THE HEALTH OF OUR CHILDREN.[1]

ONE feels on reading the report referred to below that the nation possesses in Sir George Newman a general with a plan, who, having consolidated the gains of ten years' work, is pressing on to his objective: the prevention of disabling diseases and the winning for every child of his birthright of a happy and healthy childhood. Such is the impression gained by a careful study of this most interesting and comprehensive report.

In section iii. will be found the results of a typical medical inspection conducted by a most competent observer—Dr. C. J. Thomas, of the London County Council. Two sets of three hundred unselected elder children each, in typical London and country schools, were inspected, and the results are described and analysed. One reads with dismay that "after deduction of the blind, deaf, mentally and physically defective, and invalid children drafted to special schools or absent from school, there were of the children present at school 21 per cent. found to be suffering from one or more serious defects . . . 12 per cent. were ill-nourished; 19 per cent. were unclean in body; of the London children 40 per cent., and of the country children 65 per cent., had some carious teeth; 11 per cent. suffered from disease of nose or throat; 10 per cent. had 'very serious' defects of vision; 6 per cent. suffered from defective hearing and 6 per cent. from severe anæmia; and of middle ear disease, of organic heart disease, of skin disease, and of spinal curvature of 'worst grade' there were in each case 4 per cent. of sufferers."

We agree with Sir George Newman's comment on these grim facts:—"No one, I think, can consider these findings or read Dr. Thomas's account of the physical condition of these children about to leave school for industrial occupations without understanding, once and for all, the gravity of the situation."

It is with a sense of relief one finds that a good deal is being done by several education authorities to remedy the defects found. There are still, however, a good many C3 authorities. Most hopeful of all, however, is the policy "broad and deep" which the Board of Education's Chief Medical Officer, since translated to the Local Government Board, has all along had in mind—the safeguarding of each and every child's health from babyhood up to and including school-life. This policy we find explained in his excellent exposition of those sections of the new Education Act which deal with the health of children and young persons.

"The Act," writes Sir George, "lays emphasis upon the broad fact that the purposes of the School Medical Service are not the detection of defects, the discovery of child-patients, and the treatment of such sick children, *but the advancement of the health and physical development of the whole child population of school age.*"

The author of this report does not rest content with a recital of first principles. He points the way to their realisation. Thus we find much practical advice on the teaching of hygiene and mothercraft, on the control of juvenile employment, on open-air schools, on physical education, on play-centres, and on holiday camps. We note with pleasure his reference to the cheery brotherhood of Boy Scouts.

Everyone interested in education, and therefore in our children, should study this inspiring report. Certainly the *personnel* of the School Medical Service must realise that they have had as chief, not only an eminent expert, but also a man of large vision, a leader who really leads. W. E. H.

[1] Annual Report for 1917 of the Chief Medical Officer of the Board of Education. (Cd. 9206.) (H.M. Stationery Office.) Price 1s. net.

FORTHCOMING BOOKS OF SCIENCE.

BIOLOGY.

Ginn and Co. (Boston, Mass., and London).—An Elementary Biology, Gruenberg; Manual to Elementary Biology, Gruenberg. *Oxford University Press.*—Mammalian Physiology: A Course of Practical Exercises, Prof. C. S. Sherrington. *John Wiley and Sons, Inc. (New York), and Chapman and Hall, Ltd.*—Economic Woods of the United States, Prof. S. J. Record; Forest Management, A. B. Recknagel and J. Bently, jun.; Bacteriology and Mycology of Foods, Dr. F. W. Tanner, illustrated.

CHEMISTRY.

Ginn and Co. (Boston, Mass., and London).—Notes on Qualitative Analysis, Test and McLaughlin. *John Wiley and Sons, Inc. (New York), and Chapman and Hall, Ltd.*—Commercial Oils, I. F. Lauchs; Manual of the Chemical Analysis of Rocks, Dr. H. S. Washington.

ENGINEERING.

Benn Bros., Ltd.—Electrical Measuring Instruments: Their Design, Construction, and Application, Dr. C. V. Drysdale and A. C. Jolley; Electric Traction on Railways, P. Dawson, illustrated; The Handling of Materials: A Manual on the Design, Construction, and Application of Cranes, Conveyors, Hoists, and Elevators, being the second edition of Electric Cranes and Hoists, H. H. Broughton, in four volumes, vol. i.; The "Electrician" Annual Tables of British and Foreign Electricity Undertakings; and new editions of Electric Mains and Distributing Systems, J. R. Dick and F. Fernie, and Electric Switch and Controlling Gear, Dr. C. C. Garrard. *Sir Isaac Pitman and Sons, Ltd.*—Electric Mining Machinery, S. F. Walker, containing chapters on prime-movers, signalling, telephony, shot-firing, etc.; Reinforced Concrete, W. N. Twelvetrees, dealing with the subject from the theoretical and practical points of view; Gas and Oil Engine Operation, J. O'Kill; Papers on the Design of Alternating-current Machinery, C. C. Hawkins, Dr. S. P. Smith, and S. Neville; Storage Battery Practice, R. Rankin; Electrical Engineers' Pocket-Book, edited by R. E. Neale, being a thoroughly revised edition of the volume originated and edited by K. Edgcumbe. *John Wiley and Sons, Inc. (New York), and Chapman and Hall, Ltd.*—Waterproofing Engineering: For Engineers, Architects, Builders, Roofers, and Waterproofers, J. Ross; Geodesy and Geodetic Surveying, Prof. G. L. Hosmer; Principles of Transformer Design, Prof. A. Still; Oxy-Acetylene Welding Manual, Lieut. L. Campbell, jun.; Essentials of Alternating-current Electricity, W. H. Timbie and Prof. H. H. Higbie; Vital Statistics, Prof. G. C. Whipple; and new editions of Irrigation Engineering, Dr. A. P. Davis and H. M. Wilson; Compressed Air Plant: The Production, Transmission, and Use of Compressed Air, with special reference to Mine Service, Prof. R. Peele.

MATHEMATICAL AND PHYSICAL SCIENCES.

Ginn and Co. (Boston, Mass., and London).—Advanced Book of Arithmetic, Wentworth and Smith; General Mathematics, First Year, Schooling and Reeve; Projective Geometry, Wentworth, Smith, and Ling; Plane Analytic Geometry, Wentworth, Smith, and Siceloff; and a revised edition of Elements of Astronomy, Young. *John Wiley and Sons, Inc. (New York); and Chapman and Hall, Ltd.*—The Sumner Line, or Line of Position as an Aid to Navigation, Prof. G. C. Comstock.

TECHNOLOGY.

Sir Isaac Pitman and Sons, Ltd.—Petroleum, A. Lidgett; Salt, A. F. Calvert; Coal-Tar, A. R.

Warnes (Common Commodities and Industries Series). —*John Wiley and Sons, Inc. (New York), and Chapman and Hall, Ltd.*—Mechanical Drawing, J. S. Reid.

MISCELLANEOUS.

Oxford University Press.—The Bantu and the Semi-Bantu Languages: A Comparative Study, Sir Harry H. Johnston; Slavic Europe: A Selected Bibliography in the Western European Languages, R. J. Kerner; World Power and Revolution, E. Huntington; Some South Indian Villages, by a number of Indian Students, the first volume of Economic Studies, edited by Prof. G. Slater, illustrated.

METEOROLOGY DURING AND AFTER THE WAR.[1]

DURING the past four years and a half of hostilities meteorology has, like many other branches of knowledge, been utilised in naval and military operations to a far greater extent than ever before. Consequently, there are now a large number of officers in the Services who have had practical experience of the value of meteorological information when it has been prepared from sufficient data, and by men who have been thoroughly trained in the subject. It is, therefore, highly desirable that full advantage should be taken of the experience which has been gained during the war in order to meet, as adequately as possible, those demands which will be made upon meteorology in the general reconstruction which is now beginning.

In some ways the conditions which prevailed during hostilities were favourable to advances in the subject. Special facilities were given for the rapid transmission of reports; kite-balloons could furnish series of observations at various heights; aeroplanes were available to observe the temperature in successive layers of the atmosphere up to 12,000 ft. or 14,000 ft.; the velocity and direction of air-currents up to even 25,000 ft. were determined by the bursting of shells fired at high angles; pilot-balloons at perhaps a hundred stations were observed four or more times daily. In these and other ways a vast store of information has been amassed which has already been utilised, but remains available for much more detailed study in the immediate future; and not the least difficult problem will be to reduce the mass of information to a manageable and orderly arrangement.

There were in 1914 in this country the State Meteorological Service (the Meteorological Office) and a Naval Meteorological Service, which had been formed in 1913 to meet the needs of the Royal Naval Air Service. Besides these, a private institution, the British Rainfall Organisation, collected and discussed observations of the rainfall of the British Isles and studied all questions connected with rainfall; also two scientific societies—the Royal Meteorological Society and the Scottish Meteorological Society—specially devoted themselves to the advancement of meteorological science. It will be seen, therefore, that only the State service could provide a career for anyone desiring to take up meteorology as a profession, and as the staff of this service was comparatively small, it is scarcely surprising that the great majority of meteorologists were amateurs in the sense that they studied the subject from their interest in it, outside their ordinary occupations.

In the Meteorological Office the policy for some years had been to bring in men who had had a thorough scientific education at a university and to encourage them to devote it to the study of the many problems which meteorology had to offer. This was a great advance from the empirical treatment of the subject, and has been amply justified by the success obtained when this policy has been tested under the conditions of active service.

For the general public current meteorology was mainly represented by the daily forecasts and the weather summaries which appeared in the Press, and the cases in which these failed to describe accurately the weather in the reader's immediate locality usually impressed him more than their general accuracy as tersely worded descriptions of conditions which were likely to prevail over an extended area, such as south-eastern England, but those who had only been brought into contact with meteorology in this superficial way on the outbreak of hostilities soon found that the weather affected their preparations and their operations at every turn. It was scarcely to be expected in these circumstances that all Staff officers would at once realise what information trained meteorologists could provide, or to what extent their reports and warnings could be relied upon in practice.

In the course of the last two decades investigations have been extended from the surface of the earth into the air by means of kites and balloons, and our knowledge of the conditions prevailing up to ten, and even fifteen, miles above the earth's surface has thereby been steadily increased. Self-recording instruments continuously registering the pressure, temperature, and humidity have been carried up through the lower seven miles (11 kilometres), the troposphere—the region in which the temperature falls with increasing height—and far into the stratosphere above it, sometimes to heights of 12½ miles (20 kilometres) or more. In this way the remarkable fact of the differentiation of the atmosphere into the lower troposphere and the overlying stratosphere has been established, and further investigations indicate the great importance of these upper regions of the atmosphere in the solution of many problems relating to the weather.

With the gradual introduction of balloons and aircraft into the Army, and the subsequent formation of the Royal Flying Corps, meteorological establishments were formed at South Farnborough in 1910 and at Upavon in 1913, where the study of the upper air was carried on regularly. In this way, and with the material furnished by the meteorologists of other countries, a very large amount of information had been collected, and, to a large extent, discussed and utilised, before the outbreak of war, but this was, for the most part, known and appreciated only by those who were especially interested in the subject, and the bearing of the results obtained had not reached the wide circle of those who were later to become acquainted with them under the exacting conditions of active service.

On the outbreak of hostilities some lines of work had to be abandoned, and new lines taken up at once. Many of the staff of the State service joined the Army in those early days who would have been very profitably employed in the meteorological units which were formed later, or even in the Office itself, where the work became ever increasingly heavy, while the task of replacing those who went on service became constantly more difficult.

On the outbreak of war in August, 1914, meteorologists were at first considerably handicapped by the reduction of their supply of information. Wireless reports from ships ceased; weather telegrams from Germany and Austria were no longer available; and Central Europe became a blank on the working charts of the Meteorological Office. The censorship over all inward and outward telegrams disorganised the supply of meteorological information from Allied and neutral

[1] From a paper read before the Royal Society of Arts on January 22 by Col. H. G. Lyons, F.R.S., Acting Director of the Meteorological Office.