The density of the tissue is considerable, and its reddish-brown coloration recalls that of rust or of old untanned leather. The surface is smooth, and the biliary ducts are, as a rule, unaffected.

The intestinal glands are slaty black in colour. The ascites is generally moderate in amount, from 2 to 9 litres. The spleen is increased in volume, indurated, and presenting a reddish-brown colour, somewhat resembling that of the liver. The mesenteric and mediastinal glands have somewhat the same rusty colour as the liver. The ochre-coloured pigment, which infiltrates most of the organs and the Malpighian layer of the skin, is an iron-containing pigment, as is proved by its reaction with ammoniac hydric sulphate and potassium ferrocyanide. M. Brault⁵ has insisted upon the properties which distinguish the yellow pigment from the other ones, the melanin pigment and the pigment of Addison's disease, which have no reaction for iron. The pigment contained in melanotic sarcomas is soluble in potash, and if one places a fragment of a melanotic sarcoma in a tube containing potash, the pigment is entirely dissolved out, and the liquid in the tube takes the colour of port wine. The ochre-coloured pigment does not, on the other hand, dissolve.

In the liver, the pigment, which in Dr. Lapique's experience appears to be a "salt of iron," is found between the connective tissue fibres, in the fibres themselves, and in the hepatic cells. The cells sometimes contain a few granules only and sometimes appear to be loaded with pigment, having lost their nuclei and becoming transformed into yellowish masses.

The symptoms consist of general signs of diabetes with abundant glycosuria; of melanoderma, most marked upon the face, the limbs, and the genital organs; general symptoms of hypertrophic cirrhosis, hypertrophy of the liver and of the spleen, with slight ascites and distension of the abdominal cutaneous veins.

The onset is frequently sudden; wasting, diarrhoea, oedema of the lower limbs soon appear; loss of strength rapidly ensues and death supervenes, either during coma or from septic pneumonia following diabetic gangrene. Although the pathogenesis is not yet definitely proved, it appears to me that *diabète bronzé* is a distinct morbid entity. It is easy to recognise, and may even now be placed in the list of definite diseases.

THE ARREST OF RHEUMATIC ENDOCARDITIS.¹

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A LENGTHENED experience of hospital and private practice has caused me to feel strongly the importance of preventing, or, when prevention fails, of arresting in the initial stage, if possible, rheumatic endocarditis in order to save the patient from the miseries of a crippled heart.

Fourteen years ago, having acquainted myself with the measures adopted by others with the same object, I commenced a series of observations and experiments which have been continued until now. The work was partly done in the laboratory and partly clinical. The clinical material consisted in 320 cases of febrile rheumatism. The general treatment of these cases consisted in the administration of moderate doses of salicylates, always preceded by a cholagogue; a plain light diet was given. The patients were always clothed from head to foot in flannel, and kept strictly and always in bed. In case of pain lingering in any joint, it was dispelled by the use of small blisters locally. The absolute rest and avoidance of chills during and after the pyrexial period lessens, I think, the liability to cardiac complication. My proportion of cases with cardiac trouble is under 20 per cent.

In 53 cases cardiac complication occurred. This total of 53 cases I divide into two series, the earlier one of 13 cases covering the first four years, the later including 40 cases during the last ten years. During the earlier period of four years I confined myself to expectant treatment of the cardiac ailment, or experimented in the use of poultices, leeches, dry cupping, and slight blistering. Of these 13 cases one only

left hospital with a sound heart, the other 12 went out with a *bruit*.

My results during the second period—namely, that of ten years, when I had entirely abandoned expectancy—were, I am glad to say, much more encouraging. In the treatment of articular rheumatism I had long found great benefit from Dr. Herbert Davies's method, the local use of small blisters, and this experience led me to make a lengthy series of laboratory experiments to ascertain whether irritation of intercostal nerve branches had any effect on the organs beneath in the thorax and abdomen, and if counter-irritation would do for the heart what it undoubtedly does for the joints. I found distinct evidence of such effect, chiefly through the medium of the spinal centres, but partly through the sympathetic.

Time will not allow me to give any detail of these experiments, but I may say that in a paper read before the Physiological Society at Oxford, I showed that stimulation, either thermal, electrical, mechanical, or chemical, of the thoracic integument produced alterations in the calibre of the arterioles in the lung; that similar stimulation modified the electrical potential of the intestinal wall as shown by the galvanometer.

These experiments, of course, did not in themselves prove any therapeutic influence: all they showed was that an influence was transmitted, round by the spinal and sympathetic nerve centres, to the nerves, muscle, and blood vessels of organs within the thorax and abdomen when the surface skin was irritated. Hence it seemed probable or possible that a trophic effect, a stimulation or modification of nutritive processes, might result in an internal organ whose function was becoming disturbed, by such stimulation as I have described, applied to the superficial nerves, in accordance with the views of Ross, Anstie, and other writers.

On this theory I founded the treatment adopted during the last ten years, which is as follows: I examine the heart daily in each case of acute rheumatism. If a *bruit* occurs at the mitral or aortic valve, or even when the premonitory *assourdissement* is perceptible, a series of small blisters, each the size of a florin, is applied along the course of the third, fourth, fifth, or sixth intercostal nerve, in front and at the sides. We apply one at a time, repeating it at different points. These small vesications occasion no serious amount of pain or inconvenience. I have rarely had a complaint about them. Meantime, sodium or potassium iodide is given in 8 or 10 gr. doses thrice daily, the ordinary treatment of rheumatism being also continued. Lastly, I keep the patient in hospital for, on the average, 41 days, most of the time in bed. The results have exceeded my utmost hopes. As I have said, during the ten years I have adopted this method 40 cases of acute endocarditis have occurred in my wards. In 7 of these the patient went out with a distinct and, I fear, permanent *bruit*; in 3 the result was doubtful, but, I fear, unfavourable; in 29 the *bruit* had disappeared, and the patient went out with a perfectly normal heart. Many of these cases were kept in view for months or years afterwards. One case is now under treatment.

The contrast between the results of the previous expectant treatment and that of the more active measure of long-repeated vesication with administration of iodide and prolonged rest is a striking one. Under the former 12 out of 13 recovered with a damaged heart, while under the latter nearly three-fourths regained a normal circulation. I wish I could induce some of my audience to lay aside the despair with which most of us regard acute rheumatic endocarditis, and to try this method. Success in a considerable proportion of my cases has made me feel confidence in recommending it. At the worst, if it fails, it will do no harm. If it is to succeed, however, much patience and perseverance are required in continuing the blisters, and in insisting on a prolonged rest, to which I believe much of the good result is due. I need hardly say that the method is entirely useless unless the endocarditis is quite recent.

Dr. STEPHEN MACKENZIE remarked that Dr. Caton's treatment gave results of such a nature that he should feel bound to try it, especially as the treatment appeared to exercise a marked influence on an existing but acute endocarditis. The treatment by blistering was extremely ancient, but Dr.

¹ Read in the Section of Medicine at the Annual Meeting of the British Medical Association, held in London, July-August, 1895.

Caton's method differed from the old in that it consisted in a persistent and slight peripheral stimulus instead of a greater and more brief irritation.

THE INFLUENCE OF THE BACILLARY THEORY OF TUBERCULOSIS ON THE TREATMENT OF PHTHISIS.¹

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WITHIN the last few years all sorts of antiseptics have been recommended in phthisis; some as medicines, others for subcutaneous injection; others, again, for use as inhalations or even to be injected *per rectum*. Injections direct into the lung tissue were also practised. Some of the drugs employed had long been used in the treatment of phthisis, and had already gained a certain repute. Of these creasote and iodine may be taken as examples.

Creasote and its derivative, guaiacol—both used in the form of the carbonate—are now, perhaps, the most fashionable.² Theoretically, the attempt to kill or to prevent the growth of the bacillus tuberculosis within the body, by means of antiseptic or germicidal substances introduced direct to the affected part or carried there by the blood stream, is admissible. But the practical carrying out of this object is attended with great, and apparently insuperable, difficulty. No doubt if creasote, guaiacol, or corrosive sublimate (and many other substances) could be made to reach the bacilli in sufficient quantity the result would be the destruction of the micro-organisms and the arrest of the disease. This, however, would be at the expense of lowered vitality of all the tissues and a consequent predisposition of the individual—a matter of some importance to those undergoing treatment in a special hospital for consumptive patients.

The quantity of any germicide required to make the fluids of the body antiseptic is a bar to complete success. Estimating the amount of the blood at one-thirteenth of the body weight, this would give for a man weighing 9 stone nearly 10 lbs. of blood. To make a 5 per cent. solution, about half an ounce of the antiseptic must be dissolved in the blood, and this quantity must be maintained in spite of rapid excretion. Hölscher showed that we cannot effect this, although both he and Cornet succeeded in rendering guinea-pigs partially immune against tubercle infection by injections of creasote.

But supposing we can get sufficient antiseptic dissolved in the blood will it reach the bacilli? The pathological changes which occur in the immediate vicinity of these organisms result in early obliteration of the blood vessels of the part, and the consequent cutting off of the blood stream from the disease focus. This necessarily prevents any blood-borne antiseptic reaching the bacilli in the tuberculous centre. True, the margin of the tuberculous area still receives its blood supply, and extension of the mischief might presumably be checked. But the bacilli in the centre of this area, secure from flushing by an antiseptic blood stream, thrive and multiply; and when, in the natural course, the bloodless mass softens and breaks down, myriads of bacilli are suddenly let loose to be carried to other parts. Were it possible to have the whole body so impregnated with antiseptics as to ensure the immediate destruction of these micro-organisms, wherever they may be carried, we should soon clear the body of the bacilli. But how would the living cells of the body thrive on such an antiseptic liquid? These living cells are our natural protectors against the attacks of pathogenic organisms, and we want to promote their vigour and not to poison them with antiseptics.

We must be content with a less strongly antiseptic fluid in

the blood vessels, and at the best the bacilli will be "scotched, not killed." Antiseptic remedies cannot be relied upon as curative agents in pulmonary tuberculosis. Nevertheless, these drugs have a certain value in the treatment of consumption; and one object of this paper is to assign to these remedies their proper position, so that they may not be entirely discarded when the inevitable reaction against the antiseptic treatment of phthisis sets in.

Several observers have recorded beneficial results from certain of these antiseptic remedies, and this may in part be due to their possessing some action in destroying and nullifying the effects of secondary products of the growth of the bacilli, thus restraining the noxious agents which produce septicæmia. In this way they may prevent hectic, and the distressing symptoms which accompany high temperature. But perhaps the two great uses of antiseptics in phthisis are to prevent secondary infection by the air passages, and to destroy bacilli which have been expelled from the body. The latter object is attained by disinfecting the sputa; the former is, to a certain extent, possible by using antiseptic inhalations. In my opinion, inhalations are better for this purpose than antiseptic medicines which are excreted by the lungs; for, with the latter, in order to affect one organ we flood the whole body with antiseptics.

The best means we have for destroying the tubercle bacillus within the body exist in the action of the living cells and fluids of the body—the natural safeguards against deleterious germs. If we drench the tissues with antiseptics, we may diminish the vitality of the bacilli, but at the same time we impair the vitality of the "phagocytic" cells, and this not only at the disease centres, but throughout the body. We are then interfering with the natural means of cure, not assisting Nature; and whenever medicine is opposed to the natural process of cure, it is likely to do more harm than good. I have at different times given a fair trial to most of the special drugs which have been found successful by others; but in looking through my hospital records, I have not found one that gave results which justified expectations held out by their advocates.

The hospital to which I am attached is surrounded with pure air, of which we encourage the patients to take full advantage; a dietary is provided which is so generous that it is the despair of the Finance Committee; and as much comfort and cleanliness are maintained as is possible with the class of patients admitted. With such hygienic advantages medicines are chiefly required to help the patients to get the full benefit of these, to stimulate appetite, to aid digestion, and to ease cough—especially so as to give a fair chance of a night's rest. In the ordinary case, a simple tonic (acid and bitter), an expectorant when needed, perhaps cod-liver oil, and an antiseptic inhalation from an oro-nasal respirator worn for an hour twice or three times a day, give better results than any of the antiseptic drugs which we have tried.

The good effects recorded by so many observers from the use of creasote, guaiacol, and other antiseptics prove that these remedies are beneficial in some cases. But there is hardly a drug which has not been used in phthisis with more or less success. There is much significance in the following remark of one who records his success with creasote carbonate. Dr. Chaumier writes:³ "Those of my patients who obtained fresh air to the largest extent, and who tired themselves least, derived the greatest benefit from my treatment with creasote carbonate. With those, however, who lived in bad hygienic surroundings, and, in spite of the disease, were obliged to work the whole day, the condition remained the same, or became worse." These lines would, I believe, apply equally well to any drug treatment of phthisis.

Hygienic means furnish the most reliable treatment for phthisis, and the medicines employed should help the patient to derive the fullest benefit from these. The essential importance of strengthening the resisting power of the tissues may be overlooked in attempts to kill the tubercle bacillus by antiseptics.

It is impossible here to quote cases in support of the views I have expressed. These views are, however, the outcome of careful observation of several hundreds of cases, and of a dozen years of special hospital experience.

³ Reported in *Deut. med. Woch.*, No. 25, 1893, p. 611.

¹ Read in the Section of Medicine at the Annual Meeting of the British Medical Association held in London, July-August, 1895.

² The following antiseptics have been used:—(1) By the mouth: Phenol compounds—creasote, guaiacol, salol, benzozol, and their compounds; iodine compounds and iodoform; corrosive sublimate. (2) Inhalations: Carbolic acid, creasote, eucalyptus, bromine, iodine, iodoform, hydrofluoric acid, sulphurous acid, sulphuretted hydrogen. (3) Injections: (a) Hypodermic—creasote, guaiacol, eucalyptol, iodine; (b) into the lung—bichloride of mercury, iodine, iodoform, carbolic acid, creasote, turpentine; (c) *per rectum*—sulphuretted hydrogen.