attracted by the sound, and recognised his own bone the moment that he looked round. He marched up to Guy (who immediately stopped eating) and stood before him. Denis growled, and Guy slowly removed one great paw from his prize. Denis advanced a step, with another growl; Guy removed the other paw, and slunk back a little, whereupon Master Denis calmly walked up, took possession of his bone, and went off with it.

I am bound, however, to remark that after another half-hour's contented amusement over it, he resigned the remainder, which was too hard for his small mouth, to Guy, who finished the last morsel with great satisfaction. Now that he is full grown, Guy still gives up to Denis in many little ways, but it is evidently through generosity only, for he has proved himself perfectly capable of taking his own part. But he is very gentle with his little playmate, except at night, when he lies across my door-way —entirely of his own accord—and will allow no one and nothing to enter without my command.—I am, Sir, &c.,

FRANCES E. COLENSO.

Bishopstowe, Natal, South Africa, September 1.

IRISH EDUCATION.

[TO THE EDITOR OF THE "SPECTATOR."]

SIR,—A few months ago you published a letter of mine, in which I said that the Act of the last Session of Parliament by which the Poor-Law Unions of Ireland were permitted to tax themselves for the purpose of increasing the salaries of the national teachers was merely playing with the subject, and would utterly fail.

I have great pleasure in requesting you to let me state how completely I was mistaken. There are in Ireland 163 Unions, and of these, 65, or as nearly as possible two-fifths, have become contributory under the Act. This is a wonderful success, considering the difficulties,—the strong, though silent, dislike of the Roman Catholic clergy for whatever could have any tendency to make the teachers independent of them; the widely-spread feeling in Ireland that the Imperial Parliament ought to find money for everything, and the fact that the Poor-Law Guardians have no control over the money when they once vote it away. One of the greatest difficulties in the way of improving Irish education has been removed by this experimental proof of the willingness of Irishmen to tax themselves for the purpose.—I am, Sir, &c.,

JOSEPH JOHN MURPHY.

BAVARIA AND IRELAND.

[TO THE EDITOR OF THE "SPECTATOR."]

SIR,—Will you allow me to say that I am unable to agree with you in your summary assertion of Mr. MacCarthy's ignorance of the German Constitution in reference to the Bavarian crisis. The Bavarian Diet were perfectly within their rights, according to both Imperial and Bavarian Constitutions, in demanding the dismissal of the Cabinet for pro-Prussian—not pro-Imperial—policy, and for gross and avowed falsification of the electoral circumscriptions of Bavaria.

As for your hypothesis of one of the members of an imperial federation acting a scoundrelly part—murdering all the Catholic clergy, for instance—I am unable to perceive what bearing such a monstrous supposition has on the expediency of Federalism. Under present circumstances, such an atrocity would probably not fail to be resented.

It must be a source of considerable satisfaction to some German journalists to witness the recent *volte-face* of the *Spectator*. They will not be so likely, as heretofore, to get fined and imprisoned for reproducing your views of German affairs.—I am, Sir, &c.,

F. HUGH O'DONNELL.

[We never said the Diet were not within their right. They were within it. But so, as member of the Federal Council, was the King.—ED. *Spectator*.]

BALACLAVA AND THE 'BIRKENHEAD.'

[TO THE EDITOR OF THE "SPECTATOR."]

SIR,—The lines of Sir Francis Doyle on "The Loss of the 'Birkenhead'" may be finer than those of his on "Balaclava," inasmuch as the theme is more heroic. But the latter poem deserves to be remembered too. Unless it be in the epitaph of Simonides,—

"Go, tell the Spartans, friendly passer-by,
That we obeyed their orders, and here lie,"

it would be difficult to find any words which express more exactly than those of Sir Francis Doyle the soldier's idea of duty, as obedience to orders:—

"Men may be mad, or men be wise,
But not with us the question lies;
Although we guess not their intent,
This one thing well we know,—
That where the Light Brigade is sent,
The Light Brigade will go."

. . . . . .

We will not call their lives ill-spent,
If to all time they show,
That where the Light Brigade was sent,
The Light Brigade would go."

Perhaps some of your readers may be glad to know that both poems are to be found in the little volume called "The Return of the Guards, and other Poems."—I am, Sir, &c., E. S.

MR. FYFFE'S "HISTORY OF GREECE."

[TO THE EDITOR OF THE "SPECTATOR."]

SIR,—In the very kindly notice of my little "History of Greece" in your last number, the writer, condoling with me on my enforced brevity, remarks, "It is hard, for instance, not to be told about the fate of Demosthenes." I should myself have so low an opinion of the workmanship which could thus allow its heroes to drop from its hands, that I trust you will permit me to point out that your reviewer, owing, no doubt, to my own imperfect arrangement, is in error, and that the fate of Demosthenes is recorded in section 22, page 125.—I am, Sir, &c.,

131 *Piccadilly.* C. A. FYFFE.

[We owe an apology to Mr. Fyffe. The event is recorded, but not where we looked for it.—ED. *Spectator*.]

POETRY.

A ROMAN "ROUND-ROBIN."

("HIS FRIENDS" TO Q. HORATIUS FLACCUS.)

"*Hæc decies repetita* [*non*] *placebit.*"—ARS POETICA.

FLACCUS, you write us charming songs:
No bard we know possesses
In such perfection what belongs
To brief and bright addresses;

No man can say that Life is short
With mien so little fretful;
No man to Virtue's paths exhort
In phrases less regretful;

Or touch with more serene distress
On Fortune's ways erratic;
And then delightfully digress
From Alp to Adriatic:

All this is well, no doubt, and tends
Barbarian minds to soften;
But, Quintus—we, we are your friends—
Why tell us this so often?

Why feign to spread a cheerful feast,
And then thrust in our face
These barren scraps (to say the least)
Of Stoic common-place?

Recount, and welcome, your pursuits:
Sing Lyde's loosened hair;
Sing drums and Berycynthian flutes;
Sing parsley-wreaths; but spare,—

Ah, spare to tell, what none deny,
That fairest things decay;
That Time and Gold have wings to fly;
That all must Fate obey!

Or bid us dine—on this day week—
And pour us—if you can—
From inmost bin, as velvet sleek,
Your cherished Cæcuban;—

Of that we fear not overplus;
But your didactic 'tap'
(Forgive us!) grows monotonous;
Nunc vale! Verbum sap. AUSTIN DOBSON.

BOOKS.

THE UNSEEN UNIVERSE.*

A THIRD edition of this now well-known work presents an opportunity of notice in some respects more favourable than its first appearance. The preface to this edition does not indeed add

* *The Unseen Universe, or Physical Speculations on a Future State.* Third Edition. London: Macmillan.

anything to what we have to comment on in the book, but the fact of two editions of a volume so abstruse and difficult being exhausted in so short a period is of great significance, while the preface to the second edition, in its warning against certain misconceptions, is a valuable guide to understanding the work. It has, we think, two literary blemishes. It mixes up reasoning of different degrees of cogency, and addresses minds of different calibre. Both these hindrances perplex an argument not in itself perplexing, and the second defect is not compensated for by those advantages for which it was perhaps worth while to incur the first. The reader is interrupted by jolts of transition from too much to too little explanation, excursions into abstruse speculation that strains his whole capacity of attention, and then retrogressions into a kind of dissertation that an intelligent person is rather aggrieved at having to peruse. It is a great tribute to subject and authors that, with transitions so deadening to attention, a third edition should be called for within the year. Our part, however, must, in this short space, be that of a mere interpreter. We need all our space to put before an uninstructed reader what seems to us most cogent in the argument which has led two men of science to gather from the study of the natural world an expectation of something that lies beyond nature. This exposition, therefore, forms our whole aim.

The great intellectual achievement of our day is the theory of the conservation of force. From the dawn of scientific thought it began to be seen that no particle of matter was destructible, but this principle was not applied to the correlate of matter—force—till our own day. The application seems to us, indeed, to have been virtually made when Newton formulated the three laws of motion. If we may sum up those laws in the assertion that motion, when apparently destroyed, is actually transferred, and add to this summary the definition of force as that unknown reality which lies behind motion, we may surely say that the idea of the indestructibility of force is contained in the *Principia*. The two centuries intervening between the implicit and explicit statement of this truth were necessary, however, for the transference of the imponderable agencies affording its illustrations from the domain of matter to that of motion, and the correlation of the physical forces received its first literary statement thirty-two years ago, in the lectures of one whose study of laws other than those of nature has always seemed to us a grievous loss to science. The principle then enunciated by Sir W. Grove has been illustrated, confirmed, and defined by every fresh discovery, and is now a common-place. Nevertheless, a familiar statement of its import may not be unnecessary.

The varied forces of nature must be pictured to the mind as a kind of alternate agitation between the small and the large divisions of matter, a ceaseless activity now concentrated on the movement of a single mass, now spent in sending thrills of palpitation through countless atoms. If our sense of sight were keen enough, we might see this interchange; under the present circumstances, it presents itself alternately to our eyes as movement, and to that unnamed sense in us which takes account of "warmth" or "chill" (words which we think it would be a great convenience to keep for our sensations, as "heat" and "cold" for their causes). We may bring a sort of pictorial representation of this change before our mind, by imagining what happens in a railway collision, the sudden cessation of movement in the large thing, the train, causing a clashing together of the smaller things, the human beings inside it. This is a pattern of the way movement passes from masses to molecules; make the train large enough, and the people inside small enough, and it becomes a specimen of such a change. When our feet strike the ground, movement is in just the same way transferred from a large thing to a number of small things, for the sensation we know as warmth cannot, except *as* a sensation, be described in different terms. Just as a person watching a train stop suddenly would know nothing of any number of collisions inside, so movement vanishes to our eyes when it changes into the molecular form known as heat. And as a brisk walk may remind us that heat is transformed motion, a railway journey may remind us that motion is transformed heat. Motion—heat—motion again, thus we may, to uninitiated minds, condense the whole cycle of force which the scientific observer knows on a larger scale. Some fragment of this cycle forms the object of every scientific experiment, and he who is familiar with the whole realises vividly the truth denied by none, that force, like matter, can be transformed only, never annihilated. "The art of measurement," Socrates is made to say, in the *Protagoras*, "will teach us to do away with the art of appearances, and find rest in the truth;" and the great lesson of this unerring teacher is to verify, to the furthest decimal figure, the principle that what seems destruction is only change. It is a lesson impressed on the physicist in every form, at every turn, with every corroboration of convergent illustration. It moulds his whole mind. It gives form to his fancies and hopes, as well as his legitimate anticipations, and the tendencies it fosters are as large a part of its influence as the inferences it authoritatively prescribes. "Knowledge once gained," said Professor Tyndall in 1863 to the British Association, "always casts a faint light beyond its immediate boundaries." It is in this faint light that we must seek for new revelations of truth.

We should have thought the conviction borne in upon the mind that there is something behind all appearances that remains unchanged throughout their changes, would have given the belief in immortality whatever support analogy can give. For an individual being cannot be resolved into its elements; it must exist as a *self*, or not at all. Experience, however, refutes the anticipation, natural as it seems to us, that the study of the visible world would thus suggest the existence of the invisible. The fact is, that scientific men are attracted by another line of suggestion, and the unmaterial is confounded with the unreal. The grandeur of the visible universe seems to satisfy the mind given up to it. Men so occupied live in something large and permanent out of themselves, and just as the Roman or the Hebrew neglected all speculation as to his own future in his strong sense of a national immortality, so now has it been with the physicist. He has been the citizen of a world of order, of stability, of permanence. He could afford to regard human life as a ripple on the stream.

But what if this world of order should not prove a world of permanence? What if we are in the position of the vintager in Lucretius, who complains of the poor return the aged earth makes for his toil,—

> "Nec tenet omnia paulatim tabescere et ire
> Ad capulum spatio ætatis defessa vetusto?"

Then what becomes of the sense of permanence fostered by the study of science? If all that we meet in nature forbids the thought of an absolute end, and yet certain indications prove that the whole physical universe is approaching its end, then will not the principle of continuity call upon us to recognise that here, as elsewhere, what seems destroyed is transformed?

At all events, this universe of order, of life, and to translate its Greek equivalent, of ornament, is approaching its end. We learn from this volume that "it is absolutely certain that physical life depends upon transformations of energy; it is also absolutely certain that age after age, the possibility of such transformations is becoming less and less, and so far as we yet know, the final state of the present universe must be an aggregation into one mass of all the matter it contains with uniform temperature throughout the mass." (pp. 91-92.) Why is this? Why cannot these transformations of energy go on for ever? Unless we are deluded by superficial knowledge, the answer given by our authors to this question is addressed to the scientific reader exclusively,—a great pity, it seems to us. No doubt the elaborate dissertation into which we are called upon to follow them may be quite necessary in order to satisfy a mind open to all possible objections. But a mind open to all possible objections is familiar with all the facts of the case, and it confuses the reader who has to learn both facts and arguments to set before him the train of reasoning necessary to bring home a particular conclusion to a mind needing only arguments. Whether or not the following translation is faithful, therefore, we are sure it is not superfluous.

No law of thought seems to us to have a wider range than what we would call the law of imperfect antithesis. Hardly anything in nature, in experience, in human life, is entirely antithetical, and it is in the slightly varying form we are obliged to give the converse of any statement that we often find the most important bearings of the truth therein expressed. Motion is convertible into heat. Heat is convertible into motion. Keep clear of modification, and you may make one statement the converse of the other, but bring in defining terms, and this is impossible, for *all* motion may be changed to heat, and *some* heat only may be changed to motion. This mutual and unequal exchange is going on every day, every hour, every moment. Now as force can no more be created than it can be destroyed, there will be, apart from miracle, no more force in the universe millions of ages hence than there is now. But all that time one kind of force will be constantly changing itself into another kind of force, and at last it is evident the change must be accomplished, and all the force in the universe will be of one kind.

To understand the full bearing of this fact, we need only remember that what the very existence of organic nature depends on,—in fact, what the very word *natura* means—is transformation

of force. The simplest experiences show us as clearly as the most elaborate experiments that every time any force becomes manifest to our senses it is transformed. Again take the case of heat. What has happened when we warm ourselves? What does the sensation of warmth mean? If it were not for the sunshine, we should be forced to realise that every time we warmed ourselves something was expended. Two people feel cold on a winter's day; one takes a brisk walk, the other sits by the fire, but the empty coal-scuttle reminds the indolent person that in order to give him warmth something has had to give up its substance, apparently to give up its existence. Two different forces here have been changed into heat; the essential thing is the change. We might perish of cold in a coal-mine; the coal itself, apart from the change which combines it with the oxygen of the atmosphere, is valueless to us. And we must not suppose that the necessities of animal life are the only claims made on the transformableness of force. Every natural event is such a claim. In fact, nature *is* the transformation of force. This idea includes all the varying senses of that word. There is no part of nature that is not a transformation of force; there is no transformation of force that is not a part of nature. The supernatural, alike for those who believe and disbelieve in its existence, is the region above this cycle of interchange,—the region where something may be achieved and nothing expended, something given and not lost. And the region where this is impossible, whether in the world of matter or of spirit, is nature.

The want of perfect reciprocity between the various physical forces is, therefore, undermining the stability of our system. Heat will do no work, even in a theoretically perfect steam-engine, without squandering itself on the atmosphere all round it, and there is no corresponding liberality by which this lavish giver may be reinstated in the full working power thus lost, for we must remember that what we want to produce motion is not only heat, but unequal heat. We can get no more work out of equal heat than out of level water, and the continual tendency of heat is to become equal. "Heat," say our authors, with epigrammatic felicity, "is, *par excellence*, the communist of our universe, and will no doubt ultimately bring the system to an end." For this want of reciprocity between heat and movement is not confined to our globe; the sun himself is squandering his heat, and must change first to an icy mass, then to the material of a new conflagration, then, again, to the particle of a new cold globe, exceeding it in vastness as much as our globe exceeds a clod of earth, and then, perhaps, if we have rightly understood the authors' views of matter and ether, into an invisible and intangible form.

We find ourselves, then, face to face with an ultimate destruction of the universe:—

> "All worldly shapes must melt in gloom,
> The Sun himself must die,"

has become a teaching of science. The dream of poets has become the certainty of physicists. The day draws near when "the heavens shall pass away with a great noise, and the elements shall melt with fervent heat; the earth also, and the works that are therein shall be destroyed." No doubt, we are separated from that event by millions of ages, still *those millions of ages will pass.*

Now what the study of nature impresses indelibly on the mind is the lesson that nothing is lost. Destruction to the man of science means change. The end of one thing means the beginning of another. Where the stream vanishes beneath the earth he, like another Alpheus, is ready to follow his Arethusa to her escape, whether under a colder or a brighter sky. When he learns, therefore, that all that we mean by nature is hastening to its tomb, can he make the fate of nature one vast exception to the whole teaching of nature? Or may we not say, somewhat exaggerating our authors' over-timid statement of their aim, that the laws and the prospective fate of the visible universe together suggest the belief in one which is invisible?

If it be asked,—What is an argument worth which can be stated only as a suggestion? we should concede that it proved nothing in either a mathematician's or a lawyer's sense of proof. But we should urge that most of the considerations which induce deep and abiding belief are not proof in this sense. No book is richer in such suggestions than Butler's *Analogy*, but it proves nothing to the mere logical ear. It is hardly fair to the work under notice to compare it with one so mature and thoroughly thought out, but the most different kinds of intellectual effort may be grouped together when the aim is alike, and the present work, no less than its immortal predecessor, is an effort to show that the "Constitution and the Course of Nature" presents an analogy to something outside nature. Analogy, we believe, is the largest agent in all change of belief. "I refused to listen to this *kind* of evidence yesterday, and was wrong,—had I not better try to-day if it proves a true guide?" is the form generally assumed by the reasoning, conscious or unconscious, of all those who have sufficient depth of character to profit by the teaching of experience. Analogy may be a deceitful guide, as we are reminded by one who has profited most from it, and at the strongest, it never rises to certainty. Still it is the intellectual inlet to all new truth. The mistakes and successes of thinkers alike remind us that it is the seed of science. When Comte forbade the attempt to assimilate the laws of light and of motion, he was, like some of our authors' critics, restricting a generalisation to a set of phenomena beyond which he knew of nothing but analogy to extend it. When Newton first endeavoured to assimilate the laws of weight and of planetary motion, he was, like our authors, extending a generalisation to a set of phenomena beyond which he knew of nothing but analogy to extend it. Of course, while the theory of gravitation, for instance, *rested* on analogy, it was not a part of science properly so called, and it is at this stage that we must compare it with the view under notice. But still the extension of a principle found to hold good on this earth to the heavenly bodies before the discovery of any property common to both, is exactly parallel to that extension of the principle of continuity to a region other than that of nature which is attempted in this volume.

Do we, then, anticipate that our author's suggestion will ever take its place, for instance, beside the theory of gravitation? We have no such anticipation for any theory that assumes the existence of a spiritual world. As long as it is possible to ignore all direct evidence for such a world, so long will it be possible to declare all indirect evidence fallacious. Not thinking a conclusive argument possible, we do not think the present a failure because it is something less. We are not prepared to say exactly what it is worth. The idea of the destruction of the universe is too new and too large for any one to attempt to measure its influence on thought. It will, we believe, ultimately shut in the instinct that seeks permanence to some non-physical region; it will make men ready to listen to every whisper that tells of an enduring world other than this, which we know of through our eyes and ears. Just as the decay of national life during the first preaching of Christianity developed the sense of individual immortality, by detaching this instinct of continuity from the national life which had hitherto satisfied it, so we believe this wider sentence of destruction will prepare many ears to listen for a new promise of resurrection. On those who hear no such faint whisper anywhere, we do not suppose this argument, or any of like nature, will have any effect whatever.

AN AUSTRALIAN NOVELIST.*

We can hardly recommend ordinary readers of fiction to get and peruse the terrible and tragic story of an innocent convict's life, which Mr. Marcus Clarke has here told for us, with a grim fidelity to the natural history of convict ships and penal settlements which is as revolting as it is unquestionably powerful. From the first chapter, in which the 'Malabar' sets sail with her crew of wretched malefactors for Hobart Town, to the last, in which the innocent convict escapes from his torture-prison only to find his fate in the foundering of the 'Lady Franklin,' Mr. Marcus Clarke paints for us with a frightful realism, which makes it impossible not to see vividly the scenes he describes, the incidents of a society in which crime and vice, crowded together in foul decomposing masses, fester and ferment on the one side, and coarse authority, petrified by routine into hardness and indifference, or brutal and insolent courage, proud of its unflinching nerve in the presence of cowering guilt, tyrannises and tramples on the other side. Mr. Clarke's familiarity with all the most humble details of the life of a penal settlement is far too minute, and his power of reproducing them far too graphic, to render this powerful book fit for general perusal. It ought, however, to be read by all who, while they care for literary power, are not afraid of grim detail, and by all who still advocate the establishment of penal settlements at a distance from the wholesome influence of an opinion which has neither grown apathetic through long habit to the horror of crime, nor incredulous of the hope of humanising the outcasts of society. It should be translated into French, for the warning of those French statesmen who are developing the penal settlement in New Caledonia, and read by the Indian statesmen who are creating in Port Blair "a Port Arthur filled with Indian men, instead of Englishmen." It is next to impossible that any penal settlement

* *His Natural Life.* By Marcus Clarke. 3 vols. London: Bentley and Son. 1875. Another Edition. Melbourne: George Robertson. 1874.