MEDICINE AND THE SEA AFFAIR.

INTRODUCTION.

BY
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THIS outline of the work of the medical service of the Royal Navy, necessarily brief from the exigencies of space, may well be prefaced with the satisfactory statement that the health of the service afloat has been excellent—better, indeed, than in times of peace. This fortunate result is due to several factors: in the first place, to the efforts of preventive medicine and hygiene, especially the improved ventilation of warships introduced shortly before the outbreak of war, a subject more fully dealt with on pp. 537-539; in the second place, to the healthy isolation of the Grand Fleet, far from the temptations of seaports; thirdly, to the minute precautions taken in drafting men from the shore dépôts to the fleet, which entail due quarantine after exposure to infectious fevers; fourthly, to lectures by the medical officers to the ships' crews dealing with personal hygiene and insisting on the results of alcoholic excess and the dangers of venereal disease; and, further, to the care taken by all officers, by keeping the men physically fit by means of exercise, and by combating in various ways the effects of monotony and relative inactivity, to maintain the high spirit of confidence in eventual success.

At the outbreak of war the medical personnel was at once expanded by the mobilization of the retired, emergency, and Volunteer Reserve medical officers, by the creation of a large number of temporary surgeons for the period of hostilities, and by the appointment of about ten consultants (two being anaesthetists), including Sir Watson Cheyne, President of the Royal College of Surgeons of England, and Sir William Macewen, Regius Professor of Surgery in Glasgow. Rather later an old type of naval medical officer, the surgeon's mate, was revived in the enrolment as surgeon-probationers R.N.V.R. of medical students who had passed the examination in anatomy and physiology, and who had begun, but not completed, their clinical work. They were placed in torpedo-boat destroyers and other small vessels which otherwise do not carry medical officers, so as to render first aid, and, as the records of the Jutland battle show, this trust was fully justified. The sections which follow have been contributed by medical officers responsible for the subjects dealt with.

MEDICINE AND CLINICAL PATHOLOGY.

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THE general methods of diagnosis and treatment are naturally the same in naval and civil hospitals, and do not, therefore, require any description. The association between clinical and laboratory work is as close as in the metropolitan hospitals with teaching schools attached, and new methods of diagnosis are thus tested and utilized to the full.

The war has thrown much additional work on the naval hospitals and has led to the extensive substitution of temporary surgeons for the regular medical staff owing to the necessity for employing the latter afloat, and during this period the increasing tendency of modern medicine towards subdivision and specialization has been reflected on the navy by the assignment of temporary surgeons with previous experience of special branches of their profession, such as ophthalmology, neurology, tuberculosis, otology and laryngology, and bacteriology, to the care of such patients and duties. Up-to-date departments for x-ray work, dentistry, massage, and electrical treatment are attached to the hospitals where the sick-berth staff are trained for the service afloat. The work of the laboratories of the large base hospitals was assisted by the utilization of men with scientific knowledge but without medical qualifications, and the Medical Research Com-

mittee sent Dr. P. Fildes to Haslar as a bacteriological expert, and afforded other facilities.

Vaccines.

At the Royal Naval College, Greenwich, there is a teaching school with large laboratories and research rooms attached, which during the war has been the central establishment for the preparation of prophylactic vaccines and the distribution of curative serums to the fleet, the naval service on shore, and especially to the recently established Royal Naval Division and the Royal Naval Air Service. Here, also, most of the examinations of air, water, and food for the service afloat and the various shore dépôts called into being during the last few years have been carried out. During the war more than 2,250 bottles of antiseptic vaccine have been sent from this laboratory to the ships and fighting forces. This in 1914 was supplied by Sir Almroth Wright, but since that time has been manufactured at Greenwich from strains of pyogenic organisms isolated from wounds received in the war. For prophylactic use nearly 6,000 doses of antitetanus serum have been issued, mainly to the Royal Naval Division serving in Gallipoli and in France. During the past two years anticholera vaccine for more than 50,000 men has been supplied to the forces in the Eastern Mediterranean and Persian Gulf, and to the latter a quantity of plague prophylactic was also sent. Since the recognition of dysentery over 2,200 doses of antidyenteric serum have been dispatched for hospital use. At this laboratory and at Malta the greater part of the antityphoid vaccines used in the naval service have been prepared. The laboratories of Chatham, Haslar, Plymouth, and Malta, in which routine examinations of clinical material of all kinds (and also of the milk and food supply, and dressings) are carried on, have had a greatly increased amount of work during the war in the form of systematic examinations, both from a diagnostic and prophylactic point of view, in connexion with infectious diseases.

Antityphoid inoculations of men likely to be exposed to infection have been systematically carried out. In the first year of the war they were inoculated with a typhoid vaccine received from Sir Almroth Wright, over 5,000 bottles, containing 25 c.cm. each, being used. When paratyphoid infections became prevalent, a triple vaccine was prepared at Greenwich and Malta containing the typhoid organism and being multivalent for paratyphoid A and B, from strains isolated from cases in the Eastern Mediterranean. It contained the full dose of the typhoid germ and half the number of paratyphoid A and B. A fair degree of immunity, as judged by the agglutination test, was thus produced. The reaction is not excessive and much time and trouble are saved without sacrificing the antityphoid immunizing power. With this more than 40,000 men have received protective inoculations, and by this means the incidence of typhoid among enteric cases in 1916 was reduced from 35 per cent. in the uninoculated to 11 per cent. in the inoculated,* or 0.7 per cent. of the total forces in the endemic area, and undoubtedly the severity of the disease was considerably lessened among those who did contract the disease.

Dysentery.

The Royal Naval Division in Gallipoli in 1915 suffered, in common with the other forces on land, from diarrhoea, dysentery, enteric and obscure fevers. The numerous convalescents sent to England were filtered through the large naval hospitals to prevent the escape of any dysenteric or enteric carriers into the general population. The diagnosis on arrival was confirmed or modified by the verdict of the laboratory based on bacteriological, serological, and microscopic investigations. The result of these numerous routine examinations incidentally threw light on the duration and course of the agglutination changes due to the influence of inoculation on the one hand and of definite infection with the enteric group of micro-organisms on the other hand, and thus enabled a more accurate diagnosis to be arrived at in any given case; but it was generally recognized that for certainty of diagnosis the culture of the organism from the blood, faeces, or urine was essential. In the dysentery group of infections the percentage of entamoeba infections found was not very high, but amongst those infected there were some very obstinate carriers, resistant to all forms of

* Vide Journ. Royal Naval Medical Service, 1917, iii, 30-32.