

tion of the  $\alpha$  particles with time. For purposes of measurements, the active material, in the form of a thin film covering a small area, is placed in an exhausted tube connected in series with the ionisation cylinder, and at a considerable distance from the hole. The number of  $\alpha$  particles entering the opening per minute is counted, and from this the total number expelled can be calculated. Preliminary measurements show that the number of  $\alpha$  particles expelled from a known weight of radium is of the same order as the calculated value. When the measurements are completed it should be possible to determine the charge carried by each  $\alpha$  particle, since the total charge carried by the  $\alpha$  particles from 1 gram of radium is known. In this way it may be possible to settle whether the  $\alpha$  particle is a helium atom or not. In any case, it is a matter of some interest to be able to detect by its electrical effect a single atom of matter, and so to determine directly with a minimum of assumption the magnitude of some of the most important quantities in radio-active phenomena.

### MEDICAL INSPECTION OF SCHOOL CHILDREN.<sup>1</sup>

THE memorandum issued by the English Board of Education on the medical inspection of children in public elementary schools is a statesmanlike document. It propounds a policy; it indicates a method, and the method, no less than the policy, takes full account of conditions, difficulties, and obstacles. The memorandum gives body to the provisions of section 3 of the Education (Administrative Provisions) Act, 1907. This section confers three broad powers on education authorities, first, to provide special environments for special children, e.g. vacation schools, vacation classes, play centres, &c.; second, to establish a medical inspection of the individual children; thirdly, "to make such arrangements as may be sanctioned by the Board of Education for attending to the health and physical condition of the children educated in public elementary schools." These three powers may be exercised in cooperation with voluntary agencies, of which, it is needless to say, there are many. But the point of importance is that the powers may now be exercised by the education authorities, and practically, since grants may be made to depend on their exercise, the education authorities are now placed under obligation to carry them into full effect. The memorandum proceeds on this assumption; but it aims rather at sketching a process of natural administrative growth than at imposing an imperative system to be immediately realised. Accordingly, it starts from what is already being done in several localities to supervise the hygiene of schools and scholars. The sanitary authorities are in possession. This Act does not supersede, it expands and supplements, their work. Here emerges the cardinal principle of the memorandum, namely, the extension of the conception of public health to include, not merely the environmental sanitation considered apart, but the individual child's health as it is affected by his environment in the widest sense—physical, educational, &c.

The purpose of individual inspection, no less than of the general inspection of the hygienic conditions, is "to secure ultimately for every child, normal or defective, conditions of life compatible with that full and effective development of its organic functions, its special senses and its mental powers which constitute a true education." Unfortunately, owing to accidents of administrative convenience or development, there has arisen within the medical profession an acute difference of opinion as to the relative advantages of a special school medical service and an expanded public health service. Dr. Newman's appointment implied that the Board of Education favoured the idea of an expanded public health service, and this memorandum sketches in firm outline what this view implies. Incident-

ally, it shows that there is no opposition between the two views. On the one hand, it puts upon the medical officer of health the organising of the system of medical inspection, but on the other, it provides that "its actual execution" shall be "deputed wholly or partly to suitable colleagues or assistants (men or women)." The two factions are thus reconciled in the one administrative organisation.

The memorandum in more than one place emphasises in a way that it is impossible to controvert the primary importance of the home and its hygiene in the school-life of the child, and the absolute necessity for maintaining continuity of inspectorial interest between the home and the school. Medical inspection will thus work backwards to the home and forwards to the after-school life of the child, so covering the entire period between birth and the entry on industrial life. When this conception of continuity is fully grasped, there will be no further theoretical dispute between the medical factions concerned.

The British Medical Association has issued a memorandum dealing in a thoroughly practical spirit with the proposals and suggestions of the Board of Education. It is of immense importance that the medical profession should thus declare itself at the beginning. The differences between the association and the Board are essentially differences of detail. The association is quite frank in its acceptance of the general positions. The association's memorandum states that "these duties could not, having regard to the nature and extent of the duties already required of Medical Officers of Health, be efficiently discharged by them personally." This is not inconsistent with the Board's suggestions on the same point. The association also states that "part-time" medical officers, paid as for work done, could appropriately undertake medical inspection. This comes naturally from the profession, and there is much to say for it; but again there is nothing here inconsistent with the Board's views. But just as in the earlier, so in these later expansions of preventive medicine, the tendency will be towards "whole-time" specialists. In England many of the counties have not yet appointed whole-time or even part-time medical officers—so differing from Scotland, where every county is obliged to appoint a medical officer, and all except five have appointed whole-time men.

The association's memorandum is emphatic on another point, namely, that treatment of disease and visitation of the homes of the children shall be excluded from the scope of the medical inspector's duties. The full bearing of this suggestion will require very careful consideration. The Education Board's memorandum contains a very judicious discussion of the implications of the Act as to treatment, and it is difficult to reconcile the Act with the letter of the association's decision. The schedule proposed by the association is very well drawn, but it makes no provision for any record as to home conditions or occupation of parents, &c., which are insisted on in the Board's memorandum.

The Board of Education has followed up its memorandum by a detailed schedule, with full directions for the medical inspection. In most respects, this schedule meets all the proposals of the British Medical Association. From the tenor of the memorandum on the clear necessity for recording the home conditions and the occupational condition of the parents, we naturally expected that these points would be explicitly provided for in the schedule. In this we are somewhat disappointed; for all that we find is a heading for "Directions to Parent or Teacher." It would have been much simpler to have specified what details are wanted for every child—number of rooms in house, number of persons, occupation of father or mother, pre- and post-school labour of the child. These are all primary factors in the mental state of the child at any one time, and practically all these data are already in possession of the school authority. In other respects, the schedule is very comprehensive. Indeed, this is the one real criticism offered by medical critics. But when it is closely scrutinised, it will be found to contain only the bare essentials of a real inspection. The order of the schedule is simple, and the directive notes are models of lucidity. The anthropologist may regret that his special point of view is not as such provided for, but there is nothing

<sup>1</sup> (1) Memorandum on Medical Inspection of Children in Public Elementary Schools, under Section 13 of the Education (Administrative Provisions) Act, 1907 (Board of Education; Circular, 576).

(2) Memorandum by British Medical Association on the Circular of the Board of Education (*British Medical Journal*, Supplement, December 21, 1907.)

(3) Schedule of Medical Inspection (accompanying Circular 582).

antagonistic to this either in the memorandum or in the schedule. Though not aiming directly at scientific facts, the medical inspection will certainly accumulate a vast number of facts that will form material of the first value for the anthropologist's methods.

We congratulate both the Board of Education and the British Medical Association on the practical sense displayed in these documents, and the general regard paid in each to the claims of science as well as to the claims of medicine. The great movement is now effectively inaugurated. Many points will emerge for adjustment, but these only experience can reveal. The main thing is that the work should now proceed on approximately uniform lines, and the Board of Education has given an effective lead.

#### FORTHCOMING BOOKS OF SCIENCE.

**F**OLLOWING our usual custom, we give the titles and names of authors of works relating to science which are to be found in the spring announcement lists of various publishers:—

Mr. S. Appleton:—"Minerals," by L. J. Spencer, illustrated; and "The Life and Habits of the Ants," by Dr. L. I. Dublin, illustrated.

Mr. Edward Arnold:—"Power Gas Producers, their Design and Application," by P. W. Robson.

Messrs. A. and C. Black:—"A Treatise on Zoology," edited by Sir E. Ray Lankester, K.C.B., F.R.S., part i., first fascicle, "Introduction and Protozoa," by Prof. S. J. Hickson, F.R.S., Dr. F. W. Gamble, F.R.S., J. J. Lister, F.R.S., Dr. H. M. Woodcock, and the late Prof. Weldon, F.R.S., illustrated; part vii., "Crustacea," by W. T. Calman, illustrated; part ix., "Vertebrata Craniata," by E. S. Goodrich, F.R.S., illustrated; "The Science and Philosophy of the Organism," the Gifford Lectures delivered before the University of Aberdeen in the Year 1907, by Dr. H. Driesch; "Cancer: Relief of Pain and Possible Cure," by S. and G. E. Keith; "Analytical Geometry of the Conic Sections," by the Rev. Dr. E. H. Askwith; "A Plant Book for Schools, being an Easy Introduction to the Study of Plant Life," by O. V. Darbishire, illustrated; "Descriptive Geography of the British Isles," by F. D. Herbertson, illustrated; "Man: his Manners and Customs," by Prof. L. W. Lyde, illustrated; "School Text-book of Geography," by Prof. L. W. Lyde; and new editions of "Studies in Fossil Botany," by Dr. D. H. Scott, F.R.S., illustrated; "An Introduction to Structural Botany," by Dr. D. H. Scott, F.R.S., part ii., "Flowerless Plants," illustrated; and "Totemism," by Prof. J. G. Frazer.

Messrs. W. Blackwood and Sons:—"Stephen's Book of the Farm," by J. Macdonald; "Forest Entomology," by A. T. Gillanders; "Significant Etymology," by J. Mitchell; and "Through the Depths of Space a Primer of Astronomy," by H. Macpherson.

Messrs. Cassell and Co., Ltd.:—"The Complete Farmer—Soils: their Nature and Management," by P. McConnell; "Cassell's ABC of Gardening: an Illustrated Encyclopædia of Practical Horticulture," by W. P. Wright, illustrated; "The Townsman's Farm," by "Home Counties"; "Familiar Swiss Flowers," by F. E. Hulme, illustrated; "Gardening for Women," by the Hon. F. Wolsley; "Structural Engineering," by Prof. A. W. Brightmore, illustrated; and "Tinplate Work," edited by P. N. Hasluck, illustrated.

Messrs. Chatto and Windus:—"A History of Babylonia and Assyria from the Earliest Times until the Persian Conquest," by L. W. King, illustrated; vol. i., "A History of Sumer and Akkad, being an Account of the Primitive Inhabitants of Babylonia from the Earliest Times to about B.C. 2000"; vol. ii., "A History of Babylon from the Period of the First Dynasty, about B.C. 2000, until the Conquest of Babylon by Cyrus, B.C. 539"; vol. iii., "A History of Assyria from the Earliest Period until the Fall of Nineveh before the Medes, B.C. 606"; "The Open Air," by R. Jefferies, illustrated; and "Nature near London," by R. Jefferies, illustrated.

Messrs. Archibald Constable and Co., Ltd.:—"The North-West Passage: being the Record of a Voyage of Exploration of the Ship *Gjøa*, 1903-1907," by R.

Amundsen, with a supplement by First Lieut. G. Hansen, 2 vols., illustrated; "Ice-bound Heights of the Mustagh: being an Account of Two Seasons of Pioneer Exploration and High Climbing in the Baltistan Himalaya," by F. B. and W. H. Workman, illustrated; "Electrical Measuring Instruments, Recorders and Meters," by K. Edgcombe; "Heavy Electrical Engineering," by H. M. Hobart, illustrated; "Steam Electric Power Plants and their Construction," by F. Korster, illustrated; "Text-book of the Steam Engine," by J. Richardson, illustrated; "Boiler Construction," by F. B. Kleinhans, illustrated; "Hydraulics and its Application," by A. H. Gibson, illustrated; "Cranes," by A. Böttcher, translated from the German, enlarged, and edited with a complete description of English and American practice by A. Tolhausen, illustrated; "Sewage Disposal Works," by H. P. Raikes, illustrated; "Economics of American Railway Operation," by M. L. Byers, illustrated; "Railway Shop Up-to-date: a Reference Book of American Railway Shop Practice," compiled by the editorial staff of the *Railway Master Mechanic*; "Patents, Trade Marks and Designs," by K. R. Swan, illustrated; "The Manufacture of Paper," by R. W. Sindall, illustrated; "Wood Pulp and its Applications," by C. F. Cross, E. J. Bevan, and R. W. Sindall, illustrated; "Steam Engines," by J. T. Rossiter, illustrated; "Electric Lamps," by M. Solomon, illustrated; "Steam Locomotives," by V. Pendred, illustrated; "Gold and Precious Metals," by Dr. T. K. Rose; "Photography," by A. Watkins, illustrated; "Commercial Paints and Painting," by A. S. Jennings, illustrated; "Brewing and Distilling," by J. Grant, illustrated; "Specifications and Contracts," by Dr. J. A. L. Waddell and J. C. Wait; and a new edition of "Railway Tracks and Track Work," by E. E. R. Tratman, illustrated.

Mr. H. Frowde and Messrs. Hodder and Stoughton:—"A System of Medicine," edited by Prof. W. Osler, F.R.S., and Dr. T. McCrae, 7 vols., illustrated, vols. iv. and v.; "The Collected Papers of Lord Lister," with an introduction by W. W. Cheyne, F.R.S., 2 vols.; "A System of Diet and Dietetics," under the editorship of Dr. G. A. Sutherland, introduction by Sir Lauder Brunton, F.R.S.; and "Diseases of the Eye," by S. Mayou, illustrated.

Messrs. Gauthier-Villars (Paris):—"Leçons sur les Fonctions définies par les Equations différentielles du premier Ordre," by P. Boutroux; "Œuvres complètes," by A. Cauchy, 1ere. Série, Tome II., Mémoires extraits des Mémoires de l'Académie des Sciences; "Leçons élémentaires sur le Calcul des Probabilités," by de Montessus, illustrated; "La Terre et la Lune: Forme extérieure et Structure interne," by P. Puiseux, illustrated; "Précis d'Arithmétique des Calculs d'emprunts à Longterme et de Valeur mobilière," by H. Sarrette; and a new edition of Villard's "Rayons cathodiques," illustrated.

Messrs. Harper and Brothers:—"Hypnotic Therapeutics," by Dr. J. D. Quackenbos; "Worlds in the Making: the Evolution of the Universe," by Prof. S. Arrhenius, translated by Dr. H. Borns, illustrated; and a new edition of "The History of Science," by Dr. H. S. Williams, 5 vols., illustrated.

Messrs. G. G. Harrap and Co.:—"Manual of Clinical Chemistry," by Prof. A. E. Austin, illustrated; "A Text-book of Topographical Drawing," by F. T. Daniels, illustrated; "Feathered Game of New England," by W. H. Rich, illustrated; and "The Teaching of Practical Arithmetic to Junior Classes," by J. L. Martin, illustrated.

Mr. W. Heinemann:—"The Natural History of Cancer," by W. R. Williams.

Messrs. Hutchinson and Co.:—"The Naturalist in West Cornwall," by W. H. Hudson, illustrated; "The World's Peoples," by Dr. A. H. Keane, illustrated; and "The World's Birds, a Simple and Popular Classification of the Birds of the World," by F. Finn, illustrated.

Messrs. Longmans and Co.:—"Refrigeration: an Elementary Text-book," by J. W. Anderson, illustrated; "The Life and Work of George W. Stow, South African Geologist and Ethnologist," by Prof. R. B. Young; and "A Practical Guide to School, Cottage, and Allotment Gardening," by J. Weathers, illustrated.