

## EDUCATIONAL REFORM.

MR. H. A. L. FISHER, the new President of the Board of Education, has not wasted much time in submitting his proposals for educational reform to the Cabinet, with a view to immediate legislation. The most urgent and necessary demand is that the compulsory school age for the children of the elementary schools shall be made effective until the age of fourteen at least is reached, and that all exemptions permitting the child to escape from school before that age shall be abolished. One of the greatest impediments in the way of this long-needed reform is to be found in the half-time system which prevails almost entirely in the well-paid textile districts of Lancashire and Yorkshire, to the abolition of which, despite the pleadings of trade-union leaders and of the Workers' Educational Association, the majority of the workers and even some employers are steadily opposed. It is a case where the Government ought to ignore merely political considerations in the best interests of the child and of the nation as a whole, and take a strong lead. Those concerned with this vital reform must either convert their constituents or urge the Government to immediate and drastic action.

The question of the number and efficiency of the male teaching staff of the elementary schools is scarcely less significant and urgent, especially as there would be a very large accession to the number and quality of the pupils if all exemptions were abolished and the compulsory school age raised to fourteen, thereby retaining in the schools the cleverer pupils, who by reason of their ability have hitherto been allowed to leave school at an earlier age than the average scholar. Such children, where they are boys, will need as they approach adolescence more of the experience and control of the trained male teacher, whose numbers, if the schools are to be maintained effectively, must be materially increased.

But to secure such a body of trained and educated men (and the estimated number required is not nearly sufficient, especially if the size of the classes be largely reduced, as it should be), the attractions of the profession, alike in respect of status, salary, prospects, and pension, must be greatly improved. The measures above mentioned will inevitably result in a demand for a better quality of teaching and of education for the scholars, and will react favourably upon the secondary school and its work, inducing a larger number at an earlier age to seek its advantages. These changes will require a much larger expenditure; now is the time to embark upon it, and it is to be hoped that Mr. Fisher, with his wide educational experience and authority, may be able to induce his colleagues to view them with sympathy and Parliament to give them immediate effect.

## PRODUCTION OF IRON AND STEEL IN CANADA.

THE Canadian Department of Mines has issued the usual advance chapter of the annual report dealing with the production of iron and steel in the Dominion in 1915, and simultaneously an approximate estimate of the production of iron, steel, and coal in 1916. It appears from these statistics that the output of iron and steel has increased considerably in both years. The total production of pig-iron for 1916 is given as 1,046,185 long tons, as against 815,870 long tons in 1915, and 699,256 long tons in 1914, the pre-war level being thus exceeded. The steel production for 1916 is also the highest on record, namely, 1,270,969 long tons of ingots and 27,356 long tons of direct castings, as against 876,591 long tons of ingots

and 27,739 long tons of direct castings in 1915. It is very interesting to note that in 1916 no fewer than 39,098 tons of steel were produced in the electric furnace, as against 61 tons in 1915, so that this new process has made important advances, and appears to have found a permanent footing in Canada. A noteworthy feature of Canadian steel manufacture is the large proportion of old scrap that is worked up, this amounting to about 55 per cent. of the pig-iron charged. The ores used in the manufacture of pig-iron in 1915 were 293,305 short tons of native ore, which, together with 623,094 short tons of Lake Superior ore, imported from the United States, were smelted in the province of Ontario, almost wholly with coke imported also from the United States; practically all the balance of the pig-iron was produced in Nova Scotia from Wabana ore, imported from Newfoundland, the imports amounting to 802,128 short tons.

The coal production of Canada for 1916 is given as 14,365,000 short tons, as against 13,267,023 short tons in 1915. The main increase comes from Alberta, being there about one million tons; British Columbia shows an increase of about half a million tons, and Nova Scotia a decrease of practically the same amount.

THE "SEI" WHALE.<sup>1</sup>

THE profusely illustrated monograph before us is the second of a series, the first of which dealt with the Californian grey whale, *Rhachianectes glaucus*. In the same thorough way that he initiated in describing *Rhachianectes* Mr. R. S. Andrews now deals with the rorqual, *Balaenoptera borealis*. The result of his work is a much larger volume, which is due, first, to the greater mass of information which has accumulated concerning the better-known *Balaenoptera borealis*, and in the second place to an appendix in which Mr. Schulte publishes the data acquired by the investigation of a young foetus of this whale. The two sections are approximately equal in length.

The author uses throughout the vernacular name for the whale which is common among the Norwegians, slightly anglicising it from "Sejhval" to "Sei Whale." This, he maintains, and with justice, is less cumbersome than the really pseudo-vernacular term of "Rudolphi's Rorqual," which finds a place in so many English treatises and memoirs. The origin of the Norwegian whalers' name is derived from the fact that this rorqual, formerly at any rate, arrived upon the coast of Finmark in company with the "coalfish," known to the fishermen as "Seje." From this it will be rightly inferred that the fishery of this whale is prominently a Norwegian industry, and Dr. Andrews takes occasion to deal very fully with the late and well-known Norwegian naturalist, Dr. Collett's exhaustive memoir upon this whale in its various aspects, scientific and industrial; this memoir was published some years ago in the Proceedings of the Zoological Society of London. Dr. Andrews himself acquired most of his first-hand knowledge of *Balaenoptera borealis* at the Japanese fisheries, most of which stations he would seem to have visited.

A comparison of the careful work done at these two regions, so far separated from each other, leads Dr. Andrews to the conclusion accepted to-day by, as we imagine, most persons: that this whale, like so many others, has a vast range in space, and that the occurrence of a given whale in areas so remote mutually

<sup>1</sup> "Monographs of the Pacific Cetacea." By R. S. Andrews. II. "The Sei Whale (*Balaenoptera borealis*, Lesson)." Mem. Amer. Mus. Nat. Hist., n.s., vol. i.

as the eastern Atlantic and the western Pacific is by no means evidence of specific distinctness. The list of synonyms of this whale—and indeed of most—is a proof of the existence of an earlier opinion, promulgated by Dr. J. E. Gray and others of his time, that whales were coped within much narrower boundaries than we now think. To the solution of this question Dr. Andrews has added a number of facts; he has dwelt upon the colour variability, which he declares to be “enormous,” and not at all influenced by age or sex. He has furthermore made the important observation that parasites taken from whales killed near Japan are at times infested with parasites representing an Antarctic species, which they must have acquired during a sojourn in those southern seas. The parasite in question is the Copepod, *Penella antarctica*.

A short time ago an alleged new species of Ballænoptera admittedly near to *B. borealis*, and named *B. brydei*, was described from the Cape region in a paper published by the Zoological Society. Dr. Andrews carefully considers this whale, and is disinclined to believe in its distinctness, but considers the matter incapable of settlement until more information concerning structure is received; but with this possible exception, and that of *B. edeni*, it would appear that all the alleged species allied to *B. borealis* are to be regarded merely as synonyms. Dr. Schulte's account of the fœtus is full and elaborate. Kükenthal and others have of late years dealt with the adult and fœtus of this and other Balænopteras, and therefore there are not facts of very wide interest left over to be recorded in the memoir. But nevertheless it is valuable, especially for its detailed account of the skull and musculature, which are illustrated by several plates.

F. E. BEDDARD.

#### SCIENCE FOR THE PEOPLE.

IN this country we are only just beginning to awake to the fact that museums have a great future before them in the task of bringing home to the nation the value and importance of scientific research. In this we are a long way behind the United States, which, through numerous channels, makes strenuous efforts to enlist the interest and sympathy of the public in all that concerns science and its importance as a factor in civilisation and progress. In this the American Museum of Natural History has played, and is playing, a very important part, not only in regard to its exhibition galleries, but also by its efforts to reach those who live outside its radius. By means of the *American Museum Journal*, it gives to the world at large, month by month, a series of lucidly written and skilfully chosen articles by members of its staff and others of established reputation on the various problems which are engaging the attention of specialists.

In the December number, which may be taken as a fair average specimen, nine essays are included, covering a wide range of subjects, thus ensuring an appeal to a large number of readers, as well as an opportunity of arousing dormant interests. Dr. C. Wissler, of the anthropological department, discusses American Indian saddles and the origin and adaptations of horse-culture in the New World, while Dr. W. D. Matthew writes on elephant-ivory and the evolution of the elephant. The Gulf Stream and the effect of ocean currents of different temperatures on the life and range of marine animals, and the phenomena of the mirage, rivet the attention on very different aspects of Nature. The significance of the vivid hues which prevail among tropical fishes introduces the

reader to the knotty problems which await solution in regard to animal coloration, while the brief essay on the life-histories of insects opens up yet another vista.

Finally, we may mention the very important article on game protection by Mr. J. B. Burnham, the president of the American Game Protection Association. Herein the author shows the remarkable results which have been obtained by State protection of hen pheasants in New York State, and of the does of the Virginian deer in Vermont. No more convincing vindication of legislation framed for the protection and preservation of native animals from the raids of “sportsmen” was ever penned than this. And there could be no more suitable channel devised for the dissemination of the results of this legislation than this always fascinating journal, which, unfortunately, has no counterpart in this country.

We look forward to the time when the British Museum shall undertake a similar task for Great Britain and our Empire beyond the Seas. The funds, however, for the American journal, it should be remarked, are not provided by the State, but by the generosity of those interested in the welfare of the museum and the furtherance of its work.

W. P. P.

#### UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

BIRMINGHAM.—The Huxley lecture is to be delivered by Prof. D'Arcy W. Thompson, who has chosen a morphological subject entitled “Shells” for his address.

CAMBRIDGE.—The Adams prize has been awarded to Mr. J. H. Jeans, F.R.S., formerly fellow of Trinity, for an essay on “Some Problems of Cosmogony and Stellar Dynamics.”

LONDON.—The degree of D.Sc. in chemistry has been conferred on Mr. S. W. Smith, an external student, for a thesis entitled “Surface Tension of Molten Metals and its Relation to other Properties of Metals and Alloys in the Solid State,” and other papers.

The report of the Military Education Committee has been presented to the Senate. It states that he number of cadets of the University of London Officers' Training Corps who have obtained commissions up to the end of 1916 was 3010, an increase of about 750 over the corresponding number a year earlier. The distinctions obtained by these officers include: V.C., 2; D.S.O., 3; Military Cross, 131; mentioned in despatches, 151; and represent more than 10 per cent. of those who have seen active service at the Front. In the earlier days of the war 300 graduates and students of the University (not being cadets or ex-cadets of the O.T.C.) obtained commissions on the recommendation of the committee. In consequence of the Military Service Act, the work of the combatant units of the O.T.C. is now restricted to the younger men. The number of individual cadets who were members of the contingent during the training year ending September, 1916, was 2077, of whom 741 remained on the strength at the end of the year. The Medical Unit, in which all medical students permitted to continue their studies are enrolled, is at full strength. The Artillery Unit has been temporarily disbanded. The report refers also to the Officers' School of Instruction in connection with the contingent, through which 1100 young officers have passed; and to the assistance given by the committee in connection with the enlistment of trained chemists in the Royal Engineers.