here he has found his evidence, is simply begging the question as any logician will at once see; for he has given us no proof yet that electricity or magnetism are entities; and to most minds this fact would imply that they are not entities. Faraday, after the closest study, confessed himself an "*ignoramus*" as to what electricity and magnetism are.

* *Substantialists* quote the well known fact, that though a bell vibrates in a vacuum, no sound is heard unless the bell stands on a sounding board, which is in

* Scientific Arena, Vol. 1, page 45.

communication with the outside air. This fact they quote in support of substantialism ; but, would it not convey the idea to most minds that sound is not an entity—that it is caused by some disturbance of the atmosphere? If the sound of the bell be a substantial entity, why does it not strike the board through the vacuum as well as through the air? Does an *im-material* entity need a conductor? What evidence is there of it? How can an *im-material* entity be held in chains by a material conductor? Dr. Hall says that “it is not subject to the laws governing matter.”

Light, which he claims is also an *im-material* entity, has no conductor, unless ether be its conductor for it passes as well through a vacuum as through the air. It seems very plain that the vibrations of the bell are communicated to the air, if there be any within the receiver, and then through the glass to the outer air, thence through the outer air to the ears. When the bell is in the vacuum, and stands upon a sounding board, its vibrations are carried by the board to the outer air, and by the board made stronger.

Writers in the *Microcosm* endeavor to show that the air waves, which break things, travel at different speed from sound, and this, they think, proves the *substantiality* of sound, on the principle, that whatever they cannot explain proves their theory. The waves that produce concussion probably do travel, sometimes faster and sometimes slower than whatever causes sound, but ordinary mortals cannot see in this any proof that sound is either one thing or the other.

The sophistry to which we desire particularly to invite attention, is about the ear itself. To a person not acquainted with the anatomy of the ear, it is the

* *Microcosm* Vol. III, page 61, also in *Text Book on Sound*, Answer 29.

most misleading of all substantialist arguments, but to one who is acquainted with the anatomy of the ear it is the most glaring sophism. It has been said that a half truth is more dangerous than a direct falsehood. We are sure that the writer has not wilfully kept back part of the truth, like Ananias and Saphira. He has, more probably, attempted to handle a subject with which he is imperfectly acquainted.

About one inch within the outer ear, we find the Membrana Tympani which a writer in the Microcosm says * "is a flabby mass of tendinous tissues, not stretched at all, as falsely supposed." So far he is right, but he should go on, and tell us about the little muscles that are attached to this Membrana Tympani, placed there by an Omniscient Creator, that this "flabby mass of tissue" may be drawn to a state of tension, as soon as such tension is needed. Had he known the existence of these muscles, he could not have been so dishonest as to omit noticing them. Can it be possible that he knew of their existence, but never thought why the Creator placed them there, what use he intended them for?

Let us pass this "flabby mass of tissue," for which a *substantialist* can have no use, no matter whether it be loose or tight, and we come to the Tympanum Proper, a small tube, less than an inch in length, separated from the outer world by this flabby membrana tympani, commonly called the *drum of the ear*. At the other end the Tympanum Proper is separated from the inner ear by the membrane of the vestibule. We thus have the outer ear, the middle ear between these two membranes, and the inner ear, beyond the membrane

* Vol. vii, page 34, line 25.

of the vestibule, which is filled with a liquid, in which floats one end of the auditory nerve.

The tympanum proper, or middle ear, somewhat resembles a drum. The outer head, this "*flabby mass of tendinous tissue*," is always ready to be drawn to a state of tension, by the little muscles, whenever tension is needed. Drums ordinarily have eyelets in their sides, that the air inside may be in equilibrium with that outside. The Creator has provided the middle ear with the eustachian tube for the same purpose. This tube communicates with the throat and thus with the outer air. Extending from one end of the Tympanum proper to the other end, are three small bones attached loosely to each other and to the membrane at each end, and held in position by small ligaments provided for that purpose. Whenever the little tympanic muscles tighten this "flabby tissue"—the *membrana tympani*—then these little bones are pressed against each other and against the membranes at both ends of the middle ear, much like the communication that is formed by the wires and magnets which connect the two tympani of the telephone.

Every electrician knows that electricity produces tension in the wire through which it passes. In the telephone, the tympani and magnets are always in a state of tension, and the wire, corresponding to these bones, is brought into tension by the electricity. A wonderful instrument is the telephone, but it is only copied after the middle ear, which was designed by Infinite Wisdom.

To return to the ear ; when the "flabby," *membrana tympani* is tightened, by the little muscles, and these little bones are brought firmly together, then the impulses of the outer atmosphere, which strike the first

membrane, are communicated by these little bones to the inner membrane, and through the second membrane to the acoustic or auditory nerve.

In the *Microcosm is the story of a man who had the tympanic membranes of both ears burst by the concussion from an explosion, who, after the paralysis, incident to the accident, had passed off, heard better than before. We do not doubt it, for scientific anatomists have said, that they saw no use in the tympanic arrangement, but to protect the membrane of the vestibule. The impulses they have said, could be just as well communicated by the air, directly to the membrane of the vestibule, without such an arrangement. This assertion of the anatomists, the Microcosm, by this quotation, unwittingly proves to be correct.

When the little tympanic muscles are in repose, as they always are when the person is not listening, this flabby *membrana tympani*, being relaxed, projects into the outer ear, and the little bones of the tympanum touch each other lightly. In this condition, if any sudden concussion strikes the first membrane, it finds that membrane loose and flabby, consequently makes a much less impression, and the bones, also touching each other lightly, the concussion is very much weakened before it reaches the inner ear or vestibule.

When listening, the whole tympanum is in tension. Should a concussion suddenly strike it, then the *membranæ tympanorum* would be in great danger. Such a combination of circumstances can seldom happen; but when the first membrane, (this "*flabby tissue*") is burst, the membrane of the vestibule would be more easily burst.

They see that a tightened *membrana tympani* would

imply waves or impulses in the atmosphere. The membrane of the vestibule should teach them the same lesson, for that is always in tension; the little muscles of this "flabby skin" should teach it; the chain of three small bones that passes through the tympanum proper, and are always ready to be tightened, should teach it. The whole construction of the ear teaches this lesson. Still, Dr. A. Wilford Hall actually quotes this accident, and cites the construction of the ear in support of his philosophy. If, in this case quoted in the *Microcosm*, the first membrane were burst, a concussion would strike the second membrane, without any intervening arrangement to soften it, and the second membrane, being always in tension, would be in danger.

Can any one view such a contrivance to protect the ear proper from accident, and believe that blind chance did it all? If so, his faith in blind chance is wonderful. Development will not account for it—development presupposes a necessity that causes such development. The tympanic arrangement has not been developed to meet an exigency, but is provided against one that is not likely to happen.

The *Microcosm* also quotes the dentaphone in support of *Substantialism*. The cases where the dentaphone has been used, have generally been where there was a thickening of the tympanic membrane. Dr. Hall gives a case where there was no external ear. What can be made out of the use of the dentaphone, except that it receives the vibrations or impulses of the air, communicates them to the teeth, and through the teeth and bones of the skull to the liquid, in which floats one end of the auditory nerve? If sound be an *immaterial substantial* entity, how can the closed ear, or thickened tym-

panic membranes that are *material substantial entities*, prevent its passage? All that revelation teaches as well as what Dr. Hall asserts about *immaterial* entities, is against any such assumption. Dr. Hall asserts what we all feel must be true, that "*immaterial* entities are *not* subject to the laws that govern matter." Still he is so blinded by his pet theory of *substantialism*, that he is constantly laboring to prove his own words false.



CONCLUSION.

It is by fastening itself upon religion that *substantialism* shows itself to be a *gnosticism*. What has science to do with revelation? Theories are subjects for scientific investigation. Does it matter whether God created the world and all therein by a single fiat or by a long process of development? The Master has said, "The gates of Hell shall not prevail against His Church," but when infidels have tried to arraign science after science against the Bible, timid Christians have forgotten their Lord's promise. There never has been a time, however, when the enemies of Revelation have forgotten to make attacks. St. Paul found it necessary in his day, to warn St. Timothy to "avoid the oppositions of science falsely so called." Whenever it is sought to make Revelation depend upon scientific theories, we have "the oppositions of science falsely so called."

In the seventeenth century, infidels were as Haeckle is now; but then they rode a different hobby. Then it was the Copernican system of astronomy. They were then more blatant than now, and challenged Christians to reconcile the Copernican system with Divine Revelation. Pope Urbane VIII thought that he could not reconcile them—he should not have tried to reconcile them, but he thought that he must, and not being able to do so, he compelled Galileo to retract his teachings on that subject. What intelligent Christian now doubts

the truth of the Copernican system? Have not the successors of Urbane for two centuries upheld it? The professor of natural sciences in the University of Jena, dare not now flaunt this challenge in the face of Christians.

Chemistry and geology have each been arrayed against our religion; but now the truths of chemistry are seen to be proofs that "Order is Heaven's first law," while Hugh Miller and other geologists have shown such wonderful agreement between the Mosiac account of Creation, and that which geology shows, that this branch of science can no longer be arrayed against Revelation. What seemed most difficult to reconcile has long since been abandoned by all geologist. According to Dr. Hall, "Lyell tells us that in 1806, the French Institute named not less than eighty geological theories that were opposed to the Scriptures, but that not one of them is now held by geologists." Recently Bishop Colenso was deposed, in England, for disputing the Bible account of the Exodus of Israel; but the objections which he and some other philosophers raised then, have since vanished before the testimony of scientific surveyors, who have been sent to that country for another purpose.

It has been said that "when scientists agree among themselves, it will be time to proclaim a conflict between Nature and Revelation." No! not even then; for our belief does not rest upon scientific deductions and inductions, but upon revelation, supported as it is, by proofs both from history and science, as nothing else is supported. The intelligent Christian teacher often finds occasion to point out to his pupils how science clinches the proofs of revelation, but, nevertheless, he pursues his investigations into each subject separately.

Sir Isaac Newton, who will always occupy a high niche in scientific fame, knew how to study both subjects. He could be at the same time a devout christian and a devoted scientist. "The prophesies were given" he said, "to prove the truth of revelation, as we see them fulfilled, not to gratify man's curiosity." Had Colenso been blessed with Newton's faith he would not have disputed revelation. Since Newton's day the Bible has been proved correct in things, where at that time, even commentators adopted explanations which are now shown to be useless.

The God that christians worship has always been called "the God of Israel." The Israelites are admitted to be a Shemitic race. Historians agree that they are descended from Shem, and that Joshua, a Jewish warrior, reduced a part of the Canaanites to the condition of bond servants, and drove another part across the Isthmus of Suez; but a thousand years before this event, how true was it all foretold by Noah! In Gen. ix chap. 26 verse where we read "Blessed be the Lord God of Shem and Canaan shall be his servant." The bringing in of the gentiles to the worship of the "God of Israel," has always been called "the enlargement of the gentiles." "Enlarge" and "enlargement" are frequently used in the Old Testament in the sense of setting free or bringing into better relations with God. Since the advent of Christ such an "enlargement of the gentiles," the descendents of Japheth, has taken place. Not even Prof. Ernst Haeckel will deny it, nor can he deny that Christians now occupy the place of Israel. He certainly cannot deny that the descendents of Canaan have been servants to the descendents of Japheth since the Christian era. We have nothing to do in this argument, with the righteousness or unrighteousness of Japheth's children,

in dealing thus with Canaan's children, but only with the historical fact which none can deny. Will any student of history deny that long before Japheth was enlarged, this was all foretold in the poetic language of Noah? Let us read both the 26 and 27 verses of Genesis, ix chapter, and note how exactly this prophesy has been fulfilled after the lapse of thousands of years. "And he said, blessed be the Lord God of Shem, and Canaan shall be his servant. God shall enlarge Japheth and he shall dwell in the tents of Shem, and Canaan shall be his servant."

Can any one acquainted with the history of the four great empires of the ancient world, Babylon, Persia, Macedon and Rome, read in the book of the Prophet Daniel, of Nebuchadnezzar's *image*, or Daniel's own vision of the troubled sea and the *four beasts* that it brought forth, and not see the fulfilment of prophecy? Let such an one read Daniel's interpretation of the image in Chap. ii from the 37 verse to the end of verse 45, and then turn to the vii and viii chapters, if he still does not believe in the inspiration of that book, his faith in coincidences or else in interpolations must be wonderful, but if so, let him compare the prophecy of Isaiah with the New Testament, and see how correctly Isaiah foretold, *six hundred* years before, what would happen to the Messiah.

Interpolation here would be impossible—the Jews have guarded these scriptures too jealously to permit Christians to interpolate things contrary to Jewish faith. To explain these prophecies, Jewish commentators have to resort to the most unnatural interpretations. Long before Jesus was born, Alexander the Great ordered the Jewish scriptures of the Old Testament to be translated into Greek by seventy learned

Jews. This translation, called the Septuagint, is often used to corroborate the Hebrew Text, which must be copied upon parchment, by Jewish Scribes and deposited in every new Synagogue before it can be dedicated. Are not the Jews in every way a standing proof of the fulfilment of their own prophecies? The buried records that are constantly being unearthed prove the truth of many things that infidels have denied, and Christians only accepted on strong faith.

The old lines of attack have been generally abandoned—Astronomy, chemistry, geology and even history! Now it is Evolution and the Wave-theory. That there is evolution within certain limits, no scientist be he believer or unbeliever will deny. Darwin, who never professed any belief, and many other scientists of all kinds of religious beliefs, as well as agnostics, admit the necessity of a creative power to originate the germs of *life* and *mind*. If some of them do not say so they nevertheless admit it, by acknowledging their inability to account for *life* and *mind*. Evolution only removes the Creator farther back, but does not do away with the necessity of a Creator, nor contradict what Moses asserts, that "In the beginning God created the heaven and the earth."

Rev. Jas. Stalker, M. A., has expressed such a Christian view of Evolution that we will quote it here. It would be difficult, we think to express the truth better. He says, "The scientific movement of the age is called Evolution. Darwin, now that his laborious life is ended, is beginning to be regarded in many quarters as the greatest man of recent times. A hundred young disciples who worship him are spreading his doctrines in an exaggerated and dogmatic form. He was always ready to acknowledge the difficulties lying in the way

of his ideas; but they are ready to draw out the scheme of the universe in all its elements, physical and spiritual, as an unbroken evolution from primeval matter. How much this is like the working of second class minds always have been! Difficulties that would stagger the author of a theory are rode over as nothing, by his second class admirers." "There has been evolution in revelation. God did not give the truth all at once, but at sundry times and in diverse manners. It is thus with all His works. All God's creatures grow. In the field we have first the blade, then the ear, after that the full corn in the ear, and in human life there is progress through the stages of childhood, youth and old age. The delight which we feel in watching things grow seems to be borrowed from the Divine mind itself."

We are not aware that the thinkers among evolutionists have ever said that science disproves revelation, but some do assert that revelation needs to be confirmed by science. At the most, this is only *negative* proof. Revelation does not ask our faith unsupported by *positive* proof, any more than science does. She gives us such proof in the fulfilment of her prophecies—proof, quiet as cogent as the demonstrations of science.

Studying the phenomena of sound, long ago carried a conviction to the mind, that sound was produced by some sort of movement in matter—thus arose the Wave-theory. Dr. Hall admits the necessity of some matter to convey sound. No sound can be heard unless conducted to the ear by matter—matter which is palpable to the senses—imaginary ether will not answer.

The wave-theory of *sound* is very old—older than Christianity. If it was contrary to Divine Revelation,

why did not the Saviour condemn it? It may be answered that Christ did not come to teach science, and the scientific theories then in vogue on most subjects have been exploded. Why then do not Substantialists follow their Lord's example? They profess to believe in Him, but join hands with Infidel Haeckel, and say that the wave-theory is contrary to the religion that Jesus came to establish.

The *Impulse Theory*, a modification of the wave-theory is open to none of the objections that have been urged against the wave-theory. It seems to explain every phenomenon of sound while the *immaterial substantial* theory explains nothing, and as we have shown, is opposed by some of the phenomena of sound. We do not defend any theory that has been applied to the other forces, and we assert that none of them have to do with religion.

Science has ever been the handmaid of our religion, but it does not need her help. Religion and science are independent subject. It is degrading to Revelation to say that it must be tested by Science, and it is degrading to both to claim that we must put a bit into the mouth of Science and the reins into the hands of Revelation.

Science is a knowledge of that which is evident to our senses, or is proved by logical deductions and inductions from such evidences. Unproved theories may be used during the progress of scientific investigation, but such theories form no part of science until they are demonstrated. Neither Ernst Haeckel nor A. Wilford Hall have any right to dogmatically assert their unproved theories.

Revelation teaches us what we cannot find out by our senses, nor by our senses and reason combined.

The assistant editor of the *Microcosm* says,* "The members of religious bodies who think need constant confirmation of their faith." Confirm their faith, then with the evidences of Christianity, such evidence is abundant, and it will not take half the time to show such evidence that it will to teach them the ratiocinations of *gnostics*. "If they hear not Moses and the prophets, neither will they be persuaded though one rose from the dead." *Substantialism*, if all its unproved theories were admitted, would only show a probability.

The *Microcosm* asserts that †"Young men in our colleges are becoming materialistic and agnostic in religion." If so it is either because their professors do not issue the evidences that are hewed and squared to their hand, or else because the young men refused to accept any evidence on the subject. In either case they had better go somewhere else.

Have we not had enough of trying to array science and revelation against each other? Those who believe in inspiration should leave such work to infidels. Haeckel and Hall have a right to advance what theories they please, and to try to prove them, but until they are demonstrated, let them hold them as working theories—they have no right to assert them, nor to demand that others shall accept them. When they do assert unproven theories they go beyond the domain of science. "They rush in where angels fear to tread"—rush into the realm of revelation.

Had Substantialists let religion alone, we would let them alone. Such *gnostic* attempts to mix religion and science received the condemnation of the apostles and of the early church generally. The *ancient gnostics*

*Vol. vi, page 13, Verse 2.

†Vol. vii, page 42.

called themselves the "*intelligent christians*." Dr. William Smith, referring to the gnostics, says, "Every union of philosophy and religion is the marriage of a mortal with an immortal, the religion lives, the philosophy dies." Those *ancient gnostic* theories are all dead. Those theories are, not only in the apostolic sense, "Science falsely so called," but true science has long ago consigned them to the heap of rubbish where many other exploded theories lie. While so much in nature lies unexplored, science cannot be occupied with the undemonstrated and undemonstrable theories of either Prof. Ernst Haeckel or Dr. A. Wilford Hall.

It is not to be presumed that the leaders of *Substantialism* will give up their ideas. The *early gnostics* were not easily turned from their errors. Many, no doubt, who adopted their teachings, afterwards abandoned them and accepted the teaching of the Church; but they were not prominent persons, and history has not recorded their conversions.

The *Scientific Arena tells us that "A clergyman who believes in the college views of the forces of nature and especially of sound, the mother of all so-called 'modes of motion,' cannot stand one minute in the presence of one of Huxley's weakest followers." † It also tells us that Substantialism "is the only possible escape from Haeckel's logic in favor of the utter annihilation of the soul at death." The Microcosm repeats the same idea, ‡ "It was Substantialism that saved theology from this overwhelming conclusion of Haeckel by demonstrating (?) that force in the physical realm, in every possible case, is a substantial though immaterial entity, and thus by an unanswerable *natural analogy*, broke the

* Vol. 1, page 3, line 21.

† Vol. vii, page 11.

‡ Vol. vii, page 43, col. 2, line 9.

force of Haeckel's materialistic logic." This paper also says that, * "had the Boston lecturer, Joseph Cook, been an intelligent convert to *Substantial* philosophy he could well have employed sound, light, heat, electricity, magnetism, gravitation, etc., as *analogical* conditions by which to elucidate the nature and permanent durability of the soul." (?)

The Scientific Arena says, † "The religious press of the country hailed Substantialism with admiration, and in some instances flattered it with extravagant encomiums of praise. (?) Christian men throughout the world rejoiced in the happy day of their deliverance;" but in the same article we are told that, ‡ "Some of them are destitute of mental perspicacity, while others are effected with intellectual indolence mingled with religious utilitarianism." It is certainly refreshing to find that there are "some christian men" that have not been captivated by this *gnosticism*.

In the same article we find these words: § "If Substantialism is not true, Christianity has no durable foundation." As Substantialism is not yet fifteen years old, it follows that FOR NEARLY 1900 YEARS CHRISTIANITY HAS BEEN BUILDING UPON THE SAND, and *Judaism for a much longer period*. What more could Haeckel say? What more could any enemy of revelation say? Hold! say our readers, we have had enough of these quotations. Well, it will be a relief to get back to REVEALED RELIGION, and to *Science* as taught by unfettered investigation and demonstration. We will only trouble you with one more quotation to show that this arrogance is seen by a Substantialist. Rev. Joseph

* Vol. iv, page 344, col. 2, verse 2.

† Vol. i, page 4, line 25.

‡ Vol. i, page 4, line 42.

§ Scientific Arena, Vol. I, page 4, col. 2, last verse.

Clements of Harbor Spring, Mich., writes to the *Microcosm* thus: **"One thing in the paper, to my mind at least, is to be regretted, i. e., the want of a kinder magnanimity in the spirit of some of the articles contributed."* Perhaps others have noticed it but this is the only one whom we have found to object. This gentleman has accomplished but little, for one can scarcely open to a page of any subsequent number of the paper without seeing its philosophy asserted in the most positive terms, with as little reason or proof as the *ancient gnostics* gave for their philosophies; and maintained with egotism, conceit and flattery unsurpassed by *those gnosticisms*.

If *Substantialism* could prove all that it claims to prove, it would only give us only a *deistical philosophy*. If revelation does not furnish proof of its assertions independently of science, then our religion is founded on *science*, not on revelation. If one doctrine of our faith must be proved by science, then all. If *science* must be called in to "*break the materialistic fetters*" in one instance why not in every instance? Does not *TRUE logical analogy*, as well as what *Substantialists* call "*logical analogy*," demand this? If it is claimed that the *Immortality of the Soul* MUST BE DEMONSTRATED by science, why not the doctrines of the Trinity, the Incarnation, the Atonement, &c.

The whole trend of *Substantialism* is towards the rejection of the authority of revelation. Like an *ancient gnosticism*, it starts out to prove revelation by scientific reasoning, and like them it will, no doubt, land in deism or atheism, where it will find other gnosticisms.

Substantialism borrows everywhere—from revelation, from gnosticism, from pantheism. In its use of *logical*

* Vol. I page 252.

analogy" from materialism; and notably from Prof. Haeckel in finding *analogies* where there are none. It is sad to see the teaching of logic on the subject of *analogy* so perverted by Prof. Ernst Haeckel and Dr. A. Wilford Hall.

N. B. Some of these remarks may seem harsh, but when they are compared with the quotations from those at whom they are aimed, the harshness will disappear.

We invite any one to point out the "many fallacies" that a Substantialist finds in this paper. As we lay no claim to infallibility, some fallacies may be found by friends as well as foes.

