

With increasing experience in the treatment of syphilis, I feel less and less inclined to administer mercurial preparations except in the form of triple iodide solution, 7 c.c. administered intravenously once a week, but the main disadvantage in using this drug is that it has got to be given always through the venous channel, and the slightest infiltration in the subcutaneous tissues is followed by excruciating pain with the result that the patient never returns for a further course of treatment. Moreover it has got a tendency to produce stomatitis of a severe type. "Mersalv" injections can only be relied upon when combined with a course of "Supsalvs" administered per rectum. Unfortunately, the price being prohibitive, this line of treatment is out of the question for hospital patients.

From among the arseno-benzol series I have found sulfarsenol to be a sovereign remedy in all stages of syphilis, especially when complicated with either gonorrhœa, leprosy, filariasis or malarial fevers; but even this medicine, so far as the poor class of patients is concerned, is beyond their reach, as each course of treatment costs not less than Rs. 20 or so.

Only recently I have had occasion to give a fair trial to a soluble organic salt of bismuth called "Benzo-Bismuth". The results obtained from its administration are extremely encouraging and nowadays I have been using it extensively among my patients with great success. The first case that I treated with this drug was one of secondary syphilis with a ring of condylomata around the anal orifice and a venereal wart on the lower lip. After receiving a course of 3 injections intramuscularly, within one week, the patient felt himself absolutely a different man; the condylomatous growth in the anal region subsided some 75 per cent. and the warty growth on the lip shrivelled up and was removed, ultimately by ligaturing the pedicle, leaving a smooth surface flush with the mucous membrane.

The second case was that of an adult about 20 years old with a serpiginous ulcer involving the left ala nasi, of one month's duration, treated in a Taluka dispensary as a simple ulcer with antiseptic dressings. As soon as the patient was brought to my notice, the affection was diagnosed as one of venereal origin and the patient was given a series of Benzo-Bismuth injections both subcutaneously and intramuscularly. After a course of 5 injections (2 subcutaneous and 3 intramuscular), the ulcer completely healed up within three weeks and with the exception of a little deformity that was left on account of the margin of the left ala having been eroded, no trace of the disease was discernible.

The third case was that of an individual suffering from huge rupial eruptions all over the back, and big gummatous nodules on both

legs and ankles (with the left leg presenting an elephantoid appearance), and ulcers on both arms. This patient made a speedy recovery after receiving 5 injections within a fortnight.

The fourth case was that of a woman aged about 28 years, who came to the hospital with the whole of the left leg studded with innumerable sinuses, discharging foul stinking pus and full of maggots. There was also a gummatous node, about the size of a duck's egg on the middle of the right shin. The condition was of 6 months' duration. This woman also recovered very rapidly; the node completely disappeared and the foul septic condition on the left leg entirely dried up, leaving behind healthy scar tissue after the patient's receiving a course of 8 injections within one month.

Having run short of the stock I had no occasion to try this medicine on more cases, but the few cases that I have treated with highly satisfactory results justify me in advocating its use in purely syphilitic cases not complicated with either gonorrhœa or leprosy, in which latter class of cases the use of sulfarsenol is a *sine qua non*.

With a view to bring about complete cure from a serological point of view, and in order to maintain complete immunity from the disease it would be best to follow carefully the directions given in the literature that accompanies each box containing five ampoules of the Benzo-Bismuth together with a similar number of ampoules containing sterilized neutral solvent. From my personal experience I find the main advantages of using this preparation to be:—

- (1) The small quantity that is injected, not exceeding 1.5 c.c.
- (2) The ease with which the drug is administered either intramuscularly or subcutaneously.
- (3) The painlessness after injection.
- (4) The uniformity of dosage.
- (5) The comparative cheapness.
- (6) No liability to toxic symptoms.
- (7) Complete solubility of the drug in a watery medium without leaving any particles in suspension.

## EXTERNAL MEDICATION IN LEPROSY.

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LEPROSY is a disease which affects the skin more than any other part of the body. The corium is affected directly by the presence of lepra bacilli in its cells and intercellular spaces; and the epithelium is affected indirectly through the nerves and by reason of the

condition of the corium. It is natural, therefore, that we should expect benefit from external medication applied to the skin.

The visible lesions of leprosy may conveniently be divided into three classes, each class being typical of a particular stage of the disease.

(1) Lesions, one or more in number, spreading radially from the centres of infection. These generally show a raised, erythematous, spreading margin, raised in proportion to the grossness of the lesions; while the centre, beginning with a small umbilicated depression, is flatter than the margin, and shows, more or less, the characteristics of a scar. In dark skins such lesions are more or less depigmented in the central area and sometimes in a narrow circumferential band which spreads in advance of the erythematous margin.

(2) These spreading areas tend to coalesce and their spreading, erythematous margin tends to die down, so that large areas of tissue, which have more or less the nature of a scar, are left. This character of a scar is not always complete as the infection may spread from the more superficial layers of the corium, which are first affected, to the deeper layers. Nodulation may be superimposed on such lesions when conditions favour the multiplication of bacilli in them.

(3) The third is the glove-trophic type and is due to contraction of the newly-formed fibrous tissue around the axis-cylinders in the long nerve trunks, which leads to various trophic changes in the extremities, such as loss of sensation, wasting of the small muscles of the hands and feet, claw-hand, ulceration and shortening of the fingers and toes, perforated ulcers, etc.

Reference will be made later to these three different types of lesions in describing various methods of external medication.

Treatment in leprosy may, for convenience sake, be divided under three divisions:—(a) means which will cause improvement of the general health of the patient, (b) special remedies which may be given by the mouth or by injection, (c) external medication. The present paper will deal with the last of these.

It may be convenient to divide external medication under the following heads:—

1. Baths, which may be hot or cold, preferably hot followed by cold; they may be given as plain baths or baths containing such medicaments as soda, mustard, etc.

2. Friction accompanied by inunction. Both of these have for their object the flushing of the skin, the strengthening of the muscles and improvement of the general health of the body, while they probably tend to set free minute doses of toxins and produce a certain limited amount of immunity.

3. Caustics.

4. Surgical procedures.

I propose to limit the present paper to the consideration of the last two.

*Caustics.*—Many remedies have been used to cause that useful, though difficult to explain, condition called counter-irritation. Pure carbolic acid, carbon dioxide snow, various juices of plants and even the thermo-cautery have been used with a greater or less amount of benefit, while the natives of some of the South Sea Islands burn the skin around the lesions with a burning cigarette end; in fact, the number of counter-irritants which have been used is practically innumerable.

Recognising that there is a certain amount of benefit to be derived from counter-irritation, however it is brought about, we tested several different methods, and have found the most effective and the most easily controlled to be trichloroacetic acid dissolved in water. We apply it in three different strengths:—a 1 in 1 solution, which is applied to the centre of large thick nodules; for painting on the face it is convenient to use a 1 in 5 solution so as to avoid all danger of over-cauterisation; and a 1 in 3 solution, which is the most generally useful and may be painted on to any of the lesions of the first two types described above. Cotton-wool on a glass rod or a piece of bamboo is used as a brush, which is dipped in the solution and pressed against the sides of the bottle so that too much does not remain on the brush; the solution is painted rapidly over the lesion or lesions selected for application and allowed to dry. As drying takes place a slightly white appearance should be seen, as if the surface of the skin had been sprinkled with a white powder; if this does not appear on the drying of the solution, a second painting is required or even a third, but it is necessary to wait each time until the solution has dried. Care must be taken that either too strong a solution or too much of it (by having the brush too wet) is not applied to the wound, in which case the skin would appear uniformly white, as this may be followed by ulceration or by keloid formation. If the right amount of solution has been applied, the white, powdery appearance will give place, in a few hours, to black discoloration; and the black, burnt epithelium will separate in a few days, leaving a red surface which soon shows either hyperpigmentation, or depigmentation followed by hyperpigmentation.

This application may be repeated after 10 days. It is convenient, when injections are given twice a week or thrice in 10 days, to divide all the areas in the body requiring counter-irritation, into three parts, one part being painted on each injection day. The application of trichloroacetic acid causes a burning sensation for about two minutes; but

in spite of this, patients who have seen the results produced, insist on having it done.

The effects of the application of trichloroacetic acid are easily demonstrated by painting one side of the body—say of the face—while leaving the other side unpainted. This is shown in the photographs in a case in which lesions were equal on both sides to begin with (see Figs. 1, 2 and 3).

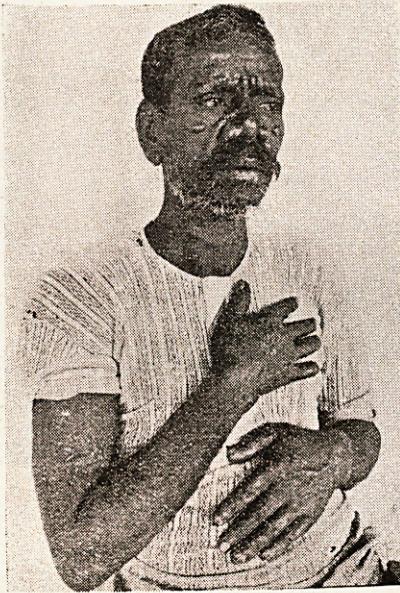


Fig. 1.—Patient before treatment.

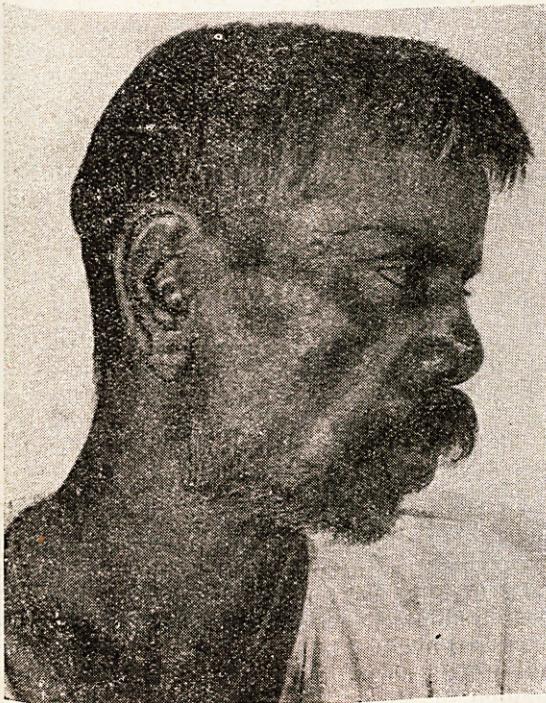


Fig. 2.—Side of face of same patient as Fig. 1, which has not been painted with caustic. Patient has undergone treatment by injections for a few weeks.

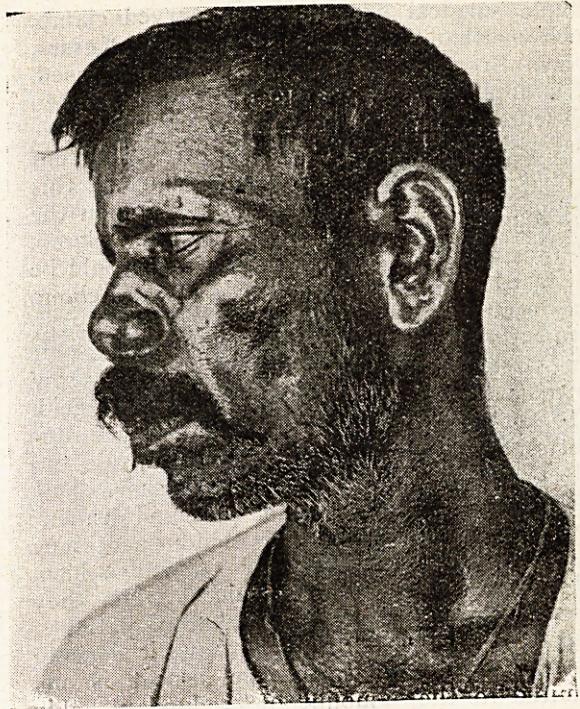


Fig. 3.—Other side of same face which has been painted with trichloroacetic acid repeatedly. The lesions were equal on both sides to begin with.

How the cauterisation acts it is difficult to say, but it seems to light up a local reaction which causes the formation of granular and resistant forms of the bacilli and also diminution in the numbers of or complete disappearance of the bacilli.

The great advantage of this form of application is that it can be absolutely regulated. More of the acid is required when the surface of the patient's skin is more alkaline or has more oil on it; but the powdered, white appearance described above is in every case a sure index to the amount of application required.

#### SURGICAL TREATMENT OF NODULES AND REDUNDANT SKIN.

(a) *Removal of early Nodules.* In cases in which there are only one or two nodules and no other marked lesions in the body, it is well to remove the nodule with the knife. This may generally be done with local anaesthesia. Even though the whole of the infection is not removed with the nodule, the plastic process set up by the operation causes entire disappearance of the lesion, only a scar being left; this is, of course, provided that the general resistance of the patient is good, otherwise such procedures have little chance of arresting the disease.

(b) *Trimming the Auricle of the Ear.* The nodular, pendulous, elephant-like ears of the advanced leper are well known; the disfigurement is very characteristic. But this condition can be improved very easily by a

simple surgical procedure. A curved clamp, such as that prepared for me by Messrs. Down Bros., (see illustration) may be used. It is applied to the auricle so that the part to be removed is external to the convexity of the clamp blade. If a shape slightly different from the curve of the clamp is required, this may be attained by pulling slightly upon the auricle before tightening up the clamp. Before applying the clamp, the ear should be cleansed and iodine applied. When the clamp has been carefully applied and tightened, the projecting skin is removed either with a pair of scissors or with a knife, and the raw surface is painted with pure carbolic acid. The clamp may be removed at once and dry cotton-wool applied; there is, as a rule, no bleeding and no bandage is necessary. Due to the deep analgesia of the part and deadening effect of the clamp, it is seldom necessary to use any anæsthetic, and patients seldom object to the procedure; indeed, when they have seen the results of it in other patients, they are generally anxious to have it done to themselves. Here, again, the benefit is not limited to the amount of redundant skin which has been removed; the plastic process causes progressive improvement for some days after the operation, and the whole appearance of the patient is often changed for the better, (see Figs. 4 to 8).

(c) *Surgical procedure in acute leprous Neuritis.* There are few conditions more painful in leprosy than acute neuritis, which often accompanies a reaction during the course of the disease, especially when the patient has had his general resistance lowered by some intercurrent cause. We have tried electric treatment, ionisation and various internal

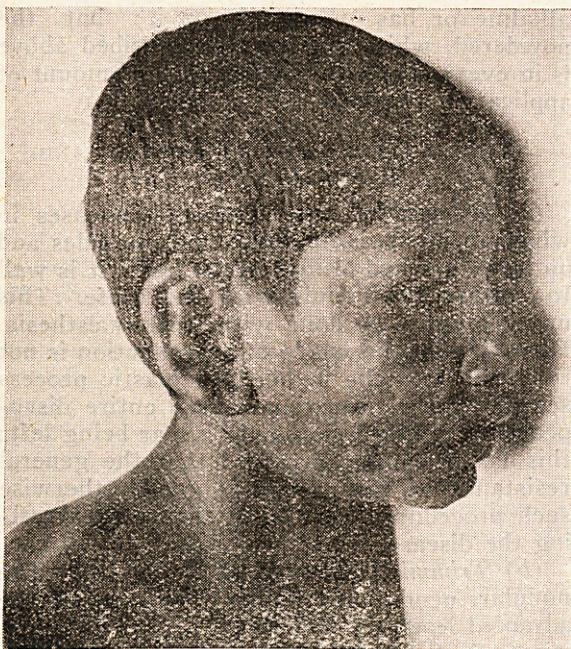


Fig. 4.—Ear before trimming.

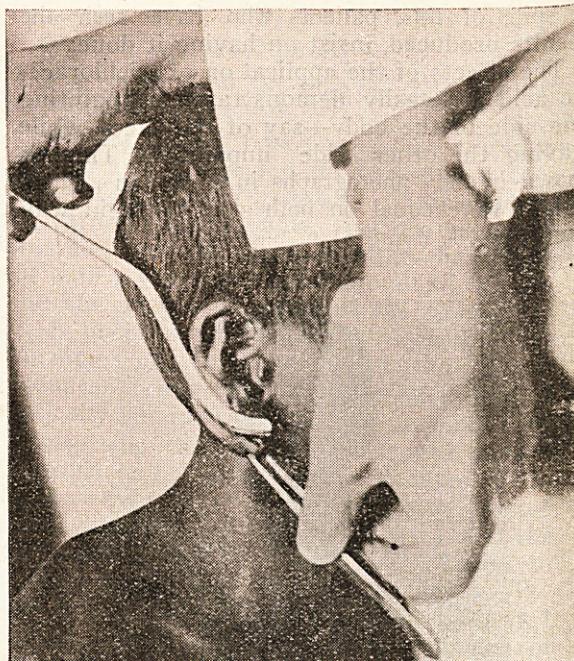


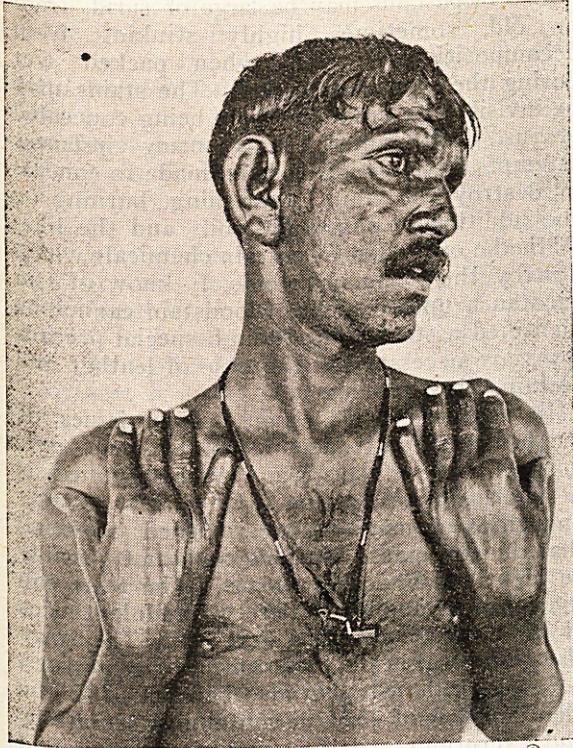
Fig. 5.—Clamp applied and ear being trimmed.



Fig. 6.—After trimming and applying pure carbolic; clamp still applied.

medicines with only temporary relief; but, when the disease is confined to one nerve, as it very often is, a very simple surgical operation will remove the pain, cause considerable reduction in the swelling of the nerve and marked lessening of the anæsthesia and other nerve symptoms in the parts supplied by the nerve.

After applying local anæsthesia by infiltrating subcutaneously with  $\frac{1}{2}$  per cent. eucaine or novocaine with a small quantity of adrenaline,



Figs. 7 & 8.—Effect of ear-trimming is seen by comparing two photographs.

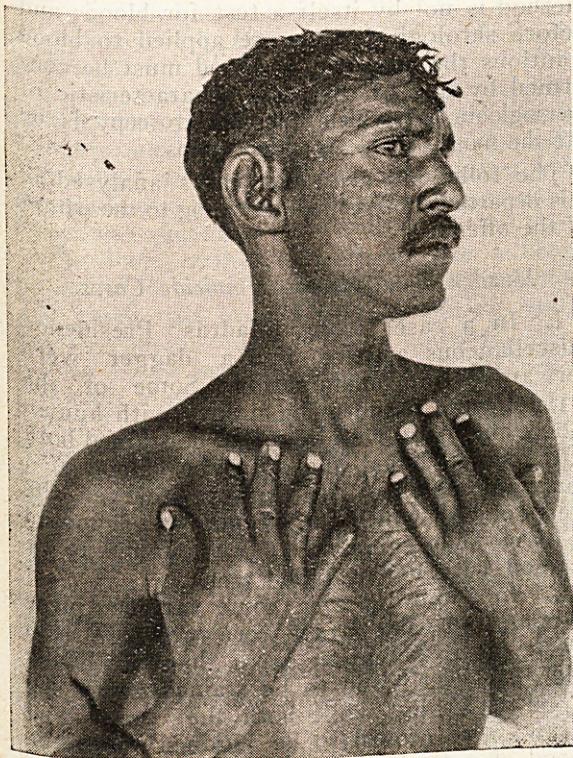


Fig. 8.

about two inches in front and one inch behind the nerve: (see Fig. 9). The wound

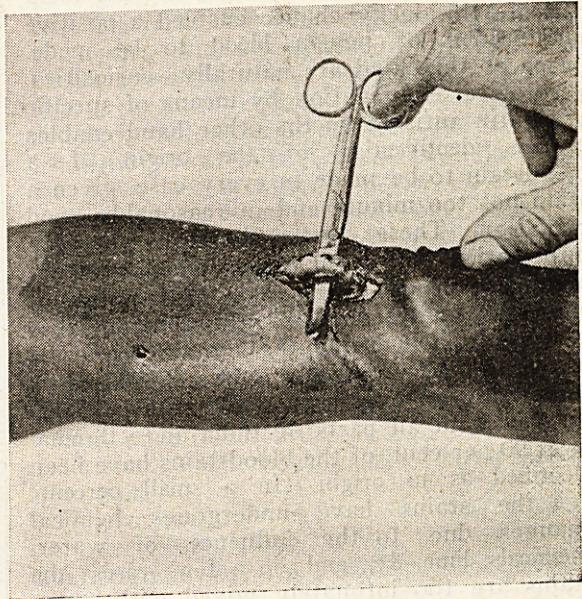


Fig. 9.—Scissors passed under thickened ulnar nerve.

is then sewn up and dressed. If the operation is done in the arm, which is the most common seat of this condition, the arm should be kept in a sling. The results of the operation are immediate cessation of the agonising pain, which the patient may have been suffering from for many days; reduction in the size of the nerve, which very often is  $\frac{3}{4}$  inch in diameter; and restoration, to a certain extent, of the function of the nerve. When leprosy infiltration of a nerve has gone on to form a nerve abscess, a condition which is not at all uncommon, similar relief is given as a rule by the opening and drainage of the abscess.

### THE SEROLOGICAL ANALYSIS OF BLOODSTAINS IN CRIMINAL CASES. (ILLUSTRATIVE CASES.)

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IN this article it is proposed to describe some illustrative cases of bloodstains received in connexion with criminal trials, which have been analysed by serological methods in this department, shewing the results they have yielded. As is well known, until recent years the utmost that could be done analytically in a bloodstain case was to inform the Court that the bloodstain was or was not mammalian in origin. Apart from accidental factors it was never possible to determine that any given bloodstain was human. An interesting case in which an accidental factor did supply

an incision is made 3 or 4 inches in length over the affected nerve and the sheath is isolated from the surrounding tissue to the extent of