in later years could hardly walk at all, when first examined was of a dark-blue colour, both in face and fingers. On departure the dark-blue colour had in a great measure disappeared, and the swelling of the liver had distinctly diminished. At the end of the cure the patient was able to take short walks of fifteen to twenty minutes, and even to make without difficulty the slight ascent of ten minutes from my house to her dwelling, whereas at first she had to be wheeled up in a bath chair.

CASE VII. *Graves's Disease; Myocarditis; Severe Anaemia.*—Mrs. A., aged 45. The patient had taken iron and digitalis before her stay at Nauheim. A short time after her arrival she had right-sided pulmonary infarct (embolism). She continued the digitalis for three days, and later for a short time took haematicum (Glausch) three bottles.

May 26th. After the fifth bath (first measurement), haemoglobin 58 per cent (blood pressure 95 mm. Hg.).

July 8th. After the thirty-second bath (of which ten sprudel baths), haemoglobin 69-70 per cent. (blood pressure 115 mm. Hg.).

CASE VIII. *Myocarditis Due to Abuse of Alcohol and Tobacco; Dilatation of both Ventricles, chiefly of the Left; Paroxysmal Tachycardia.*—Mr. F., aged 54.

July 8th. Before the first bath, haemoglobin 65 per cent. (blood pressure 115 mm. Hg.).

August 28th. After the thirty-second bath, haemoglobin 85 per cent. (blood pressure 135 mm. Hg.).

CASE IX. *Mitral Insufficiency and Stenosis; Chronic Nephritis.*—Mr. O., aged 22.

May 20th. Before the first bath, haemoglobin 68 per cent. (blood pressure 85 mm. Hg.).

June 4th. After the ninth bath, haemoglobin 75 per cent.

June 15th. After the sixteenth bath, haemoglobin 76 per cent.

June 24th. After the twenty-first bath, haemoglobin 81 per cent.

July 4th. After the twenty-seventh bath (ten of which were thermal-sprudel baths), haemoglobin 82 per cent. (blood pressure 120 mm. Hg.).

The patient, who took no medicine, and at first was very pale, looked blooming in the end, and could walk without the slightest difficulty for hours.

These few cases described here show that the treatment by baths and gymnastics is capable of increasing the formerly depreciated haemoglobin in cases of heart affection, be they cases of weakness of the heart muscle or valvular diseases (simple or complicated), Graves's disease, or chronic myocarditis, with or without kidney disease. Naturally there were many cases in which this increase was only very slight. According to my observations it seems far easier to raise the amount of haemoglobin in young and middle-aged persons than in those of riper years. Even if these latter feel much better after following the treatment, there is frequently no change to be seen in the amount of haemoglobin. The following is an example of this:

CASE X. *Chronic Myocarditis; Severe Arteriosclerosis; Angina Pectoris; Bradycardia* (pulse 30-36).—Mr. L., aged 68.

May 20th. Before the first bath, haemoglobin 79-80 per cent. (blood pressure 160 mm. Hg.).

May 29th. After the seventh bath, haemoglobin 80 per cent.

June 17th. After the twenty-first bath, haemoglobin 79 per cent. (blood pressure 150 mm. Hg.).

During the last part of the cure duplicated heart beats were sometimes noticed, but only on auscultation; not in the radial pulse. Very often there were 54 heart beats, with a radial pulse of 30 to 36.

Very instructive for medical men are these cases in which, during the treatment, a diminution of the haemoglobin is observed; and let it here be noted that severe physical over-exertion and violent emotional disturbances, especially in febrile diseases, in a short time rapidly produce a diminution in the haemoglobin. Of this, in conclusion, one example:

CASE XI. *Weak Heart; Dilatation of Both Ventricles.*—Mr. S., aged 44. He had severe anaemia, for which for many years iron had been taken at home.

May 19th. After the first bath, haemoglobin 70 per cent. (blood pressure 130 mm. Hg.).

June 2nd. After the tenth bath, haemoglobin 85 per cent.

June 22nd. After the twenty-fifth bath, haemoglobin 80 per cent. The patient suffered from feverish bronchitis and had undergone severe physical exertion during a several days' journey.

June 23rd. After the twenty-fifth bath, haemoglobin 79 per cent. (blood pressure 110 mm. Hg.).

During the following eight days the haemoglobin rose gradually again to 85 per cent. and the blood pressure to 130 mm. Hg.

I am well convinced that in an investigation of the blood which in some measure lays claim to thoroughness it is necessary to count the blood corpuscles, both red and white, and to fix the amount of ash of the blood. Such experiments, however, take so much time that in practice, at any rate, investigations on a large scale are very difficult to carry out. I propose at some other time to supply what I have here omitted.

NOTES.

¹ For description see *Philadelphia Medical Journal*, September 22nd, 1900. ² Of these tonometer measurements I give only the first and last in parentheses.

IMPROVEMENTS IN DIETETICS OF DIABETICS.

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COMPARATIVELY successful as is the modern medicinal treatment of diabetes mellitus (glycosuria) under medical prescription and guidance, in many cases—perhaps in all—the appropriate regulation of the patient's food is a chief therapeutic indication. In the management of this difficult malady, it has been recognized by the profession for many years that abstinence from sugar and from other articles of food which are convertible after ingestion into glucose causes a great lessening in the quantity of glucose in a diabetic patient's urine, and also a marked diminution towards normal of the heightened density and quantity of the urine, and that these changes for the better are coincident with arrest of bodily wasting, even with some gain of bodily weight, and also with general improvement, in a very large proportion of those persons who are suffering from diabetes.

To meet these rational and practical indications as to treatment much care has been taken by many physicians to devise an extended, varied, and agreeable and practicable dietary. Until the researches of Mossé were published two years ago,¹ it was our therapeutic rule to withhold potatoes in saccharine diabetes. The potato contains from 16 to 24 per cent. of starch, and it used to be classed without qualification amongst food inadmissible in glycosuria in a case treated upon the dietetic principle I have referred to. His researches have led Mossé to conclude that potatoes, far from being harmful, form a useful and beneficial food in glycosuria, and that they are capable of being substituted for ordinary wheaten bread in daily proportions sufficient to maintain the alimentary ratio, that is to say, in the proportion of two and a half to three of potatoes for one of bread. Mossé found that a daily ingestion of potatoes in quantities of from 1,000 to 1,500 grams, roughly of from 2 lb. to 3 lb. avoirdupois, brought about in nineteen out of twenty cases of diabetes speedy diminution of the glycosuria, quick relief of thirst, and general improvement in the patient, and all this in all forms of diabetes. The salts contained in the potato are chiefly those of potash. Potash is contained in potatoes in much larger proportion than in wheaten bread, and Mossé attributes the superiority of potatoes in a diabetic dietary to the increased ingestion of potash.² My own experience in practice during the last two years is confirmatory of Mossé's conclusions.

I think it will be found in practice that the permission of potatoes in the food of diabetics is one of the greatest dietetic advances of our times. Potatoes cooked in any of the ordinary ways are a grateful food. I would point out that for the retention of the salts of the potato the vegetable should be cooked in a peculiar way. It should be cooked by steaming with its "skin" on. If potatoes be peeled and then cooked by steaming, they lose in the cooking large proportions of their potash and of their phosphoric acid, and they lose more of each of these their constituents if they be peeled and then cooked by boiling.

It has occurred to me that the beneficial results of Mossé's discovery and teaching as to the use of potatoes as a food in diabetes might well be carried much further in the dietetics of diabetics than in merely the free allowance of properly-cooked potatoes in a dietary. I propose that the therapeutic difficulty as to the prohibition of ordinary bread for a diabetic may be met advantageously by making bread, cakes, and biscuits for diabetics by using the "flour" of properly-cooked potatoes, instead of the flour of grain. I find that excellent and delicious baked cakes can be made from paste composed of a kind of flour prepared by rubbing down potatoes cooked with their coats on by steaming, blended with cream and butter. With the aid of some good cooks in my kitchen I have made many experiments as to the formation of bread and biscuits from bran and the flour of potatoes. As the best results at present reached from these inquiries, I have decided upon the following details for the making of these new biscuits and bread for diabetics:

Bran and Potato Bread.—Take half a pound of flour of steamed potatoes, quarter of a pound of bran, half an ounce of German yeast, half an ounce of butter, one egg. Twenty-four hours before making the dough cook the potatoes by steaming them in their "jackets," then peel and break up into flour with the fingers. Mix all the ingredients together, and let the paste stand near the fire for an hour to "rise." Bake in greased tins for an hour and a-half.

In common with many other physicians, I have arranged and employed in practice for many years a diabetic dietary which is sufficiently strict for practical purposes, and which

is in harmony with the principle of abstinence from sugar and from all other articles of food which are convertible into glucose after ingestion, and of such a formulated dietary I have been accustomed to give a printed copy to a patient in a suitable case. My dietary rules in diabetes, as now modified, by Mossé's permission of potatoes, and by the developments I have devised of potato-made bread, biscuits, and cakes, prepared in the ways I have here described, would read:

May Eat.—Butcher's meat of all kinds, excepting liver. Pork, ham, bacon, poultry, game, potatoes steamed in their "skins." Fish, oysters, crabs, lobsters. Animal soups, not thickened, excepting by potatoes. Mutton broth, beef-tea. Bran and potato bread or biscuits, potato cakes, eggs, cream, butter, cheese, greens, watercress, mustard and cress, lettuce, mushrooms, nuts; jelly or custard, unsweetened.

May not Eat.—Any bread or biscuits but those made of bran and potato. Sugar, asparagus, broccoli, cauliflower, carrots, parsnips, French beans, peas, turnips, arrowroot, macaroni, rice, sago, tapioca, vermicelli, pastry, excepting potato cakes; puddings; fruit, fresh and preserved.

May Drink.—Water, tea, coffee, soda-water, claret, hock, spirits and water, unsweetened; bitter ale, very sparingly; milk, very sparingly.

May not Drink.—Cocoa, chocolate, champagne, porter, stout, home-made wines, liqueurs, cider, sweet wines, ale.

REFERENCES.

¹ *Bull. de l'Acad. de Méd.*, December, 1901, and *Rev. de Méd.*, February and March, 1902. ² Dr. Cocking's abstract, *Quarterly Medical Journal*, of papers published by Mossé.

RECURRENT FEVER ASSOCIATED WITH SPIRILLA IN THE BLOOD IN A PATIENT FROM GIBRALTAR.

By SIR PATRICK MANSON, K.C.M.G., F.R.S.

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THERE is a tendency with most of us when we come across an anomalous case to square diagnosis with some recognized type of disease rather than to search out and see if the case be not something altogether new. Thus it was that formerly the specific and distinct disease now generally designated Malta fever was put down either as malaria or as typhoid, and thus it is that at the present day, when we come across an anomalous case of fever from the Mediterranean we are prone to diagnose it Malta fever. I believe that in at least a proportion of these cases this diagnosis is wrong.

The accidental discovery recently of an unlooked-for organism in such a case has impressed this on me. I publish the case in the hope that others, as opportunity offers, may be induced to follow up the hint it conveys and endeavour to ascertain whether or not, under the term Malta fever, sometimes we may be ascribing to *micrococcus melitensis* a fever produced by the organism I refer to, or perhaps by some other germ.

The following condensed account of the case is from notes kindly supplied to me by Dr. Macwhirter Dunbar.

A married lady, aged 30, with one child, had resided at Gibraltar for three years and enjoyed good health. After a short visit to England last summer she returned to Gibraltar on September 29th. She states that she had a bad bite, ascribed to a mosquito, on the cheek on October 18th. The bite inflamed, and on October 20th she had a rigor, followed by fever, 104° F.; after profuse sweating the fever terminated on October 24th. The catamenia, due on October 19th, did not appear. On November 3rd there was a recurrence of the fever, which lasted three days, the temperature again rising to 104° on November 4th. She went to Algeiras for change on November 10th, and whilst there had a recurrence of fever on November 11th, the attack again lasting three days. She returned to Gibraltar on November 14th and came to London on November 21st. She was seen by Dr. Macwhirter Dunbar on November 22nd. As the case had been regarded as malarial and quinine given during the attacks, this treatment was continued. Whilst under Dr. Dunbar's care she has had five recurrences of the fever, each, except that of January 11th, which was very mild, being ushered in by rigor and terminated by profuse sweating. The attacks occurred on November 24th, December 4th, December 15th, December 29th, and January 11th. They gradually diminished in severity. In the intervals she was quite well. There has been no recurrence since January 14th, although on January 24th there was evidence in headache, anorexia, and general aching of an attack threatening. There was no return of the catamenia, and she miscarried on December 13th.

I was asked to see her on December 18th. The attack of December 15th had just subsided, and she was quite free from fever. The blood films I prepared on that occasion showed neither malarial parasites nor other organism. As she had been taking quinine the negative result of the microscopic examination could not be regarded as excluding malaria. The quinine was stopped, and instructions given to forward blood films prepared during the height of the attack,

should one recur. Fever recurred on December 29th, and out of six films, taken at different times, four contained spirilla; there were no malarial parasites. Films prepared the day after the abortive attack (maximum temperature, 100°) on January 11th showed no parasites. The blood was examined by Dr. Harold Spitta for Malta fever and for pyogenic organisms with negative results.

I have no doubt that this case was one of spirillum infection, but whether the spirillum was that of ordinary relapsing fever, that is spirillum obermeyer, I am not prepared to say. I am inclined to think both on clinical and morphological grounds that it was different. According to Carter, Löwenthal, and others, fourth and fifth relapses in ordinary relapsing fever are exceedingly rare, and no mention is made by these authors of such an occurrence as six or seven relapses. In this case there were seven relapses at intervals of fourteen, eight, ten, eleven, fourteen, and thirteen days respectively.

Morphologically the spirillum differed from spirillum obermeyer as usually represented; for whereas this well-known organism exhibits many short and abrupt flexures, the curves of the parasite I describe were few and graceful (see photograph by Dr. H. Spitta).

I would not insist too much on these points, but I consider that the case justifies further inquiry into the etiology of the Mediterranean fevers. Especially would I urge careful microscopic examination of blood in all cases in which the Widal test is negative or doubtful.

I must warn investigators that the spirillum is not easily found; possibly the paucity in this instance was owing to the fact that the infection was nearly exhausted; had the examinations been made during the earlier paroxysms, especially during the first, they might have been found in greater profusion. As stated, in four only out of the six preparations examined were spirilla found, and these contained only some three or four on each slide.

VERONAL: A NEW HYPNOTIC.

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VERONAL, di-ethyl-malonyl-urea, was introduced by Fischer and von Mering¹ as the result of a systematic investigation into the hypnotic properties of certain urea derivatives containing "ethyl" groups. It is a colourless, crystalline body, sparingly soluble in cold water, readily soluble in hot water. It has a bitter taste, but no smell. It is most conveniently given in the form of "tablets," or in the form of chocolate tablets (prepared by E. Merck), which can be dissolved in hot milk. Both the "tablets" and the chocolate tablets contain half a gram each (7½ gr.) of veronal.

It has already been used in a large number of cases of insomnia, and the results have been published in the case of more than a thousand patients, and in a great variety of diseases, including pure insomnia; various diseases, functional and organic, of the central nervous system; acute febrile conditions; diseases of the heart, lungs, kidneys, and liver, even in their most advanced stages.

The doses used range from 0.25 gram (3½ gr.) to 3.5 grams (53 gr.). In most cases a dose of 0.5 gram (7½ gr.) has sufficed