that an air rotor and a clinical micromotor (Fig. 2) with 500 to 300,000 revolutions per minute may either directly involve the sensory nerves or may act indirectly by inducing occlusive vascular disease of vasanervosum which supply the sensory nerves, eventually resulting in sensory loss over the area of the skin it comes in contact with.

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# Method for Detecting Sulfones in Urine

To the Editor:

Resistance of *Mycobacterium leprae* to the first line drugs used in the treatment of Hansen's disease is well known. Dapsone resistance is particularly common, rifampin resistance less common, and clofazimine resistance rare. Drug resistance in *M. leprae* is thought to be favored by prolonged low-dose or intermittent therapy ([2, 3]).

Many of our patients under apparently regular treatment with dapsone show reactive episodes or bacterial relapses for no detectable reason. Because these patients could be harboring bacilli which are sulfone resistant, we have determined the presence of sulfones in urine to rule out one of the causes of bacterial relapse, noncompliance.

The method we have used is a simple and practical one devised by Inalio de Castro in Brazil ([1]). The method is as follows:

The following four solutions are prepared:

1. Hydrochloric acid 2 N in 75% ethanol.
2. Sodium nitrite 1.5 g in 100 ml of 75% ethanol.
3. Ammonium sulfamate 7.5 g in 100 ml of 75% ethanol.
4. N-(1-naphthyl)ethylenediamine-2HCl 0.5 g in 100 ml of 75% ethanol.

To 2 ml of fresh urine in a test tube, 4 drops of solution no. 1 followed by shaking, 4 drops of solution no. 2 followed by shaking, 4 drops of solution no. 3 followed by strong shaking until bubbles appear, and 4 drops of solution 4 followed by shaking should result in a violet color in the presence of dapsone in the urine ([1]).

One hundred Hansen's disease patients being treated with dapsone on an ambulatory basis were tested. Of these, 74 were positive for dapsone in the urine, 13 were negative, and 13 were doubtful. In those cases in which the result was positive, the

change in the color of the urine was immediate. In the negative cases, it was confirmed that none of the patients had taken dapsone for at least 3 days.

Of the 13 patients whose tests were doubtful, 6 were also taking thalidomide. In one of these patients the test was repeated three times and the result was always doubtful. We are not aware of any interaction between thalidomide and dapsone which could account for this finding.

The application of this method seems to be a simple, affordable means to detect or rule out one of the most important causes for the ultimate development of sulfone resistance in Hansen's disease, patient noncompliance. A positive urine test for dapsone in the presence of bacteriologically progressive disease would be strong evidence for sulfone resistance. This might be particularly useful in locations where mouse foot pad drug sensitivity studies are not readily available to confirm the diagnosis of sulfone resistance.

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# Investigations into Cultivation of *M. leprae* in a Nasal Mucus Medium: A Preliminary Report

TO THE EDITOR:

The nostrils of lepromatous leprosy patients harbor a multitude of *Mycobacterium leprae* cells. These organisms are mainly responsible for spreading the disease to close contacts. A quantitative evaluation between the *M. leprae* of the skin and the nose showed that *M. leprae* from the nose had a significantly higher morphological index and greater length when compared with those in the skin of the same patients. Further, the number of globi was considerably more in nasal samples than in skin smears (Prabhakar, M. C., submitted for publication). Based on these data, it was postulated that the nasal cavity might provide some biochemical(s) which might nourish the *M. leprae* therein and facilitate their active multiplication ([3], and Prabhakar, M. C., submitted for publication). Efforts were made to cultivate *M. leprae in vitro* under conditions simulating those of the nostrils.

*M. leprae* cells were obtained from the nasal flushings of lepromatous patients according to the method described by Prabhakar ([1, 3]). In the author's opinion, for the cultivation of *M. leprae in vitro,* the *M. leprae* extracted from the nose of untreated lepromatous patients would be more suitable than those from any other source. In a few experiments, these organisms were used after purification according to the method described by Shepard ([4]).

Nasal mucus collected from healthy individuals was desiccated and, when completely dry, was powdered and preserved in