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Revised Darwinism

or

Father Wasmann on Evolution

BY

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(*Per R. L.*)

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PREFACE.

The article which constitutes this brochure appeared in the American Catholic Quarterly Review for January of the present year under the title "Father Wasmann and Evolution" and at once commanded widespread attention. The "Quarterly," however, having—like all reviews—a comparatively limited field, the article was inaccessible to many persons who are deeply interested in the problem of evolution. Few magazine articles have been commented on so freely, and often this comment has been, it may be added without ostentation, so favorable that many persons have expressed disappointment on being unable to obtain a copy of the Review in which the article appeared. For this reason it has been deemed advisable to publish the article in detached form in order to bring it within the reach of all who are interested in the subject.

The essay is in the form of a criticism of Father Wasmann's book, but it deals with the very fundamentals on which the theory of evolution is based, while it pursues an entirely new line of argument differing radically from the ordinary objections brought against the doctrine of cosmical development.

Although the article is written by a Catholic priest in criticism of a work by a Catholic priest—and a Jesuit—it is wholly with the scientific and philosophical aspects of the problem that it deals, and it thus appeals with equal force to every class of reader.

Few changes have been made from the original form of the article: an additional footnote or two, the correction of some typographical errors, and the substitution of a new title for the original—which now passes to the second place and becomes a sub-title. A brief sentence is also added at the close.

FATHER WASMANN ON EVOLUTION.

IT is not a little curious to find that when the English-speaking world had about settled down to the very sane conclusion that the theory of evolution was nothing more than a weariness to the spirit and a burden to the flesh, and that Darwinism had become an intolerable bore, over in the proud city of Berlin the fires of controversy are still raging as fiercely as ever and the quarrels of the schools are at white heat in the very capital of that land that aspires to be known as the "Nation of Thinkers."

Father Wasmann and Ernest Haeckel.

The reason, of course, is not far to seek, and may be summed up in two words—Ernest Haeckel. Haeckel has long been known as one of the fiercest exponents of Darwinism. He is the German champion of materialistic evolution. Facts may fail him, but his imagin-

ation is ever furnished with a ready supply. No one among the original expounders of the famous hypothesis seems to have taken him at all seriously. Its great English-speaking chiefs were wont to smile benignantly on his extravagances of statement. The extraordinary proofs brought forward from time to time by the preposterous Jena professor were regarded with amusement and wonder rather that with anger or alarm; and it is now somewhat surprising to find his countrymen in his old age taking him seriously as an exponent of the moribund hypothesis. But that this is so is beyond question, and the most convincing proof of the strange fact is a somewhat curious volume that comes to us all the way from Berlin, entitled "The Problem of Evolution, by Erich Wasmann, S. J."

Lectures and Discussion.

It would appear that Father Wasmann had already published a book on "Modern Biology and the Theory of Evolution." In a series of lectures delivered at Berlin by the Jena professor, he frequently referred to Father Wasmann's book. Indeed, Father Wasmann tells

us in the preface to his recent book that Professor Haeckel had "in fact stated that the appearance of this work had led him to deliver his lectures." Father Wasmann then proceeds to tell us how "it seemed therefore expedient, in view of the many misunderstandings to which Haeckel's references had given rise, to publish a definite statement of my own opinion." This he accordingly did in an "Open Letter to Professor Haeckel"; but as this method of meeting the issue raised by Professor Haeckel seemed inadequate to the purpose, Father Wasmann says he "deemed it very important to give a course of lectures in Berlin itself on the same subject"—the theory of evolution.

It would appear that in Germany an appeal to a Berlin audience is the proper procedure. An audience of Berlin scientists seems to be regarded as a jury sufficiently competent to properly adjudicate the claims of contestants of every kind. The Saxon Wittenagemote in the days of the English Heptarchy does not seem to have been regarded as a tribunal of more surpassing wisdom; and, like the Athenian Areopagus, it is to it every man with a worthy

cause turns as to the body endowed with the proper jurisdiction and the requisite attainments to decide the difficulties which arise in the discussion of his problems. The arrangement in the case of Father Wasmann's lectures made the whole affair a quite unique proceeding. Indeed, its singularity makes it quite a remarkable episode in these latter days of the history of evolution. Three different nights were assigned to Father Wasmann for the delivery of his three lectures. A night was then set apart for the discussion of the problems in evolution raised by these lectures. At this discussion eleven savants in all spoke, ten of whom were opposed to Father Wasmann's views, the eleventh being non-committal. Finally, Father Wasmann closed the discussion, speaking by way of rejoinder to the replies of his opponents; and his remarks—which lasted half an hour—closed the debate, the learned and distinguished assemblage breaking up a little after midnight. Surely Berlin has taken the problem of evolution seriously.

In one of his remarkable novels, Sienkiewicz, the famous Polish writer, in unrivalled word-

painting, pictures one of his noble characters in the act of death to which he is assigned. By way of forlorn hope his hero attempts to escape from a besieged city to obtain outside aid for the beleaguered army and citizens within its walls, but finally falls into the hands of the enemy. The death to which he was swiftly condemned was that he be placed against a tree facing the soldiers and made a mark for the fiery arrows of the enemy's sharp-shooters. His life was spared to the last arrow. But as the whizzing darts pierced in quick succession first his limbs, then his body, and—when he was completely covered—finally his heart, each sharp wound of the cruel Cossacks was met with a profession of Christian faith; the various verses of the Litany of Loretto kept time with the flying arrows. In somewhat similar fashion Father Wasmann met his opponents—each monistic thrust is met with a new profession of faith. The issue, too, is different; for although Father Wasmann emerges from the steady fire of his enemies with his body a forest of scientific darts, he is nevertheless victorious. It was a remarkable proceeding throughout, and Father Was-

mann, evolutionist though he is, like Sienkiewicz's hero, never fails to make profession of his faith.

Father Wasmann's book rehearses all these proceedings at length. It gives Father Wasmann's three lectures, the replies of his opponents, and Father Wasmann's rejoinder. But as only a half hour was assigned to Father Wasmann for this rejoinder, whereas his opponents had spoken for two and a half hours, it is evident that it was absolutely impossible within the brief space of half an hour to cover adequately all the varied objections of his numerous opponents. Father Wasmann himself has evidently thought so, for in the book which he has just published he has deemed it prudent —which certainly it was—to comment at greater length on the speeches and objections of his antagonists. There is no doubt that this commentary is by far the most valuable part of Father Wasmann's book. Written as it is in the cold clear light of the morning after, or, more correctly speaking, weighed in the cool atmosphere of his study, with his wise and sound philosophical guides at his elbow, the

objections of the various speakers are for the most part met directly, and Father Wasmann shows that, whatever the merits of his theory of evolution, he is deeply versed in the principles of sound Christian philosophy. Indeed, whatever inconsistencies or logical lapsings we may deprecate in his lectures, there is little to be desiderated in his comment. In not more than two instances has he failed, we think, to meet the objections of his opponents squarely and forcibly, and to crush them with overwhelming logic.

Father Wasmann as an Evolutionist

But it is not because of the discussion, unique though it all was, that this article is written. We were wholly unacquainted with Father Wasmann's writings. We knew in a vague way that Father Wasmann had been coquetting with evolution of some kind. We regarded ourselves as tolerably familiar with everything of importance that could be adduced in favor of the somewhat inconsequential and tardy theory. A somewhat close attention to the arguments of Darwin, to the pugnacious contentions of

Huxley, and above all, to the philosophico-scientific treatment of the subject by Herbert Spencer—who, it may be remarked in passing, as a summist surpassed even Darwin himself—had long familiarized us with the leading arguments at least, in favor of evolution, and if not always with all the facts themselves, at least with the classes of fact upon which these arguments were supposed to be based. An acquaintance of more than a quarter of a century with all the strength and all the weakness of the theory, and an occasional battle with the advocates of the doctrine over the somewhat brusque claims made in its behalf, made us somewhat curious to learn what Father Wasmann, the Jesuit, had found in the arguments of Darwin or his followers to make him also a disciple. We had, besides, some slight acquaintance with the theories of the Catholic evolutionists. We had read their claims and noted their inconsistencies, and we confess to a slight curiosity to know whether Father Wasmann's evolution was not also characterized by the constitutional weakness and inconsistency with which we had long been familiar in evolutionists of this class. For these

reasons we shall take the liberty of examining Father Wasmann's position at close range, and of applying strictures where to us they may seem necessary.

It goes, of course, without saying, that Father Wasmann is as orthodox—even in his evolution —as Pope Pius X. himself. His work has the approval of his own Jesuit Provincial, as well as the "Imprimatur" of the Archbishop of St. Louis, and no one could have fought more valiantly than he against the monists, materialists and atheists who in Germany take their stand under the ægis of evolution. From the standpoint of orthodoxy there is little to find fault with, and it is wholly from the standpoint of scientific and logical conclusion that we intend to deal with it.

Doubtless Father Wasmann will repel with indignation our statement which classes him as a disciple of Darwin. But there is no remedy for it; in his acceptance of the theory of evolution it would be impossible to class him otherwise, much as Father Wasmann may object. Indeed, the very first anomaly that strikes us in Father Wasmann's book is the desperate

attempt which he makes to exorcise the doctrine of evolution of the Darwinian spectre. In common with all Catholic evolutionists, he wishes to rescue evolution from the opprobrium which attaches to the name of Darwinism. They all naturally desire to rid both themselves and the theory of Darwin's name by drawing a wide distinction between the theory of evolution and the doctrine of Darwin; but the attempt is a wholly fruitless one, and moreover it is entirely unfair to Darwin. Indeed, the theory of evolution with the name of Darwin expunged would be the play of Hamlet with the Prince of Denmark left out. Father Wasmann expends so much labor and energy on his effort to accomplish the impossible that it may be well to clear up the matter.

Wrong Views of Darwinism

Father Wasmann tries to draw a sharp line of separation between the theory of Darwin and the theory of evolution. He wishes Darwin's doctrine to be regarded as merely "a special branch" of the evolution theory. He says, with all the emphasis that italics can impart to the

statement, that "*Darwinism and the doctrine of evolution are not equivalent ideas.*" He even attributes to Darwinism "a Darwinian theory of the universe." He attempts to establish the distinction by telling us that evolution, "which is wider and more general, connotes the doctrine of the derivation of *all* forms of life from earlier and simpler forms, whereas Darwinism deals with the origin of the organic species *by way only of natural selection*, and is therefore a special branch of the doctrine of evolution." And lastly, Father Wasmann enumerates what he calls four different significations of the term Darwinism, and takes considerable pains to show that none of these is identical with the theory of evolution.

Now, nothing could be more misleading, and in some instances farther from the truth, than Father Wasmann's contention under this head. Indeed, on reading it one begins to wonder whether Father Wasmann is, after all, at all acquainted with what Darwin wrote on the subject of evolution. The real truth in the matter is that Darwin is the real father and founder of the theory. It was Darwin and Dar-

win alone who gave to the doctrine—even in the sense in which Father Wasmann accepts it —a local habitation and a name. It is true that the subject was first broached by Lamarck, that Erasmus Darwin, the grandfather of the famous founder of the evolution school, and Geoffrey St. Hilaire had also speculated along the line of the famous theory; but the theory was either scorned, or ridiculed, or ignored, or abandoned until the "Origin of Species, by Charles Darwin," raised the extraordinary commotion in the scientific world. In saying this we are not overlooking the part played by Mr. Wallace, but Mr. Wallace himself has joined the rest of the world in according whatever honor belongs to the authorship of the invention to Darwin. Whatever credit or discredit attaches to the creation of the theory of evolution belongs to Darwin and to Darwin alone, and all endeavor to wrest from him the glory (?) of the invention must be regarded as the bold and daring attempt of piracy or usurpation. This is so obvious that it is surprising to hear Father Wasmann question it. The concluding words of Darwin's introduction to his famous "Origin

of Species" show plainly the scope of his work, and that it was not so much the principle of natural selection as the mutability of species which he wished to establish on a firm and lasting basis. He says:

"Although much remains obscure, and will long remain obscure, I can entertain no doubt, after the most deliberate and dispassionate judgment of which I am capable, that the view which most naturalists until recently entertained, and which I formerly entertained—namely, that each species has been independently created—is erroneous. I am fully convinced that species are not immutable."

This, then, was the end and aim of Darwin's work—to show that the barriers which were supposed to divide species from one another were not insurmountable—that species are not immutable. The principle of natural selection, it is true, entered into his theory as a predominating *factor*, but its place was always secondary and subordinate; its importance was great, in his estimation, but always subsidiary. This is evident from the words which follow those above quoted, where he says:

"Furthermore, I am convinced that natural selection has been the most important, but not the exclusive, means of modification."

Darwin's evolution, then, was the formulation of the broad generalization. His main effort was to overthrow the scientific doctrine of the immutability of species, and to supplant it by the doctrine of descent with modification. For this purpose he collected numberless facts from every department of science, he collated and compared varieties, he endeavored to systematize the laws of variation, he pointed out the struggle for existence, he dived into the depths of palæontology, he brought forward arguments from morphology, embryology, and rudimentary organs, he strove to trace the succession of organic beings in time and their geographical distribution in space—all this he did and a thousand times more, and all for the express purpose of proving to the world that species is not immutable, but that all the different species of organic life now existing on our globe have been developed from a few original simple forms. And this is precisely what Father Wasmann calls evolution

when he tries to oppose it to Darwinism and tells us that the former, as distinguished from the latter, "connotes the doctrine of the derivation of *all* forms of life from earlier and simpler forms." All Darwin's industrious researches, all his reflections on the mutual affinities and resemblances of organic beings, on their embryological relations, their geographical distribution, their geological succession, tended to one single purpose, viz., to show that the perfection of structure and coadaptation of the innumerable species which inhabit our globe, have all been brought about by the simple principle of descent with modification—in other words, by the principle of evolution. Hence all other evolutionists are but followers or borrowers of Darwin's broad generalization; and it is somewhat amusing to read Father Wasmann's attempts to rule him out of the school of evolution altogether. Towards the close of one of the later editions of "The Origin of Species" Darwin wrote—many years before Father Wasmann dreamed of evolution, we surmise—"I formerly spoke to very many naturalists on the subject of evolution, and never

once met with any sympathetic agreement. It is probable that some did then believe in evolution, but they were either silent or expressed themselves so ambiguously that it was not easy to understand their meaning. Now things are wholly changed, and almost every naturalist admits the great principle of evolution." Were Darwin living to-day, he might add, "'Now things are changed,' with a vengeance"; for not only is evolution accepted, but the more ardent believers in the doctrine strive to read him out of the school of evolution altogether.

Of course, in order to show that the principle of evolution was at work throughout all organic life, Darwin felt himself obliged to give some reasonable explanation of the manner in which the principle operated. He wished to convince rational beings of the truth of his hypothesis, and for this reason he was forced to cast about for a cause of its operation. Just as Father Wasmann feels himself obliged to answer to his own mind the question: By what agency does evolution accomplish its wonderful results? so did Darwin feel forced

to answer it. And just as Father Wasmann imagines that the agency by which evolution operates is what he calls "the interior factors," so Darwin imagined that the agency was an external factor which he called "natural selection"; but it would be just as reasonable to undertake to read Father Wasmann out of the school of evolution by saying that his evolution is not evolution at all, but a principle of interior factors, as to exclude Darwin because natural selection was the agency in which he believed. The fact is that in seeking for an explanation of the modification and coadaptation which he believed he had discovered Darwin imagined he had found the key to it in the action of breeders who artificially selected. This suggested to him the notion of a principle of selection in nature which might be the agency at work in evolution and the instrument of modification. Thus we see that natural selection, while it is all-important in Darwin's theory, nevertheless holds only a subordinate place, although the chief agency by which evolution is supposed to be effected. With Darwin evolution is the great result;

natural selection is the means. Evolution is the great door through which all organic life passes in its wonderful variations; natural selection is the hinge on which the great door swings. Hence we fail to understand how Father Wasmann hopes to separate evolution from the doctrines of Darwin or rid the theory of evolution of the incubus of his name. Even though he may change the factors, the product will be the same; though he may invent new means of evolution, the result will be evolution still; to Darwin rightly belongs organic evolution's whole realm.

Nevertheless Father Wasmann makes a desperate effort, and for this purpose, somewhat capriciously, we think, enumerates four different classes of Darwinism, each of which in turn he rejects as properly representing the true idea of evolution. Let us glance briefly at these four divisions by Father Wasmann. His first division of Darwinism is what he calls "Darwinism in the narrower sense," which briefly means evolution "by way only of natural selection." That this was the theory of Darwin is to some extent true, as we have just seen; but

it is not the whole truth. Darwin at first maintained that natural selection was not only the chief factor, but he seems to have long thought that it was the only one. That he afterwards admitted other factors, and that later he believed he had overrated the importance of natural selection, is certain. In the words from the introduction to one of the later editions of his works which I have already quoted, he expressly says he regarded natural selection an important, "but not the exclusive means of modification." Indeed, Father Wasmann himself—in a note—tells us that besides natural selection Darwin admitted "direct adaptation, correlation, compensation, etc.," as factors of evolution. Consequently it seems to us somewhat arbitrary on the part of Father Wasmann to rule Darwin so cavalierly out of all his original titles-deeds and letters patent in the realm of evolution. On the same grounds every upstart evolutionist would be fully justified in extruding Father Wasmann from all his evolutional claims.

In Father Wasmann's second division of Darwinism he tells us that "In the wider sense,

Darwinism is the name given to the generalization of Darwin's theory of selection, and its extension to a 'Darwinian theory of the universe.' This is identical with the monistic theory in the form of Haeckelism; acording to it, the whole world has come into existence without a creator and through merely mechanical causes."

There certainly must be a grave mistake here, and the error is absolutely unfair to Darwin. We think it would be difficult for Father Wasmann to show that Darwin in any of his speculations touched upon "a theory of the universe" at all. Whatever may have been his private views on the subject, we fail to find in any of his writings any trace whatever of such speculation. He seems to have confined his studies absolutely to the organic world, and to have left the "theory of the universe" entirely to others. Herbert Spencer, it is true, gave us a theory of the universe, but we look in vain through Darwin's own writings or teachings for a hint of his views on the origin of the cosmos.

But especially is it in the highest degree

unjust to Darwin to attribute to him the monistic theory of Haeckel. We think it is exceeding the limits of truth to associate Darwin's name with the theory that "the whole world has come into existence without a creator and through merely mechanical causes." So far, indeed, is this from the truth that Darwin, if his own words mean anything, believed that the original organic forms came into existence by means of a creative act. Even in the later editions of the "Origin of Species" Darwin accepts the doctrine of creation of the original organic forms. He frankly discusses the question "whether species have been created at one or at more points of the earth's surface," and thinks that "the simplicity of the view that each species was first produced within a single region captivates the mind." He argues that "to my mind it accords better with what we know of the laws impressed on matter by the Creator, that the production and extinction of the past and present inhabitants of the world should have been due to secondary causes"; and in the concluding chapter of his famous work he tells us: "There is a grandeur

in this view of life, with its several powers, having been originally breathed by the Creator into a few forms or into one"—all showing that to the end he was a believer in creation. Indeed, Father Wasmann himself quotes this last passage to show that Darwin was a believer in a theistic evolution, and how he can at the same time endeavor to link his name with monism and materialism, and assert that he sanctioned the notion that "the whole world has come into existence without a creator and through merely mechanical causes," is an anomaly which it is difficult to account for unless on the ground of the inevitable inconsistency which seems to dog the footsteps of the Catholic evolutionist. However this may be, there is no doubt that it is a wholly unfounded calumny to attribute to Darwin a mechanical theory of the universe or the belief that "the whole world came into existence without a Creator." Herbert Spencer was the author of these views—Darwin, never.

Father Wasmann tells us: "The third way in which the word Darwinism is used, popularly, is to designate the application to man of

the Darwinian theory of selection. Man is assumed to be the animal most highly bred in the course of the struggle for existence, and nothing else," and here at least Father Wasmann does not make the mistake of attributing to Darwin views which he never professed. Indeed, this is the great *lapis offensionis* of Charles Darwin's hypothesis; and perhaps we should not be surprised to find evolutionists, by fair means or by foul, attempting to divorce evolution from this stupid theory. Father Wasmann here at least is guilty of no calumny on the memory of Darwin. He only makes the mistake of saying that the term Darwinism is used "popularly" in this sense. It is used not only "popularly," but scientifically in this sense, and Darwin himself labored hard to make it a tenet of science. Indeed, Father Wasmann himself, while he indignantly refers to it, is not so far removed in his evolution from this theory. But to Father Wasmann's relation to this division we shall return later.

"Fourthly and lastly," says Father Wasmann, "the name of Darwinism is applied in a general way to *the theory of evolution*, as I remarked

before." Here again Father Wasmann uses terms somewhat loosely and in a way that is apt to be misleading. If, when he says that "the name Darwinism is applied in a general way to the theory of evolution," he means that Darwin applied his theory of evolution "in a general way" to the evolution of organic beings from creation down to the present time, and from one or two primordial forms to all the endless varieties which have appeared on our globe; then, indeed, is he near to the truth; but if by this expression he means—and this seems to be the case—that Darwin extended his speculations on evolution beyond the limits of the organic world and into the inorganic, then is he dealing with an assumption that is, as we have just seen, without the slightest tittle of evidence.

The object of Father Wasmann's divisions of Darwinism is, as we have already said, to rid the Christian philosophy of the stigma of the third division. For this purpose he wishes to effect a permanent divorce between Darwin and his own theory. Father Wasmann makes no secret of his motives. He frankly tells us

"This confusion of ideas has done much harm in many ways. If, for instance, a serious student, engaged in scientific research, finds in his special department what he regards as evidence of the development of species, he is at once called a Darwinist, and as such is assailed by another party." Father Wasmann naturally chafes under this classification as unjust, and naturally tries to remedy the injustice. But as long as he accepts the theory of evolution we do not see how his position can be amended. He may differ from Darwin on a few minor points, but the world at large, as we have seen, must class him simply as a follower of Darwin. The name of Darwin is as inseparably interwoven with the theory of evolution as is the name of La Place with the nebular hypothesis or the name of Comte with the positive philosophy. Darwin has been the first on the field, has been the first to map out the territory of the broad generalization, and henceforth and forever has the legitimate right to claim it as his own. The claim of Christopher Columbus to the discovery of the new world was not more valid than Darwin's claim to the

realm—such as it is—of evolution. Indeed, Father Wasmann himself seems to be all the while unwittingly conscious of all this; for while he is laboring so hard towards the extrusion of Darwin, at the close of his third lecture he actually proceeds to an apotheosis of evolution, with Darwin as its creator. He compares Christianity to a rock around whose base the waves of science are breaking. Although the wave of science was successful in the case of Copernicanism, the rock stands firm, and he thinks it will be the same in the present instance. A wave had again, like the Ptolemaic system, "rested in long-continued peace at the foot of the rock" of Christianity. But "the new wave came, and it will probably be victorious in the conflict now raging between it and the old." This wave is evolution, and its mover is Darwin. He tells us—in spite of his attempts at Darwin's extrusion—"In 1859" (the year in which Darwin first published "The Origin of Species") came the moment when a powerful wave, starting from England, assailed us like a deluge. It increased in strength and power until the foam flecked the

very pinnacles of the rock. It is true that this wave no longer bears the name of Darwin and of the Darwinian system in the narrower sense, but it is the theory of evolution which . . . . has hitherto been victorious in the strife, and will probably remain so to the end." It is not a little singular, after all that Father Wasmann has written to show that evolution has nothing in common with Darwinism, to find him now speaking of that same evolution as the mighty and "powerful wave, starting from England in 1859," which "has assailed us like a deluge," and which, having "hitherto been victorious in the strife (?), will probably remain so to the end." The incongruity of statement is explicable only by the usual inconsistency of the Catholic evolutionist.

Views of Darwin and Father Wasmann Compared.

Indeed, in spite of all his ostentatious rejection of Darwinism, there is a remarkable resemblance between Father Wasmann's evolution and that of Darwin—a resemblance so striking as to suggest relationship; and on some points where there is dissimilarity Father Wasmann

seems to us to out-Darwin Darwin himself. Here are a few points of resemblance on the essential features of the doctrine: (1) Darwin maintains that the theory of evolution is operative throughout all organic nature. Father Wasmann, if we understand him rightly, maintains the same, and proceeds even further, for he extends the principle not only to inorganic nature, but to the development of the cosmos. In this he far outstrips Darwin and is to some extent abreast of Herbert Spencer and Ernest Haeckel. (2) Father Wasmann rejects monophyletic evolution, whether applied to the whole kingdom of organic life or to "the whole animal kingdom on the one hand," and to "the whole vegetable kingdom on the other, as derived from one primary form." He seems to believe, however, in a polyphyletic evolution; that is the theory of "development from a variety of stocks." Darwin to the last believed in polyphyletic evolution as opposed to monophyletic. He discusses the question freely, and tells us "I cannot doubt that the theory of descent with modification embraces all the members of the same great class or kingdom. I

believe that animals are descended from at most only four or five progenitors, and plants from an equal or less number." Monophyletic evolution, even in the sense "that all the organic beings which have ever lived on this earth may be descended from one primordial form," he regarded as neither impossible nor incredible, but the only evidence in its favor was, he believed, "chiefly grounded on analogy." In any case, he regarded it as wholly "immaterial" to the theory of evolution "whether or not it be accepted." (3) On the importance of "natural selection" as a factor of evolution there is a slight difference between Darwin and Father Wasmann; but only slight. Darwin regarded natural selection as the chief, "but not the exclusive means of modification." He admitted "the inherited effects of use and disuse," "the direct action of external conditions," and also the influence of "variations which seem to us in our ignorance to rise spontaneously." Father Wasmann, while apparently making light of natural selection, and while proclaiming it to be a merely "subsidiary factor," nevertheless tells us "it is indispensable" as such

"in the theory of evolution." He regards what he calls "the interior factors" as the chief point to consider; but of these interior factors he admits no one knows anything, and what with their expediency, adaptiveness, etc., etc., it is not easy to distinguish between them and Darwin's "variations which seem to rise spontaneously"; so that on this point the difference between his views and those of Darwin, which he so indignantly rejects, appear to be the difference between tweedledum and tweedledee. Nor in the last analysis do we find so wide a difference between Father Wasmann's theory and Darwin's doctrine of man's descent from beasts, which Father Wasmann finds so objectionable. Father Wasmann will undoubtedly rebel against all such interpretation of his theory. But if we understand Father Wasmann rightly, while he rejects the ape as man's ancestor, he substitutes for him a creature which, though not a beast, is not yet a man—possibly a species of Caliban. And this brings us to Father Wasmann's own theory of evolution. Before proceeding to an examination of his views on the subject, however, we may be per-

mitted to emphasize the fact that when Father Wasmann attempts to expel Darwin from the realm of even modern evolution, he is simply beating the air. All his endeavors in this line, together with the results which are apparent from his work, remind us of the attempts of the modernists to wrest the weapons from the hands of the Biblical critics, but which, alas! resulted so ignominiously in their own complete capture by the very Egyptians whom they had planned to despoil. In espousing the cause of evolution Father Wasmann has but opened the floodgates for that "powerful wave starting from England," which "has assailed us like a deluge," and which must inevitably sweep him —indeed, which seems to have already done so —from that bold and determined stand which he has nobly—though not very logically—taken against his third division of Darwinism. Meanwhile, what constitutes Darwinism must be determined by what Darwin himself taught and wrote, and in spite of all the efforts and protests of Father Wasmann, it will be difficult for him to show that he is not a disciple of Darwin in the true sense of the term, or, as he himself

with some ostentation tells us Haeckel has already styled him, "a Darwinian Jesuit."

Theistic Evolution.

Although in his preface Father Wasmann tells us that the motive of his lectures was that he aimed "at throwing light upon the important question, 'What are we to think of the doctrine of evolution?' " and although he repeats this in his first lecture when he tells his audience, "I only wish to throw some real light on the subject, trusting in this way to do a good work," we confess to some difficulty in fully ascertaining Father Wasmann's exact views on some important points. More than once he rides right gallantly up to the ranks of the evolutionists, and when we expect to find him registering as an enthusiastic recruit, we are surprised to find him backing away in a sort of awkward fashion, and his words have not the ring of enthusiasm we might expect to find in those of a newly enlisted soldier. Then, too, we find some difficulty in grasping the manner in which he endeavors to couple together the theory of creation and the great universal principle

of evolution. We shall try to give a brief synopsis of Father Wasmann's attempted rehabilitation of the discredited doctrine of evolution:

(1) He calls this theistic evolution and tells us that it starts "with assuming the existence of a personal Creator."

(2) Next, "The theistic theory of the world involves the idea of creation."

(3) "Further, the theistic view, taken in conjunction with the creation of matter, lays down as its foundation the subjection to law of the whole cosmic evolution and of the entire evolution of the inorganic world, asserting that the first combination of atoms or electrons contained the definite material disposition from which, in the course of the succeeding millions of years, all the various constellations of atoms were to result by way of natural evolution. Thus we have a sufficient foundation and a sufficient primary cause for the further natural evolution of the whole inorganic world—and this to me appears a very reasonable view to take."

(4) We have thus got down to the time when life began to exist on the globe, and "in order

to account for the origin of the first organisms, the theistic theory of life presupposes a so-called act of creation to have taken place." This is "a production of organic bodies out of pre-existent inorganic matter." The theistic theory, however, is ready to surrender this position of the "so-called creation" of organisms in case spontaneous generation should ever become an established conclusion of science.

(5) "The earliest laws of evolution were laid down for the organic world at the production of the first organisms." And

(6) "The Christian theory of life" requires "the assumption that man possesses a spiritual and immortal soul."

This is in brief the programme of theistic evolution; but it is so vague that we must try to fill in the great gaps in the bald statement from other parts of Father Wasmann's lectures.

We may say, then, that Father Wasmann believes in a Creator and a creation of original matter. Next he believes that on this original created matter the Creator had impressed the laws of evolution, and that in consequence we have the natural evolution of our solar system

and the uniform development of the cosmos as a whole, including all the heavenly bodies. "Included" in this vast universal evolution is the evolution of our own little world, and it occupies "a scarcely perceptible period of time, barely a minute, and of this minute a small fraction, (that nevertheless, according to geologists, lasted millions of years), was occupied by the evolution of organic life before the appearance of man." We have already seen that this process of evolution had either ceased or was interrupted at the entrance of life upon this planet, and that Father Wasmann was obliged to assume "a so-called creation" of the first organisms to account for the appearance of life. Two great links in the chain of evolution are yet to be accounted for by the theistic evolution, and as these are the two that most concern us, we are not a little disappointed to find that when Father Wasmann approaches them he becomes nebulous and obscure. These two are, first, the development of organic life from its appearance on the globe down to man, and next the evolution of man. In the organic world down to man, Father Wasmann seems

to believe in a sort of spasmodic evolution. This evolution seems to be partial, or chro matic, or intermittent; and Father Wasmann is singularly hesitant about formulating his views in anything like a plain categorical statement. Although he tells us that in his special line of studies he has come upon "a number of interesting phenomena, which are biologically explicable only from the point of view of evolution"; although he says "The principle of the theory of evolution is the only one which supplies us with a natural explanation of these phenomena, and therefore we accept it"; and although he emphasizes this latter statement by printing it in italics; we find that it is soon defecated by him to a mere transparency, and he so sublimates it that from a proof it soon becomes a mere probability. Although he finds evolution the only explanation of the phenomena which he has observed, and although he adds that therefore he accepts it, in the very same breath he asks, "But to what extent do we accept it?" And his answer is in italics: "*Just as far as its application is supported by actual proofs.*" And when he "attempts to

answer how far this is the case," the answer dwindles from "actual proofs" down to mere probability and the essence of the whole explanation seems to be merely that "the probability is in support of evolution." The evolution of original created matter and its development throughout the cosmos as well as the evolution of inorganic nature on our globe are, of course, pure assumptions on the part of Father Wasmann, without a single tittle of evidence, whether by way of direct or indirect proof or even analogy to sustain them. Consequently they are of no value whatever and are entitled to just the same respect as any other groundless speculation, but no more. Indeed, we have become somewhat sceptical as to the value of such so-called scientific speculations. They have nothing whatever of science about them, and it must be regarded as somewhat misleading to link them with the name of science in any way. We are inclined to be equally sceptical about the value of speculations which are the outcome either directly or indirectly of studies in special departments of science. No doubt it seems very imposing in a scientist to

hear him speak of his own special department and his observations therein, together with his special conclusions therefrom; but we have always held fast to the inconsequence of the implied assumption. For instance, Father Wasmann is a specialist, he says, in an important department of science. His specialty is the study of ants and cockroaches. Outside of this he must, to use his own admission, "rely upon the authority of others." Candidly, we have always been of opinion that interesting and all-absorbing as is the study of ants, it is a strange place to seek for a solution of the problems of the universe. Of the scientific value of the conclusions from this department, too, we must confess to a mild scepticism ever since we once read in some of Darwin's own observations in this field, an account of how he once came upon a raid on the home of F. Fusca by a body of F. Sanguinea, how the conquerors were marching home in triumph carrying the pupæ of the vanquished, how the survivors of the fray who had lost their home were rushing about in great agitation, and how "one was perched motion-

less with its own pupa in its mouth on the top of a spray of heath, an image of despair over its ravaged home." The "image of despair" has, rightly or wrongly, ever since rendered us sceptical about the value of "scientific conclusions" drawn from this special department of science.

Father Wasmann's Descent of Man.

But let us pass to Father Wasmann's Descent of Man. His exposition of the evolution of man is, as we have said, unfortunately obscure, or perhaps we should say, hesitant. Father Wasmann is of course throughout his three lectures arguing against the Monism of Haeckel, but he is at the same time—as he said at the outset—endeavoring to throw light on the problem of evolution. He rejects with scorn the theory of man's descent from beasts, whether by descent we mean the whole man or merely man's body. He examines the two zoological theories of man's descent, first from the higher apes and secondly from an ancestor common to both man and ape, and he rejects both absolutely. He makes a noble plea for

the independence of man of the brute creation. He claims rightly that with regard to the whole man—and the whole man is body and soul united—zoology alone is not capable of giving an adequate answer to the question of his origin. He truthfully says that in investigating the origin of man, the chief question is: Whence comes his higher part? not: Whence comes his lower part? and yet, in spite of all this, it is difficult to see that Father Wasmann's theory of the evolution of man is at all an advance on the theory of his descent from beasts. For Father Wasmann seems to have a theory of his own of the evolution of man. Indeed he asks the question: "*May this theory* (*evolution*) *be applied to man, and if so, in what degree?*" And this is how he answers it: "I wish to state definitely, before discussing the matter, that we are not concerned with the application to man of Darwin's theory of evolution, for I showed in my last lecture that I was unable to accept that. But he immediately adds, "We may apply the theory of evolution to man, and still have as foundation the principles of Christian philosophy and of the Christian theory of life."

We have searched in vain through Father Wasmann's book for the explanation of this theory of man which is supposed to be in perfect harmony with "Christian philosophy" and "the Christian theory of life," but fail to find it, unless it be in the speculations at the beginning of his third lecture which lead up to the question just asked and answered. In these speculations he says:

"Every atom in the human body had its primary origin in a creative act of God at the first formation of matter, although millions of years of cosmic development were to elapse, before it became a part of a human body; and in just the same way, we might imagine a hypothetical history of humanity, governed by the laws of natural development, which God pressed on the first cells at the moment when life originated."

Father Wasmann then proceeds to tell us how, "in accordance with this purely speculative supposition, man would have become man completely only when the organized matter had so far developed through natural causes, as to be capable of being animated with a human

soul. The creation of the first human soul marks *the real creation of the human race*, although we might assume that a natural development lasting millions of years had preceded it."

"These," he adds, "are, it is true, only attractive possibilities, the outcome of bold speculation, but I have referred to them in order to prove to you that, if ever science is able to demonstrate to us the natural development of man from an ancestry resembling beasts, *the divine origin and the divine end of humanity will nevertheless remain unassailed and firmly established as before.*"

This may be regarded by Father Wasmann as a "bold speculation," but we can hardly agree with him in calling it an "attractive possibility." If we understand Father Wasmann's speculation rightly, it is an attempt to push aside Darwin's doctrine about the descent of man, and in a measure the Mivartian hypothesis as well, and to supplant both by what might, perhaps, be properly termed *a phylogenetic germ-cell theory of humanity*. In other words, instead of the hypothesis of Mivart which refers man's ancestry to apes, assuming that at a certain period in

the evolution of the ape a human soul was infused, Father Wasmann assumes that man had a direct and special ancestor for himself, which we might call man-in-preparation. It presupposes that at the creation of life God created something like a germ-cell of humanity endowed with life and the power of development, with the ultimate intention of erecting it into a man "when the organized matter had so far developed through natural causes as to be capable of being animated with a human soul." It was not yet man. It was distinct from other animal ancestry. It was not ape or beast or any other kind of obnoxious ancestor. It was worthy of the future dignity of man. It was man-matter vivified by the spark of life and left with the power of developing. It was specially created, probably out of specially prepared matter; and when the proper time in its own development came, the human soul was grafted on this living thing. Heretofore it was uncompleted man; now it became complete man. We think we have given Father Wasmann's views; but of course are subject to correction if we have misapprehended his meaning.

Of course every proposition that does not involve an antinomy of thought is possible, and Father Wasmann's "bold speculation" is no exception, but for our part it is difficult to understand how this is at all an improvement on the Mivartian hypothesis; and we utterly fail to see how Father Wasmann expects to reconcile it with "the principles of Christian philosophy." Its main object seems to be to discover a proper salve for human pride, and for this it is indeed well calculated, though the notion is purely fantastic. But whether the human soul was at man's creation grafted on an ape or on this man-in-preparation—whether we regard the preparation as homunculus, or an undeveloped Caliban, or a soulless man—seems to be of little consequence as far as "Christian philosophy" is concerned. Consequently whatever may be the merits of the speculation from a scientific point of view, from the standpoint of Christian philosophy it is absolutely worthless. There seems to be one fatal flaw in all these speculations—in which the human soul is supposed to be grafted on beings already possessing an anterior principle of life—which seems to have

been completely overlooked, but which to us at least seems to negative completely all theories of this kind. It is the simplicity of the human soul. Father Wasmann himself argues nobly in favor of this principle which, nevertheless, his speculation would completely contradict. According to the teaching of St. Thomas and all Christian philosophers the soul is the first principle of life—"*primum principium vitae.*" According to Father Wasmann's hypothesis this first principle of life is introduced into an organized being already endowed with the life principle. Consequently in Father Wasmann's man there are of necessity two principles of life, one the original life of the incomplete man, the other the human soul specially created. Now how do these two principles of life existing within each of us act? Do they operate separately or conjointly? It is hardly conceivable that the first life principle is absorbed by the second, and it is equally improbable that it is annihilated by the second or by God to make room for the second. In fact a whole swarm of spectral questions emerge from Father Wasmann's speculation which he

will find it difficult to allay or to reconcile with his philosophy of the simplicity of the soul. Do the two souls exist in one body? Or is the newly-created soul superadded to the first? Do they coalesce? Or does the newly-created soul absorb the evolution soul? And if so, how can such a soul be said to be simple? Or we can take the three different ways into which the speculation must resolve itself. Either the two souls exist in man independent of each other; or they act in unison by co-operation, or coalescence, or absorption; or the first soul is either annihilated or expelled. The theistic evolutionist will hardly be ready to accept the first. In the second case the soul of man is not simple but compound; for the third there is no warrant of any kind either in science, or philosophy, or experience.[1] Indeed we prefer to these revolting and unwarranted alternatives, which Father Wasmann's speculation forces upon us, to accept crass materialism without question. Materialistic materialism is

[1] Possibly some expressions of St. Thomas might be regarded by some as pertinent here; but it will be difficult to show that they have application at all, except possibly by way of analogy: and even analogically it would be difficult to show that they are applicable.

bad enough, but materialistic spiritualism which these assumptions postulate—!! The simple question: What becomes of the animal soul? seems to be fatal, from the standpoint of "Christian philosophy," to all speculations that involve the introduction of a new and human soul into a being already endowed with life. For the rest we cannot see how Father Wasmann's speculation can aid Christian philosophy in an acceptance of evolution, though as a sop to human pride it does palliate to some extent the theories of Mivart and Darwin.

Proofs of Evolution.

It has long been a wonder to one portion of humanity that men should permit their imaginations to run away with their judgments in matters scientific, thus involving themselves in inextricable difficulties and perplexities. In the case of evolution at least this is certainly not owing to the overwhelming nature of the proofs. Nor does Father Wasmann claim to give us any new proof of the theory which he espouses. We have looked for them in vain. In dealing with this portion of the theory of evolution

Father Wasmann divides the proofs for it into the "direct" and "indirect." "The direct proofs," he tells us, "are those faint traces of transformation of species, as they still may be discovered; such, for instance, as the botanist, Hugo de Vries, has described in support of his theory of mutation. He shows that in the botanical genus Oenothera, mullein, new forms are still being developed, which "behave like real species." Of course this is a case of *parturiunt montes* in which all that the great generalization—evolution—can bring forward in its favor is the behavior of some specimens of the mullein plant, and is ridiculous in the extreme. The great principle of evolution is supposed to have been at work throughout all time and throughout all space. On our own globe, on land and sea, throughout the entire vegetable kingdom, throughout the entire animal kingdom, throughout all inorganic matter; yea, throughout the entire cosmos, the universe, the heliocentric system, it is supposed to be operative and to have been operative throughout all past time and down to the present; and yet the only direct proof that can be adduced

that there is such a principle at work or indeed that there is such a principal at all, is that some varieties of mullein are somewhat eccentric in their behavior. Of course Father Wasmann is too sensible a man to regard this as a proof, and so we may dismiss it. We wish Father Wasmann's judgment had been as correct in dealing with the "indirect proofs."

Proofs from Paleontology.

His indirect proofs are from paleontology and, it is hardly necessary to say, are affected by the constitutional weakness which are characteristic of all the proofs from this quarter in favor of evolution. Father Wasmann furnishes no new principle and not even any new variety of fact, although his facts are taken from his own observation in his own special department of ants and cockroaches.

"There are," he tells us, "hundreds of kinds of ants, which we know through their having been preserved to us in the tertiary amber of the Baltic and Sicily. Amongst them occur several genera which still exist, but scarcely a species that is identical with the present ones.

We can hardly avoid coming to the conclusion that our ants are the descendants of these fossil varieties, and that they have come into being by way of natural evolution of the race, and not by way of a new creation."

Father Wasmann does not give us the mental process by which he finds himself so constrained that he "can hardly avoid coming to his conclusion"; hence we must deal with his argument in common with the whole argument from paleontology. First, however, let us hear Father Wasmann in full on this point.

"Again if we compare the fossil termites of the tertiary epoch with those now known to us, we are forced to assume that the latter are modified descendants of the former, and that they have come into being by way of race evolution, not by way of a new creation."

Had Father Wasmann, instead of "a new creation," said "a separate creation," his meaning would have been made much clearer; but the force of his reasoning in behalf of evolution would have lost half its value.

Father Wasmann cites a third instance. He says:

"Further, if we consider the oldest of the still existing varieties of termites, viz., the Australian genus Mastotermes, and compare the formation of the wings with that of the Blattidæ, or cockroaches, both fossil and still existent, we shall *probably* find that the termites in some prehistoric palæozoic age were evolved from one and the same stock as the ancestors of our present black-beetles."

Father Wasmann adds, "I might give many such instances, but it is time for me to pass on to my photographs."

This then is the whole argument from paleontology which Father Wasmann furnishes as the indirect and only proof that evolution has taken place throughout all space and throughout all time, and that it is still at work throughout the entire universe. These indirect "proofs" are a fair sample of the evolutionist's method of argument and give us a fair notion of what is meant by "the proofs of evolution." We regret to find Father Wasmann falling into the slip-slop of the evolutionist, and for this reason we shall deal with the argument somewhat at length.

If we understand Father Wasmann's argument rightly it is this: Since among the fossil ants found in the tertiary amber of the Baltic and Sicily none are discovered which are identical with some species which now exist "we can hardly avoid coming to the conclusion" that no such species ever existed before, and that our present ants must have descended by way of evolution from the fossil ants which are there found. By way of confirmation of this argument it may be added that among the fossil ants of the Baltic and Sicilian tertiaries we do find genera which still exist. Therefore the probability is that no species like those now existing ever lived and that our present ones are descended from these fossil ants which we do find there. We think Father Wasmann himself has not put his argument in stronger form than we have done. Let us examine this argument at length.

The argument looks exceedingly like trying to prove a negative. What is the proof that no such species ever existed previously and that we must look elsewhere for the ancestors of Father Wasmann's present ants? Why must

we derive them from other species? And what proof is there for the non-existence of similar species? None that we can see except that they are not to be found in the "tertiary amber of the Baltic and Sicily." But surely, this can not be regarded as a proof that such a species never existed. Father Wasmann's argument is based on three distinct assumptions, not one of which holds good in reality. First, that we have a complete acquaintance with all the fossils which the full geological record contains; secondly, that every species which ever existed has become fossilized and that therefore in the complete geological record we have an exact inventory of all the species that have ever existed upon the earth; and thirdly, that in the supposition that all forms have left fossil remains, those fossil remains have been preserved. A failure in any one of these suppositions renders extremely doubtful the position assumed by Father Wasmann; but there is failure in all three. With regard to the first, it is a truism to say that we have but a fraction of the geological record and consequently only a mere fragmentary portion of its content.

The geological record is an open book, the fossiliferous strata are its open pages, the fossil remains found in those pages are the characters or letters by which paleontologists seek to reconstruct the past history of plant and animal life on this globe. But this history is not only incomplete; it is merely fragmentary. Sir Charles Lyell always insisted on its imperfection. Even Darwin himself bewails it. He tells us, "The noble science of geology loses much from the extreme imperfection of the record." And again, "For my part, I look at the geological record as a history of the world imperfectly kept and written in a changing dialect. Of this history we possess the last volume alone, relating only to two or three countries. Of this volume, only here and there a short chapter has been preserved, and of each page, only here and there a line." Even Herbert Spencer candidly admitted that "had we an exhaustive examination of all exposed strata covered by the sea, it would disclose types immensely outnumbering those at present known." Hence even though no identical ancestors of the now existing species of ants are

to be met with in the fossils of the Baltic and Sicily, it would be an extremely rash judgment to conclude that such ancestors never existed. The conclusion which can be drawn from the absence of such forms in the amber fossils of of Sicily and the Baltic is that no such fossils are to be found in the Baltic and Sicilian tertiary amber, but nothing more. It would be even rash to conclude that they never existed there ; for we have no evidence to show that remains of all fossils even in that environment have been preserved. And this brings us to the second assumption, viz., that all living forms that have ever existed upon the earth have left behind them fossil remains. No one who gives the subject a thought for a moment will entertain so wild a notion. We know that fossilization is now the exception, and it is fairly certain that it has been the exception in all past time. A concurrence of the conditions which preserve for us in fossil state the forms of life which at one time or other inhabited our globe is not frequent and certainly is not constant. In all probability the proportion of organisms in relation to the whole animal and vegetable

life of the globe, that have been preserved in fossil form to puzzle posterity and multiply perplexing problems, was no greater at any time than it is at present. Darwin himself admits that "The accumulation of each great fossiliferous formation will be recognized as having depended on an unusual occurrence of circumstances, and the blank intervals between the successive stages as of vast duration"; and Herbert Spencer again is forced to admit here that "geologists agree that even had we before us every kind of fossil which exists, we should still have nothing like a complete index to the past inhabitants of the globe;" and he adds further, that "there are strong reasons for believing that the records which remain bear but a small ratio to the records that have been destroyed." He also further admitted that "the facts about fossil remains are so fragmentary that no positive conclusion can be drawn from them." Then, too, as Spencer has remarked, "The great mass of ancestral types—plant and animal—consisting of soft tissues, have left no remains whatever," which coincides with Darwin's remark that "No organism wholly soft

can be preserved." None will deny then that it would be wrong to suppose that even though we had the entire geological record before us and made an exhaustive examination of its contents, we would be very far from anything like an approximation of the varied species that have at one time or other inhabited our globe. Indeed, Spencer's words are nearer the truth, that "even though we had before us every kind of fossil which exists, we would have nothing like a complete index to the past inhabitants of the globe." So that the second assumption on which Father Wasmann's conclusion is based is groundless as the first. And just so with the third. Supposing that we had before us the complete pages of the geological record which laid before us every specimen of organized forms which that record contains, and supposing also that each organism that ever lived upon the earth had left behind some fossil remains. Father Wasmann's conclusion would not yet follow. For it is certain that numberless fossil remains have in the course of ages been entirely destroyed. That fossils have been formed is no proof that those forms have been pre-

served. On the contrary fossil remains frequently disappear. And what is more, this disappearance is by no means on a small scale. Darwin himself admits that "Shells and bones decay and disappear when left on the bottom of the sea, where sediment is not accumulating." Again he holds that "remains which become imbedded in sand or gravel will, when the beds are upraised, generally be dissolved by the percolation of rain water charged with carbolic acid." Spencer, as we have seen, claimed that "the records which remain bear but a small ratio to the records which have been destroyed," and ascribes the destruction to igneous action. He tells us that "Many sedimentary deposits have been so altered by the heat of adjacent molten matter, as greatly to obscure the organic remains contained in them." And he adds, "The extensive formation once called 'transition,' and now renamed 'metamorphic,' are acknowledged to be formations of sedimentary origin, from which all traces of such fossils as they probably included have been obliterated by igneous action. And the accepted conclusion is that igneous rock has

everywhere resulted from the melting-up of beds of detritus originally deposited by water." Those beds of detritus were the resting places of the fossil remains. Spencer's conclusion from it all is: "How long the reactions of the earth's molten nucleus on its cooling crust have been thus destroying the records of life, it is impossible to say; but there are strong reasons for believing that the records which remain bear but a small ratio to the records which have been destroyed." We have purposely chosen those opinions from the two founders of the theory of evolution—Darwin the father of the theory on the side of physical science, and Spencer the father of evolution taken as a philosophical theory; Darwin, who confined his researches wholly to the sphere of organic nature, and Spencer, who extended his philosophical speculations not only through all organic life, but extended it to inorganic nature and to the entire universe on the one hand, and on the other throughout the whole realm of human life whether social, political, religious, or moral.

Thus, on the authority of the founders of the

evolution theory themselves, we find that the assumptions on which Father Wasmann's "proof" is based are wholly without foundation. First, our geological record as known to us gives but a mere fragment of the complete geological record as it exists in its discovered and undiscovered form; secondly, the forms of life that have been fossilized are but a fraction of the forms that have existed in past time; and thirdly, even those that have become fossilized and are preserved (though mostly yet undiscovered), bear no proportion to the records that have been destroyed by the action of igneous rocks, by the action of chemical dissolvents, and by other known and unknown causes. What then are we to think of Father Wasmann's conclusion from paleontology? What are we to think of his expressions "we can hardly avoid coming to the conclusion" and "we are forced to assume" that because no ancestors have found for these specific ants, we have therefore come upon a case of evolution? In the face of the facts and conditions which we have just seen it seems a little premature to maintain that such ancestors never

existed, although none of their remains have been, not indeed preserved—for of this we know nothing—but discovered. Spencer's conclusion, already quoted, that "the facts about fossil remains are so fragmentary that no positive conclusion can be drawn from them," seems to us to be the only sane one in the field of paleontology. But in Father Wasmann's mouth this argument has a character of inconsistency peculiarly its own. For in his argument against an ape ancestry of man he draws from similar premises a directly opposite conclusion from that which here "he is forced" to accept. His argument in one case is; the Termites have no ancestors of their own; therefore they must be descendants of the ants of the Baltic tertiary; while in the case of man his argument against Haeckel and monism is: Man has no ancestor therefore he is not descended from the ape, but from some ancestor unknown. But supposing a thorough-going monist like Ernest Haeckel should undertake to apply his "ant" argument to man and say: We find fossil apes and prosimiae in abundance, but nowhere do we find fossil human species,

therefore, we are forced to conclude that man must be descended from apes or prosimiae, we do not see what reply Father Wasmann could well make, since it is taken from his own mouth.

The most interesting argument for Father Wasmann's evolution would have been that taken from his own experience, but as this is given only in the condensed form of the press report we can merely surmise its force from Father Wasmann's conclusions which he gives more at length. Father Wasmann does not claim to have discovered any new facts or principles, but merely states that he has observed some phenomena "which are biologically explicable only from the point of view of evolution." This, however, is strong language and he supplements it by telling us, "I wish to draw your attention to the fact that accommodation to the life of ants and white ants or termites has in all probability led to the formation of new species, genera and families among their guests, which belong to very various families and orders of insects. In some cases (*Taumetoxena*) the characteristic marks have been so

completely altered by accommodation that it is scarcely possible for us to determine to which order of insects this strange creature belongs. In other cases (*Termytomyia*) the whole development of the individual is modified in such a way that it resembles that of a viviparous mammal rather than that of a fly."

Father Wasmann here calls attention to the modification in what he calls "the characteristic marks" of species and also to changes in their physical development. Now it must be observed that among the lower forms of life the divisions of genus and species are not always very clearly defined. Indeed what distinctions we have here are the factitious divisions of naturalists, and seldom do any two agree in their classifications. The family lines are not easily distinguished; very often the lines between orders and classes are not so sharply outlined. Linnaeus, the father of classification, misled by "characteristic marks," actually classed an homopterous insect as a moth. The numerous instances of dimorphism, trimorphism and polymorphism in individuals of the same species both in plants and animals,

have long been the wonder and perplexity of naturalists. Among these lower orders naturalists meet with startling variations within the limits of known species—variations which cannot possibly be the result of evolution, for they occur in members of the same family or offspring of the same parent. These alterations occur not only in the characteristic marks, but, also in the physiological structure. Often these differences are met with in the different sexes of the same species. To pass over those cases which are so familiar to every one—the difference between the male and female of the peacock, the pheasant, the fowl; if we go into Father Wasmann's own domain, we shall find that some ants are winged while their females are wingless—a wide morphological difference. Mr. Wallace was the first to call attention to the fact that among butterflies in the Malayan Archipelago, the females of a certain species regularly appear under two or even three conspicuously distinct forms, not connected by intermediate varieties. The same is said to be true of certain Brazilian crustaceans. Of the Lepidoptera Mr Wallace says "there is no

possible test but individual opinion to determine which of them shall be considered as species and which as varieties." Darwin calls all this "very perplexing," which it undoubtedly is, and he further tells us: "It certainly at first sight appears a highly remarkable fact that the same butterfly should have the power of producing at the same time three distinct female forms and a male; and that an hermaphrodite plant should produce from the same seed-capsule three distinct hermaphrodite forms, bearing three different kinds of females and three or even six different kinds of males. Nevertheless, these cases are only exaggerations of the common fact that the female produces offspring of two sexes, which sometimes differ from each other in a wonderful manner." Surely, in all these instances there is no room for evolution. Now let us suppose that Father Wasmann had met with two of those individual types in the course of his investigations, without any previous knowledge of their close, intimate and immediate relationship. Doubtless he would recognize both as belonging to at least the same order, would determine the spe-

cies to which each belonged, and, in all probability, would feel that he was forced to attribute the relationship to evolution, precisely as he does in the present instance. Nevertheless, not only was there no room for the intervention of evolution at all—not even room for the difference of genus or species; for in spite of their "wonderful differences," they were offspring of the same parent. We should think Father Wasmann would endeavor to clear up this inexplicable fact before deriving any proofs—even indirect and and merely probable ones—from the "characteristic marks" or morphological structure of beings in the lower world of life.

Add to this that, as Darwin has said, "no one quite understands what is exactly meant by the term species;" that we are profoundly ignorant of the laws of variation, their extent and efficacy; that it is naturalists themselves who have drawn the lines between species and species—not always with the greatest accuracy ; and it will be easy enough to account for the results of Father Wasmann's observations, we fancy, without an appeal to evolution. We

ourselves were, we think, the first to call attention in this Review to the fact that the creation of species as species is not a dogma of religion at all, but a doctrine of science;[1] and if scientists are not yet prepared to define clearly the lines of separation beyond which organisms do not pass and become new established species, the fault is the fault of science. Indeed, viewed in this way, evolution seems to be but an expression to cover our ignorance and shield our indolence. Various definitions have been given to the term species; but as Darwin has remarked, "No one definition has satisfied all naturalists." Darwin thinks the term includes the unknown element of a distinct act of creation;" but it should be remembered that it is science which has assigned this meaning to it; not religion. The confusion over the lines of demarcation in the lower forms of life is among the scientists themselves; and it is science and not religion which is interested in the "characteristic marks" and physiological "development" of

[1] Linnaeus was the first to formulate the doctrine in his stately phrase: Species tot sunt quot diversas ab initio produxit Infinitum Ens.

organisms in the lower spheres of existence. Doubtless, if by evolution Father Wasmann means that among the inferior orders of animal life the tendency to vary is greater than in the great systematic categories, or that in this realm the lines of the limitations of variation are more elastic ; in other words, that there is a greater plasticity of nature in the lower forms of life; he may not be so far from the truth ; but it would be a travesty of language to dignify this by the name of evolution ; it is simply variation. Indeed, we are of opinion that the term variation will cover all the facts that Father Wasmann has found; that is, when scientists will have agreed among themselves as to what constitutes the true meaning of their own term "species."

The Biogenetic Principle or Proof from Embryology.

There is one other proof of evolution which is usually brought forward and upon which Father Wasmann barely touches—and then only to reject it—which we cannot pass over, so peculiarly does Father Wasmann deal with it. His manner of accepting and rejecting it—

like his acceptance and rejection at the same time of evolution, and his attempted ejection of Darwin from his own theory—seems to us highly capricious and wholly unreasonable. This proof is what Father Wasmann calls "the biogenetic principle," but which among evolutionists of the English school is known as the argument from embryology. The absolute tyranny of the evolution theory was perhaps never better exemplified than in Father Wasmann's treatment of this "proof." Incidentally, too, it demonstrates the inconsistency of the Catholic evolutionist. Roughly this argument is: that the individual organism in its development from the cell to maturity passes through all the stages of the evolution of the race; or, as Father Wasmann puts it: "According to it the development of the individual is only an abbreviated and partially modified reproduction of the development of the race." Father Wasmann seems to accept this as a principle when it suits him and to reject when it does not suit him; so that like evolution we must regard it as spasmodic in its action. He says with full italicised emphasis :

"I maintain, therefore, that *we cannot accept the biogenetic principle* in its entirety, nor can we sanction its application to man in order to *prove his descent from beasts.*" Nevertheless, we find him telling us: "It is an undeniable fact that, both among the higher and lower animals, instances occur of stages of individual development, which can be explained only by regarding them as temporary traces of a previous stage of development, which was permanently impressed on their ancestors." This sounds somewhat strange coming from a man who rejects the biogenetic principle; but more follows. Father Wasmann thinks that he has discovered instances of this rejected principle in his own special department; but we shall let him speak for himself. He says: "Something similar occurs in the case of the Termitoxenia, a very small fly that lives with the white ants. You saw a diagram of it during my first lecture. It presents the peculiar feature of having for a short time, whilst it is passing through the stenogastric stage as a full-grown insect, genuine veined wings in the still cuticular appendices to the thorax;" and he adds in wonder-

ment, "I could scarcely believe my eyes, when I noticed this for the first time in my series of sections. Subsequently, these little hooked appendages to the thorax grow into horns, and serve as organs of touch and exudation, and enable the fly to balance itself, and no trace of likeness to wings remains."

Seeing is, of course, believing, and Father Wasmann, unable to withstand the force of this convincing evidence, adds: "Probably we have here a certain amount of reproduction of the growth of some ancestors." We are glad to find Father Wasmann prefixing "probably" to the results of his marvellous discovery, but soon his enthusiasm seems to get the better of him and he tells us, "I might refer to a number of similar instances, but what has been said will suffice to show that there are really cases in which the evolution of the individual gives us a clear indication where to seek the ancestors of the race." So far, Father Wasmann's mental processes are sufficiently clear on the subject; but what follows seems to be enveloped in fog and mystery. He adds: "Nevertheless, if we are to explain such a stage of

evolution as being a repetition of some hypothetical stage in the life of its ancestors, this explanation must be the only possible one (!)—and it is my opinion that there is no such stage in the ontogeny of man." Now, the riddle of the sphinx is easy compared with this sybilline language of Father Wasmann. And then, why should he balk the great principle when he comes to man? Was not the principle sufficiently proven to him in the case of the parasites of the white ants? In the "Discussion," which was not discussed, but written out at his leisure, Father Wasmann returns to the mystery of his words and this is how he interpets them for Dr. Smith-Jena, who called his attention to the inconsistency. He says: "I never recognized the *biogenetic principle as such*, either in my third lecture nor in my book on *Biology and the Theory of Evolution.* The instances adduced by me, to which Dr. Smith-Jena referred, were exceptional cases of *relatively rare occurrence*, in which the development of the individual gives us a clue to the evolution of the species. But the fact that these are exceptional and of rare occurrence shows that

the biogenetic principle is not a general law." But if it be not a "general law," how does Father Wasmann know that in his own particular discovery (!) he has "a clue to the evolution of the species"? Why should it prove to be the law in his case and not in that of others? There are those who maintain that they, too, have discovered instances of it and those also who insist that it is a general law. Why should Father Wasmann be so confident of its import in his own case and so positive in his rejection of it in other cases? Why should he be so certain that he has come upon a real case of parallel between ontogenesis and phylogenesis? Indeed, Father Wasmann's attitude here is wholly capricious and, in spite of all his protestations, can only be interpreted as a confirmation of their position by those who maintain the validity of the biogenetic principle. Indeed, we think the admonition of the nursery rhyme, "The gobbeluns'll get you if you don't watch out," is particularly appropriate for Father Wasmann on this particular point. For the rest we are sorry to find Father Wasmann lending himself to an effort to revive

interest in the argument from embryology, especially when scientists themselves seem to be abandoning it as valueless.

Let us, however, try to get the force of Father Wasmann's argument; and perhaps we can obtain some idea of its value and efficacy more readily by taking one from the "number of similar instances" of the biogonetic principle which he cites, rather than Father Wasmann's own instance. As one of those instances, Father Wasmann mentions the case of the whalebone-whale, which is one of the stock arguments of evolutionists in behalf of the biogenetic principle. We shall try to follow Father Wasmann's argument in this case, which he accepts as a "clue" and an "indication where to seek the ancestors of the race"; but first a brief digression may be permitted. Whether the principle of evolution has or has not been at work in other directions there is one place at least where it seems to be a marked success—the evolution of error. Indeed, so successful has it been in this department of knowledge that it has actually differentiated a new spick-and-span species of fallacy and de-

veloped it to such perfection that it has come into general use throughout the entire school of evolution and seems to be a characteristic mark of every member of that school from Darwin down to Father Wasmann. This new species we may call the fallacy of the double hypothesis; and its operation is thus-wise. First a hypothesis is framed, wholly possible, more or less probable, absolutely without proof, and with little presumption in its favor. After more or less discussion this hypothesis quietly takes its place as a proven fact, though it has not progressed in its evolution beyond the assumption stage. Later, in another totally different department of science another totally different hypothesis is needed for another totally different purpose. It is forthwith invented, and, after its invention, follows the usual discussion, when suddenly someone discovers that the first hypothesis has some bearing on the question. The first hypothesis is instantly invoked, and *presto!* the second hypothesis is proven by the first. Meanwhile the fact that it has been instrumental in proving the truth of the second hypothesis at once raises the

first to the dignity of a truth also. Occasionally, not only two, but entire series of hypotheses thus become established truths. The argument from the whalebone-whale is a brilliant example of this. Father Wasmann says of it:

"As an example of this (the biogenetic principle), I may refer to the teeth which the embryos of the whalebone-whale still possess, although subsequently they degenerate into whalebone . . . . .If we may compare with it the further fact that geology has ascertained, viz., that the whalebone-whale only in the tertiary period succeeded to the toothed whale, which may be regarded as its probable ancestor, the conclusion is obvious. The whalebone-whale is descended from an older toothed whale, and the reason why, in the development of the individual whalebone-whale, there is a stage at which teeth appear, lies in the fact (!) that the ancestors of the present whales passed through this stage of development, and it remains up to a certain definite point in the growth of the embryo."

This is a splendid specimen of the

fallacy of the double hypothesis. Indeed, there is a third hypothesis which plays a silent part also. Father Wasmann says "that the whalebone-whale only in the tertiary period succeeded the toothed whale, which may be regarded as its probable ancestor" —mark the "probable," and the double assumption, first of the succession (which is very far from certain) and secondly of the relationship by descent. The first hypothesis then—destitute of every vestige of proof—is, that the whalebone-whale is descended from the toothed whale. The second hypothesis which is the one seeking for proof, is that the appearance of the embryonic teeth is due to the biogenetic principle.[1] In this particular case Father Wasmann wishes to prove it by the appearance of the teeth in the embryo whales. And this he does by the simple process of assuming his first hypothesis to be a "fact." We have already, elsewhere, called attention to this new species of fallacy which consists in basing one

[1] This is the hypothesis which tells us that in ontogenesis, or the evolution of the individual, we have a reproduction of phylogenesis, or the evolution of the race; in other words, that the individual embryo up to maturity passes through all the forms through which the race has passed.

hypothesis on another and assuming the edifice thus raised to be a solid structure, whereas it is merely a castle in the air without any foundation whatever. Yet the whole literature of evolution teems with this species of reasoning, and the fallacy vitiates every argument and every conclusion of the entire school. It is a monstrous form of deception against which an effective protest should be made, though often the deception is wholly unconscious, and for the most part dupes even its own authors. It is manifest, however, that outside the school of evolution, any writer who had the interests of truth in mind would state plainly and candidly the wholly conditional aspect of the argument; and in such a case Father Wasmann's argument would run somewhat in this fashion: Fossil remains of the whalebone-whale have been found in the tertiary deposits, but in no earlier ones; and for this reason it is supposed that this species of whale did not exist earlier. Toothed whales, however, have been found in earlier strata, and consequently it is surmised that the whalebone-whale may be descended from the toothed whale. If this supposition

should prove to be true, and the whalebone-whale should prove to have the toothed whale for its ancestor, the appearance of teeth at a certain stage in the development of the embryo whalebone-whale would be a marked confirmation of the biogenetic principle.

We think we have put the argument as strongly as the facts in the case will warrant, but Father Wasmann, in true evolutionist fashion, tells us "the conclusion is obvious," and that "it will suffice to show that there are really cases in which the evolution of the individual gives us a clear indication where to seek for the ancestors of the race."

Evolution and Progress.

Before taking leave of Father Wasmann's book there is one other feature of his evolution which we wish to note for the reason that in the light of admitted facts it seems to us to be wholly untenable. It is that development with progress or advance seems to be regarded by him as the law of evolution. Instead of being explicitly stated, this is taken for granted throughout his entire work. Indeed, he seems

to think there can be no evolution without progress. Advance is essential to the doctrine. Thus in his attempted differentiation of Darwinism from evolution, he tells us that evolution "connotes the doctrine of the derivation of *all* forms of life from earlier and simpler forms." In his third lecture he says: "It is essential to the very nature of evolution to advance from what is simple to what is complex." Following Hertwig, he has told us: "As this process continues, the corresponding new generation must advance somewhat further than its immediate predecessor"; and still again he says: "The more highly any animal is organized, the more stages of development must it pass through before reaching the complex final stage." Hence there is no doubt whatever that at least Father Wasmann's evolution includes the notion of advance or progress from the simple to the complex or from a low state of organization to a high one.

Now, few things are more certain than that such a notion is wholly incompatible with the facts of paleontology. Indeed, it is surprising in the extreme how prone evolutionists gener-

ally are to forget this all-important fact. For one of the real lessons which paleontology teaches us is, that if there has been an evolution of organic life throughout the past ages, such an evolution must have taken place without progress of any kind. We have many organic forms existing at the present day which are identical with the earliest which paleontology discloses, and assuredly in these there could not have been advance. Father Wasmann himself tells us that the Baltic tertiary ants are in some cases "identical" with many that exist at present. Surely here there could have been no advance.

And this was the view of Professor Huxley. Half a century ago he told us: "The paleozoic age is a long distance off from the present, but the Pleuracanthus of that age, according to the testimony of paleontology, differs no more from our present sharks than these differ from one another." Where, then, is the advance? The same is true of the Ganoid fishes. Where is the progress or advance? The essential characters of Crocodilia among reptiles of our day are identical with those of the Mesozoic epoch.

Where is the advance? And even among mammals, those of the Triassic and Oolitic species differ from those of the present no more than these last differ from one another. Where here do we find advance?

Professor Huxley took each great division of the animal world which was remarkable for a long range of period throughout the geological series and tried to ascertain what had been the advance from simple to complex structure. Let us glance briefly at a few of his conclusions. The Protozoa range throughout the whole geological series from the lower Silurian to the present day; the most ancient forms are exceedingly like those that now exist; they are not more embryonic or less differentiated. Among the Coelenterata the Tabulate Corals range from the Silurian to the present day; the ancient Heliolites are quite as highly organized as our present Heliopora. Among Molluscs, he asks "In what respect is the living Waldheimia less embryonic, or more specialized, than the paleozoic Spirifer . . . . ?" And conversely he asks in what sense Loligo or Spirula are in advance of the Belemnite. It is

the same with the Annulosa. It is the same with the lower vertebrates and with the higher vertebrates. He asks: "In what sense are the Liassic Chelonia inferior to those which now exist? How are the Cretaceous Ichthyosauria, Plesiosauria or Pterosauria less embryonic, or more differentiated species, than those of the Lias?" It is not necessary to multiply instances. Where, then, is there evidence of Father Wasmann's evolution, to "the very nature of" which "it is essential to advance from what is simple to what is complex"? Professor Huxley sums up by saying:

"These examples might be almost indefinitely multiplied, but surely they are sufficient to prove that the only safe and unquestionable testimony we can procure—positive evidence—fails to demonstrate any sort of progressive modification towards a less embryonic, or less generalized, type in a great many groups of animals of long-continued geological existence. In these groups there is abundant evidence of variation—none of what is ordinarily understood as progression; and, if the known geological record is to be regarded as even any

considerable fragment of the whole, it is inconceivable that any theory of a necessarily progressive development can stand, for the numerous orders and families cited afford no trace of such a process."

Professor Huxley concludes his investigations on this subject by the query: "What, then, does an impartial survey of the positively ascertained truth of paleontology testify in relation to the common doctrines of progressive modification which suppose that modification to have taken place by a necessary progress from more or less embryonic forms, or from more to less generalized types (Father Wasmann's theory) within the limits of the period represented by the fossiliferous rocks?"

And his answer is: "It negatives those doctrines; for it either shows no evidence of any such modification or shows it to have been very slight; and as to the nature of that modification, it yields no evidence whatsoever that the earlier members of any long-continued group were more generalized than the later ones." Huxley's conclusion has never been disputed, but is the accepted doctrine of the

schools to-day. In one instance Huxley himself maintained twenty years later that there was a notable exception, but the evidence seemed to be wanting to prove its authenticity and the exception has fallen into innocuous desuetude. What, then, are we to think of Father Wasmann's evolution, which postulates advance from one generation to another and advance from the simple to the complex as constant and continuous?[1]

Father Wasmann says, with considerable *naivete*, that evolution is not an experimental science. We quite agree with him; but it is not an experimental science for the simple and conclusive reason that it is not a science at all. It deserves to be ranked as a science no more than the cooling theory of La Place and Kant can be regarded as a science, or than Christian Science can be regarded as a science. Indeed, Father Wasmann himself admits all this, for he shows with much circumlocution that it is

[1] It is remarkable that in his own argument from the whalebone-whale (page 80) Father Wasmann has failed to notice the contradiction on this point in his own contention. He assumes the evolution of the whalebone-whale from the toothed whale with, of course, all the advance which the term implies, yet he quite naively, but truly, says: the supposed development of the teeth into whalebone is degeneration—not advance.

but a hypothesis built on several other hypotheses. "It is essentially a theory," he tells us, "based on a group of hypotheses." Such a theory can hardly be called a science; but since these hypotheses are "in harmony with one another," Father Wasmann thinks that they "afford the most probable explanation of the origin of organic species"—a proposition which he has failed to satisfactorily demonstrate.

Evolution Breaks Down.

Father Wasmann's evolution breaks down in the same way when we come to regard it—as he wishes it to be regarded—in the light of a great universal principle, whose sway extends throughout all organic life on our globe, throughout inorganic nature, and throughout the entire universe. Now, a great universal principle that breaks down at every important point, and that is discoverable in only out-of-the-way corners, and even there not very discernibly but merely supposedly, is no principle at all. Father Wasmann's evolution starts with the primal creation of matter and is sup-

posed to be actively at work in the development of this matter—whatever that means; Father Wasmann or no one else understands —down to the time when this matter is ready for the introduction of life. Here suddenly it halts, breaks down completely, indeed so completely that Father Wasmann is forced to introduce "a so-called act of creation," as he styles it, to account for the origin of life, and by the intervention of this new auxiliary, evolution starts in again with fresh courage and and attempts a renewal of its operations. It must be remembered, however, that up to this point the existence of evolution and its labors in the development of matter is purely conjectural and without the slightest shadow of reason; that it now is and ever will remain as incapable of proof as it is of disproof; and that when we come down to the beginning of life on the globe this conjecture breaks down completely. Even after its new start with the creation of life on the globe we fail to find that Father Wasmann has proved it to be universal; it is far from it. But the evolutionist, still confident, clings to his theory and is still

a firm believer in its efficacy; and, getting a fresh field with its new start in organic nature, he gives it full sweep through this vast realm; for is not this its own home, wherein he first suspected its existence—the field of its energy, its industry, its efficacy—the scene of its own special triumphs and demonstrable victories? Throughout this whole realm it has universal sway. *Si monumentum quaeris, circumspice.* Well, what do we find? Let Father Wasmann answer in behalf of his great principle, of whose "laws" and "interior causes" and "internal factors" he talks grandiloquently, although he admits that he knows absolutely nothing about them. "In the case," he tells us, "of the same genus, the genera of the same family, and often for the families of the same order, even for the orders of the same class, the probability is in support of evolution." Now, when it is remembered that in coming down the history of matter from its first creation to our own time, this is the first trace we find of the great universal principle, and that this vestige is mere probability, and that this probability is confined to the lower forms of organic matter, we must

regard it as only an optimism of the most cheerful kind which would find in such a probability a solid basis on which to found a great "science." For outside of the limits which Father Wasmann describes, he is forced to admit: "But the higher we ascend in the systematic categories, and the more closely we approach the great chief types of the animal world, the scantier becomes the evidence; in fact, it fails so completely that we are finally forced to acknowledge that the assumption of a monophyletic evolution of the whole animal kingdom of organic life is a delightful dream without any scientific support." Hence here in its own special realm, where evolutionists of every school admit that the great principle has absolute sway, we find whole tracts and continents, so to speak, where its existence is but "a delightful dream"; so that even here evolution breaks down seriously. And even accepting this fragmentary evolution within its own special realm to be some slight evidence in favor of the principle, Father Wasmann declares that when we come down to man, the principle again breaks down irretrievably.

Where, then, is the evidence of the existence of this great principle? It fails us everywhere. To insist on a great principle of evolution running uninterruptedly throughout the entire universe and producing all inorganic phenomena as well as all organic life, and to maintain that such a principle is demonstrable from the crazy-quilt patchwork of evidence in our possession, is like proving that all the great bodies of water on the continent of Europe are expansions of one great river which is invisible except where the lakes appear. Supposing the principle of gravitation were thus chromatic and elliptical? Gravitation is demonstrable everywhere, from the dewdrop to the motion of the spheres.

"That very law that moulds a tear
And bids it trickle from its source,
That law preserves our earth a sphere;
And guides the planets in their course."

When Father Wasmann can speak thus confidently of his principle of evolution, he may ask us to accept it. At present it seems as though we were all expected to transfer our

faith from religion to science, so scant is the evidence in proof of the scientific principle. For the rest, Father Wasmann's attempt to establish a harmony between evolution and Christian philosophy seems to us, like all other attempts of the kind, an endeavor to ride around the ecliptic of evolution with one horse of heaven and one of earth.

Before completely surrendering ourselves, however, to an unhesitating acceptance of Father Wasmann's theistic evolution or to an unquestioning faith in its truth, it is just as well to remember that all evolution, whether theistic or atheistic, rests for proof on just two[1]

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[1] There are to be found, of course, other alleged arguments for evolution; but they are deserving of little attention. For instance Herbert Spencer—and indeed all the earlier evolutionists—once set great store by the "Argument from Classification," until it was showu that classification depends wholly on the point of view from which we wish to study organic beings—just as we may classify the books in a library in any manner we please—and that no one is obliged to accept the classification made by the evolutionist. Now the argument seems to be wholly abandoned.

In the same way even at the present day we find, in some quarters, a tendency to lay stress on the old morphological argument, by persons who have only a superficial acquaintance with evolution or who borrow their ideas of it from others. This is sometimes called the argument from comparative anatomy. There is indeed one thing which similarity of structure indubitably proves, but it is not the necessity of genetic relation; it is the similarity of design. We are glad to find Father Wasmann himself taking his stand firmly on this position and giving short shrift to the argument from morphology. This he does not only in his lectures but even more forcibly in his "Discussion" in which he meets Professor

classes of argument, one the argument from embryology, or, as Father Wasmann calls it, the biogenetic principle, the other the argument from paleontology; that of the former Father Wasmann himself is quite pronounced in his repudiation and that he is far from alone in his rejection of it; that of the latter Herbert Spencer admitted years ago that "the facts about fossil remains are so fragmentary that *no positive conclusion* can be drawn from them"; that this sane conclusion cannot be contradicted; that it was true when Spencer first penned it, that it is true to-day, and that it will remain true for all time.

It should also be borne in mind that besides evolution there is still another hypothesis which, although partially overlooked or wholly forgotten by the scientists, "explains the facts" in a far more satisfactory manner; explains a far larger body of the facts; and explains them

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Dahl's objection from morphological resemblances by saying: "From the resemblance between man and the higher mammals only one fact can be directly deduced, viz., *that the individual laws governing the evolution of both are based on the same design.*" Unity of descent is one thing, unity of plan quite another. While the latter is conclusively proven by the morphological characters, the former must be taken on faith merely. The argument from comparative anatomy is moreover purely theoretical.

without any of the inconsistencies or incessant contradictions that inhere in the hypothesis of evolution.