

## An Indian Leper Settlement.

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### THE LADY WILLINGDON LEPER SETTLEMENT, CHINGLEPUT, S. INDIA.

By ROBERT S. DONALDSON, M.A., M.B., Ch.B., D.T.M.,  
Médical Officer-in-Charge.

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#### *The Treatment of Leprosy.*

In considering the treatment for leprosy being adopted at the Lady Willingdon Leper Settlement, I intend confining my attention to the use of Hydnocarpus Wightiana oil and its derivatives, Potassium Iodide, the drugs used for controlling leprotic reactions, and Avenyl for the treatment of associated syphilis. The treatment of leprotic eyes, true leprotic ulcers, perforating ulcers, nerve abscess and any other lesions directly due to the disease must all have their place in any scheme of treatment but I do not propose dealing with them in this article.

At the outset let me mention that before any treatment is begun at all each patient must be thoroughly examined for any other disease which may be present and if any such be found he ought to be treated rigorously for it. The more one works among lepers the more one realises the absolute necessity for such a procedure.

When the work was begun at the Settlement in 1925 the first form of treatment adopted was the subcutaneous injection of the Ethyl Esters of Hydnocarpus Wightiana oil with the addition of 4 per cent. doubly distilled creosote, commencing with 0.5 cc. and increasing at each injection by 0.5 cc. until 10 cc. were reached. Later we began the injection of pure Hydnocarpus Wightiana oil as it had been stated that the latter was as effective as the Esters and was considerably cheaper. The patients complained of more pain under this form of treatment than with Esters, but it was found that much of the pain was due to lack of sufficient exercise. Our experience confirms the general view that under Hydnocarpus oil treatment for leprosy, perhaps one ought to say under any form of treatment of leprosy, exercise and activity are vital factors. The patients most responsive to treatment are they who are leading energetic lives. Every patient certified as fit for it, is now required to do two hours light manual work per day.

After a thorough trial of the pure oil I have returned to the Esters because in my experience they give quicker and better results. They seem to be more active than the oil alone and to bring about a more rapid clinical improvement. In cases of nephritis, however, or suspected nephritis, and in cases which show a tendency to react severely and easily, the oil is safer than the Esters.

When using the Esters I begin with a mixture containing 50 cc. Esters, 50 cc. Olive oil (fatty acid free), and 4 ccs. doubly distilled Creosote, called E. After a course of this, strengthen the mixture, giving 75 cc. of the Esters, 25 cc. of Olive oil, and 4 ccs. of Creosote, called E1. Finally I go on to a mixture containing 100 ccs. of the Esters and 4 ccs. of Creosote, called E2. I have found that when using either the pure oil or the Ester in any strength it is quite safe in most cases to increase at each injection by 1 cc.

Although I prefer Esters to any other form of treatment at present, owing to the pain of a prolonged course of subcutaneous injections, for some time past I have been giving a course of intravenous injections of Alepol at certain stages. A 1 per cent. solution is used, beginning at 1 cc., increasing at each injection by 1 cc. until 10 ccs. are reached, and continuing at 10 ccs. for 10 injections. This intravenous treatment is not nearly so painful as the constant subcutaneous method and gives the patient a rest. The drug gives good results, but I consider the Esters give better. Not only so, but even by Muir's method of mixing blood with the solution before injection, although this has certainly solved the difficulty to a large extent, in some cases the veins become blocked during prolonged treatment. Such a blocking in the case of leprosy is a distinct disadvantage for two reasons: (1) Should the patient get a reaction, it is difficult to administer intravenous injections of Antimony which is an excellent drug for controlling leprotic reactions. (2) If one wants to perform a Wassermann reaction or Kahn test it is difficult to get the blood. For these reasons, once I have reached ten injections of 10 ccs. of Alepol or, when the veins have become blocked, I revert to E1 beginning at 2 ccs. and continuing as before through E1, E2, and then on again to Alepol until the patient's treatment is complete.

I find the combination of Hydnocarpus oil, Esters in their various strengths, and Alepol, quite a good method of treatment, and I append a simple table showing the grading. Even when Potassium Iodide is part of the treatment, this method suits quite well, the patients of course in this case getting only one injection per week.

For a little over a year now I have been using Potassium Iodide and have now decided to use it as part of the treatment in selected cases. I say selected, because if given indiscriminately it can do much more harm than good. If there is the slightest suspicion of tuberculosis one

must not give it and if it is given to B2 or B3 cases it must be done with the greatest caution, for some of the reactions produced are alarming. However, it is doing good and in my opinion it has come to stay. After noting its effects carefully I have drawn up a graded dosage suitable for each type of case. One must begin with small doses of the Iodide and increase gradually according to the tolerance of the patient. It is wise to begin with one grain per day and increase by one grain per day so long as there is no rise of temperature. It is often possible to begin with 5 grains or even more and to increase much more rapidly. If the patient shows the slightest sign of lung trouble, or if the reactions become too numerous, or too severe, I stop Iodide altogether and begin him on twice a week injections. It is really only by testing the drug for oneself that a knowledge of administering it to its full advantage can be gained and I consider it is well worth the trouble. Not only do I see its results but the patients are constantly speaking of how well they feel and how their disease is responding to it. My grading of dosage is based on that outlined by Muir and I have also drawn out a table for children. Anyone who wishes these guides to dosage may have them from me if they wish. While under Iodide treatment, the patients receive one injection per week of the Ethyl Esters, or Hydnocarpus oil, or Alepol, or Avenyl in oil, as the case may be.

For the treatment of reactions three drugs are in use at the Settlement, *viz.*, Potassium Antimony Tartrate, Adrenalin 1 in 1,000 (P. D. & Co.) and Ephedrine Sulphate.

Whether it be a skin reaction or a nerve reaction the intravenous injection of P. A. T. is most efficacious. It brings down the temperature and causes subsidence of the nodules or infiltrated areas in a short time. It is obtainable in tablet form, each 0.04 gramme. Begin with one tablet and increase by half a tablet every second day until two and a half tablets or 0.1 gramme has been given. This is regarded as one course. Should the patient not have responded satisfactorily to this first course it is better to wait three days before commencing a second course.

If there is much pain connected with the reaction—and this is chiefly so in purely nerve cases—the subcutaneous injection of 2 to 4 minims of Adrenalin 1 in 1,000 (P. D. & Co.) in 30 minims of saline often acts like magic in dispelling the pain. Lately we have been using Ephedrine Sulphate in the form of pulvules as suggested by Muir. The dose is 0.05 grammes. In many cases the pain disappears within fifteen minutes. If after an hour no improvement has resulted from the first dose give a second, and usually the patient will have relief for twenty-four hours and in many instances there will be no return of pain at all until another reaction sets in, when the treatment can be repeated.

Especially since the introduction of Potassium Iodide, where reactions and pains are produced much oftener and where the severity of the pain is greater, those three drugs just described are a very essential and a very excellent part of the equipment of the person treating leprosy. They help one in a marked degree to continue the treatment with very little interruption.

In the treatment of Syphilis in lepers we are getting good results from the use of Avenyl. A 0.25 per cent. solution of the drug dissolved in Hydnocarpus Wightiana oil or Esters, with 4 per cent. doubly distilled creosote added, is used. It has the advantage that it enables one to continue the treatment for Syphilis without interrupting the purely anti-leprosy treatment. I am now using it in all cases with a positive W.R. or a positive Kahn. Every patient for active treatment has his blood tested and if found positive is at once started on Avenyl. About 55 per cent. of our patients have positive bloods and so the value of such a drug can be appreciated. For any cases which may prove refractory to this drug, Sulpharsenol may be used, but my experience is that there are lepers who seem to prove refractory to any form of anti-syphilitic treatment and Avenyl is the best all-round drug for use. The course adopted at first consisted of fifteen injections, increasing at each injection by 0.5 cc. until 7.5 cc. were reached. I find, however, that it is quite safe to increase by 1 cc. at each injection and now I give from 1 cc. to 10 ccs. increasing by 1 cc. each time. This course can be repeated as often as necessary until the blood becomes negative. In the second and succeeding courses, if required, one may begin at 4 ccs. and increase to 10 ccs. Since the drug is dissolved in the Hydnocarpus oil no time is lost in treatment. In fact, the patients show great all-round improvement while on Avenyl in oil.

<i>Course.</i>	<i>Drug.</i>	<i>ccs.</i>
1st Course	E.	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, for 10 injections.
2nd Course.	E1.	2, 3, 4, 5, 6, 7, 8, 9, 10, for 10 injections.
3rd Course.	E2.	2, 3, 4, 5, 6, 7, 8, 9, 10, for 10 injections.
4th Course.	Alepol 1 per cent. solution (intravenous)	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, for 10 injections.
5th Course.	E1.	2, 3, 4, 5, 6, 7, 8, 9, 10, for 10 injections.
6th Course.	E2.	2, 3, 4, 5, 6, 7, 8, 9, 10, for 10 injections.
7th Course.	Alepol 1 per cent. solution (intravenous)	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, for 10 injections.
etc.	E1. etc.	

## POTASSIUM ANTIMONY TARTRATE COURSE.

<i>P. A. T.</i>	<i>Distilled Water.</i>
1 tablet (0·04 grammes) ...	2 ccs.
1½ tablets (0·06 grammes) ...	3 ccs.
2 tablets (0·08 grammes) ...	4 ccs.
2½ tablets (0·1 gramme) ...	5 ccs.

