

MEASLES AND STRAW-FUNGI.

The Prevention of Measles. By C. Candler. (Melbourne, Victoria. London: Kegan Paul, Trench, and Co., 1889.)

NOTWITHSTANDING the amount of labour which Mr. Candler has expended upon this work, and the ingenuity of some of his hypotheses, we cannot but think that his method might almost be taken as an example of how an inquiry of this kind ought not to be conducted. The author starts with an account of the observations of Dr. Salisbury, an American physician, published in 1862, by which he claimed to have established that a disease called "camp measles," prevalent among American soldiers, was produced by infection with certain fungi derived from musty straw. Salisbury cautiously abstained from positively asserting that the disease was identical with common measles, but said he could see no difference between them; and that an attack of the former protected from the latter. If the diseases were identical, his explanation applied to common measles.

This hypothesis of Dr. Salisbury's was very carefully examined by Dr. J. J. Woodward, Dr. Pepper, and others, who came, by experiment and reasoning, to the conclusion that Dr. Salisbury had not proved his point; and the theory that straw-fungi are the cause of measles has been generally discredited.

Mr. Candler thinks that the refutation of Dr. Salisbury's theory was not complete; and, falling into the not uncommon fallacy that "not absolutely disproved" is equivalent to "proved," he treats it as if it were certainly established, and proceeds to build further hypotheses upon it.

This we consider to be an inversion of the right method of procedure in science. Supposing that Salisbury's results suggested matter for further inquiry, the proper way to begin would be by testing their soundness. If Mr. Candler had himself repeated, or got some scientific friend to repeat, Salisbury's experiments with mouldy straw derived from a place where measles was rife, he might have obtained results, either positive or negative, of great value; and would certainly have made a more important contribution to the subject than is contained in the present volume.

Mr. Candler further extends the straw-fungus theory by supposing that the fungi become changed into bacteria in the body; and, indeed, uses Salisbury's untested and unpeated experiments as a proof of one of the most fundamental questions (if it be a question) of biology—namely, the alleged genetic relation of fungi and bacteria.

The author's argument is so characteristic of his book that we venture to state it formally thus. Salisbury, by injecting fungus-dust from mouldy straw into himself and others, produced a disease resembling measles. But all such diseases are produced by "pathophytes," *i.e.* bacteria. Therefore Salisbury "*caused pathophytes to develop from fungi*" (the italics are the author's) "and demonstrated that cardinal point in dispute in regard to the bacteria."

An easy solution indeed! if, at least, it were proved that the dust of mouldy straw contained no bacteria

(though such are pretty certain to be present), and if it were proved also that fungi by themselves cannot produce specific diseases (though some such diseases are well known in the lower animals, and are not quite unknown in man).

But even granting these points, surely the experiment might be repeated at least once before it is made a corner-stone of cryptogamic botany!

The dangerous fungus of measles Mr. Candler believes to lurk in damp and mouldy straw palliasses; and rejecting altogether the idea of contagion, he believes that measles is entirely due to the use of straw bedding imperfectly aired. Towards the end of the book the author begins to tread on firmer ground than at the beginning, for he bases his conclusions on some induction from facts.

In the great epidemic of measles in Victoria in the years 1874-75, he affirms that he could not discover any instance of measles in a dwelling from which damp straw (in the form of bedding) had been excluded, but in every house where measles occurred, the presence of damp straw in the bed-rooms was easily made out. Some curious instances of exemption, especially in the case of public institutions, such as asylums and the like, are quoted, and we seem to be on the verge of a systematic collation of evidence. But the result is disappointing, as the enumeration of instances is altogether inadequate to establish a general law. It is strange that Mr. Candler makes so much of the exemption of lunatic asylums from measles, to account for which he has recourse to elaborate explanations of the use of straw bedding. Surely the exemption of persons shut up in asylums, prisons, &c., from contagious epidemic diseases, is a very familiar fact, and easily explained. Such persons receive few visitors, and what is to the point here, lunatics especially are seldom or never visited by children, who are the chief carriers of the measles-contagium. Nor can we say that the author is more successful in explaining on his theory the great epidemics of measles in Fiji and in Japan.

Mr. Candler's book is written with much earnestness, not without candour, and contains many curious facts, though it fails to prove its main contention. There is nothing impossible in the supposition that damp straw favours the growth of "microbes"; and it might conceivably be proved by sufficient evidence that this is a favouring or even a necessary condition for the growth of the specific virus of measles. The objection is that the evidence is quite inadequate. Moreover, were such a law established, it would by no means prove that the cause of measles was a fungus, since it might just as well be a bacterium or other living thing.

In the meantime it cannot do harm and may do much good to draw attention to the insanitary consequences which may follow the use of straw bedding. A straw palliasse unchanged and undisturbed for years is not a desirable article of furniture, and housekeepers will do well to turn such things out of their bed-rooms. Fortunately, in this country they are being rapidly superseded by steel mattresses; and on inquiry at the large furnishing houses we find that few palliasses are now sold. We shall see whether measles becomes thereby extinct.

J. F. P.