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REVIEW SECTION.

I.—THE STUDY OF SCIENCE BY MINISTERS.

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THERE lies open before me a choice edition of a delightful and suggestive book, White's "Natural History of Selborne." It was once said of it, that "it proves in how laudable and useful a manner a parish priest may employ his leisure time, and how serviceable he may be to the natural history and antiquities of his country." Christopher North, in *Blackwood*, has a more glowing encomium: "Who ever read, without the most exquisite delight, White's 'History of Selborne'?"* It is, indeed, a Sabbath book worth a whole library of sermons, nine-tenths of the Bampton Lectures included, and will make a deist of an atheist, of a deist a Christian." The book was published in 1789, while the author was curate at Selborne. Allibone specifies fifteen different editions of it. In fact, it is a classic in English literature. Its story is simple. While fulfilling his parish duties, White was a careful and constant observer of nature. He studied the habits of the birds, the trees and shrubs, the insects, the reptiles which made Selborne their habitat. One of Mr. Darwin's latest scientific studies was the earthworm. I think a reference to White's thirty-fifth letter to Hon. Daines Barrington would show that White anticipated Darwin by a century in his notice of these creatures, which he introduces by saying, "earthworms, though in appearance a small and despicable link in the chain of nature, yet, if lost, would make a lamentable chasm." In a series of letters to his friends, charmingly written, White gives all his observations, often very minute, sometimes very striking, always fascinating. It is a book to make one love the outer world. It will rank in literature with "Walton's Angler," and I pity the clergyman who does not appreciate both. Yet Gilbert White was a parish priest, declining all church preferment, and finding his life not in ecclesiastical rivalries nor theological subtleties, but in simple and devout study of God's works about him. In Dr. McCosh's "Typical Forms and

* Bennett's Ed., revised by Harting. London.

Special Ends" will be found another illustration of what clergymen may sometimes accomplish in scientific study. His botanical researches gave him high credit as an observer. He has had his followers in America. The late Dr. Beadle, of Philadelphia, was an enthusiastic student of conchology. Dr. Henry McCook, of that city, has made a scientific reputation by his study of ants. He is a busy and faithful pastor of a flourishing church. But he has found in these studies of nature what has made him, I am sure, all the better a minister and all the broader a man. It strikes one a little oddly that both these American clergymen belong to the *city pastors*, where paved streets and brick walls seem to shut out nature effectually. Perhaps, however, this very fact led them to search out what immediate surroundings could not give. But the great body of our clergymen in rural parishes—Nature at their very doors in all her infinite varieties—why should there not be more Gilbert Whites in our Selbornes of the New World?

Here, however, a question must be asked and answered, *what kind of scientific study can ministers profitably engage in?* The answer must be, for most ministers, certainly, *general* not *special* studies. To be a scientific specialist in these days, demands an amount of training and of time which only the undisturbed, undivided energies of one life-time can meet. *Amateur* science is, we imagine, not held in great repute. Here and there we may find exceptions like Dr. McCosh and Dr. McCook. But science is an exacting master, and seems to demand all or none. Or, rather, she holds to the inspired saying, "No man can serve two masters." Besides, it is not the province nor the prerogative of ministers to extend the domain of science. They were not ordained for this. They had better leave special scientific investigations in the hands of those whose calling and responsibility it is to make them and give the world results. But it is a minister's business to secure some general knowledge of what is going on in the scientific world. If he has been through college, he has obtained a glimpse, probably, of what scientific progress has been made. Most Faculties have in them professors who impart the knowledge. Still, if the man who was graduated ten, fifteen or twenty years ago contents himself with this, he is making a great mistake. Science travels fast in these days, by means of the telegraph and telephone she has made. It will not be safe for the minister to quote from the pulpit what his scientific professors taught him ten or twenty years ago in the class-room. He should, however, try to keep pace with what is brought to light from day to day. There is a *general* scientific knowledge which is part of every well-furnished intellectual man. If our ministers, for example, have not read Prof. Young's book on the sun, or some similar modern work, and know little or nothing of what spectroscopic studies have taught us, they are culpably behind the times. Their ignorance is as culpable as if

they had kept themselves totally uninformed on the Irish question of Home Rule or the papal policy in the modern Vatican.

There is a field of observation in nature which it is a matter of wonder more of our country ministers do not keep up. Many of them had in college decided scientific tastes, might indeed have been excellent scientific students if they had given their lives to this. They might become careful observers of the botany of their parishes, or the birds, or the insects, just as White did at Selborne. And this not to play at being scientific men, but for the enrichment of their minds, for diversion, for knowledge of God in nature. How many of our country clergy could tell us the names of the birds which make their nests in the branches of their parish trees? If they would only read the delightful books of John Burroughs, I am sure they would see how rich a field of observation is open to them here, and would thank me for calling their attention to it.

The facilities for such scientific study are at hand. Every science has its hand-books, its popular treatises. Some of us can recall the lively and profitable interest with which we listened to the lectures of Professors Tyndall and Proctor. One could do worse than go through the modern text-books in use among our colleges. Every minister should have access to the *Popular Science Monthly*. It will keep him posted on many scientific topics which ministers should at least know something about. "A little learning is a dangerous thing" only when it makes its possessor think he has more than a little. "Better half a loaf than no bread" is a true maxim here. And if he can obtain a microscope and learn how to use it, there will be open to him a source of wonder and delight from its use on objects he could gather in every parish walk, which will be a permanent spring of enjoyment and profit. The universe of God is made up of littles. No man ever realizes this who has not known something of microscopic revelations. No men need to know this more than ministers. Yes, the helps to general scientific knowledge are at hand. As I write, my eye falls on a series of *history* primers, and *literature* primers, and *scientific* primers, costing perhaps twenty-five cents apiece. Among the latter I find one on "Chemistry" by Roscoe, and another on "Physics" by Balfour Stewart, some on "Physical Geography" and "Geology" by A. Geikie, one on "Astronomy" by J. N. Lockyer. These *primers* will show any one how to pursue the study further, if he be so minded. I venture the assertion that few ministers could read them without astonishment at the problems they suggest. Some of our scientific men, I believe, discredit these attempts at popularizing science as tending to degrade or belittle scientific study. But we think their fear is groundless. Science cannot afford to be a monopoly for the few. Give us outsiders and scientific laymen a chance at the crumbs which fall from the loaded tables of modern discovery.

Are there, however, no dangers attending such acquaintance with

science? We hear so much in these days about the infidel tendencies of science, etc., etc., that many good people are afraid to dabble with it too much, lest they should make shipwreck of faith and so become castaways. Of course there are dangers. There are dangers in going to Europe to see the Old World. There are dangers in horseback exercise. There are dangers, too, in being ignorant of some things taught us by modern science. Ministers sometimes utter what they suppose to be scientific truths in the pulpit, when they are venting exploded ideas of a generation or more ago. Let me, however, point out a few dangers which may attend such scientific study as ministers can afford to give.

First, there is the danger of supposing that science is hostile to revelation because one writer hit upon is inimical to it, or because modern science broaches conclusions which are not reconcilable with our pre-conceived exegeses of Holy Scripture. I was inexpressibly pained on reading a recent notice of Charles Darwin's life by a clergyman, to find that he uses Darwin's honest confession of a falsehood told in youth, to insinuate that perhaps he did not quite recover from the habit of lying in after years. What will impress all men who keep pace with modern scientific inquiry, is the enthusiastic pursuit of truth by men of science. The scientific men have erred sometimes; have used hard words sometimes about theologians. Have the theologians never provoked them? Have they always used the "soft answer which turns away wrath"? It is a wholesome lesson for the clergy to recall the early controversy on Genesis and geology. Better remember this and let the scientific men go on investigating evolution before we put ourselves on record as denouncing its anti-scriptural, infidel tendencies.

There is another danger in such study—the danger of attempting too much. The field is the world, but ministers can ill afford to scatter too much time over so large a surface. Dr. McCook has found that the study of ants has given him all that he can do wisely and well. Choose your favorite science; be it astronomy, or botany, or ornithology, or physics, or entomology. Find your spare hours for reading up in that, keeping your eye on the whole. Everything in these days goes by specialism. No mortal man can drive all the sciences abreast. But it is astonishing how much one can come to know by simply keeping his eyes open in one direction.

There is still another danger in scientific study for ministers. It is that of airing their scientific knowledge in the pulpit. The chances are they will blunder about it. Some of the so-called scientific statements made by divines in a late General Assembly were, as viewed by scientific men, so much hopeless blundering. They only made men of science laugh. They were uttered with a sublime unconsciousness of their egregious folly. But none the less were they a humiliation to the religion they were supposed to be upholding. The pulpit teaching is sometimes enriched by apt illustrations from science. But there is

danger in too free use of scientific knowledge in sermons. The preacher may shoot over the heads of his people, or he may blunder in its use. And yet there are positive uses for such studies, and among them that of illustration, as we shall see. This is very different from that display of scientific knowledge—lugging it in under every possible and impossible plea, as if to impress the pews with the notion that science had lost a shining light when the minister forsook the laboratory or observatory for the pulpit.

What, then, are the uses of such studies to the working minister? Can he afford to spare precious minutes from the Greek Testament and his commentaries, from the grand old theologians like Howe and Char-nock, from the great preachers like South and Barrow, for the general knowledge of modern science? Unhesitatingly, yes. The apostle in 2 Timothy iii: 17 lays great stress on the *completeness* with which Christian workmen should be furnished for work. It is not enough for the minister to know books and men. He should know what he can of the world of nature in which men live and on which books are written. So he will be the workman in apostolic phrase—*ἀρτιος, πρὸς πᾶν ἔργον ἀγυδίῳ ἐξηρισμένος*.

More specifically, the disciplinary use of such studies must be noted. One cannot come even into general contact with scientific studies and not admire the exactness in the use of terms and the closeness of reasoning which they display. Verboseness is at a discount; plain, clear, logical statement is at a premium. Surely, in all this the minister may find a useful discipline. For he is often compelled to treat of subjects on which such qualities must be bestowed. The pews are often bewildered for want of them. It is no hard judgment on the modern pulpit to say that it is lacking just here. It has admirable powers, but is there no danger that the power of exact statement may be sacrificed to the love for popular effect? At any rate, such studies may serve to keep the minister's hand in, and the pews will never complain if the pulpit always says what it means, and means what it says. Another use of such studies is found in the number of telling illustrations they will suggest. There is danger here of becoming too technical, and of parading scientific knowledge without skill to handle it, or aptness in the illustration itself. But there is a wide field of facts which may be used with great power to illustrate Biblical truths. In this the preacher but follows the lead of inspiration itself. The world of natural life—seas, mountains, stars, forests, all birds of the air and fruits of the field, flowers of garden and meadow—every work of God is used to illustrate His Word. The Psalms and Prophets are full of such illustrative uses of natural objects. They light up with wonderful beauty the divine Word. "Hast thou entered into the treasures of the snow?" asks Job. No minister could answer that question in a sermon till he had heard the latest word of science on the subject.

I opened Dr. William M. Taylor's volume of sermons,* to his discussion on the eagle's nest, and found that he had introduced a wondrously apt and choice illustration from Sir Humphrey Davy's "Salmonia." There will be found in the "Bibliotheca Sacra" a discourse on the sea by Rev. Leonard Swain, D.D. It was published many years ago. But it could not have been written, had he not studied what modern investigation had taught on the subject. And it rivals in its wealth of imagery and solemnity of impression that lecture of Rufus Choate's on the same great theme, which lives in the memory of all who ever heard it. Dr. Chalmers' celebrated astronomical discourses are also in point. For one, I should like mightily to hear Dr. McCook preach a sermon from the text, "Go to the ant, thou sluggard," etc. It seems almost superfluous to point out the uses of such studies as mental diversion, or relaxation. But the best rest one ever gets is by change of mental occupation. There come times when the overworked minister, and lawyer, and physician, and business man need absolute rest from all occupation. Let him travel or go trout-fishing, or if nothing better turns up, let him eschew Saratoga and Newport, and go to some breezy unspoiled country home and lie on his back in the green grass, watching the clouds sail over his head. But in the season of work the minister often needs relaxation. He may get it from a good book of poems, or a good novel, or a good history. He may get it from an excursion into scientific fields, with such men as Professor Young to guide him along the fiery path of the sun, or Professor Guyot over the earth as an abode for man, with the numerous scientific guides who are writing every day new works in their departments. The regret some of us older ministers feel is that we have made so little of this vast and interesting branch of modern research. The men who do take up scientific studies speak enthusiastically of the mental refreshment such studies bring. They bring into exercise a new set of faculties. If they do not make us laugh or cry, they make us wonder and admire. A good stretch of wonder is like a cool bath on a summer morning. It leaves every sense alert and active. The student of modern science, as he comes upon some of the new revelations science has made, can best express himself by quoting the closing lines of Keats's celebrated sonnet, "On first looking into Chapman's Homer":

"Then felt I like some watcher of the skies,
 When a new planet swims into his ken;
 Or like stout Cortez, when, with eagle eyes,
 He stands at the Pacific—and all his men
 Looked at each other with a wild surmise,
 Silent, upon a peak in Darien."

* "Limitations of Life."