opinion, formed on the strength of clinical observations and experience extending over a period of more than four years.

In order to give an idea of the therapeutic results obtainable in the case of leprosy patients solely by means of the benzoyl-nastin method, a few photographs are reproduced. In Turkey I had under treatment altogether forty patients for at least several months; I was able, however, to observe some patients for a considerably longer period, up to several years.

The photographs of Case I show the conditions in a severe case of nodular leprosy, with the extensive, partly ulcerated leproma of the face, the arms, and the hands; with tumours of the lymphatic glands on both sides of the throat. The patient, who at that time already suffered from extensive leprosy of the tongue, the pharynx, and larynx, and of both the testicles, was a very unruly individual, who after a short stay escaped from the hospital at night. After a few months he returned with immensely aggravated leprosy of the mucous membrane and severe attacks of suffocation owing to leprosy of the larynx, necessitating immediate tracheotomy. In the course of treatment, continued for more than twelve months, the patient got rid of the leprosy of the mucous membrane, the tracheal tube could be removed, and he now speaks in a clear voice.

The skiagrams show multiple osteo-leproma of the hands in this case prior to, during, and after treatment. It can be seen that the parts of the bone previously affected, partly greatly distended, partly even completely destroyed, gradually consolidated and ultimately presented again a normal structure of bone.

The result obtained by the treatment regarding the leproma of the skin is shown by the photograph of the hands, where, instead of leproma and ulcers there are left only flat cicatrices.

The photographs of Case II show nodular leprosy with specially large leproma. The first photographs—(a) and (b)—were taken during the treatment, and besides the large fungiform prominent nodules, very flat pigmented cicatrices, the residue of former tubera, may be seen on the left arm. Photographs (c) and (d) illustrate the therapeutic result in such a manner that no further description is required. The last picture shows the same result obtained by the therapy on the legs of the same patient, where the pigmented cicatrices still approximately show the size of the leproma at that place.

I would add, however, a few remarks regarding tuberculosis, whose exciters are so nearly related to the *lepra bacilli*.

The neutral fat of tubercle bacilli, which necessitated the employment of special methods for isolating it and which was produced by me a year and a half ago, is chemically and biologically very near to, perhaps even identical with, nastin. This neutral fat, which we will call tuberculo-nastin, acts in the case of sufferers from leprosy in the same way and with the same intensity as nastin does. And vice-versa the ordinary nastin, which is quite inactive as regards healthy men and animals, proves in respect of tuberculous individuals to be an extremely active substance which acts likewise in the sense of fat removal and of the granular decay of the tubercle bacilli, as has recently been recognized as regards the animal organism by Behring, who has seen and verified my cases of leprosy in Constantinople.

But the decisive and essential difference between leprosy and tuberculosis consists in this, that in the case of leprosy one's object is attained in general with the fat-removal and with the dissolution of the bacteria into granules, that is, the organism then is able to dispose of the remaining constituents of the nuclei of the comparatively but slightly toxic *lepra bacilli*. In the case of tuberculosis, however, it is the very deprivation of fat and the granular decay which renders the extremely poisonous endotoxins of the tubercle bacilli amenable to absorption, and for this reason much harm may be done by incautious injection of nastin. Nevertheless I think and trust, on the strength of numerous cases of the most varying forms of tuberculosis which have come under my treatment hitherto, that nastin—in greatly different concentrations than are used for leprosy, and; it may be, combined with antitoxic treatment—is destined to play a part in the therapy of tuberculosis also.

But observations to be made for many months, perhaps

for many years to come, will be needed before I can be in a position to recommend a tuberculosis-therapy which admits of being generally introduced. At the present stage of my studies in this highly controversial province I can but urgently caution against applying nastin in the concentration indicated for use in the treatment of leprosy, when dealing with patients suffering from tuberculosis. Sad experiences would be the result.

It is otherwise as regards leprosy; I am convinced that in leprosy the present benzoyl-nastin therapy is innocuous on the one hand, and hence may conscientiously be recommended for use to medical men; and that, on the other hand, it constitutes a real advance in the treatment of this terrible disease.*

ELECTROLYSIS IN TIC DOULOUREUX AND IN SPINAL SCLEROSIS.

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I SHOULD like to call the attention of the profession to the valuable results which can be obtained in tic douloureux, spinal sclerosis, and other conditions by ionic medication. The human body is an electrolyte, and electrical currents are only conveyed through it by the migration of ions (electrified particles of matter). A current through the body is a convection current analogous to the convection of heat. There is an actual transfer of material particles, each carrying one or more electrical charges on its back, from one electrode to the other in both directions. By this means drugs can be carried through the unbroken skin into the body, and exactly at the spot where the effect is desired. I will refer here only to the two conditions of tic douloureux and spinal sclerosis. Ionic treatment of tic douloureux has been recommended by Leduc and others. Leduc narrates several successful cases, but no previous reference to the ionic treatment of sclerosis is known to me.

Six cases of tic douloureux have recently been under treatment by me. In each of these great relief or a cure—whether permanent or not it is too early to state—has been obtained.

CASE I.

R. M., aged 58, recommended by Dr. Boyd, had suffered from tic douloureux for five months, the pain was stabbing and worst at night, but never entirely away. The patient was unable to sleep and in and out of bed all night, had difficulty in opening jaw, and was becoming exhausted; many remedies had been tried unavailingly. The first application relieved him for twenty-four hours; the second application three days later had a similar effect; after five applications the patient expressed himself as being greatly benefited, he was able to take food and to sleep, and the attacks had almost ceased.

CASE II.

A. B., recommended by Dr. Ronaldson; tic douloureux had followed herpes; the attacks were severe, keeping the patient awake at night. Four applications sufficed to remove the pain, but the patient suffered from nausea and giddiness afterwards; during the applications she was inclined to sleep. Each séance was followed by freedom from pain.

CASE III.

A patient of Mr. Cotterill, aged 73; she had suffered from tic douloureux for nine years. The first application gave her, in her own words, the first good night she had had without an opiate for weeks. Three or four séances greatly relieved her, but when the treatment was intermitted the pain had a tendency to recur; a renewal of the applications always led to improvement, and after a dozen applications she returned home greatly benefited.

CASE IV.

A patient, aged 34, recommended by Dr. Frost, complained of shooting pains in the side of the face and back of the neck. In this case the current was passed from the one affected area to the other by means of large electrodes placed over these areas. The result was satisfactory; when the patient returned some days afterwards, she said that she had had scarcely any pain since the treatment.

* The benzoyl-nastin solution is put up in ampoules containing each from 0.0005 to 0.002 nastin in sterilized olive oil. One such dose is injected hypodermically once a week. No reaction is observed with the smaller doses, but with the larger reaction occasionally takes place. It is not desirable to induce a marked reaction. In favourable cases, after some weeks or months the lesions gradually disappear. Kalle and Co., Biebrich am Rhein, have undertaken to prepare the material in a form ready for use.

In treating cases of the *douloureux* by this method when strong currents may be passing through the brain, it is very important to avoid all abrupt changes in the current strength, or giddiness, faintness, or other serious symptoms may follow. Burns will also be produced if the current density be allowed to become too great. Beneath each electrode several layers of unmedicated lint soaked in the solution it is desired to use should be placed.

In all these cases the treatment was the same; the salicylic ion (or the quinine ion) was introduced into the cellular tissue beneath the skin by a strong constant current.

In the hitherto incurable and hopeless cases of spinal sclerosis something can now be attempted, not to directly regenerate destroyed nerve tissue, though indirectly some such effect may possibly be produced, but to loosen and remove the fibrous tissue which may be pressing upon and interfering with the function of the nerve strands and cells. Two cases of lateral sclerosis and one of disseminated sclerosis have been treated electrolytically by me.

CASE V.

The patient, aged 34, had been ill for more than a year; he presented all the signs and symptoms of spastic paralysis; he was unable to walk alone, and suffered from urinary incontinence. Six applications sufficed to remove these symptoms, and, under a continuance of the treatment, he was soon able to walk quite well by himself. After reaching this stage of improvement the applications were discontinued, and the patient was advised to remain quietly at home. Unfortunately, he returned to his work, and when he was seen again some months later his condition was aggravated. A repetition of the former applications now failed to relieve him; but when much stronger currents were employed satisfactory results followed. The patient steadily improved, and was soon brought back to his former level.

CASE VI.

A patient, aged 25, of Dr. G. Gibson. Improvement began at once; immediately after the application the patient could move his limbs more freely. He was given three applications a week, and manifested improvement after each one; this was sometimes more marked on the day following the treatment. He has now had twelve applications, and his legs are stronger and he can walk better.

CASE VII.

Also one of Dr. Gibson's. The patient, aged 29, has been ill for five years with disseminated sclerosis, the left leg being chiefly affected; this patient has had three applications similar to those in the previous cases, but without any observable improvement; another ion will, therefore, now be introduced—the iodide ion instead of the chloride ion.*

That the chloride ion has a remarkable power of resolving fibrous adhesions has been shown by Leduc and tested by me in many surgical cases, and it was this fact which led me to try it in sclerosis. I would suggest that overgrowths of fibrous tissue in other organs—for example, the liver and kidneys—should be similarly attacked. Naturally the more superficial the organ the better hope of success. Strong currents and long sittings and the individual attention of a qualified specialist are in my opinion the key to successful results. Surely we may rejoice at the addition of this new powerful but most manageable weapon to our armamentarium.

MEMORANDA:

MEDICAL, SURGICAL, OBSTETRICAL.

TOXIC EFFECTS OF PETROL FUMES.

In connexion with the notes which have lately appeared in your columns the following cases of "petrol poisoning" may be of interest:

A young fellow in charge of a 40-h.p. Daimler car returned with the car to a private garage accompanied by another chauffeur. Having taken the car in, they completely closed the garage by pulling down the roller shutters with which it was provided. There was no other opening to the air with the exception of a staircase to the upper story. The time was about 4 p.m. They then proceeded to manœuvre the car about the garage. For this purpose the engine was kept running, and they noticed a strong smell and black smoke from the exhaust. The younger one stated that a lot of petrol (Carless spirit) was

running through the engine. At 4.30, experiencing a sense of vertigo and constriction of the head, "worse than headache," but no nausea, they went upstairs to get some tea. About this time people outside the garage heard considerable shouting and commotion from within, and remarked upon it. At 5.45, on the return of another car, the garage was unlocked, and the two young fellows were found insensible upstairs. One was in the lavatory, which had to be forced open; the other lay near the door of the kitchen. They must have lain insensible for over an hour. The windows upstairs were open. They were immediately carried down into the open and soused with water. I saw them about fifteen minutes later. Both were then in a completely dazed condition, with medium-sized, active pupils. They were unable to stand. One was pale, shivering, and drumming his feet on the floor. He did not appreciate what was said to him, resented interference, and struck out when addressed. The other was deeply flushed and slightly cyanosed. He was more sensible, but when moved he struck out at the door, injuring his knuckles. The pulse in each case was small and rather fast. There had been no vomiting, and the fact that one was found in the lavatory was due to his having taken a pill previously. They were again carried upstairs and laid on settles near the fire. The windows were widely opened. Although warmly wrapped up, they continued to shiver acutely for some time. The shivering had the appearance of clonic spasm, and was particularly marked in the case of the pale patient; the feet in his case and the hands in the other were constantly beating against the floor. The flushed and younger of the two recovered rapidly, the pale one more slowly. By the next day they were both all right, but had only an imperfect recollection of what had happened subsequently to their leaving the garage proper and going upstairs. The treatment adopted was free ventilation and the administration of hot strong tea, which was handy. The kindness of a bystander had already supplied a glass of spirits.

It was a fortunate thing that, on the first feeling of illness, they left the closed garage and went to a higher level where windows were open.

London, W.

CHARLES R. BOX, M.D., F.R.C.P.

RIGOR MORTIS IN THE STILLBORN.

SINCE reading the annotation in the BRITISH MEDICAL JOURNAL of October 5th, 1907, on a case of rigor mortis in a stillborn infant, I have been on the look-out for this condition, and a few days ago my patience was rewarded by seeing a child born in a typical state of *post-mortem* rigidity. The mother was a multipara, and was in full labour when I saw her. As her pains did not seem to be doing much good, I was just thinking of applying the forceps when the patient exclaimed the head was in the birth. On raising the bedclothes, I saw the head bulging the perineum in such a way as made me think at once that the presentation was an occipito-posterior one.

The head showed no signs of undergoing the movement of extension, and it was only when I pressed it strongly forward that the vertex appeared at the vulval outlet. When it was born I was surprised to see an occipito-anterior instead of a posterior presentation, as I had anticipated. The child was dead, and *post-mortem* rigidity was very marked; indeed, its condition was exactly that described so clearly by Mr. Parkinson in the issue of the JOURNAL for February 8th, that I cannot do better than quote his words: "The head was drawn forwards and the back somewhat rounded. The arms were flexed on the elbows and bent on the chest; the thighs were drawn up and flexed towards the belly, and the legs were flexed at the knees."

The position of the head—namely, drawn strongly forward—accounted for the lack of extension and simulation of an occipito-posterior presentation by undue bulging of the lower part of the perineum.

The woman stated that she had not felt fetal movements for a fortnight, but in this she is probably incorrect, as the child would have shown signs of maceration at birth had it been dead so long.

This is the first case of rigor mortis in the stillborn which I have observed, but now that my attention has been drawn to the subject I mean to keep a keen look-out for it in the future.

South Shields.

JOHN BAIN.

* This patient has now begun to show improvement.