

THURSDAY, APRIL 12, 1883

THE VIVISECTION BILL

THE failure of Mr. Reid's Vivisection Abolition Bill on April 4 affords cause of congratulation to all who are interested in science, although it is perhaps to be regretted that the Bill did not come to a "division" instead of being "talked out." Scientific men must be pleased because one more attempt of ignorance to stop the pursuit of knowledge has been defeated. But, more than this, the failure of the Bill is a boon to all who care for their own health, for that of their families, and for the welfare of society at large. Had it passed it would not only have stopped all experiments in physiology, pathology, and pharmacology in this country, but it would have rendered impossible the detection of crime by the application of physiological tests. Had this Bill been law at the time of the trial of Lamson for poisoning by aconite, his conviction would have been impossible; for although chemical evidence pointed to aconite as the poison used, the tests for it were not sufficiently distinctive to have justified his conviction on chemical evidence alone, and it required to be corroborated by physiological evidence. This was afforded by the injection of the substance obtained from the stomach into some small animals. As these died presenting all the symptoms of aconitine poisoning, the chemical evidence was confirmed, and the poisoner was accordingly convicted.

Under the present law, considerable delay was caused before a certificate could be obtained to allow these experiments to be performed, but if Mr. Reid's Bill had been law, they could not have been performed at all; and secret poisoners secure of immunity might have become as common in this country as they were in the days of the Borgias.

To understand thoroughly the effect of the Bill upon medical science and practice, we must imagine to ourselves what would occur if experiments were stopped not only in this country but in others; for it is not alone in this country that the opponents of vivisection are active; they are endeavouring to stop it as far as they can in America and on the Continent also.

Last week we published some facts and considerations regarding vivisection and its relations to medicine, issued by the Association for the Advancement of Science by Research. The data there contained we should think were sufficient to convince any reasonable person of the advantages that medicine has derived from experiments on animals. But it is curious to notice the way in which they are regarded by anti-vivisectionists. Finding themselves in many cases unable to deny the advantages of the knowledge which has been obtained by experiments, they say this knowledge might have been got without experiments, and so it might, if man had been differently constituted. But being as he is, there is no royal road to knowledge, and he must take the only one which is available for him—that of experiment.

As Mr. Cartwright pointed out in his speech, if experiments on animals are prohibited, experiments must be made on human beings, and in their rudest form. The contrast between such rude popular experiments on man

and scientific experiments on animals was illustrated in a speech of Dr. Lyon Playfair in reference to these two kinds of experiments on cholera. The first experiment was tried on 500,000 human beings in London, who were supplied with water contaminated by choleraic discharges with the result that 125 out of every 10,000 consumers died from the effects of the experiment. In two other experiments made by another water company, 180 died in the first experiment, and 130 in the second, out of every 10,000.

These popular experiments on a large scale involved the sacrifice of half-a-million human beings. In contrast with this may be taken the scientific experiments made upon animals by Thiersch and others. These experiments were made on 56 mice, 14 of which died from the choleraic discharges. These were not mixed with water accidentally or carelessly, as in the popular experiment, but were administered under definite conditions, and the effect watched. The results of these experiments showed that water contaminated with choleraic discharges was deadly; the water so contaminated was avoided, and an epidemic was escaped.

The common-sense conclusion on the whole matter was expressed by the Home Secretary, who said that he disliked as much as any man in the House the infliction of pain upon animals, but felt satisfied that under the administration of the law at present there was very little pain inflicted upon animals, and that pain was inflicted under such circumstances as to guarantee that it was not wantonly inflicted, but that it had occurred in the course of experiments that were abundantly justified for the benefit of humanity at large. As a guarantee that no experiments shall be performed that are not abundantly justified, Sir W. Harcourt has made the agreement with the Association for the Advancement of Science by Research, that, "if they will undertake the task of reporting to him upon the experiments, he will undertake that no certificate shall be granted except on a previous recommendation from them." This Association is a representative body of the whole medical profession, being composed of the Presidents of the Royal College of Physicians and Surgeons of London, Edinburgh, and Dublin, of the Royal Society of London, of the Medical Council, and of all the chief medical associations and societies, along with some others specially elected. It would be difficult to imagine a body better adapted for the purposes of maintaining the high character of the profession for humanity, by preventing any wanton infliction of pain upon animals by experiment, whilst at the same time preventing the serious consequences to human health and life which would ensue if properly devised experiments were prohibited by ill-judged and excessive care for animals.

THE BRITISH NAVY

The British Navy: its Strength, Resources, and Administration. By Sir Thomas Brassey, K.C.B., M.P. Vols. I., II., III. (London: Longmans, Green, and Co., 1882.)

THE three volumes of this work already given to the public by Sir Thomas Brassey are to be followed by three others; but as these are to contain reprints of speeches and publications on naval affairs it is preferable

to notice separately the first half of the series, which is complete in itself. No better description of the scope and intention of the book can be given than that appearing in the Introduction, where it is described as "a comprehensive summary of all that has hitherto been published, whether in England or abroad, concerning the most important fighting vessels of modern times." It is avowedly a compilation rather than an original work, and Sir Thomas Brassey has rendered a most valuable service to all persons interested in naval affairs by undertaking the very laborious task now completed. He states that it has extended over twelve years, and it must often have seemed as if the end would never be reached in view of the rapid progress being made in naval armaments, and the large number of publications which have appeared in recent years dealing with war-ships, their armour, armament, and equipment. To keep abreast of this progress, and at the same time to retrace the history of war-fleets during the last quarter of a century, must have been a most arduous undertaking, and the author of these bulky volumes must be congratulated on his industry and perseverance. As the result he has produced an unrivalled book of reference, which should be in the hands of all naval officers, ship designers, shipowners, and administrators of naval affairs.

It is a singular fact that until this book appeared English readers had to turn to foreign publications for the best accounts not merely of foreign navies but of the British Navy. There was no English rival to the books produced by Dislère or Marchal in France; by Littrow, Brommy, or Kronenfels in Germany; by Von Tromp in Holland; and by King or Véry in the United States. Scattered notices in the press, meagre Parliamentary papers, the scanty facts respecting H.M. ships given in the Navy List, and the special information afforded by Reports of Commissions or Committees were the best sources of supply open not merely to the general reader but to most naval officers. Sir Edward Reed, in 1869, dealt with the general problems of armoured construction in "Our Ironclad Ships," but the character of that work excluded the detailed descriptions of individual ships and the statistics of various fleets which are most needed in discussions of the relative powers of maritime countries. This want in English literature Sir Thomas Brassey has admirably supplied. His book is better than all its foreign predecessors, and this may be said without offence, seeing that he has been able to draw freely from them, frankly acknowledging his indebtedness. Coming later into the field, he has also been able to add much valuable information not to be found in the earlier books; while in style of production, wealth and beauty of illustration, and moderate price, the "British Navy" stands alone. It is only proper to mention that Sir Thomas Brassey has evidently desired to secure a wide circulation for his book among naval officers, irrespective of the cost of production; and it is to be hoped that his wish will be realised, for it is clearly of the utmost importance that those who have to fight our ships should be well informed as to the characteristics of the ships with which they may be engaged.

Like all compilations this book requires very careful reading. The author gives, in every case, the fullest detail as to the authority from whom he is quoting; but

he does not compare or correct various statements on the same subject, or attempt to appraise the relative value of the opinions of the writers from whom he quotes. This is left to the reader. A careless or hasty consultation of the book might therefore lead to wrong conclusions, and a word of warning on this point may not be out of place. For instance, one may find in close succession statements by Admiralty officials, or private shipbuilders who have designed and constructed foreign vessels, or officers of foreign governments—all of which are to be reckoned authoritative—and statements by anonymous or unofficial writers in various publications—some of which, at least, are of doubtful authority. The reader should turn, therefore, in all cases to the admirable "List of Authorities" in order to make sure whose opinions he is studying before adopting them.

Sir Thomas Brassey undoubtedly did wisely in not attempting to reconcile or correct the various statements which he has summarised. Had he done so before accepting office at the Admiralty, the task would have been beyond his power of accomplishment even for the Royal Navy, since it could only be performed by the freest use of official records; and for foreign navies the difficulties would have been obviously greater. As a matter of fact, before the publication of the book took place the author had accepted office as Civil Lord at the Admiralty, and thus had an additional reason for avoiding the difficult task. He is careful to explain that the publication is in no sense an official one, the work having been far advanced before he went to the Admiralty, and having been completed on the lines previously laid down.

This is only one of the many incidental illustrations of the magnitude of the work done, and the difficulty of bringing such a book up to date. For instance, in the second volume, issued in 1882, the author has to explain that the figures given for the naval strengths of various countries date from 1879. Again, the descriptions of progress and experiments in armour and guns, full as they are, necessarily leave unnoticed many important events of recent occurrence which must affect future war-ship construction. Even if a new edition could be produced speedily, and quite up to date, it too would soon need additions.

The author has had many reminders of the fact that although his book is announced as "unofficial," it may be used as an aid to criticism of the action of the Board of Admiralty, of which he is a member. Admiral of the Fleet Sir Thomas Symonds, and other advocates of a more energetic policy in naval affairs, have found many arguments in support of their views in these volumes. Into this controversy we have no intention to enter, but it may be observed that Sir Thomas Brassey, who must be as familiar with the facts as most persons, remarks that, "On a general and dispassionate review of our position, we are led to the conclusion that the naval power of England, in all the vital elements of strength, is greater now than in any former age." This may be true, but Sir Thomas Brassey would also be the first to admit that continued and strenuous efforts are required in order that this position may be maintained.

The first volume is chiefly devoted to armoured ships; a brief description of unarmoured ships being appended. Elaborate tables of the dimensions, speeds, cost, thick-

nesses of armour, weight of guns, &c., are given for the navies of the world; numberless diagrams and drawings also appear in illustration of distributions of armour, arrangements of armament, character of structural arrangements, design and position of propelling machinery, &c. Besides these there appear a large number of very beautiful woodcuts of typical ships, from designs by the eminent marine artist, the Chevalier de Martino, who was formerly an officer in the Italian Navy, and possesses a seaman's knowledge of ships in addition to his ability as a painter. These diagrams, drawings, and tables taken alone are of the greatest value, and if published separately in a handy form ought to command a large circulation. Sir Thomas Brassey would add to the debt of gratitude we already owe him if he undertook the issue of such a publication, rivalling the French "Carnet de l'Officier de la Marine," or the Austrian "Almanach für die Kriegs Marine."

The second volume deals with "miscellaneous subjects" of great interest and importance. Amongst these are a fuller discussion of unarmoured ships, of torpedoed and torpedo boats, harbour defence and coast defence ships, the employment of mercantile auxiliaries on war services, and many other topics. Amongst these none exceeds in importance the discussion of the possible employment of our merchant steamships in time of war. The means for securing the aid of these vessels when the necessity arises, and of best equipping them, require the gravest consideration. Already something has been done in this direction by the Admiralty, but much more yet remains to be done, if at the time of need the best of our unrivalled merchant ships are to be available for the defence of the mercantile marine or the many other services on which they might be employed.

The third volume is devoted to a summary of opinions on the shipbuilding policy of the Navy. It is in some respects a curious collection, but will well repay a careful study. The classification by the author of this mass of opinions greatly assists the reader. Unanimity on any point is scarcely to be hoped for, and is not to be found; but the reader will find ample suggestion and food for reflection. The advocates of small ships are fully represented; the designers of the *Italia* and *Lepanto* have their views set forth. Those who believe in armour-protection, and those who think it should be abandoned, obtain an equally fair audience. And in these, as in most other matters, the author gives little or no prominence to his own opinions.

Sir Thomas Brassey has given many proofs of his devotion to the naval interests of this country during his Parliamentary career; but by the publication of this work he has established a claim on the gratitude of all classes of English readers who take an interest in naval affairs.

W. H. WHITE

OUR BOOK SHELF

Camps in the Rockies. By W. A. Baillie-Grohman. Map and Illustrations. (London: Sampson Low and Co., 1882.)

MR. BAILLIE-GROHMAN has already made himself known as an intrepid hunter, a close observer of nature, and a charming raconteur. In the volume before us he shows no falling off in any of these points, and seems quite as

much at home among the parks and peaks of the Rocky Mountains as he is among the chamois-haunted precipices of the Tyrol. The present volume is the result of more than one visit, mainly for sporting purposes, to the Far West, between the Yellowstone Park and Utah. Of the wild life of the ranchers and hunters of the region he has much to tell, and many exciting stories of his own hunting experiences. He adds, moreover, not a little to our knowledge of the topography, geology, and natural history of a region, of many parts of which we yet know little. On the Cañons of the Colorado region he has some interesting notes. We shall be pleased to have another such book from Mr. Grohman.

Physics in Pictures: the Principal Natural Phenomena and Appliances Described and Illustrated by Thirty Coloured Plates for Ocular Instruction in Schools and Families. With Explanatory Text Prepared by Theodore Eckardt, and Translated by A. H. Keane, M.A.I. (London: Stanford, 1882.)

THESE plates are somewhat rough and occasionally violent in colouring, but perfectly trustworthy, and well calculated to interest young people and convey to them a clear idea of the elementary scientific truths intended to be illustrated. The accompanying text gives all the explanation necessary. The plates embrace a wide field of subjects in mechanics, navigation, magnetism and electricity, sound, optics, photography, colours, spectroscopy, &c. We hope the collection will find its way into many schools and families.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to insure the appearance even of communications containing interesting and novel facts.]

Unprecedented Cold in the Riviera—Absence of Sunspots

IN the second week of March Cannes was visited by falls of snow and degrees of cold far exceeding any of which there is previous record. The preceding part of the winter was of average mildness; the minimum thermometer having fallen below freezing only three times, as follows: December 2, 32°; January 24, 29°; January 26, 31·8°. Not once did it fall so low during February; the average minimum being nearly 44°, and the maximum in shade 56°, and was apparently steadily rising with the approach of spring. The following notes are extracted from my diary:—

February 28.—Thermometer, minimum 46°·6, maximum 58°·3; ¹ barometer 29·65. Day fine. Wind W., calm. No spot on the sun.

March 1.—Th. min. 48°·3, max. 58°·3; bar. 29·46. Day fine. Wind N.E., moderate.

March 2.—Th. min. 43°, max. 57°·5; bar. 29·42. Fine, with haze. Wind N.N.E., very strong in p.m.

March 3.—Th. min. 42°·8, max. 55°·3; bar. 29·70. Fine, but strong wind from N.E. Not a spot on the sun.

March 4.—Th. min. 36°, max. 54°·8; bar. 29·70. Wind very strong from N.E. Fine, with cumuli.

March 5.—Th. min. 40°, max. 54°·8; bar. 29·70. Cloudy, nimbostratus. Wind very high from N.E.

March 6.—Th. min. 40°, max. 51°·7; bar. 29·40. Fine, but some clouds. Wind N.E., very high and cold.

March 7.—Th. min. 36°·8, max. 53°; bar. 28·87. Snowed in night in large flakes, and till 10 a.m. to depth of 8 inches. Little wind, N.E. The weight of the snow bowed down shrubs and trees, breaking many. In a large shrubbery in my garden, *Erica arborea*, from 10 to 20 feet high, full of flowers,

¹ Thermometers by Casella. Minimum is placed every night outside an east window of the first floor of my villa, the bulb being protected from radiation. Maximum lies shaded inside the same window, open by day. Barometer, aneroid, by Pillscher.