with certainty be present it should be emptied of its contents by a fine trocar and cannula before the strapping is applied. Tumours which are probably due to chronic mastitis, but which exhibit doubtful signs, especially if they are single and occur in older women, should be incised without delay, so that their real nature may be determined at once. In any case if there is no decided improvement after six weeks of treatment the disease should be removed without hesitation. It suffices to remove the affected portion of the breast, and, where both organs are affected, to remove the affected portion of both, keeping well outside the disease. Mr. Butlin has no sympathy with the advanced doctrine which enjoins the removal of the entire breast in cases of chronic mastitis in which an operation is necessary.

ON TREATMENT WITH ANTITUBERCULOUS SERUM.

DR. ALEXANDER MARMOREK,¹ speaking at St. George's Hospital, said that he had been working at this subject for a number of years, and was convinced that in the laboratory would be found the long sought for cure for tuberculosis. While not minimising the importance of hygienic measures, vaccination against tubercle, and the like, he emphasised the fact that what is wanted now is a cure for those already diseased.

The human organism is refractory to the tubercle bacillus: 20 per cent. of patients who already show signs of its invasion are enabled to recover by means of their natural immunity alone. Recoveries due to different curative methods amount to 20 or 22 per cent. Therefore, although no doubt the patient's condition is much ameliorated by sanatorium, and other such treatment, the proportion of cures is not much above the proportion of cases recovering by their natural immunity.

Tuberculin is not the primary cause of the pathogenic symptoms of tuberculosis. It is a reactive which causes the bacilli to secrete another and hitherto unknown toxin, and this toxin is the weapon with which the bacilli attack and undermine the organism. If an infinitesimal quantity of bacilli be injected beneath the skin of an animal, and after 30 minutes 1-80th of a drop of tuberculin be injected into the brain of both this animal and a control, a rise of temperature occurs in both, but is more marked in the inoculated animal. This genuine and precocious tuberculin reaction can only be explained by the fact that the injected tuberculin stimulated the bacilli which had been previously introduced under the skin to secrete a toxin causing fever. Thus the treatment by tuberculin aims at an active immunisation, and is unsuited to all forms of severe tuberculous intoxication and all cases where natural immunity is absent. Passive immunisation by introducing an antitoxin already produced would cure consumptives whether possessed of a natural immunity or not. An antitoxin prepared from the true toxin would have most effect upon those cases in which the intoxication is most severe, and when the symptoms are entirely due to the tuberculous process, and not to mixed infection or to the results of

chronic inflammation. Dr. Marmorek believes that he has succeeded in producing the real tuberculous toxin in vitro,² and its corresponding antitoxin by methods of active animal immunisation. He treated at first only patients in the more advanced stages; his results encouraged him to use the serum in earlier and slighter cases. He found that a long series of injections caused very little local or general intolerance; that the younger the lesion the quicker were the healing effects of the serum to be expected.

The serum is directed against the intoxication in its primary effects. If such primary lesions alone are found a *restitutio ad integrum* can be accomplished. A woman of 33, with every classical symptom of acute miliary tuberculosis of both lungs, was treated by serum injection 27 days after the inception of the disease, all other treatment was excluded, and the case had been pronounced hopeless. After 720 cubic centimetres of serum had been introduced in 47 injections, absolute recovery was proved, and for months the sputum has been free from bacilli, and the signs in her chest have been normal. In the most acute form of tuberculosis, that of the meninges, the treatment has been commenced too late. Some cerebro-spinal fluid obtained by lumbar paracentesis should be used as the first injection in a tuberculin observation such as has just been described, and thus a diagnosis may be made quite early. The results in cases where the treatment has been commenced too late for cure have still been very encouraging; the condition of the patients was ameliorated at every point.

The serum is capable, Dr. Marmorek states, of curing pulmonary consumption by specific action. It has little or no effect upon too severe or chronic cases in which there are large cavities and irreparable lesions. The most recent portions of the infiltration are affected most favourably and very quickly resolve. The reconstruction of the tissue of the older and duller parts is more difficult and it is impossible to clear the portion of lung which is enveloped with pleuritic membrane and in which there is a large amount of fibrous tissue. Many injections may still be needed after symptoms of disease have disappeared to remove all bacillary trace from the sputum, and even cured patients continue for some time to expectorate several grammes of sputum daily.

Fever is reduced in all cases where the tubercle bacillus is the cause, but where there is a mixed infection it is sometimes useful to combine with the antituberculous an injection of antistreptococcus serum. During treatment there has been in the cases observed an almost entire absence of hæmoptysis. This may be accidental.

Surgical tuberculosis is rapidly and markedly affected by the injections, suppuration ceases, sinuses, intestinal ulcerations, and fistulæ heal, Pott's disease and hip-joint tuberculosis can be cured by the exclusive use of the serum. The dose employed is from 5 to 20 c.c., and after two or three daily injections an interval of two or three days is recommended, and after three or four series of injections they should be discontinued for a week or more. Some patients are intolerant to these

doses. Occasionally "erythems" are noticed, but no serious consequences due to the injections have been noticed.

¹ Lancet, March 26, 1904. ² Ibid., Dec. 12, 1903.

BENNETT'S FRACTURE.

In 1881 attention was first directed by Professor Bennett, of Dublin, to the fact that fracture through the base of the metacarpal bone of the thumb is a common injury. He held that it is the commonest fracture of the metacarpus; that it may be readily recognised clinically, but is constantly overlooked, greatly to the disadvantage of the patients. Since that time but few instances of the injury have been recorded, and but little attention appears to have been paid to the subject. Alexander Miles and J. W. Struthers¹ now come forward to support Bennett's views concerning the frequency and nature of the fracture. Since 1900 they have seen 15 clinical cases of fracture of the base of the first metacarpal bone, and have been able to find two specimens of undoubted old-standing cases of the injury and two specimens showing changes probably due to Bennett's fracture followed by osteoarthritis of the neighbouring joint. They describe the fracture as a chipping off of the palmar projection of the base of the metacarpal bone of the thumb, with a varying amount of upward and backward displacement of the rest of the bone, the short palmar fragment retaining its normal relation to the trapezium. The injury is caused by force applied to the tip of the outstretched thumb, or to the end of the first phalanx when the terminal phalanx is flexed, and may be produced by striking the thumb in falling or in delivering a blow with the closed fist. The line of fracture will vary according as the metacarpal bone is flexed or extended on the trapezium at the moment of the accident. In full flexion the summit of the convexity of the trapezium rests more towards the dorsal margin of the articular surface of the metacarpal bone than in full extension, when it rests more towards the palmar margin. The line of fracture, therefore, is nearer the dorsal aspect of the bone when the accident happens with the metacarpal bone flexed, and nearer the palmar surface when the accident happens with the metacarpal extended. In many of the cases which were observed by Miles and Struthers the patients at first regarded the injury as a trivial one, and did not apply for treatment till the continued pain and weakness in the injured thumb made it clear to them that they were not merely suffering from a sprain. The authors note that crepitus may still be observed in patients who first come for treatment some weeks after the original injury. Only once were they unable to detect crepitus within four weeks after the fracture had occurred.

They state that there is no difficulty in distinguishing fracture of the metacarpal bone from dislocation backwards. The facts that the deformity can be reduced, that the reduction is accompanied by crepitus, and that the displacement returns when the reducing force is removed, all serve to distinguish the fracture from a dislocation. In recent cases the displacement can easily be corrected by making traction on the thumb in the abducted and fully extended position, and at the same time making pressure over the dorsal aspect of the metacarpal bone. The main difficulty consists in maintaining

the fragments in apposition. The best splint is a palmar one extending from the tip of the thumb across the base of the hand, and projecting beyond the ulnar side of the wrist. The lower end of the splint is first fixed firmly to the end of the thumb, which is then fully abducted and extended, the fragments being suitably manipulated. The abduction and extension are kept up by applying a bandage round the wrist and hand so as to catch in the end of the splint and push it downwards towards the radial side. In cases where the displacement cannot be reduced, nothing is to be gained by fixing the thumb, and the patient should be encouraged from the first to persevere with passive and active movement of the thumb at the metacarpal joint. The prognosis is almost uniformly good as regards function though a small amount of visible deformity may remain.

¹ Edin. Med. Jour. April, 1904.

THE PATHOLOGICAL DEPARTMENT OF A MODERN HOSPITAL.

In the current number of *St. Bartholomew's Hospital Journal* a very interesting account is given by Dr. F. W. Andrewes of the pathological department. He states that St. Bartholomew's was the first metropolitan hospital to found a special pathological department. This was in 1893, when the late Dr. Kanthack was appointed lecturer on pathology on the understanding that he would devote himself solely to the subject. Since that time the growth of the department has been rapid and for some time now has been beyond the capacity of the existing buildings. The work falls under three headings:—(1) the hospital work proper—the examination of material from the wards, the operating theatres and the dead-house, with the view of diagnosis and prognosis; (2) the teaching of students; (3) original research on the material so abundantly provided in a large hospital.

The first of these entails an enormous amount of labour. Blood examinations are required in a variety of conditions, to ascertain the numbers and characters of its cellular constituents, the presence of parasites, and the presence or absence of the typhoid reaction. Suspected cases of diphtheria and tubercle give a good deal of work, while urines, fluid from cysts, and so forth, are continually being sent to the pathological department for investigation. Two or three years ago the number of tasks in clinical pathology had so increased that a change was introduced. The hospital provided adequate microscopes, hæmocytometers, and other requisite apparatus for use in the wards. The junior house physicians were made to attend a special class in clinical pathology before entering upon their duties, and upon them was laid the task of instructing the clinical clerks on the subject. This has enabled the simpler examinations to be carried out in the wards, though some six or seven hundred investigations, and these the most laborious ones, are still down in the pathological department each year.

Histological and bacteriological work comes also from the operating theatres in large amount. All specimens from operations are taken to the museum where they receive critical consideration. Every specimen demanding a microscopic diagnosis is cut and stained; the sections are kept for reference, records are preserved, and the results entered in the ward notes.