

shed on the aetiology of cataract in India. To what extent would glasses such as Messrs. Zeiss hope to make be valuable in India? It is difficult to find a glass which transmits a sufficient amount of visible light and still protects from the infra-red and ultra-violet. Crookes' A and B were excellent in so far as they eliminated a maximum amount of ultra-violet, but it might be more important here in India to have the infra-red rays cut out completely. Delhi green cuts off the extreme red and all the ultra-violet and transmits 60 per cent. white light, and is said to be a pleasant glass to wear.

Investigation is being continued in this direction and no doubt if it is once established that it is desirable for people subject to exposure to infra-red to be protected, a glass will be forthcoming which will meet this end and at the same time transmit a sufficiency of white light for work. The difficulty of a lens which absorbs heat becoming itself a source of radiant heat could no doubt be got over.

Prof. Axenfeld's Clinic at Freiberg (Baden).—Ten most interesting days were spent in this well known clinic. Prof. Axenfeld was exceptionally courteous and showed me anything I wished to see including numbers of histopathological preparations which illustrated many of the facts and theories which he has published. He allowed me to work with Prof. Von Szily who gave up hours of his time in demonstrating and discussing many subjects. Two of his researches must be mentioned, although he has not as yet been able to publish the work in full owing to the difficulty of getting out the German journals due to financial stringency.

Experimental Production of Cataract in the Young of White Rats by withholding Fat Soluble Vitamin A from the Mother.—When young rats are born the mother is fed on a McCollum diet devitaminised for fat soluble A. The young rats after some days begin to show changes in the lens nucleus and in from 15 to 20 days cataract follows.

The early changes are associated with the appearance of calcium salts in the lens. Normally the lens has no calcium salts. This deposition of calcium salts is noteworthy as dysparathyroidism is held to be a highly probable cause of a form of cataract, and the parathyroids are intimately bound up with calcium metabolism. This experimental work of Von Szily's is peculiarly interesting to ophthalmologists in Southern India, where early senility and vascular changes appear to be associated with unsuitable dietetic processes, and where keratomalacia as a recognised disease appears in a small percentage of the patients attending our out-patient departments. I cannot remember ever having seen a child with keratomalacia develop cataract other than that associated with perforating corneal ulcer. On the other hand I have not been particularly on the watch for changes in the lenses of an infant whose mother was suffering from keratomalacia. It will be interesting to do so.

Embryology of the Human Eye.—Prof. Von Szily has made this subject peculiarly his own and worked it up out of all recognition to that which appears in the standard works. Much of this he has published in Von Grafe's *Archiv für Ophthalmologie*, 1922. It has been largely founded on serial sections and reconstructed models. It is comparatively easy to understand this complicated subject when one is able to handle large models of the optic vesicle. They explain very simply such formations as the optic groove. It is easy to see that the groove is not produced for the vessels but for the fibres of the retinal nerve to grow back along on their way to the mesencephalon. If the secondary optic vesicle were a simple cup-like invagination of the primary vesicle, the sprouting fibres of the ganglion cells of its inner layers would have to bridge a gap or find their way over the rim and round the outside of the cup.

More intricate questions like the formation of the conus and the determination of the pattern of the

disc and its spread of vessels have been fully thrashed out. The instructive thing about an embryological study of this sort is the shaking it gives to one's prima facie reasoning with regard to the relation between the cell structure of a neoplasm and its embryonic layer of origin. One is inclined for example to ascribe all sorts of appearances in the gliomata to their origin from one or other layer of the primitive retina. Some maintain that they must be neuro-epitheliomata, others that they may be sarcomata (of mesothelial origin). It is balancing to realise that the human sphincter iridis is a type of smooth muscle of neuro-epithelial origin; in birds it is similar in origin but striped. The dilator pupillae in man is a primitive type of muscle in which the elongate contractile fibres retain their connection with epithelial-like cells. It leaves on one the impression that almost any new cell type can develop from an epiblastic cell layer, and if one harks back far enough into development towards the blastocyst there is no reason why this should not be.

It would be of little interest to readers of the *Gazette* to allude to the many days spent in investigating ophthalmological instruments and interviewing their makers. Most ophthalmologists have spent tedious hours in elucidating, adjusting, mending and improving or inventing apparatus. I visited a number of the houses of note in London and some of those on the continent. Unfortunately I was unable to accept the invitation of Prof. Henker to go to Jena.

A "Madras Model" electric ophthalmoscope has been put on the market by Messrs. Hamblin & Co. It embodies the improvements suggested in my article in the *British Journal of Ophthalmology* for December 1923, and some others arrived at in consultation with Mr. Hamblin. The first of its kind is in use here and is working well.

A convenient pocket dry cell holder with rheostat, suitable for use with an electric ophthalmoscope and fitted with Hellensen dry cells (the only dry cells which we have ever found of value here) was turned out by Mr. Howard, Wigmore Street. It might with advantage carry a 4½ volt set instead of a 3 volt.

Messrs. Down Brothers have taken considerable trouble to perfect the cautery handle suggested in our 1922 report, and the final model was finished under my personal supervision.

Ill health prevented me from visiting Barcelona, and Leiden, and with great regret for a like reason I had to cancel my passage to New York, whither I had intended to proceed in response to kind invitations from ophthalmologist friends.

Reviews.

HEALTH PROBLEMS OF THE EMPIRE; Past, Present and Future.—By Dr. Andrew Balfour, C.B., C.M.G., M.D., B.Sc., D.P.H., F.R.C.P.E., and Dr. H. H. Scott, M.D., M.R.C.P., D.P.H., D.T.M., F.R.S.E. London: W. Collins, Sons & Co., 413 pp. 9 illustrations. Price, 16s. net.

WHEN Dr. Andrew Balfour sets pen to paper on the subject of tropical hygiene, he places the whole of the medical profession in the tropics under an obligation to him; and this admirable book, written by him in conjunction with Dr. Harold Scott, formerly of Hong-Kong, and now of the new London School of Hygiene and Tropical Medicine, is no exception to this rule. It is one of a series of twelve volumes, written by the leading authorities in each instance, dealing with the British Empire in all its phases, under the general editorship of Mr. Hugh Gunn (formerly Director of Education, Orange River Colony), and brought out in connection with the British Empire Exhibition at Wembley.

In the course of twenty short, succinct and most informative chapters the authors have outlined the past history, present position and future outlook of hygiene in the British Empire. As they themselves confess in their preface, such a task might well-nigh seem an impossible one; how ably it has been performed the reader will realise when he has finished the volume; and feels that there is here before him a brief, yet finished and adequate presentation of so vast a subject. There are many admirable and well-known books dealing with British public health problems; others dealing with military and naval medical questions; others dealing in a rather sketchy way with Indian and Colonial public hygiene; yet nowhere else a completed story of the whole, written primarily perhaps for the educated layman, yet none the less of surpassing interest to the medical practitioner in the tropics.

The authors begin with the story of public health in England. The year 1833 is still not a century behind us, yet at that date the hygienic state of London was probably not much better than that of Peking to-day. Fortunately, epidemics of cholera, of typhus and even of yellow fever aroused a demand for better public health, and in 1848 the first General Board of Health was constituted, to be subsequently succeeded by the public health activities of the Local Government Board, and the final present day constitution of the Ministry of Health and of the Medical Research Council under the Privy Council. The story of the London and Liverpool Schools of Tropical Medicine is briefly told, and the debt mentioned which the Empire owes to Mr. Joseph Chamberlain's activities as Colonial Secretary. This section is followed by chapters on the growth of public health work in connection with the navy, the mercantile marine—where conditions are still far from good,—and the army.

From this the authors pass in review the conditions present in the widely scattered Empire, the New World, Africa, India, Egypt, the Middle and Far East, the Antipodes and the Pacific Archipelago. Everywhere we learn the same lesson; that a public health conscience lies dormant as a rule until some cholera or other epidemic arouses a demand for reforms based upon fear; everywhere we read of the few and often forgotten pioneers of imperial health. The history of public health work in India and Burma is dealt with in 16 pages, and it is wonderful how complete an outline the authors are able to present in so short a space. Colonel Cunningham's address in 1922 as President of the Medical Research Section of the Indian Science Congress is quoted as a forceful presentation of the *bad* old days; whilst we are gratified to note that the cartoon in our issue for July, 1923, on the Incheape Commission and the future of medical research in India is reproduced, together with some strong remarks on the penny-wise, pound-foolish policy of stinting medical research work in India of men and funds. Attention is drawn to Dr. N. H. Choksy's draft scheme for a special sanitary service for India, and to the recommendation by the conference of sanitary commissioners held at Simla in 1920 for the establishment of an imperial Indian Ministry of Health. The authors—perhaps wisely—refrain from suggesting any panacea for this country; indeed it may be noted that in the British Isles the present day tendency is all towards centralising and co-ordinating public health work under a central Ministry of Health; whereas in India the present day political tendency is all towards provincialisation and de-centralisation, and to devise any public health scheme for India which will prove to be both efficient and yet de-centralised is a problem which will call for the most able and constructive statesmanship.

Passing from such a general survey of the past and present, the authors next deal with "some imperial diseases"; ankylostomiasis, cholera, the dysenteries, enteric fever, influenza, malaria, plague, small-pox, tuberculosis and venereal diseases. For the benefit of the layman the general method here adopted is to give a very brief account of the history of each disease, of its aetiology, its clinical course, and of our present knowledge

concerning it. The chapter on tuberculosis is admirably written; it brings out in a most striking manner the fact that in sophisticated peoples with an age-long civilisation behind them, tuberculosis tends to be mild in type; but when it is imported into the virgin soil of a non-immunised and unsophisticated population it becomes a terrible, very fatal and almost epidemic disease.

The chapters on these imperial diseases are followed by a section dealing with "some imperial burdens,"—maternity and child-welfare work within the Empire and the infant mortality problem, where New Zealand sets an outstanding example to the whole Empire in its well organised campaign and its exceedingly low infantile mortality rate; alcoholism; the drug habit; and—finally—the financial aspect of public health. This last chapter is one which we would like, did space permit, to quote *in extenso*; we have rarely seen the fundamental facts so clearly set forth. A single example may be quoted however. A large insurance company instituted a scheme which established a "life insurance extension" to which any person insured by the company could present himself periodically for medical examination and general advice. Within two years an expected annual mortality among those insured of 303 lives had been reduced to one of 267, and a saving to the company of 166,000 dollars effected; the cost of the scheme being only 40,000 dollars. The example is a good one; well organised public health measures *pay*, not only for themselves, but in lives saved, in increased material prosperity of the country, in increased national income. Malaria was largely responsible for the passing of "the glory that was Greece, and the grandeur that was Rome." Yet in some of the Southern States in the U. S. A., the disease has been practically extirpated from some seventy towns at a cost of 78 cents. per capita. In Bamberger, South Carolina, malaria cost the community approximately 35,000 dollars in 1919; antimalarial measures were then instituted and the expenditure on this disease fell to less than 1,000 dollars in 1921. Kunhardt estimates that the rat has cost India during the present century approximately £828,000,000; yet it still remains the friend of man, although the cost of rendering a dwelling rat-proof adds but some 2 per cent. to the cost of its construction.

In the final section we come to "the outlook." Here undoubtedly the British organisation presents a model to the whole Empire. And its last and finest venture is the new London School of Hygiene and of Tropical Medicine, which owes its inception to the wise generosity of the Rockefeller Foundation, and of which Dr. Andrew Balfour is the Director. Here we have a central nucleus in education, example and precedent for the whole Empire. The day of the pioneers has now passed, even in the far outlying isles of Empire statesmen are alive to the importance of public health, though they still grudge the beneficial expenditure upon it. The authors close with a mote of confidence and of sane optimism.

We trust that this admirable volume by Dr. Balfour and Dr. Scott will be widely read in India; for it is written in the easy and clear style of the senior author, a style which makes everything that he writes so readable; it is full of information, and full of "ammunition" for the public health advocate; also in its narrative form it presents a very clear outline of a widespread subject. What the upshot of the present situation in India will be, we do not know; whether public health administration and work will be devolutionised to such an extent that it will ultimately devolve upon the conservancy staff of municipalities to carry into execution; or whether we shall see the creation in India of a Ministry of Health, which,—even if only in an advisory and non-executive capacity,—will ensure uniform and continuous progress, we do not know. The Lee Commission has not solved the medical and public health problems of India by shelving their full and detailed consideration on to the shoulders of the proposed Statutory Commission, and the problem is too important and too vital for loose thinking. The whole future of public health work in this country demands to-day, as it has always demanded, but now even

more than ever before, the most careful consideration, and the very wisest of constructive statesmanship.

R. K.

A TREATISE ON HYGIENE AND PUBLIC HEALTH WITH SPECIAL REFERENCE TO THE TROPICS.—By Dr. Birendra Nath Ghosh, F.R.F.P. & S. (Glasgow). 5th Edition, 1924. Hilton & Co., Calcutta. Pp. 586. Price Rs. 6 or 9/6d.

We have pleasure in noticing a new edition of this well-known text-book on sanitation, the former editions of which appeared under the joint authorship of Dr. B. N. Ghosh and Dr. J. L. Das. The new edition is from the pen of Dr. Ghosh alone.

This book bears evidence of thorough revision and presents several new features which add greatly to its value as a student's text-book. The chapter on water has been brought up to date, and a good description of the principles of water purification given. The technique of rapid filtration is clearly described and supplemented by an excellent diagram of a Paterson Gravity Filter. The chlorination of municipal water supplies on modern lines is discussed and the value and sanitary significances of tube wells mentioned. A feature of this edition is the number of excellent new pictures and diagrams illustrating the text. Of these we would mention particularly those on the activated sludge process, those illustrating the chapters on night soil disposal, village and "fair" sanitation. Full advantage has been taken of the advances made in the Great War. A very commendable addition is the interpolation at the end of each chapter of the local legislation on the chapter subject; this should bring home to the student the practical bearing of sanitation and preventive medicine in every day life, and will be useful to those appearing in the higher examinations in public health.

The chapter on insects is much improved by new pictures of mosquitoes, fleas, bugs and lice. In a book of this sort it might be better in dealing with insects as disease bearers to convey only established facts; it is stated that the "bed bug is responsible for many communicable diseases," but the charge has not really been brought home in a single instance. The latest work on the bionomics of the sandfly in Malta by Whittingham and Rook has been made use of.

The chapter on restraint of infection has been largely re-written and gives definite and clear descriptions of disinfecting methods. The section on vital statistics has been revised. A few mistakes which occurred in previous editions have been corrected and several interesting tables of Indian vital occurrences added.

The chapters on village sanitation, and fairs, and the appendices giving the duties of district health officers and sanitary inspectors will be useful to those engaged in district sanitary work.

There are a few misprints..... on page 38 "Chloramine" should be NH_2Cl and Farr's formula is not given correctly on page 548. In the chapter on ventilation more stress might have been laid on the physical changes in the air of occupied rooms in the light of Hill's recent work in England, and a description of the kata-thermometer would have added to the value of the section.

The book is very well printed and bound; the illustrations and diagrams are excellent. We thoroughly recommend this edition as a reliable text book for students and workers in public health in the tropics.

A. D. S.

DYSENTERY IN THE FEDERATED MALAY STATES.—By Dr. W. Fletcher, M.D., and Miss Margaret W. Jepps. Studies from the Institute for Medical Research, Kuala Lumpur, No. 19, 1924, pp. viii+82. 44 Illustrations and Plates. London: John Bale Sons and Danielsson. Price 10s. 6d. net.

We trust that this admirable book will have a wide circle of readers in India, for it is very ably and clearly

written, and its lessons in medical practice in the tropics are of very great importance. The Kuala Lumpur Institute is doing an admirable service to tropical medicine in the publication of its admirable series of special monographs. The authors of the present volume, Dr. Fletcher, Bacteriologist to the Institute, and Miss Jepps, formerly a collaborator with Professor Dobell, and now Protozoologist to the Institute, are both of authoritative standing in the subject discussed.

Dysentery and diarrhoea constitute an exceedingly important factor in the death rate in the tropics; in 20 years in the government hospitals in Malaya alone over 47,000 deaths were recorded from these diseases among a population of one and a quarter million. The authors set out to investigate on a large scale basis the answers to several questions:—(a) the relative frequency of amoebic and of bacillary dysentery; (b) the most expedient method of diagnosis during life; (c) the distinguishing post-mortem features of amoebic and of bacillary dysentery respectively; (d) the therapy of dysentery in general; (e) the pathology of the carrier state in bacillary dysentery; and (f) the role played by secondary infections; a not unambitious programme, but one which has been very well carried out, with most instructive results.

Amongst Europeans dysentery is a cause of invalidism, but only very rarely of death; in the Asiatic however matters are different. Most of the authors' material came from the government Home for Decrepit Indians, Kuala Lumpur, where the inmates are mostly coolies who have come down in the world, deserted from rubber and other estates, are saturated with malaria and in the very depths of poverty. The mortality rate of dysentery in such persons is very high. In the Dardanelles during the war the case mortality rate among the troops probably never exceeded 5 per cent.; at the General Hospital, Kuala Lumpur, where a small fee is charged for beds, and a better class Asiatic hospital patient is the result, the case mortality among 1,678 cases observed was 17 per cent.; at the district hospital where the class of patient is much poorer, the case mortality during the same period was 36 per cent. Hence the first great lesson of the book,—the terrible effect of malaria and of poverty in raising the death rate from dysentery; a lesson emphasised by the terrible photographs of such cases, including one of a group of four men who were cured of dysentery, but died at a later period simply from lack of recuperative power. One male adult of 25 years weighed only 46 lbs. "Poverty is the chief factor in the prevalence of fatal dysentery in the Malay States, and one of the principal causes of poverty is malaria." Malaya is a country of immigrants; the indigenous Malayan is comparatively free from dysentery, the poverty stricken immigrants are devastated by it.

Dropsy is noted as a frequent complication, especially in fatal cases. (The authors do not go into the question of the causation of this dropsy; but the reviewer, who has very frequently seen such a condition of post-dysenteric ascites, does not agree with Colonel Megaw as to its special relationship to bacillary dysentery. It is an equally fatal complication in kala-azar; and in both conditions what appears to happen, as stated by Major Acton, is adrenal exhaustion, with adrenalin deficiency, possibly also with calcium deficiency and parathyroid defect. The daily administration of a maximal dose of adrenalin hypodermically to such cases will often help in the most surprising manner to ward off death.)

In common with all recent workers on the subject, the authors find that bacillary dysentery is far commoner than is amoebic; the figures for 983 cases being *E. histolytica* found in 20 per cent., Flexner's bacillus in 55 per cent., and Shiga's bacillus in 3 per cent. The respective mortality rates for these infections were 20, 30 and 55 per cent. Shiga infections were not common but tended to occur in very severe localised outbreaks, choleraic in character, and with high mortality; even the convalescents may tend to die later from wasting and debility. Flexner infection is far more important, and here the authors do well to lay stress upon the unsound policy of