

REMINISCENCE OF ARMY MALARIA CONTROL

BY

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IN the Union Defence Force in World War II malaria control was carried out by men in the Hygiene Section of the S.A.M.C., who had training in civilian life to deal with such a problem under African conditions. Responsibility for enforcing all sanitary requirements, including anti-malarial precautions, rested with unit commanders, who were advised by the medical officers attached to formations. Practical demonstration and supervision of actual measures put into operation were carried out by officers and non-commissioned officers of the Hygiene Section of the S.A.M.C. which was on detached duty to individual formations. The training and experience of these men could deal with any situation arising out of the known conditions, but when it became evident that the newly formed South African Armoured Division was to operate under totally different conditions to those which the Union Defence Force had hitherto experienced, a special unit was formed whose duties would be solely that of malaria control.

This unit was known as "A.M.C.U." (anti-malarial control unit) and it was to be highly mobile. The personnel were drawn from the Hygiene Section attached to the 6th South African Armoured Division, preference being given to men who had training or experience of this work in the past. There was Jimmy, John, Lappies, Buck, Joe, Frikkie, Coatsie, and myself; the unit functioned under Peter, who was Divisional Hygiene Officer. Up to now we had been dealing with malaria vectors common to the Ethiopian region and those of the South Mediterranean littoral, so the first thing to be done was to give the personnel of the new unit instruction and experience in the control of the vectors and conditions which might be encountered in the new operational theatre. Instruction was given at Maadi in Egypt by a special British Army group, many of whom were world authorities on malaria. The training was thorough and revolutionary, and in fact laid a foundation on which future studies could be based. For experience the A.M.C.U. was sent to Syria where the personnel were attached to various British Army Malaria Control Units and worked under conditions which were afterwards found to approximate to those in the Balkan States and Southern Italy.

After its return the unit was dispersed and only brought on to a war establish-

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ment footing on the eve of the departure of the 6th S.A. Armoured Division, "destination unknown." In the meantime the Division had received its first instruction in the new malaria drill, and all personnel were equipped with individual mosquito nets and a small container filled with insect repellent liquid at one end and mepacrine tablets at the other. The A.M.C.U. had three three-ton trucks, one jeep and six motor-cycles allotted to it; war stores consisted of a wonderful array of tools for drainage work, and pumps and rotary dusters for the application of insecticides. Anti-malarial policy had been decided on and was to be as follows :

- (1) Front-line precautions. Troops in battle areas were to rely on protective clothing, the application of insect repellents, and on chemoprophylaxis. Under all conditions, when circumstances allowed, troops were to sleep under nets.
- (2) Battle echelon areas. Precautions here to be the same as above with the additional use of insecticides.
- (3) Lines of communications and base camps. Protective clothes to be worn, nets to be used, and permanent anti-malarial works to be carried out, in conjunction with the use of insecticides and larvicides.

After embarkation it was certain that the destination of the convoy was Italy, and although our troops operated in areas where the civilian malaria rates had risen to alarming proportions because of the breakdown in health services and lack of insecticides and anti-malarials, our infection rates were amongst the lowest in the Allied armies exposed to malaria infection.

On landing in Italy mosquito control at first was an easy matter, with the Division static in its concentration area in Puglie, routine anti-malarial measures plus mosquito surveys being carried out. But when the tide turned at Cassino and the German wall of resistance collapsed the front moved so fast and halts *en route* were of such short duration that the organization and equipment of the A.M.C.U. could not deal with the situation. It was realized that reorganization on real mobile principles, and relying on the one thing that a "mosquito flying squad" could effectively carry out—*i.e.*, anti-adult spraying of mosquito resting places—was required. A few members of the A.M.C.U. had already been drafted back to hygiene and ambulance duties, and north of Rome the remainder of the unit was disbanded, only myself remaining with divisional headquarters. A mobile spraying unit, consisting of a small Austin truck on which was mounted a compressor unit, was attached to our Division from Army Command. This was manned by a driver and spray operator, with myself forming a third member of the crew. We were really mobile, and for a single spraying unit did remarkably well, the only fault in the new set-up being that one spraying unit could not deal effectively with all the work required of it.

The spraying unit worked on the divisional axis; it was always attached to the leading Field Ambulance, doing duty to the brigade in action at the time, leap-frogging to the new Field Ambulance as that advanced forward of the position taken up by the former ambulance so that the spray unit was always

in a leading position, spraying out all houses, stables and piggeries taken by the infantry, and working backwards on the man axis till a new area was liberated. All premises which could be entered or occupied by our troops were sprayed out with Army "Flit," as were all the houses bordering the roads in the divisional area.

Theoretically, there was to have been a spraying team attached to Army and working on the divisional axis to connect up with the areas treated by us. But due to the large area covered on the divisional front we were never able to work backwards far enough to meet the Army spraying team, following up. The job was too big for the personnel and equipment allocated to do it.

In July, 1944, we were visited by an officer from the 10th British Mobile Malaria Laboratory, who brought with him some of the new wonder insecticide which we had heard about, but had not seen up to now. We were instructed in the use of this new insecticide called D.D.T., and from that time onwards it replaced Flit for the control of adult mosquitoes. The publicity which D.D.T. received at that time was perhaps unfortunate, because the uninitiated criticized its apparent lack of power without knowing about its residual lethal effects over long periods. People expected to see insects shocked into instant death on coming in contact with a treated surface, or thought that it had repellent properties, and condemned it on the evidence of large numbers of flies crawling about on treated surfaces, not realizing that this was due to the rate of influx from outside breeding places. It was found that the delivery nozzle of the spray gun had to be changed to deliver droplets instead of a mist as required when spraying Flit, and of course the internal surfaces of all walls and ceilings of houses were coated with D.D.T., instead of producing a fine concentration as had been done in the past with Flit. All premises treated were marked in a conspicuous place D.D.T., and the date of treatment appeared under these letters. The painting of this sign reminded me of the gigantic wayside signs we had passed on some roads erected by Army, such as "*Eighth Army can Beat Malaria.*" showing pictures of a soldier wearing slacks and sleeves rolled down, getting ready to take his mepacrine.

The malaria transmission season drew to an end, the Division began to operate in areas where malaria had not been known to exist before, so the spray team was withdrawn towards the beginning of October. Reliance was now placed entirely on personal prophylactic measures, and only mosquito field survey work was continued. Late in October the Division began to climb the pass north of Florence and preparations for the bloody battles of Monte Stanco and Monte Sole were commenced. We were out of the malarious areas now, facing the enemy dug into his winter line. Only on approaching the River Po would the danger of transmission recur.

In the meanwhile I was privileged to spend considerable time in a British Army Malaria Laboratory in Rome learning the biology of the vectors of this region, and became attached to U.D.F. Administration Headquarters where I set up a small entomological laboratory. My duties now were to do mosquito surveys under the direction of the Senior Officer Hygiene in areas occupied by

non-divisional units and to advise on measures to be adopted for the control of mosquito breeding round these camp sites.

The type of malaria control practised in the U.D.F. was similar to measures advised to be carried out for all Allied armies operating in Italy. The standard of efficiency of the personnel who enforced these measures, plus the whole-hearted response on the part of the soldiers, resulted in a very high standard of anti-malarial discipline which ensured a low rate of malaria infection in our troops. The new insecticide D.D.T., although used only for the protection of Army formations, did in fact keep down the rate of infection in isolated groups of the civilian population inhabiting troop areas, large areas round camps being treated on the principle of preventing anopheline mosquitoes from moving into camp after becoming infected through feeding on these civilians. Thus, while the rates of infection amongst the total civilian population were rising steadily there were islands in the rising tide where the rates of new infection remained static for the period during which the Army sprayed D.D.T. So although the Italian health authorities were in the dark as to the use and properties of D.D.T., part of the peasant population had already experienced its benefits. Italian malariologists who had hitherto relied on Paris Green for their mosquito measures were quick to realize the immense potential of D.D.T. for malaria control in rural and semi-rural areas.