is insufficient to control the pain I increase the dose to a grain, and give it as frequently as seems necessary. As a rule, I find that it does not produce drowsiness, nor has it interfered with the digestive functions.

To sum up, the results I have obtained from the administration of codeine have satisfied me that it has a powerful action in allaying abdominal pain, and it can be pushed to a much greater extent than morphine without causing drowsiness or interfering with the respiration or with the action of the bowels. It is, therefore, specially indicated in such a case as Dr. Philpot's, which I have already mentioned, where the dilated heart and consolidated lung tended to make one afraid of morphine. Codeine is also specially indicated in a case like Dr. Pardington's, where one wished to relieve the pain without interfering with the action of the bowels. On the other hand, in cases where there has been much diarrhoea, as in some cases of malignant disease of the colon or rectum, the absence of any tendency to lessen peristaltic movement is rather a disadvantage to codeine as compared with morphine or opium.

I have found that in cases of long-continued enteralgia without organic disease, it has continued to relieve pain for months together, without the dose being increased beyond one grain three times a day, and I found the same to be the case where the presence of a tumour, in addition to other symptoms, had led to the diagnoses of malignant disease.

It is interesting to follow the vicissitudes of a drug, and to notice how its use extends or diminishes until at last it finds its right place and maintains it. Thus digitalis, while mentioned in the London *Pharmacopœia* of 1721, was excluded from that of 1746. It again appeared in 1788, and since then it has held its place.

Possibly codeine, after falling into almost complete disuse as an analgesic for many years may again regain a more or less important place amongst the remedies which enable us to relieve pain.

ON THE TREATMENT OF TUBERCULAR LEPROSY BY EXCISION.

By BEAVER RAKE, M.D.LOND.,

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MODERN pathology tends to show that leprosy is a parasitic disease. However that may be, I have for some time been of opinion that a good deal may be done in the way of local palliative treatment by excision of tubercles. Having lately had an opportunity of testing the truth of my conviction, I will first briefly describe two cases, and afterwards make a few remarks.

CASE I.—J. J., aged 14, a negress born in Trinidad, was admitted to the Leper Asylum on November 5th, 1884, with one year's history. She was a well-developed, healthy-looking girl. The forearms, hands, and fingers were covered with large tuberculated masses, and there were similar isolated masses on the forehead, cheeks, nose, and chin. As she wished to have something done to improve her appearance, I determined to try the effect of free excision.

On January 1st, 1885, she was put under chloroform, and tubercles were ligatured and excised from the *alæ nasi* and above the eyebrows.

On January 22nd more tubercles were removed from the end and side of the nose.

On January 29th a large mass of tubercles about two inches long was removed from the chin without chloroform, as she took the anæsthetic very badly.

On February 7th she was given chloroform, and a flat mass of tubercle about an inch and a half square and half an inch in height was removed from the right cheek; the edges of the wound were rubbed over with strong nitric acid.

On March 5th about two square inches were removed from the left cheek without chloroform. The edges of the wound were trimmed with scissors so as to bring them level with the surrounding skin. She made but little complaint of pain.

On March 31st some small tubercles, which had sprouted from the *alæ nasi* since the operation of January 1st, were removed. A slight recurrence at the upper margin of the cicatrix on the right cheek was also removed with scissors, also a tubercle about three-eighths of an inch in diameter from the bridge of the nose.

On April 14th the following was the condition of the cicatrices: Right cheek: cicatrix $2 \times 1\frac{1}{2}$ in.; small scab in centre; small

patches of tubercle at lower and inner margin. Left cheek: cicatrix $2\frac{1}{2} \times 2$ in.; small scab remaining; a few small islands of tubercular tissue scattered about in cicatrix. Over right eyebrow: cicatrix $1\frac{1}{4} \times 1$ in.; small growth of tubercles at upper and inner margins. Over left eyebrow: cicatrix $\frac{1}{2}$ in. diameter; growth at edges. Chin: crescentic patch $2 \times 1\frac{1}{4}$ in.; lower part occupied by cicatrix, upper part by rather exuberant tubercles encroaching on the lip. Right side of nose: cicatrix $1 \times \frac{1}{2}$ in.; growth of small tubercles all down outer side. Left side of nose: triangular patch; cicatrix in centre; tubercles at edges. There was a recurrence of small tubercles round the nostrils and tip of the nose, at the edges of the cicatrices. There were a few untouched tubercles on the forehead and over the glabella.

On April 23rd a small tubercle was removed from the lower lip.

On September 29th the tubercles over the eyebrows and nose were found to be sprouting more, and at her own request the tubercle over the right eyebrow was further removed on October

6th. A superficial incision was made all round at the junction of healthy with infiltrated skin. The tubercle was then lifted up and snipped off with scissors. Strong glacial carbolie acid was rubbed over, and then tannin powder sprinkled over so as to form a crust. No chloroform was given, and she made no complaint of pain.

The more thorough cauterisation on this occasion was suggested by the recurrence of small tubercles on the margins of the old cicatrices. This recurrence appeared to be due to escape of some of the tuberculous tissue, and it was hoped, by freer excision, and cauterisation with such a powerful bactericide as glacial carbolie acid, to prevent lateral extension. It will be seen that this method was more fully carried out in the next case.

Magenta showed swarms of the bacillus lepræ in the excised tubercles. She was put on four minims of liquor arsenicalis three

times a day on January 26th, and this was increased to six minims on March 31st.

The accompanying woodcuts are from photographs taken before and after operation. It must be noted that some tubercles had been already removed from above the eyebrows, and from the alae nasi before the first photograph was taken, but this does not materially affect the comparison.

CASE II.—R. G., aged 12, negro, born in Venezuela, was admitted to the Leper Asylum on September 16th, 1881, with a three

years' history. Large tuberculated masses involved the trunk and extremities, but these were especially exuberant on the face and ears, producing a degree of disfigurement which I have never yet seen equalled in tubercular leprosy. On April 11th, 1885, he was given chloroform, which he took remarkably well. A large mass of tubercles, about 3 by 2 inches, was excised from the forehead. There was a good deal of hæmorrhage. The raw surface was treated as above described, with carbolic acid and tannin. This method was adopted in all subsequent operations. The cicatrix was complete by April 25th.

On April 18th numerous tubercles were excised from the left cheek, over an area of about four square inches.

On April 25th more tubercles were removed from the left cheek, over an area of about two square inches, also from the left side of the chin.

On May 5th, about one ounce of tubercles was removed from the right ear and alae nasi.

On May 12th tubercles were removed with scissors from the left ear, also from the right side of the chin and lips, also a few from the bridge of the nose.

On May 28th nearly all the scabs had fallen, and his appearance was so much changed that he was not recognisable.

The areas of cicatricial tissue were roughly calculated as follows: Forehead: $3 \times 1\frac{1}{2}$ in. Each cheek: $4 \times 3\frac{1}{2}$ in. Chin: $2\frac{1}{2} \times 2\frac{1}{2}$ in. Each ear: $2 \times \frac{1}{2}$ in. Total area about 27 square inches.

Most of the tubercles were preserved in spirit and weighed, and their total weight was calculated at about four ounces.

On June 20th he was found to have an attack of yaws, which, however, had passed by September 22nd.

On December 4th it was noted that there was practically no return of tubercles in the ears. There were firm, smooth cicatrices on the face. Those pieces of tubercle which had escaped removal by knife or scissors had grown a little, but not more than $\frac{1}{4}$ to $\frac{1}{2}$ inch; where the knife or scissors had gone more deeply there was no return. On the alae of the nose the tubercles had grown rather more—about $\frac{1}{2}$ inch—but here it was not practicable to remove them without more or less destroying the nose. Over the forehead and eyebrows the tubercles were stationary.

In this case, also, magenta showed swarms of bacilli in the excised tubercles. On April 21st he was ordered four minims of liquor arsenicalis three times a day, but there was some difficulty in getting him to take the medicine regularly.

The accompanying illustrations, showing the face before and after operation, will serve to give some idea of the relief afforded.

I have at present in the asylum two milder cases which are undergoing similar treatment. Though the result can be at the best but palliative, it seems worthy of consideration in such a disfiguring disease as tubercular leprosy. It may be objected that this treatment is practically the same as that pursued by the late Dr. Beauprethuy. An all-important distinction lies in the use of the knife or scissors—a detail which I believe was not adopted by him. Free excision combined with caustics gives a more rapid, clean, and effectual cicatrix than the use of caustics alone. Assuming, as a working hypothesis, that leprosy is a parasitic disease, it is hoped that the use of two powerful germicides—one, arsenic, internally; the other, strong carbolic acid, externally—may kill, at any rate, some of the bacilli, and thus hinder if not prevent recurrence. In point of fact, on examining tubercles after the use of arsenic, I found in some cases fewer bacilli, but this may have been a mere error of experiment, and of course a large number of comparative observations will be necessary. The tannin powder is used with the idea of forming crusts to protect the granulating surfaces and so prolonging the local action of the carbolic acid.

Another important effect of this treatment is to lessen the amount of ulceration. Tuberculated tissue ulcerates much more readily than sound skin, and thus often works its own cure to a certain extent. This was very marked in the second case. Before operation the large masses on the ears were constantly raw and ulcerated. After operation a small firm cicatrix formed, and one could scarcely recognise the site of the former tubercles.

A SECOND SUCCESSFUL CASE OF EXTRACTION OF GLASS FROM AN EYE,

AFTER A LODGMENT OF SEVEN YEARS AND A DAY

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IN the JOURNAL for April 28th I recorded the case of a gentleman, from whose left eye a piece of glass, which had lodged there for a little more than ten years, was successfully extracted, and it is curious that, within a few weeks, another similar case should have come under my care. The history given to me by the patient is as follows.

W. C., aged 33, received at midnight on January 12th, 1881, a severe wound of the right eye, owing to the bursting of the glass water gauge of a boiler, and was, in consequence, admitted into hospital. About three months later the eye was "needled," and the patient eventually returned home, with fair vision (C+ 3" $\frac{3}{8}$, C+ 2 $\frac{1}{2}$ J 8), and with all inflammation gone. In 1883 the eye was hit with a piece of rope; it inflamed, was very irritable, and watered much, and opinions were divided as to the necessity of its removal. Eventually sedative treatment was selected, and after some months the eye again settled down. In May, 1885, inflammation recurred, this time without apparent cause, and it disappeared in about a fortnight. In the autumn of 1885 the eye again received a trifling knock, the inflammation being again allayed by hospital treatment, and after a short time he was able to return to work. In the beginning of July, 1887, the eye was slightly flicked with a piece of bagging. A fortnight later, the irritation not subsiding, an adhesion between the iris and the cornea was successfully divided (September 17th, 1887), and after