words grateful to his regal papa, always anxious about his Army and Navy.

As to the working branch, the wonder is that, at a time when siege operations were so common, a regular corps was not formed at a very much earlier period. The Sappers and Miners were accidentally born of the exigencies which arose out of the fortification of Gibraltar. In 1772, a small regular company was substituted for the hired artisans who were under no control. During the great siege, which began in 1779, the "Military Company of Artificers" was augmented, and some years after its victorious close, companies were raised and established in England; and these formed the basis of the Sappers and Miners, a title the Artificers acquired in 1813, so that they were really the offspring of the experiment made in Gibraltar. At the close of the Napoleonic wars, we seem to have been fairly supplied with them; but the peace broke down the engineer as it did all other organisations, and this essential force was not brought up to something like efficiency until our own day. General Porter, of course, while narrating the military history of his corps, explains all the changes which befell it from time to time, and the story is a commentary on the small influence which foresight has exercised over the constitution of our Army,-always, except under Cromwell, and even now, to a great extent, a thing of shreds and patches.

At this time of day it is not in the least necessary to dilate on the value of the Royal Engineers. In an age of science they are bound to stand in the van, or they could not carry on the varied employments which have naturally fallen to their share, not only in war or in military labours, but in peace and matters purely peaceful. In the latter sphere they were not employed until after Waterloo; but we all know how much they have since done,-the great surveys alone all over the world are a title to honour. In our day, also, the curious prejudice which excluded them from command has been broken down. On the Continent, engineers and artillerymen were employed like the officers of infantry and cavalry, but not with us; and a scientific training only ceased to be a bar after the Crimean War. If no amount of education can make a great captain, every born great captain who obtains it is made greater thereby. He can only go to the limit of the faculties which he brings into the world with his baby-breath, but he can cultivate and develop those faculties to the full extent. More or less, soldiers of all arms nowadays who are to command must know their trade from bottom to top, and there is no reason why an engineer or a gunner should not be the man wanted. At all events, the best man should be selected, whatever may have been the arm in which he was trained.

One story in this book, told on the authority of Sir John Cowell, who had it from Sir Frederick Stovin, is so fine an example of reticence, and at the same time so dramatic, that we cannot refrain from repeating it. The incident occurred after the death of Pakenham, and the disastrous repulse before New Orleans:—

"The troops were ordered by General Lambert to retire out of fire, and a council of war was held to decide on future proceedings. This council was assembled in a cottage, little more than a hut, and on a table in the centre of the room lay the body of an officer of the staff covered with a sheet. There was no other place in which to meet, and the members of the council stood around the body. News had just reached them that the [American] battery on the opposite side of the river had been captured, and was ready to act if the attack were renewed. In spite of this success, the decision of the council was to abandon the undertaking and retreat to the ships."

Burgoyne brought off the detachment from the right bank of the Mississippi, and it was supposed that he was the man who advised retreat; yet, although his voice was urgent for action, he bore the reproach in silence, nor did his comrades clear him. The vindication has now come. The "body" was that of Major Stovin, hastily given over for dead, but not dead. "Whilst the council were in debate, he recovered consciousness, and heard all that passed." Stout Burgoyne never said a word; but when all the members of that council were dead, Stovin spoke to friends in confidence, and now the strange incident is authoritatively recorded. What an example of reticence, fortitude, and good-comradeship, and how noble Burgoyne's share in the drama!

TWELVE YEARS' TRIAL OF THE VIVISECTION ACT.*

FEW volumes contain more that is saddening than the little pamphlet of twenty-two pages with this title, which we would commend to the notice of our readers. Many among them will remember the passing of the Act, twelve years ago, which would, it was hoped, prevent any torture of animals at the hands of men of science within the realm of English dominion. Unless such accounts of experiments as are given in this pamphlet should be refuted, that hope must be almost surrendered. Most thankfully should we welcome any evidence tending to this refutation; but what form it could take we cannot even imagine. The descriptions here given of experiments by Dr. Roy some years ago, by Drs. Phillips and Bradford in 1887, Drs. Sanger Brown and Schäfer in 1888, Dr. Pye Smith for six years previous to 1887, Drs. Lauder Brunton and Theodore Cash in 1884, and many others, are all taken from their own accounts, in various medical journals. If there be any exaggeration in these accounts, it must be the work of the experimenters themselves. We have no intention of inflicting these descriptions on our readers; they will take our word for it that all the experiments to which they refer occasioned what would be called, if human beings were concerned, excruciating torture. Anæsthetics, were they always used, and could we hope they meant more than the mere pretence which "M.R.C.S." pronounces them, would prevent but a small part of the pain. A considerable proportion of medical investigation at the present moment consists of the production of disease, in which the mere puncture of inoculation may be a trifle, while the disease itself is sometimes acute and prolonged suffering. And, more-over, the experiments (as in the case of Ferrier upon the brains of monkeys) often last so long — one is mentioned as enduring "for more than seven months"-that the few minutes of the actual operation seem hardly worth consideration in comparison with what follows; and we can feel no confidence that any one accustomed to witness such protracted sufferings would take pains to secure real insensibility (no easy matter when dealing with creatures who do not co-operate in the effort) even in those moments when the pain is most acute. "We know," says "M.R.C.S.," "that no more than a mere whiff of chloroform dare be given in conjunction with curare, or the animal would die," and curare does seem generally used in these operations.

It will be conceded, we fear, by every one who believes our account and cares about the matter, that the state of things does not appear much better than it would have been if no Act at all had been passed on this subject. The only advantage secured, as far as we can see, is that no person can perform these experiments, or at least record them, without convincing the Home Secretary that he expects some gain to Science as likely to result from them. But as almost every experimenter would think that some scientific value attached to his work, that is not saying much.

The difficulty of calling public attention to this matter is that on the one hand sensitiveness is deadened by a sense of secure remoteness, and on the other by the absorbing interest that throws all else into the shade. The sufferings here described are never witnessed except under the very strongest temptation to disregard them. An ordinary person, not belonging to the medical profession, is absolutely certain that he will not, in any case, come unawares upon the spectacle of an animal under vivisection; while those who do witness this spectacle observe it under the strong pre-occupation of research, and are deaf and blind to all but the knowledge they hope to We are all apt gain, and the discoveries they hope to make. to feel as if suffering which we know that we shall never witness were in another hemisphere,-something that we had nothing to do with. And then, again, every one who does witness the suffering is fortified against compassion by motives that are just as strong with the humane as the cruel. Putting out of the question any other consideration, every student of physiology hopes for the kind of distinction most appreciated in our day, and there is no mental stimulus more powerful than the hope of fame. It is connected with what is highest in human nature, and also with what is lowest. All selfish feeling responds to the call, and so does a great deal that is

[•] Tuelve Years' Trial of the Vivisection Act: has it Stopped the Scientific Torture of Animals in England? By "M.R.C.S." London: Swan Sonnenschein, Lowry, and Comp.

most remote from selfishness,—for perhaps none ever desired fame who did not aim at deserving it. When on the one side there is this overmastering impulse, and on the other is the suffering of a creature who cannot use any argument for itself, and whom the student may deprive even of the power to utter a cry, it should not be considered that we make any imputation on him in refusing to accept his estimate of the thing which he observes only under this temptation to minimise its significance. We merely assume that he is not exceptionally free from the limitations of ordinary humanity. The scientific view of the suffering inflicted by him should be checked by a knowledge of that pain in minds not steeped in the atmosphere of eager anticipation, and influenced by the strongest intellectual stimulus known to man. It is this which we would urge on our readers. We have no hope that we could induce a single person who does not care for the suffering of animals, to consider it by any representations or descriptions of ours; and, in fact, the question of vivisection does not appear to us a good opportunity for any endeavour to create that sympathy where it does not already exist in some degree. All we would urge is, that if it is right to do these things, it is right to know what they are,-and right that persons who stand outside the engrossing interests of those who do them, should know what they are. To rouse ordinary persons to a duty so painful, is indeed difficult; but it should not be impossible, if the promise, "Thou shalt be blessed, for they cannot recompense thee," be no exclusive privilege of our species, but (as we believe) the enunciation of a universal law.

THE MAGAZINES.

WE have already noticed the principal article in the Nineteenth Century, the defence of her opinions by the authoress of Robert Elsmere; but the number, though it contains nothing striking, is full of good papers. Mr. Plimsoll returns to his favourite subject, the protection of sailors and ships from loss at sea, dwelling this time on the pecuniary damage to the country inflicted by our carelessness in not securing that ships shall be thoroughly well appointed. He estimates this loss, apparently on sound data, at twelve millions a year, and implores all commercial men, as well as all good men, to put a stop to it. He attributes much of the loss to the practice of allowing owners to insure their ships for more than their value, and calls upon the Legislature to prohibit that practice first of all. Of course, the article being Mr. Plimsoll's, it contains a great deal of watery sentiment; but there is a great deal of sense in it too, and we do not ourselves see where a complete answer is to be found. Certainly there can be neither justice nor wisdom in allowing an owner to insure his vessel, as in many of the instances quoted by Mr. Plimsoll, to double its value. That must be an encouragement to carelessness, if not to fraud. -Dr. Wace continues his controversy with Professor Huxley, and certainly, in our judgment, convicts him of either misquoting or misunderstanding Renan; and the Bishop of Peterborough explains his meaning in calling some agnostics cowardly. He did not call them all cowardly; that would be absurd, he says, in the face of Professor Huxley's writings; but he thinks there are cowardly agnostics as well as cowardly Christians, and has in his eye especially a class who escape the difficulties of the pro-blem by saying, "I don't know!" which often means, "I don't care!" Dr. Magee might have added that there don't care!" are a good many "agnostics" who have convinced themselves, or at least think they have, that thoroughgoing materialism is the only truth, but who conceal their conclusion from fear of the social consequences which still, outside London, fall upon those who openly profess a disbelief in God. There is surely cowardice in that attitude, though we should admit, as fully as the Bishop does, that many agnostics, probably a majority of those before the public, were even haughtily sincere. It is a symptom of the time, however, that negative theology is becoming so far popular that it is attracting hypocrites, men who are only agnostics because they fancy that to believe is somehow unintellectual.-Mr. Lucy, with his immense experience of the actual working of the House of Commons, declares that the new rules have greatly improved procedure, but that it is still indispensable to abolish the debate on the Address, and to allow business to go on from Session to Session, though not from Parliament to Parliament.

That would be an immense change, and it deserves much more consideration than it has received; but Mr. Lucy does not dispose of the argument that it might stop legislation altogether. It is the fear of a lengthy Session which now enables Government to pass its Bills, and that fear would be removed or greatly decreased.—Mr. Myers's essay on "Tennyson as Prophet," contains some admirable writing, open mainly to this cavil, that it is a pity in criticism, which, however scientific in reality, should be literary in form, to employ strictly metaphysical terminology. It cannot always be helped, but it always impedes the general acceptance of what else might be popular thought. More is gained, we fear, towards inspiring conviction by sentences of restrained, yet intelligible satire, like this description of the Comtist philosophy:—" Never have we come nearer to 'the grin without the cat' of the popular fairy tale than in the brilliant paradoxes with which some kindly rhetorician—himself steeped in deserved prosperity-would fain persuade us that all in this sad world is well, since Auguste Comte has demonstrated that the effect of our deeds lives after us, so that what we used to call eternal death—the cessation, in point of fact, of our own existence-may just as well be considered as eternal life of a very superior description." With Mr. Myers's general view of the Laureate as the poet of spiritual hope, we fully coincide; but do not see that to take that view requires any great earnestness of study. ---- Mr. Knowles makes the noteworthy suggestion that instead of adding a Monumental Chapel to Westminster Abbey, the Cloisters, which are, in fact, parts of it, should be utilised as a Pantheon, the green space in the centre being used occasionally for the actual interment of the illustrious dead. This suggestion, which would, in the architect's opinion, afford space for at least another century, is one for experts, but it is one which, on the ground of economy alone, is worthy of serious consideration. To that which Mr. W. Morris sends as Secretary of the Society for the Protection of Ancient Buildings, we cannot accord the same praise. He would substitute for the religious chapel a Pagan hall, with a loggia as entrance, and so destroy the whole idea of the Abbey. He says :- "We may venture to suggest as a body interested in architecture generally (though some of our detractors will not allow this), that the form which such a building should take ought not to be that of a 'chapel,' which implies an altar and ritual-things which might hurt the susceptibilities of some of the successful competitors—but rather of a long hall with a loggia as covered entrance to it." All interested in emigration should study carefully Mr. Tuke's report on the prosperous condition of the emigrants whom he has helped to send from the most congested districts of Ireland to Minnesota. He has now sent away ten thousand persons—unhappily, a mere drop in the ocean—and so great is the desire to emigrate, that hundreds of families have within the last few weeks sailed for South America, to a land they know nothing of, populated by a stranger people, being attracted solely by the free passages offered by the Argentine

The March number of the Contemporary Review is unusually dull. There are papers of value, the best, perhaps, being Mr. E. Whymper's on "The Panama Canal;" but there is nothing to which the ordinary reader seeking entertainment will turn with hope, unless, indeed, he is of a kind to be attracted by Canon Wilberforce's sentimental wish-wash about the Christian duty of surrendering Ireland, in the name of "love," to be governed by the nominees of the National League. Mr. Wilberforce believes that there is something divine about a majority, that "movements wakened into activity from the central fires of a nation's heart are finally irresistible;" but he accords no reverence to a majority if it is Unionist, and would despise the "fire" in England's heart if it flamed up at the thought of a bitter humiliation. He even ventures to say:-"The intellect, the wealth, the social rank of Judæa combined against the claims of Him whom the common people 'heard gladly,' and the inspired narrative affords an impressive example that the instincts of the less well instructed masses, when in direct opposition to the classes, the professions, the ecclesiastics, can be right." Canon, one would think, might have remembered that it was because of the cry of the common people that Christ was executed, in opposition to the cold judgment of the Roman gentleman, and that the Jewish masses, so far from accepting