

It may interest you to know that I have just recently had a letter from a nursing sister, who trained in India and is now nursing in Portugal. She says, 'The standard of nursing is very low in Portugal. Nursing is done mostly by the religious orders, and the girls from a good class and good family do not take up nursing.' How very much does not that sound like our own country? Therefore, we must raise the standard of Nursing.

I thank you for giving "Nursing" a little publicity in your grand paper, for I feel we have long hidden the nursing profession under a bushel and its light has not been made known, hence the lack of public sympathy.

Yours faithfully,

E. Paul.

Mosquitoes and Malaria

A most annoying sound at night is the humming of the mosquitoes, the insect responsible for the spread of malaria and the mortality and morbidity of millions of people in India.

Three species of mosquitoes spread disease; the anopheles carries the organism which causes malaria; culex is responsible for the spread of filariasis; the aedes aegypti is responsible for spread of dengue and yellow fever.

100 to 200 eggs are laid at a time by the anopheline mosquitoes on stagnant water and sometimes on the damp surfaces. The presence of air cells and the boat shape enable the eggs to float in water. Fresh eggs are white and later become black in colour. The heat of the sun helps the eggs to hatch and within 3 days the active larvae comes out. Most of the time they swim which is attractive to watch, or they float on the surface of water. The larvae are very voracious and feed on small aquatic plants and animals. In 6 to 10 days they complete the present life cycle and form pupa or nymph. These float always near the surface of water and are also active. This is a stage of complete starvation. The pupa breathes through two tubes present in the thorax. The pupa state ends in 24 to 48 hours and the insect or the imago comes out. This young new mosquito sits on the shell of the pupa, which floats above water until its wings and body are dry.

The male anopheles mosquito lives on vegetable juices and takes no part in the spread of malaria fever. The female sucks the blood and with every bite she injects a quantity of salivary fluid which sets up local irritation and inflammation. A blood meal is highly necessary before the female can produce a batch of eggs. They live under leaves of trees, bushes, holes, dark corners under cup-boards, in cow-sheds and other dark damp places. They are very active in the night. The female mosquito flies to a distance ranging from one to two miles.

Malaria is a specific infectious disease, caused by a sporozoon parasite carried from man to man by the female and anopheline mosquitoes. The salivary fluid contains the malarial parasite.

Human malaria is of four kinds and is carried by four different kinds of parasites, namely plasmodium vivax causing Benign tertian malaria; Plasmodium falciparum cause of Malignant or sub-tertian malaria; Plasmodium malaria causes the Quartan type and Plasmodium ovale causes a mild form of tertian malaria.

The last type is not found in India. These 4 types have two cycles of development; one asexual cycle in man and secondly the sexual cycle in the mosquito. The asexual cycle takes 48 to 72 hours and the sexual cycle 12 to 21 days to be completed, if conditions are favourable. In Benign tertian malaria fever comes on alternate days; in the Quartan type every fourth day; Malignant tertian shows irregular fever. Benign tertian and Quartan type are the most persistent forms and relapses are very common. The Malignant type, though more amenable to treatment, may occur in very grave and fatal forms. It may also cause cerebral symptoms by blockage of the blood vessels in the brain. This is a very serious condition, often fatal.

The incubation period is 10 to 14 days. In man the parasite attacks the red corpuscles, giving rise to pyrexia, also enlargement of spleen, anaemia and cachexia, if not properly treated. No man can have natural immunity against malaria but can have partial immunity which is specific, acquired as a result of the repeated infection by the particular type of organism.

The fever in malaria is marked by three stages; the cold stage, the hot and the stage of sweating. In the first stage patients feel chill and will shiver uncontrollably. The pulse will be feeble and small and gradually increase in rate. The temperature also rises. In 10 or 15 minutes the patient passes on to the second stage, the hot stage when he feels very hot. The skin and mouth are dry and he will be very thirsty and have a bad headache. Temperature will range from 104° F. to 106° F. and the patient may be delirious. This stage passes and the sweating stage sets in. Now the skin begins to function. There will be profuse perspiration, the temperature falls down. The pulse improves and the patient feels a little more comfortable. In this stage more attention and care are necessary, as the patient may collapse. There are certain factors which help in the spread of this disease.

1. The presence of gametocytes in the peripheral blood is essential for the transmission of the disease from one individual to another. This is found mostly in families of infected children.

2. Presence of a suitable place for the anopheline mosquitoes to breed. They cannot breed in places where there is heavy rainfall and a temperature below 60° F. Climatic conditions help in the development of the sexual cycle of the malarial parasite which takes place in the midgut of the mosquito.

Economic conditions such as insufficient food, overcrowding and exposure to privations have an important bearing on the incidence of malaria.

4. Insanitary conditions in houses and towns. In most of the houses of crowded cities, sanitary conditions are so poor, that there are no proper latrines or drains for water. Domestic animals are also kept inside the houses. Sometimes the public drains are so poorly attended so that we can see millions of mosquito larvae living.

5. The effect of rice cultivation on the incidence of malaria varies markedly in different places. Rice fields which are flooded during Monsoon are seldom malarial. But in districts where there are only a few inches of water during the rainy season, the disease is usually prevalent. The anopheline mosquitoes chiefly breed in the nearby pools, channels and water storages, made for cultivation of rice. By this I do not mean rice must not be cultivated, but the breeding of mosquitoes or its prevention depend upon the method of cultivation & irrigation.

As nurses we should study something about prevention and control of malaria, "Prevention is better than cure". Protection against the bite of mosquitoes is most important. It is always safer to use mosquito nets at night in localities where there is malaria. They must be hung inside the poles and well tucked in all round under the mattress. The use of mosquito boots, veils and gloves help to some extent, so also does the use of medicated cream to exposed parts of the body.

The destruction of adult mosquitoes is the next problem. Spray killing of adult mosquitoes is now recognised as one of the most valuable methods of malarial control. There are several kinds of sprays, but D. D. T is found to be the best. It suffices if a place is sprayed twice a week. Fumigation with sulphur dioxide and cresol vapour is another method. Usually anopheline mosquitoes spend the day time hidden among long grass, in bushes and under leaves, and so it is advisable to clear this away from the vicinity of dwellings.

The next measure to be undertaken is to kill mosquito larvae. This is by complete eradication of breeding places. Jungles must be cleared selectively and places where there is a possibility for stagnation of water must be drained and dried. Adopting sub-soil drainage system is better in places where there is no possibility for open drainage. A preparation of cresol with oil is used to spray the water. Filt and crude oil are also of great value. All vegetation should be removed from the water before spraying.

Where it is not possible to employ the above methods, wells and other sources of water may be stocked with larvivorous fish. There are many varieties of fish which prey on mosquito larvae but to be effective, they should be present in large numbers. Floating weeds and other debris should be removed from the water. Larger fish which may feed on these fish should also be removed. Improvement of economic conditions and use of drugs as prophylactic and curative agents will also help in the prevention and control of malaria.

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Miraj.

By courtesy of British Information Services (India).
BRITISH ACHIEVEMENTS IN TROPICAL MEDICINE NO. 2.

Paludrine Treatment for Malaria.

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[Consulting Physician to the Hospital for Tropical Diseases, London]

The epic story of the discovery of paludrine by two British researchers, F.H.S. Curd and F.L. Rose (1) is well known and its action on *Plasmodium gallinaceum* by D.G. Davey is deeply appreciated, so that we are now in a better position to assess the role it may play in the suppression and treatment of malaria.

Paludrine (N1-p-chlorophenyl-N5-isopropyl-biguanide acetate) exerts an action on malarial plasmodia somewhat different to that of quinine or atebrin. Its effect upon the hypothetical exoerythrocytic stages (E.E. forms) of *Plasmodium vivax* and *P. falciparum* is only equalled by that of *Plasmoquine*, but it has the great advantage of being more efficacious and certainly much less toxic.