

dition of the people. A number of pages are taken up with a description of an ideal water-supply and methods of drainage, great stress being laid on the necessity for laying down drains and sewers of the smallest possible size consistent with the immediate removal of the maximum flow at any one time. The wisdom of such a plan is now admitted on all hands, the powerful flow preventing all deposit, and by maintaining a down draught from the houses, avoiding the ingress of sewer-gas.

In the section on "Health in the School," we find an account of the "Half-time System" initiated by Sir E. Chadwick with the object of ensuring to children employed in manufactories a certain time for school-work and recreation, in addition to that devoted to physical labour. The time which should be occupied by lessons at various ages, and the effect of good lighting, warming, ventilation, and personal cleanliness in augmenting the receptivity of pupils, are ably discussed, and the value of military drill as a part of the education is rightly insisted on. The methods for the prevention of the occurrence and spread of epidemics are so briefly touched upon, that we cannot but think that the importance of the subject might have demanded somewhat fuller treatment.

The most important portion of the following section deals with the results of occupation and surroundings on the length of life in various classes of society, the effects of intemperance and of bad feeding being specially considered; the author, however, being careful to point out the sources of fallacy to which all such statistics are liable. The last portion of the book is mainly devoted to an attack on the Malthusian theory.

The work is not, and does not in any way pretend to be, a student's text-book, so that the candidate for a diploma in public health will hardly find it of much value, except, perhaps, from an historical point of view. Still, there is much in its pages which may be studied with advantage by those interested in matters pertaining to general hygiene, especially as it presents in moderate compass a most readable account of the labours of a distinguished pioneer in the field of sanitary science.

OUR BOOK SHELF.

Induction and Deduction, and other Essays. By Constance C. W. Naden. Edited by R. Lewins, M.D. (London: Bickers and Son, 1890.)

THIS little work acquires a melancholy interest from the fact that the talented young authoress has not lived to see its publication. The title essay, on "Induction and Deduction," gained in 1887 the Heslop Memorial Medal, provided out of the proceeds of a bequest to the Mason Science College of Birmingham by the late Dr. Heslop, and awarded annually by the Council of the College. It is clear, concise, well-arranged, and carefully thought out; and leads one to believe that, had the hand of Death been withheld, Miss Naden would have made valuable contributions to philosophic thought. For Miss Naden the fundamental principle in philosophy is the famous Protagorean formula of relativity, that "Man is the measure of all things, of things that are that they are, of things that are not that they are not." She insists on the close inter-connection of induction and deduction in all reasoning, the two processes not being antagonistic but complementary. Both involve cognition and recognition; but whereas induction is a process of cognition involving recognitions, deduction is a process of recogni-

tion involving cognitions. The historical development is traced from the Greek cosmologists, through Plato, Aristotle, Bacon, Descartes and Locke, Mill, Jevons, and J. H. Green; and there are many signs that Miss Naden had not merely grasped but assimilated the teachings of those whose influence on the theory of reasoning she traced.

That Miss Naden was not wanting in humour is seen from the "Legend of the Inductive Method" in her introduction. This is so good as to be worth quoting.

"In the beginning was a set of philosophers, who, instead of looking about them, simply investigated their own thoughts, and tumbled into many ditches, not so much through star-gazing, as through mind-gazing. Out of their inner consciousness they extracted a great many principles which were inapplicable to Nature, and were therefore of none effect; and on account of this wilful perversion they failed to invent the steam-engine or to discover the circulation of the blood. This state of things went on for a long time; and in the Middle Ages matters grew worse rather than better; for now there appeared a set of men called schoolmen, who submitted everything to the authority of the Church and of Aristotle, and wasted their time in frivolous debates about phantoms named quiddities and hocceities and haecceities. Their method also was deductive, and was false. But in the glorious sixteenth century, and in our own glorious island, there arose a Lord Chancellor who wrote a book which changed the face of the intellectual world. This great man found out that the proper office of the mind is to make discoveries, and that the proper way to make discoveries is to interrogate Nature. He laid down rules for the correct framing of our interrogations. He is the father of all such as make far places near by steam-engines and electric telegraphs, or numb our pain by anaesthetics, or light the world by gas or electricity. His method is called inductive, and is true."

The other essays are on ethical and sociological questions, and on "Hylo-Idealism: the Creed of the Coming Day." They are somewhat unequal in value. The work is prefaced by a short memoir. C. LL. M.

The Lepidopterous Fauna of Lancashire and Cheshire. By John W. Ellis, M.B. (Vic.), F.E.S. (Leeds: Printed by McCorquodale and Co., 1890.)

THIS volume, the contents of which are reprinted from the *Naturalist*, will be of great service to all students of the subject to which it relates. Dr. Ellis does not offer his list as conclusive; but he has "endeavoured to present, as completely as possible, the facts known with reference to the occurrence in Lancashire and Cheshire of the British species of Lepidoptera." The list is preceded by a short statement as to the geological and meteorological conditions which, by affecting the flora of the district, affect indirectly its lepidopterous fauna.

LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. No notice is taken of anonymous communications.]

Intelligence of Chimpanzees.

ONE is glad to see that your review of Mr. Stanley's book calls attention to the following statement, which is made on the authority of Emin Pasha, and rendered in his own words:—

"The forest of Msongwa is infested with a large tribe of chimpanzees. In summer-time, at night, they frequently visit the plantations of Mswa Station to steal the fruit. But what is remarkable about this is the fact that they use torches to light the way! Had I not witnessed this extraordinary spectacle personally, I should never have credited that any of the Simians understood the art of making fire."

On this passage your reviewer remarks:—"We cannot doubt