

shrink either with or without liquefaction and discharge of the contents.

Reinfiltration.

Lesions should as a rule not be infiltrated a second time till after a month has elapsed. In cases with wide-spread lesions it may take six months before the whole body is covered. It should be remembered that the oil and esters remain in the cells of the skin for a considerable period, and that progressive improvement goes on in the parts once infiltrated. If there are few lesions it may be possible to cover them all at one or two sittings. In such cases intramuscular injections into the gluteal region or subcutaneous injections may be given on the days that skin lesions are not available; or, if the patient's resistance is high (especially towards the end of treatment) he may be injected at two or four weekly intervals.

General Considerations.

If skilfully carried out, intradermal infiltration does not cause excessive pain and we seldom find patients objecting to it. Analgesia, though not complete, is sufficient in most cases at the beginning of treatment to make the injections bearable. Reinfiltrations are often more painful but seldom beyond the tolerance of any but the most sensitive patients. If, however, a lesion is reinjected before the induration caused by the previous infiltration is absorbed, much pain results and even ulceration may occur. Other causes of pain and ulceration are: injection of too large a dose at any one point; injecting too superficially into the epithelium; injection of irritating and impure oil or esters; injection of oil which is too viscous due to its not being sufficiently heated.

(Reprinted from "*Leprosy in India*," July, 1932.)

NEW X-RAY DISCOVERY.

HOW OPERATIONS MAY BE AVOIDED.

A new development in the use of X-rays in the diagnosis of intra-abdominal disease has been engaging the attention of research workers for some months, says the medical correspondent of the *Morning Post*, and the successful experiences of a team consisting of a surgeon, a pathologist, and an X-ray expert in Toronto have just been published in the *Canadian Medical Association Journal*.

Certain scientists in Germany first discovered that a metal called thorium could be injected into the circulation in a colloid solution without doing any harm, and it was deposited in certain parts of the body, which then became temporarily opaque to X-rays. The work in Canada fully confirmed this, and in all 18 patients have been investigated with this new method without any untoward result.

It must be remembered that the penetrating powers of X-rays are relative. In the early days of radiography the sole use of this method of diagnosis was to show up the bones, which were more dense than surrounding structures. The next developments came when bismuth was given by the mouth and the outline of the stomach seen on the X-ray screen.

Of recent years satisfactory methods of introducing contrast material to show up the structure of the lungs, gall-bladder and kidneys have been elaborated, but until

the use of thorium no satisfactory shadows of the liver or spleen could be obtained.

The liver and spleen are especially rich in certain special cells ("reticuloendothelial"), which have the property of taking up substances from the blood stream, and thus the thorium given into the veins gradually becomes accumulated in these cells. A 25 per cent. solution of thorium dioxide has been used, given in three daily doses of about one ounce (25 cubic centimetres), and on the fourth day X-ray pictures are taken. The metal is deposited mainly in the liver and spleen, but is found to a lesser extent in various glands and in the bone marrow.

A still further use of the special preparation of thorium, which has been employed, is to demonstrate exactly the configuration of the blood vessels of the brain. The harmlessness of the injections has led to their being used into the carotid arteries, and this will probably mean, in the future a big advance in the accurate diagnosis of obscure brain tumours. In the meanwhile the X-ray appearances of the liver and spleen, as demonstrated in this way, will be of considerable value in solving problems of abdominal disorders.

Previously the only way to make a diagnosis has been what the surgeons call an "exploratory laparotomy," which means to take a look inside. The new discoveries suggest that this will be possible without the necessity of an operation.

It is of interest that most of the work in Toronto has been carried out in the laboratories of Professor Banting, the discoverer of insulin.

THE MYSTERY OF SLEEP.

Sleep is a mystery which, so far, physiologists and psychologists have failed to unravel. The latest suggestion for its causation comes from Berlin, as reported in the *The Lancet*. Professor Zondek, already well known for his researches into certain special internal secretions or hormones, claims to have discovered and isolated a chemical substance which is intimately connected with sleep. He began his work, apparently, by examining the blood of patients suffering from a certain type of insanity characterised by restlessness and sleeplessness. He found that the blood of these patients contained less than the usual quantity of bromine, but became normal between the attacks. He next examined certain secretions of the pituitary gland, a small gland situated at the base of the brain, and found one containing bromine. This new hormone he succeeded in isolating in soluble form, and on injection it produced a decrease of muscle power, fatigue, and apathy.

According to Professor Zondek's views this hormone is discharged from the pituitary gland into the fluid surrounding the brain, which is found during sleep to contain an increased quantity of bromine. When the patient wakes this discharge ceases and the hormone is stored in the pituitary. It is not revealed by what mechanism this discharge and storage is brought about, whether the cause is nervous or chemical or an inherent property of some special portion of the pituitary gland so that in one sense the cause of sleep is still a mystery.

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