

MORE MINOR HORRORS.*

Those who read "The Minor Horrors of War," by Dr. A. E. Shipley, Master of Christ's College, Cambridge, and Reader in Zoology in the University, will welcome another book from one at once so learned and so humorous.

In his preface, Dr. Shipley says that his publisher tells him that the volume will be regarded as a sequel to "The Minor Horrors of War," and that sequels are not a success. In spite of this warning, he decided to publish the volume, for there still "air some catawampous chawers in the small way, too, as graze upon a human being pretty strong," that were unmentioned in his earlier book. Most people will be glad that he disregarded the warning.

Indeed, the "Minor Horrors" dealt with in the present volume are both numerous and important, including cockroaches, the bot or warble fly, the mosquito, the yellow fever mosquito, the biscuit weevil, the fig moth, the stable fly, rats, and the field mouse. Our knowledge of these is for the most part neither precise nor extensive.

COCKROACHES.

Dr. Shipley remarks that "In 'The Minor Horrors of War' we rather neglected the Navy—the senior Service, and till now the more dominant of our two magnificent forces—partly because it is less interfered with by insect pests than is the sister Service, though the common pests of our poor humanity—the flea, the louse, the bug—are, like the poor, 'always with us.' Like aeroplanes, insects have captured the air; like motors, they have made a respectable show on land; but they have signally failed at sea. They have nothing corresponding to battleships or submarines; and a certain bug, called *Halobates*, alone hoists the insect flag on the ocean, and that only in the warmer waters.

"But one insect at least causes more trouble to sailors than to soldiers, and that is the cockroach." The author tells us that it came into England at the end of the sixteenth century, and, like the bed-bug, it came from the East.

"Cockroaches are very difficult to catch. They practically never walk, but run with a hardly believable rapidity, darting to and fro in an apparently erratic mode of progression.

"Even when caught they are not easily retained, for they have all the slipperiness of a highly polished billiard-ball. They have great powers of flattening their bodies, and they slip out of one's hand with an amazing dexterity.

"Besides their slipperiness they have another

weapon, and that is a wholly unpleasant and most intolerable odour, which is due to the secretion of a couple of glands situated on the back of the abdomen.

"The glands which produce this repellent odour are sunk in the soft membrane which unites the fifth and sixth abdominal segments, and the moment a cockroach is attacked it exudes a sticky, glue-like fluid, which gives out this most unendurable smell. The fluid is extraordinarily tenacious, and difficult to remove from the hand of those who have touched the insects. No doubt the cockroach, in nature, finds safety in this from the attacks of insectivorous animals. . . .

"Cockroaches will eat pretty well everything. They are a great nuisance on board ship, where they are said to gnaw the skin and nibble the toenails of sailors. Hardly any animal or vegetable substance is absent from their menu. It is said that they will even devour bed-bugs, and that natives on the African shores troubled by these semi-parasites will beg cockroaches as a favour from sailors in passing ships. . . .

"Even the most devoted friend of cockroaches can find little to say in their favour, except that they are currently reported to form the basis of the flavouring of a very popular sauce; but even wild cockroaches will not drag from me what the name of that particular sauce is."

It is important to note that "cockroaches will devour human sputum with avidity, and are frequently to be found in spittoons (or, as the more delicately minded American calls them, 'cuspidors'), and it is interesting to know that after feeding the insects on infected sputum from a tuberculous patient, the tubercle bacilli are found in the fæces within twenty-four hours; two specimens which had been fed on staphylococci showed these pathogenic organisms in their fæces, and in the cultures on agar-agar, which were obtained from their dejecta."

Dr. Shipley concludes a most interesting chapter by quoting from the report of Dr. C. Conyers Morrell, who undertook some investigations and observations as to what part, if any, cockroaches play in the dissemination of pathogenic organisms. These experiments were conducted on one of the Union Castle liners sailing to South Africa, and proved that "the common cockroach is able by contamination with its fæces (1) to bring about the souring of milk; (2) to infect food and milk with intestinal bacilli; (3) to transmit the tubercle bacillus; (4) to disseminate pathogenic staphy-

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[previous page](#)

[next page](#)