

only in ordinary illnesses, but to women in their confinements. If this be the case it will adversely affect a very large class of workers for whom comprehensive legislation has just been effected, and, so far as we see, drive them completely out of employment—these are *Registered Midwives*. The rich and upper classes do not usually employ midwives, but the poor or lower middle class do very extensively, in fact entirely in some districts; but if they are from henceforth to be entitled to free *medical aid*, where will the trained midwife come in? A friendly neighbour will most likely do all else that is required.

PERSONAL PROPHYLAXIS AGAINST PLAGUE.

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SOME knowledge of those conditions which assist in the prevention of disease is essential for all Europeans in India. Nurses being brought into contact with infection as no other body of women are, for their own sakes as well as for other peoples' it is essential that they should study precautionary measures.

Now in no other branch of preventive medicine has there been so much wrongful expenditure of energy and money as in that which has been directed against the spread of plague. With our present knowledge of the causation of this disease, it makes curious reading to peruse the account of the preventive measures adopted not only by lay people but by medical authorities in India at the onset of this dreadful disease.

The failure of these measures led to a sort of fatalism which was revealed by the decrease of public money voted by municipalities, etc., to contend against it; and this half-hearted battle persists still in spite of the fact that our knowledge of the conditions which favour an epidemic of plague is now very perfect.

A great deal may be done by private individuals to ensure immunity against plague, and I wish to review briefly in this paper the precautionary measures that each one may adopt for himself or herself. Plague, as nearly everybody knows now, is of two types. I will deal first with the less common of the two: that is the pneumonic one. The incidence of this form of plague in India is very small—so small that nurses may never in their whole Indian experience witness a case. But small epidemics have occurred; for example there was an outbreak among the nursing staff in Bangalore last winter. It is a very fatal disease, and reveals itself just like an ordinary attack of pneumonia, except that delirium is more common and as a rule the sputum is very bloody. Bacteriological examination of the sputum reveals at once—with no

possibility of doubt—what the real cause of the pneumonic condition is : millions of the typical plague germs can be seen under the microscope. Now ordinary pneumonia, which is caused by a germ totally different from the plague bacillus, namely the pneumococcus, is infective in a very small degree. So little is the danger of the spread of it that cases of ordinary pneumonia are treated in the general wards of hospitals. Very different is the case of plague pneumonia. The breath of a patient suffering from this disease is exceedingly infective. Small particles shot out in the act of speaking or in the forcible expiration of these patients carry enormous numbers of the bacilli, and if these lodge in the respiratory tracts—the mouth and nose of a nurse bending over the case—the danger of her acquiring the disease is enormous. In no other disease has there been such fatality among nurses and doctors as in pneumonic plague. There was issued just the other week in one of the illustrated journals a photograph of the medical and nursing staff of one of the plague hospitals in China. In it all wear their working costumes, and these consist of an overall which descends to the feet, and a mouth and nose mask. Such a photograph has struck many people in India as strange, but it must be remembered that the existing type of plague in China is pneumonic for the most part. The causative germ is the same as the one in Indian plague, but, for certain reasons which are being closely studied at present, it has acquired a partiality for the respiratory tract. Obviously then some such costume is necessary for all nurses and doctors working against this particular type of plague. A mask which will prevent the entrance of germs into the nose and mouth of the nurses direct from the patient's breath is absolutely necessary. Careful disinfection of the patient's sputum is also essential.

Second.—By far the commonest type of plague known in India is Bubonic Plague. Here the germs live in the blood stream and internal organs. They are introduced into the blood by the agency of rat-fleas, in the vast majority of cases. Human fleas and bugs may *occasionally* transmit the disease from one patient to another, but such instances are very rare, and in India at all events the agency of these insects as transmitters of plague may be regarded as of no practical importance.

Plague then is a disease of rats which is accidentally communicated to man by the fleas which leave the rats on their death, and jump on to man to get a meal of his blood. Preventive measures therefore are directed against:—first rats and second rat-fleas.

The presence of dead rats in a house ought to be a grave warning to its owner that plague is at work among these rodents. At present house disinfection for plague is in an experimental stage, and efforts are

being made to find some means of freeing houses of both rats and rat-fleas. As a matter of fact such a means must be gaseous, and it must penetrate rat burrows; it must be lethal to rats and to rat-fleas, and if possible it must not injure fabrics. The efforts are still unsuccessful as either the gasses which have been tried are safe but useless, or efficient but too dangerous to human life for use.

So probably the best thing to do at present is to evacuate the house at once and remain out of it till the epidemic has died down, or the medical authorities are certain that no more rats are dying in the vicinity of the house.

Another important measure is the disinfection of clothing so as to get rid of rat-fleas. This is specially necessary in District Hospitals situated in localities where plague is raging. The clothing of native patients is usually excessively verminous and constitutes a grave danger.

A really sound way to kill rat-fleas is as follows :—It was described first by Captain J. Cunningham, I.M.S., of the Bacteriological Laboratory, Bombay. On a level space some 30 feet from the hospital at least, and outside the shades of trees, etc., build a sort of platform of fine sand spread out smooth. The space must be fenced in. On this clothes may be laid out in a single layer during the heat of the day when the sun's rays can act directly on the clothes. The temperature of the sand ought to be not less than 120° Fah. (49° Cent.). The clothes should be left out in the sun for one hour and ought to be turned once or twice. No clothes should be laid within three feet of the edges of the platform. This will effectually kill all fleas and render the clothes absolutely harmless.

Another method of killing the fleas is to soak the clothes in an emulsion of petroleum made up as follows* :—

Take three parts of soap and fifteen parts of water; put the soap in the water and let it soak for two hours, then boil it till the soap is dissolved. Take 100 parts of kerosine oil, warm it very carefully, avoiding possibility of the flame getting at the oil while being heated, then add gradually the warm oil to the soap solution, shaking and stirring the while till the whole becomes emulsified. The first addition of oil must be very gradual. As this becomes emulsified the remainder may be more quickly added.

For use as a disinfectant of clothes and of houses mix one part emulsion with 19 parts of water immediately before use. The diluted emulsion does not keep long, therefore must be freshly made as required.

* This method has been in use for some years in the Bacteriological Laboratory Bombay.

The easiest way is to use a gardener's watering can and to freely soak the floors and bottom of walls with it. The emulsion acts by killing the fleas.

Now in addition to these measures of house disinfection, evacuation and clothes disinfection, we have a great stand-by in the use of the plague vaccine or prophylactic. Of the efficacy of this, in two directions, there can be no doubt both from experimental studies and statistics.

1st. It reduces greatly the chance of a person getting plague.

2nd. If the person does get the disease, it will run a much milder course and recovery is more probable.

The drawback to its use is a little fever of perhaps one or two days' duration, and a more or less painful arm (the injection site). But balance these drawbacks against the advantages given by its use.

The patient who is suffering from bubonic plague is himself then practically not a source of infection. In ordinary cleanly conditions he can be looked after with absolute safety to the nurse. The germs are in the blood and internal organs. They cannot escape to infect other people, unless by the agency of fleas and perhaps bugs.

ARE NURSING AGREEMENTS UNFAIR ?

READERS of the *Nursing Times* must have repeatedly noticed in the columns of "Legal Answers," advice and comment upon the interpretations of some extraordinary agreements between nurses and their employers, and must by this time have received the impression that all is by no means well in this department of nursing life—that, indeed, there is much needed in the way of reform.

From the legal standpoint I am about to set down some suggestions on this subject of nurses' agreements, and, to begin with, I do not think I can do better than draw attention to a case upon which *Truth* has, I am glad to say, recently commented with some severity.

Truth refers to the form of agreement subsisting at a Scottish hospital, by which probationer nurses bind themselves to remain in the service of the hospital for a term of four years, the wages being £10 the first year, and £15 the second and third years. But while the nurse binds herself for four years, the hospital committee takes very good care to do nothing of the kind. The committee reserves to itself the right to dismiss the nurse at any time, upon any ground; and consequently the nurse, after making all arrangements to enable her to comply with her part of the bargain, may suddenly find herself and her baggage out in the street from absolutely no fault of her own. I do not