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Further particulars can be obtained on application to Dr. M. I. Balfour, Honorary Secretary, Countess of Dufferin's Fund, Simla.

RATS.

By J. WALLACE, Esq., C. E.

THE cost of the rat to India between consumption of food and destruction of property amounts to many crores of rupees per annum. Add to this his capacity to distribute plague infection to human beings, and to infect food by walking over it with soiled feet, and we have an idea of the mischief this formidable rodent can cause. His powers of multiplication are such that so long as Indians, especially in cities, will continue to throw food refuse out of doors, they will multiply beyond all means of control. It is nevertheless possible to protect both life and property against him by suitable precautions. Houses in Indian cities seem to be built with special facilities for the entrance of rats. Exterior ornamentation provides ladders for them, mouldings and balconies are level roads round the building and climbing plants and trees offer additional facilities. Within a lumber room becomes a perfect breeding place while stables and lofts are places of refuge in case of a raid.

It is useless to make spasmodic attacks on the rat so long as his daily life is one long campaign against us. Traps and poison are the most popular weapons used against him and of these there is a great variety and the great secret of success in their use is to have all foods securely protected so that the choice becomes either the bait or nothing.

Although there are very few eatables that a rat will not touch he has his preference among foods with a pronounced odour like cheese, dried fish, bacon, tallow, &c., and if the trap is one that is released by touching the bait every care should be used in keeping it in perfect adjustment and oiled at the joints. This precaution is too often neglected, causing failure. The cage trap with an entrance in the form of a funnel of pointed wires has no mechanism and is good so long as the wires preserve their joints and the old porteullis with its sliding door remains a strong favorite as it *appears* so very safe to the rat. But it needs occasional scolding to keep it effective. The same precaution should be taken with the spring traps that kill.

People are not always prepared for the incursion of rats and it is useful to know how to devise a trap with materials at hand. The Indian housewife has a very ingenious and simple trap which consists of a chatty rather more than half full of water, on which a layer of bran or rice husk floats. On this she spreads a little strong-smelling dried fish in powder. The rat attracted by the odour jumps down on to the dry surface just an inch or two below him and drops through the bran that closes over him. Several rats may follow each other, none knowing the fate of his predecessor.

Another trap is one on which the rat literally "walks the plank" into a cold bath. The materials are a bucket half full of water, a chair or box a little higher than the bucket, and a bit of board a quarter inch thick, two inches wide and nine inches long, to the end of which a bit of toasted cheese or bacon is tied. The bucket is placed against the chair on which the baited stick is placed with the bait projecting over the bucket. More than half of the wood must be on the chair so that the rat may be half over the edge of the chair before it tilts and drops him into the water. This trap must be reset for each rat but if the stick is hinged in any simple way to a separate bit of board it will recover and be ready for the next rat as the inner end is heaviest. It may be tied between two strings, the strings being attached to a nail at each side so that the stick will swing on trunnions like a cannon.

Bisulphide of carbon is a liquid producing a very poisonous gas that is heavier than air and if put in a rat-hole kills every thing, rolling down and filling the nest.

Gas tar when put in small quantity into a rat-hole drives the occupants away as they strongly object to soil their feet with tar. An experiment was made in a gas works where rats were numerous by painting two rats with tar and releasing them. They very soon fouled the burrows and drove the other rats out.

One of the simplest poisons is barium carbonate which is mixed with eight parts by volume of oatmeal into a stiff paste and flavoured with grated cheese. It is cut into half-inch cubes. Sponge fried in oil after being cut into pieces of about a quarter of an inch is also used. It shrinks a good deal and when eaten the oil is dissolved out and the sponge resumes its original size and blocks the alimentary canal.

A mixture of dry oatmeal and grated cheese with one third of their volume of fresh plaster-of-paris has been successfully used against rats. A small vessel of water should be placed near the food. This poison will not keep long as the plaster is liable to set.

As rats are migratory no one knows when to expect an unwelcome visit from them, it is well, therefore, to protect all food from their attacks and to burn all food refuse instead of throwing it out of doors as practised by most Indian domestics.

CHRISTMAS.

By MISS A. M. BURKE.

THE day of all days is near, and this year it brings Peace; we must put aside all petty worries and try to follow the teaching of the Great Master and each help in every way we can towards the reconstruction of a better world. We look around and view the havoc and destruction caused by a Christian monarch in Christian lands, who for years planned to throw the world into misery and who succeeded only too well, and we pray that out of the vast suffering better understanding may emerge and a great universal brotherhood working for good.