CASE OF RATTLESNAKE BITE IN LONDON.

By SIR JOSEPH FAYRER, K.C.S.I., M.D., F.R.S.

ON August 4th a gentleman, of about 30 years of age, came to me at about 10 P.M. with his hand bandaged. He informed me that about an hour previously he had been bitten by a *crotalus durissus*, 4 feet long. The accident happened in this wise:

It appears that, being interested in poisonous snakes, he keeps several as pets. He was feeding this rattlesnake, and was pushing a dead mouse into its throat with his finger when the reptile imbedded one fang in the mouse and the other in his finger, near the apex and by the side of the nail. He withdrew his finger rapidly; it was bleeding freely. He sucked the wound, went immediately to consult a medical man, who most judiciously applied a ligature tightly round the finger, gave him some whisky, made an incision into the puncture and applied nitric acid to it. He then went to a hospital, where he received further attention and was invited to remain; this however he declined to do, and came on to my house.

When I saw him, about an hour after being bitten, he looked fairly well, not frightened, but rather confused and excited—perhaps from the whisky which he had taken. He said he had swallowed about a tumblerful of that stimulant. The finger was much swollen, probably from the ligature, and the wound discolored from the nitric acid. The ligature had been removed and the wound was still oozing blood; it had been carefully dressed at the hospital. There were neither constitutional indications of poisoning nor pain in the injured part. He said he had a tingling sensation in the mouth, but this was probably due to the whisky he had imbibed.

I re-applied the ligature tightly round the finger and sent him back to the hospital at once, to remain there all night under observation, giving him a note recommending that the ligature should be kept on as long as it safely might be, and that a solution of permanganate of potash, 1 to 10 or 20 should be injected into the wound, which should also be allowed to bleed freely if it would. I urged him to lose no time.

Next day, at 1.30 P.M., he called at my house when I was out; he did not appear to be suffering, I was told.

On August 6th I met him walking in the street; his hand was still bound up, but he had suffered no further inconvenience. He said he had spent the night in the hospital, and was allowed to leave on the following morning.

I heard nothing further of him till August 20th, when he presented himself in his usual state of good health, the wound on the finger still unhealed, but looking healthy; evidently there had been no constitutional poisoning, but the finger was still swollen.

The case is interesting, as it throws light on the explanation of those cases of bite from the more venomous snakes in which no evil result ensues.

In this instance the patient had been clearly punctured by the long vibratile fang of a large rattlesnake, irritated and hungry for its food. The bite was probably not intentional, and, the finger being rapidly withdrawn, no time was allowed for compression of the jaws or forcible injection of the poison into the puncture. It was, moreover, promptly and judiciously treated immediately after the bite, and this alone might account for the immunity from symptoms of poisoning. I am inclined, however, to believe that either no poison had been injected at all, or so little as to cause no ill effects. It is in this way that people do sometimes escape, and it is thus that so-called antidotes sometimes acquire a reputation they do not deserve.

It is to be hoped that this will prove a salutary lesson to this gentleman, and make him more careful in future how he handles and feeds his dangerous favourites; a little more pressure of the jaws, with a little deeper penetration of the fang, and a less happy result might have been recorded.

I need hardly say the case was full of interest, and it was a source of great satisfaction to find that both on the part of the patient and the medical adviser all that presence of mind and common sense, combined with appreciation of the urgency of the case could suggest, had been so promptly and vigorously done.

It is curious that I should have had two opportunities of seeing cases of snake bite in London, the first from a puff adder, *vipera arietans*; the second from a rattlesnake, *crotalus durissus*. In both cases the result was favourable.

REPORTS

TO THE

SCIENTIFIC GRANTS COMMITTEE

OF THE

BRITISH MEDICAL ASSOCIATION.

REPORT ON

THE BACTERICIDAL ACTION OF ALEXINS.

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[From the Pathological Laboratory, Cambridge.]

I HAVE elsewhere shown that proteid substances capable of killing bacteria, and now known as alexins, can be obtained from the bodies of various animals. Further, I have given reasons for thinking that during life these bodies are contained in cells; that by an appropriate stimulus on the death of the animal they may be liberated, and pass into the body fluids; that the bactericidal power of the cell-free blood serum (which has been ably dealt with by Buchner and others) is probably due to the presence of traces of these alexins. Lastly, I have shown that from the chemical standpoint these bodies are identical with Halliburton's cell globulin- β , a substance having the same action on blood plasma as fibrin ferment.¹

A belief is prevalent that the bodies of animals killed by a lightning flash putrefy with unusual rapidity, and that their blood refuses to clot. If this is so, we might suppose that the lightning flash has destroyed fibrin ferment and its allies. Among the latter must be counted the alexins. Consequently, decay-producing bacteria might penetrate the tissues with more than ordinary rapidity. As this somewhat vague possibility was among the suggestions that originally led me to seek for a bacteria-killing proteid among the allies of fibrin ferment, I have recently thought it worth while to subject the matter to an experimental investigation. As lightning flashes are not included in the armamentarium of the laboratory, I had to be content with sparks from a six-plate Wimshurst electrical machine, for the use of which I owe my best thanks to Professor J. J. Thomson.

I may here point out that such sparks, though containing electricity of very high potential, contain it in such small quantity that the thermal, electrolytic, or other physical changes they are capable of producing are extremely small, and could only be measured, if at all, by extremely delicate physical methods. Consequently their action on alexin solutions—which I shall describe below—cannot be explained by a reference to the more ordinary effects of an electric current. First, with regard to the action of such sparks on the bactericidal power of serum. In the case of rabbit's serum it must be trivial or non-existent, for it could not be demonstrated by the following method employed by me for estimating the bactericidal power of serum:

A rabbit's throat is cut and the blood is allowed to flow directly into a sterilised centrifuge tube. As soon as clotting has occurred the clot is loosened from the walls of the tube by means of a sterilised glass rod. The tube is loosely plugged with cotton-wool and placed in a centrifugal machine for some minutes. By this means the serum is expressed from the clot in greater quantity, and more rapidly than would be the case if the serum were left to itself. The serum is then decanted by means of a 1 c.c. pipette into a number of small test tubes that have previously been sterilised and plugged. Exactly 1 c.c. of serum is placed in each tube. The tubes are then inoculated with varying quantities of a vibrio Metschnikovi culture.² A 24-hour-old bouillon growth should be em-

¹ On a Bacteria-killing Globulin, *Proceedings of the Royal Society*, vol. 48, p. 93, May 21st, 1890. On the Conflict between the Organism and the Microbe, *BRITISH MEDICAL JOURNAL*, July 12th, 1890; and On Immunity, read before the Congress of Hygiene and Demography, London, August, 1891.

² The vibrio Metschnikovi is preferable for this method, and the anthrax microbe for the plate culture method of estimating the bactericidal power of alexin solutions, for reasons mentioned later on in this paper.