

nature of the spawn; (2) the periods of spawning; (3) the food of the herring. In 1882 the Board of British White Herring Fishery having been dissolved, the present Fishery Board for Scotland was established, to carry on the work of superintending the fisheries, and also to "take such measures for their improvement as the funds under their ministration may admit of." The Board soon recognised the absolute necessity of obtaining accurate scientific information as to the habits and life-history of the food fishes, and therefore appointed a Committee consisting of Prof. Cossar Ewart (convener), Sir James R. Gibson Maitland, Sheriff Forbes Irvine, and J. Maxtone Graham, to carry on scientific investigations.

The preliminary report of work done in the autumn of 1883 and at Ballantrae has been already given in NATURE. The Admiralty has been pleased to provide a gunboat, H.M.S. *Jackal*, Lieut. Prichett, R.N., commander, to help in the investigations and inspect the spawning grounds, and the Board has also at its service the cruiser *Vigilant*, both of which vessels have done excellent work, though it is desirable that they should be replaced by others more capable of sea-going service. The Board is fortunate in having in its service a large staff of intelligent officers not only familiar with all the practical aspects of the fishing industry but deeply interested in the scientific work of the Board, which they aid to their utmost power. The future lines of inquiry which the Board hope to undertake include (1) the examination of the spawning beds round the Scottish coast; (2) the determination of the food of useful fishes; (3) the investigation of percentage of young herring, &c., destroyed by present modes of fishing; (4) the influence of sea-birds, &c., on supply of fishes; (5) study of spawning, nature of the eggs, and general life and development of herring, &c.; (6) best means of restocking deserted fishing grounds; (7) of increasing artificially the supply of shell-fish; and (8) of inquiry into fungi, &c., hurtful to fish life. The Board is fitting up a marine station at St. Andrew's, where Prof. McIntosh will make investigations for the Board, whilst similar work will be carried on in the Moray Firth. We trust that the impetus given to and the interest excited in the work of the Board may produce most favourable results, both economic and scientific.

We hope to return in a future number to some of the papers of specially scientific interest contained in this Report.

#### THE HISTORY OF A TYPHOON

PÈRE DECHEVRENS, the indefatigable head of the Meteorological and Magnetic Observatory at Zikawei near Shanghai, has just published the first part of a work dealing with the typhoons of 1882. The present instalment is confined to those of the months of July and August in that year. The various plans and maps showing the course of the typhoons, and the height of the barometer at various times during their progress in different places, are so "fabulously complicated," to use the writer's phrase, that he fears more than one reader will regard his pamphlet as a work of imagination. Père Dechevrens, however, has had the advantage of observations made in China, Japan, and the Philippines by captains of vessels, lighthouse keepers, Customs officers, &c., such as have never before been made of any cyclone. Chinese typhoons, as he points out, fortunately for the meteorologist, though unfortunately for the navigator, ravage races visited by the ships of all nationalities, and hence with a little arrangement and organisation these phenomena may be easily studied in these regions. The Shanghai Chamber of Commerce and Sir Robert Hart have arranged for a regular supply to Père Dechevrens of a regular series of meteorological observations, and one of the earliest results is the pamphlet now before us. As a consequence of these wide and varied observations, the

writer, while acknowledging the work of his predecessors, such as Spindler in Russia, Knipping in Japan, and Faura in Manila, claims that, while they were only able to give the history, as it were, of incidents in the life of a typhoon, he, thanks to the vast number and extent of the documents placed in his hands, has been able to connect these various fragments, and to trace the history of several typhoons from their cradle in equatorial maritime regions to their grave in the North Pacific Ocean. This, in his own words, is what Père Dechevrens has now done in his pamphlet. The first section deals with July 1882, and it is divided into several sub-sections, dealing with the formation of a typhoon on July 5, its progress in the China Sea, and a first separation or offshoot from the main storm, its progress on the mainland of China, the second typhoon of July 10 in the China Sea, and before Hong Kong, in the Formosa Channel, "its flight towards India, and its disappearance in the north of China," and finally an account of a typhoon in Hong Kong and Indo-China. The typhoons of August are discussed in a similar manner in detail, the conclusions being supported by observations made in all parts of the China seas and coasts. There are also a large number of diagrams. In his recapitulation the writer points out that, though he has been speaking of various typhoons, such as that in the Formosa Channel, in Hong Kong, &c., he has really been dealing with only one widespread storm, which, during its life of fifteen days, visited every coast from the equator to Siberia, and from the extreme east of Japan to the western frontier of India. The character which Père Dechevrens gives the phenomenon he has so carefully studied is this:—"It allows itself to stray with the greatest ease outside the straight path. In a truly headlong way it throws itself against all obstacles, gets into difficulties from which it can scarcely extricate itself, wastes its energies in whirlwinds, often powerless, which it abandons readily, goes, returns, hastens, stops still, in a word revolving always in the same circle, until, having expended all its strength, it disappears miserably at that part of the Pacific which in a short time would have been able to give it the necessary vigour to sustain a longer career, and, like many others, to reach the shores of North America, or at least, if retarded by the violence of the North Pacific, as far as Behring Straits." Three facts which this study renders prominent are:—

1. The extreme facility with which these typhoons divide and subdivide.
2. The mutual attraction and repulsion of atmospheric disturbances (whirlwinds).
3. The absence of the south-west monsoon in the Philippine Islands.

In his recapitulation these three points are discussed at some length in the summary, and we merely indicate them here to show the student what he may expect in this painstaking and learned publication.

#### HEALTHY SCHOOLS<sup>1</sup>

THERE can be no more appropriate product of an exhibition which seeks to illustrate the two problems of health and education than a handbook on healthy schools. Within the brief space of 72 pages Mr. Paget has brought together here some of the most important counsels which experience has suggested on structure, drainage, fitting, food, recreation, ventilation, and other conditions on which the health of children in schools depends. No school manager or teacher can read it without much profit; and the executive of the Exhibition has done the community a service by placing within its reach in a succinct and readable form so much practical knowledge and fruitful suggestion.

<sup>1</sup> "Healthy Schools." By Charles E. Paget, Medical Officer of Health for the Westmoreland Combined Sanitary District; Honorary Secretary of the Epidemiological Society of London. International Health Exhibition Handbook Series. (Clowes and Sons.)