that in almost every case injected with this material there has at least been some obvious return of sensation in some anaesthetic area.

The next thing that leprolin does in alleviating the symptoms of this disease is: it relieves the shooting pains in the limbs and joints that these patients suffer so badly from, and causes the heavy sensation in the limbs to disappear. It changes slowly the white anaesthetic patches by commencing in the centre and edges of the patch to change the colour of the skin to normal. It causes the rough furfuraceous skin to become smooth. After injection the anaesthetic patches will show redness in their centres, which gradually assume the natural colour of the skin, and these patches, which may have been anaesthetic before, become tender to the touch. It causes the nodules in the subcutaneous tissue to subside, and this in some cases has been a very marked feature of the improvement. It causes the ulcers to heal up, and this it does rapidly; some cases had had ulceration for years, and after only one injection the ulcers healed up. Even parts that are gangrenous slough away and leave a healthy granulating sore. Such a case—a man who came to hospital with gangrenous feet and loss of sensation in the entire legs—after four injections of leprolin was so much improved and almost healed up, with return of sensation completely in the legs, that he was able to walk about.

I showed you last month a Burman who, after the short space of ten days, lost all signs of the disease after one injection of leprolin. He had had ulceration of the foot for four years, and loss of sensation in both legs and feet. The ulcer completely healed and all sensation returned, and he went out apparently cured; he turned up again to-day, and I therefore show him to you again.

The same leprolin and the same preparation of the same culture of the bacillus will not always produce the same effect in all cases of leprosy. In some it may cause a slight reaction, in some it may cause a very severe reaction. As a rule, the severity of the reaction may be taken as an index of the benefit that is likely to occur, and this in itself is a good sign of the beneficial action of this material in this disease. I have been injecting only once a fortnight, but in some bad cases I have injected at intervals of only a few days.

If the injection is given at the interval of only a few days, or before the temperature of the first injection has reached normal, then it generally occurs that the temperature of the second injection will be prolonged.

I have now injected this material over four hundred times, and in every case there have been no bad symptoms, and in every case the disease has ceased to advance.

The action of leprolin, then, appears to be very similar to that of tuberculin, when the latter is applied in cases of lupus. There is a marked reaction in the affected area, and cases of lupus have been reported which have greatly benefited by the injection of tuberculin. As is well known, however, its action is dangerous, as it is liable to loosen the bacilli from the deeper tissues and cause a general infection of the disease. There appears to be no such danger with regard to the action of leprolin.

Tuberculosis is a disease which affects the hypoblastic tissues, while leprosy is a disease which affects the epiblastic tissues.

Treatment of Leprosy.

Of the total cases of leprosy now treated by this method, four have been cured; at least there remains no sign of the original disease; two of these cases I showed at the last meeting and two I showed this time.

The number of cases now under treatment in Burmah is about one hundred, and in the great majority of these there has been very marked improvement, and it is now being tried in thirty different places in India, by I.M.S. men and others, and I have heard from two of these gentlemen that the leprolin is causing very good results, and they have wired for more of the material.

Some of these cases are well worth seeing as showing how the anaesthetic patches gradually assume the natural colour of the skin, commencing from the edges and the centres of the patches, which later become invisible. As already stated, the principal sign of improvement is the return of sensation and the rapidity with which it causes this is difficult to explain.

Rapid improvement cannot be expected in such a chronic disease, but one case has been apparently cured after one injection of leprolin, while some cases have had as many as eight injections.

The difficulty of manufacture of this material, has prevented

me from treating my cases as regularly as I should have liked, as most of my spare time has been spent in my laboratory, but I hope soon to be able to produce enough culture to make sufficient leprolin for the injection of 300 cases a month. Since publishing my reports in the *Indian Medical Gazette* for May and June, I have been inundated with applications for this material, only some of which I have been able to supply.

Theory.

As to how the organism enters the body and causes the disease, it would appear from the method of growth of this bacillus that the theory recently brought forward that the disease is caused by the consumption of badly-cured fish is erroneous.

I have examined several samples of badly-cured fish, some very bad, so much so that one did not care to go too close to them; I found in all a large amount of salt, and moreover salt in certain amounts is not a preventive of putrefaction. I tried to grow acid-fast bacteria from these bad samples of cured fish in my medium, but failed.

In all kinds of fish and meat the amount of salt is considerable, and is certainly sufficient to prevent the growth of a bacillus that has such a marked aversion to salt as the bacillus leprae.

There are two views that may be taken as to the manner in which this leprolin acts beneficially in cases of leprosy. One is the autotoxic view, and the other is the antautotoxic view; the former is that all cultures of bacteria eventually die out by poisoning themselves by their own excreta, and that, therefore, if one injects the toxins from the cultivation of the leprosy bacillus and injects them in large amount into the body the bacillus leprae is killed off before it has time to progenerate its species, as it is very slow in growing in the body. The antautotoxic theory is that if a bacterial poison is injected into the body, the body reacts to it in such a way that an antitoxin is eventually formed in the body which acts as an antitoxin and kills off the bacilli, so that when leprolin is injected into the body an antitoxin is formed in the body and acts as an antidote to the bacilli and their poisons.

In support of the first theory we have the fact that the action of leprolin in causing the sensation in the anaesthetic patches to return is most sudden, and therefore it would not be likely to be due to an antitoxin, as it would not have time to be formed in the body, to cause this sudden return of sensation.

A SECOND CASE OF CUTANEOUS ANTHRAX SUCCESSFULLY TREATED BY SCLAVO'S SERUM WITHOUT EXCISION.

By ANTHONY BOWLBY, and F. W. ANDREWES,
C.M.G., F.R.C.S., M.D., F.R.C.P.,
Surgeon to and Lecturer on Surgery at St. Bartholomew's Hospital. Lecturer on Pathology, St. Bartholomew's Hospital.

A FEW weeks ago one of us, in conjunction with Mr. C. B. Lockwood, recorded in the *BRITISH MEDICAL JOURNAL* a case of anthrax of the face successfully treated at St. Bartholomew's Hospital without excision, by the use of Sclavo's serum. A second and equally successful case has now to be recorded.

On January 17th, 1905, a man, aged 30 years, a horsehair dresser, presented himself at St. Bartholomew's Hospital with a characteristic anthrax lesion on the forehead. He gave the following history: On January 9th he had fallen, striking his forehead against a fender, bruising it but not breaking the skin. Four days later he noticed some watery fluid exuding from the bruise, and on January 14th, a small black slough was present in the centre of the bruise, which was more defined and evidently inflamed. The neck became a little stiff, and on January 15th an enlarged gland was felt at the left angle of the jaw. His general health was scarcely impaired and there was little pain. On admission to the hospital, under the care of Mr. Bowlby, the patient showed on the left side of the forehead, near the roots of the hair, a black slough about the size of a sixpence with a ring of vesicles around it from which a clear fluid exuded. There was not much inflammation or oedema around, but a large hard gland could be felt at the angle of the jaw. The temperature was 99.6° F. and the pulse 100. The fluid from the vesicles showed numerous characteristic anthrax bacilli, and cultures yielded, next day, a profuse growth of the bacillus practically unmixt with any other organisms. The bacillus was fully virulent when tested upon a mouse. In view of the success which had attended the use of Sclavo's serum in the previous case above referred to, the sole treatment adopted was the injection beneath the skin of the abdomen of 40 c.c.m. of the serum, which was kindly furnished by Dr. Legge, of the Home Office. The slough was kept covered by a piece of lint, coated with boracic ointment. No rise of temperature followed the injection, which

was given at 4 p.m. on the day of admission (January 17th). During the night the temperature fell to 98.4° F., and thenceforward remained normal. Next day the pulse was 76, and there were no constitutional symptoms; there was less local discomfort, and the gland at the angle of the jaw had diminished in size, but more oedema was present. This oedema still further increased on January 19th, but was never enough to close the eye; it was not associated with any increase in the size of the slough or with the formation of any fresh vesicles; the slough became, however, more prominent from the increased swelling and inflammation. The gland continuously diminished in size from the first. The oedema then grew less, and was gone by January 21st. The patient's convalescence was uninterrupted, and the slough separated on January 31st, fourteen days after the administration of the serum; on this day the man left the hospital with a superficial granulating wound which seemed likely to leave hardly any scar.

A very striking observation was made on the case. We have said that on the patient's admission to the hospital cultivations from the fluid of the vesicles yielded abundant colonies of anthrax bacilli. On the following day, only nineteen hours after the serum had been injected, precisely similar cultures were made, clear fluid being still present in the vesicles. Not a single colony of anthrax could be obtained on this second occasion; only staphylococci grew in the cultures. The cultures were repeated on the third day, again with negative result. The fluid from the vesicles was on this third occasion patiently searched under the microscope; only a very few disintegrating bacilli were found, mostly enclosed in leucocytes. It seems legitimate to infer that the serum exerted a powerfully bactericidal action. It may be suggested that the notable increase in the oedema which occurred after the bacilli had apparently been destroyed, depended upon the liberation of an intracellular toxin from the disintegrated bodies of the bacilli.

We would draw special attention to this increase in the oedema after the use of Scavo's serum. It was seen to an even more marked degree in the previously reported case, and might easily give rise to the idea that the serum was not doing its work. In the present case, the daily bacteriological examinations helped to allay any undue anxiety on this score, but in both cases the increased oedema was associated with an improvement in all other respects, and was not attended with any new development of vesicles or other indication of an extension of the infective process.

The two cases, taken together, confirm the favourable results which have been obtained in Italy by the use of Professor Scavo's serum. They seem to indicate that, at least in moderately early cases of cutaneous anthrax, excision may safely be dispensed with where an initial dose of 40 c.cm. of the serum is employed. So far as we are aware the present case is the second in Great Britain in which reliance has been placed on the serum alone. It has been used in a number of other cases, but always in combination with excision.

An Address

ON THE

MEDICAL WORTHIES OF CUMBERLAND.

By HENRY BARNES, M.D., LL.D., F.R.S.E.,
Vice-President of the British Medical Association; President of the
Border Counties Branch.*

My first duty is to thank you most cordially for the honour you have conferred upon me by electing me a second time to the Presidency of this Branch. It is just twenty-eight years ago since I entered upon my first term of office as your President, but for more than forty years I have taken an active interest in the work of the British Medical Association, and have been a regular reader of the *BRITISH MEDICAL JOURNAL*. During my student days in Edinburgh, I had week by week a copy of the *JOURNAL* sent to me, and soon after my graduation in 1864 I had during more than a year's residence in Manchester an opportunity of becoming practically acquainted with the organization and working of the Lancashire and Cheshire Branch, which was at that time and still is one of the largest and most active Branches in the Association. On settling in Carlisle in 1866, I found to my regret that only some half-dozen members of the medical profession in Cumberland and Westmorland had seen the advantage of becoming members of the Association. After two years, however, the Cumberland and Westmorland Branch was established, and I became its first Secretary. Its success was never a matter

of doubt. In three years we were able to boast that 63 per cent. of the medical profession residing in the two counties were enrolled as members of the Branch—a greater proportion than any other Branch could claim in those days.

After seven years' work as secretary the area of the Branch was extended, its title was changed, and it became the Border Counties Branch. I had the honour to be nominated as President-elect, and duly filled the office of President in the years 1876-7. In the year 1895 the Association was invited to hold its annual meeting in 1896 in Carlisle, and by your unanimous vote the further great distinction was conferred upon me of being nominated for the office of President. The success of that meeting has been generally acknowledged. One of its results was to give definite shape to the agitation which has resulted in the recent change in the constitution of the Association which came into force at Swansea last year. For some years it had become apparent that the influence of the Association was not so great as might have been expected from the number of its members. At the time when this Branch was formed the Association, which had existed for thirty-six years, numbered about 3,500 members. During the next thirty-six years its increase was rapid and progressive. For more than two-thirds of this latter period I was a member of the Central Council. A spirit of reform rose up within the Association, and gradually the new constitution was elaborated. The future is full of promise. New members have already been attracted to our ranks, and the time, I hope, is not far distant when we can boast that we have enrolled in our ranks every respectable member of the medical profession.

During the past year the Branch has lost by death one of its most distinguished members. Two years ago Dr. Fray Ormrod gave us in his presidential address a very forcible and practical account of some of the extraordinary duties of the general medical practitioner. He had been for many years an active member of the Association, and he had a high ideal of the position and responsibilities of a medical practitioner. In 1888 it was my duty as the representative of this Branch to bring before the Council of the Association the heroic conduct of Dr. Ormrod in connexion with a disastrous colliery explosion near Workington, and I proposed that the gold medal for distinguished merit be awarded to him. This was seconded by Sir Walter Foster, M.P., and carried. In due course the medal was presented at the Glasgow meeting by Sir William Gairdner, K.C.B., and the magnificent reception then accorded to Dr. Ormrod has only been equalled in my experience of annual meetings by that accorded to Surgeon-Captain Whitchurch, V.C., the hero of Chitral, to whom I presented a similar medal at the Carlisle meeting in 1896, when a scene of enthusiasm occurred which, I think, will be fresh in the memories of many of you.

Having thus briefly sketched the history of our Branch, I now come to the main part of my address. I propose to give you a short account of the life and work of some of the more eminent members of our profession who, by descent or residence, have been connected with Cumberland, in the earnest hope that the record of their labours may stimulate all of us to increased exertions in promoting the science and art to which we have devoted our lives. Taking them in chronological order, the first name that claims attention is John Radcliffe, M.D. (1650-1714), who was born at Wakefield, in Yorkshire, and was not a little proud of his Cumbrian descent. Sir Francis Radcliffe, Earl of Derwentwater, acknowledged him as a kinsman, and suffered him to bear the family arms on his coach, which none of the college belonging to the Earl Marshal thought fit to animadvert upon during his life. As a physician Radcliffe was an acute observer of symptoms, and in many cases was peculiarly happy in his treatment. Dr. Mead, who succeeded to much of his practice, wrote of him that "he was deservedly at the head of his profession on account of his great medical penetration and experience." He died from apoplexy in 1714, and left a large fortune by which the University of Oxford, St. Bartholomew's Hospital, and the medical profession largely profited. There is a portrait of him, two biographies, and many particulars of his life in the Radcliffe papers in the Jackson Library, Tullie House, Carlisle. Here also is to be found a copy of the *Gold-Headed Cane*, a work describing various adventures in the lives of several great physicians. The gold-headed cane is now one of the treasured possessions of the College of Physicians in London. Its first owner was Radcliffe, who bequeathed it to Mead. It then became the property of Askew, a famous Westmorland medical worthy. By Askew it was bequeathed to Pitcairn, who in his turn left it to

* Read at the annual meeting of the Branch, June 30th, 1904.