appetite, he complained of night-sweats and was rapidly losing flesh. On March 17th the right knee was swollen and soon became greatly distended, and there was pronounced fluctuation. The swelling was not accompanied by pain. Salicylates, 4 grams a day, had no effect.

On March 20th I asked our surgeon, Dr. Pelissier, to see the patient with me. On his advice the left knee was punctured and some pale yellow fluid withdrawn by aspiration. It contained numerous flakes, pointing to the imminence of suppuration. Dr. Lemaire reported that it contained 95 per cent. polynuclear leucocytes, staining well (no karyolysis), and very numerous pneumococci, intra- and extra-cellular. No tubercle bacilli were present. The urine, at first faintly acid, later on became neutral; no albumin was present. On March 23rd the patient complained of his right elbow, which was beginning to swell. It was not thought desirable to perform arthrotomy of the knee-joint, Dr. Pelissier being of opinion that in suppuration due to the pneumococcus operative measures should be had recourse to as late as possible.

In view of the bacteriological report we gave him daily injections of Dr. Minet's antipneumococcal vaccine, together with 20 c.cm. of the antipneumococcal vaccine prepared by the Pasteur Institute. No vaccine was given on March 25th and 26th, but the daily dose of serum was raised to 40 c.cm. This was injected under the skin on the outer aspect of the thighs.

On March 30th the right knee was again punctured and some fluid withdrawn. This time it was quite clear and free from flakes. The bacteriological report was to the effect that no pneumococci were present.

Between March 27th and April 2nd the patient was given a daily dose of 20 c.cm. of the serum, but in spite of the administration of calcium chloride and adrenaline he suffered a good deal from serum reaction: urticaria, arthralgia in all the joints, especially in the shoulders, hard oedema where the serum had been injected, and so on.

At this stage it could be seen that the swelling of the knees was diminishing and the patient's general health improving. The appetite was returning, he was in better spirits, and was feeling more comfortable apart from the serum manifestations. The temperature had returned to normal and remained there, he was putting on weight, and by the middle of April he was able to get up and walk a little, though he felt very weak on his legs. He was ordered massage and passive movements, and the stiffness of the joints gradually lessened.

His pulse remained very rapid (130), though the heart sounds and cardiac rhythm were normal. Blood pressure 125 maximum, 90 minimum. The tachycardia was greatly influenced by tobacco, so that though he only smoked in moderation he was advised to drop it for the time being. Thereupon the pulse fell to 90. The feet and legs became very oedematous towards evening. He was discharged for the return journey to England on May 22nd.

I am sorry it did not occur to me to have recourse to haemoculture, which might have afforded interesting information. In another case of the kind I should feel disposed to inject some serum into the inflamed articulations; though in this particular instance no time was lost in consequence of our not having done so, inasmuch as the joint trouble began to improve directly we started injecting the serum. Even so, the case presents considerable interest in view of its differentiation from gonorrhoeal arthritis on the one hand and from tuberculous arthritis on the other. On a correct diagnosis depended the success of the treatment.

Judging from statistics of polyarticular pneumococcal arthritis, the case would in all probability have had a fatal termination but for the bacteriological diagnosis; hence the importance of such examinations in all cases of arthritis not obviously rheumatic in origin—that is to say, cases in which the patient's antecedents are confirmed by the action of the salicylates.

Pneumococcal arthritis, though not very common, has been recognized for many years. In most instances it is secondary to pneumonia, but it also occurs independently of any other pneumococcal lesion, and arthritis in patients suffering from pneumonia is not necessarily due to the pneumococcus. It is met with most frequently in children. Dr. Gasne¹ reports 52 cases of pneumococcal arthritis—33 during the first twelve months of life, 8 between 1 and 2, 8 between 2 and 7, and 3 between 7 and 15. In 35 the affection was monarticular and in 17 polyarticular, the bigger joints being mostly attacked. Death occurred in 16 of the 52 cases.

Bulkley² collected 173 cases, mostly in children. In 70 per cent. it was associated with pneumonia. Three-quarters of the cases were monarticular (83 times the knee, 41 the shoulder, 23 the hip, 22 the wrist, 20 the ankle, 18 the elbow, and 12 the sterno-clavicular articulation). Suppuration took place in 147 of the cases, while in 15 the effusion was serous.

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ACUTE POISONING BY FUMES FROM CELLULOSE ACETATE.

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DURING the late war many chemical substances were prepared, or brought into industrial use, almost for the first time, as belligerent necessities arose. Some were found to possess highly toxic properties which, little suspected at the outset, proved to be the cause of many cases of grave illness, prolonged ill health, and even, in some instances, death. Among them I would name trinitrotoluene and cellulose acetate. The latter is extensively used as a varnish for aeroplane wings. It is a mixture of benzine, acetone, methylated alcohol, and tetrachlorethane, forming a colourless liquid which gives off a heavy pear-like odour.

Sir William Willcox first drew attention to the connexion between many cases of serious icteric illness and the use of cellulose acetate in some of the large aeroplane factories. The results of his investigations, both clinical and chemical, were published in 1915. He found that after the early symptoms of headache, vomiting, and debility had become established, jaundice supervened. *Post-mortem* examination in fatal cases revealed an acute toxic hepatitis closely resembling acute yellow atrophy. With this was associated parenchymatous degeneration of the kidneys. He added that the tetrachlorethane alone, in addition to being a tissue poison, is a narcotic 2.8 times as powerful as chloroform.

Since the danger has been appreciated fewer cases of cellulose poisoning have occurred, owing to the special precautions now exercised in aeroplane factories. But quite recently a communication was published advising the use of this cellulose acetate for making encasing splints for limbs and joints, etc. As a result of this publication a doctor in this neighbourhood put up a child's knee in a splint of this construction. I am indebted to him for the full particulars given below as regards the serious poisoning which followed. I was asked to see the child in consultation about 8 p.m., when, I am glad to state, consciousness was slowly returning. The patient presented the appearance of just coming round from a general anaesthetic.

The patient was a female, aged 3½ years, with disease of the right knee-joint. On July 7th, 1924, at 11 a.m., cellulose acetate (solutions Nos. 25 and 26) was applied to the right leg by the technique advised by Dr. Fernandez. Half an hour later the patient was returned to bed and ate a good dinner. The leg was propped up and exposed to the air, the patient lying on her back; she was placed in the open-air ward. At 3 p.m. she vomited, and she continued to vomit every few minutes until 11.30. Shortly after she began to vomit she became cyanosed (lips and cheeks). Pulse 136, feeble, at times hardly perceptible; respirations shallow, average 36; temperature 96°.

At 4 o'clock she became unconscious. The splint was removed, and the cyanosis was replaced by pallor. At 4.30 1½ pints of saline with sodium bicarbonate were given by the rectum; most of it was retained. At 5 o'clock the temperature was 98°; the pulse had improved—still rapid, but stronger; her colour had improved; lips red. She was still unconscious, with large equal pupils which did not react to light. Her breath smelt strongly of acetone. At 6 o'clock the bowels acted—stool normal; general condition unchanged. At 7.30 consciousness began slowly to return; she complained of headache. Temperature 99°, pulse 136, respirations 36. At 11.30 the patient appeared to be much better; she vomited slightly and then went to sleep, and slept all night.

On July 8th, at 10 a.m., the patient appeared to be almost normal: temperature 98.4°, pulse 120, respirations 30. The pupils were normal and reacted to light. The skin of the leg was red, inflamed, and blistered over the area covered by the cellulose acetate solution; this in spite of the fact that before application the skin was covered with a layer of vaseline an eighth of an inch thick, before being covered with layers of vesting, on top of which the solution was applied to layers of bandage. At 5 p.m. examination of the urine showed: a sediment of urates, specific gravity 1020, acid, colour normal, no albumin, a considerable amount of acetone, no diacetic acid, no sugar, no blood.

Fourteen days after the above narrated incident the patient showed no signs of jaundice or other complication. But I think it is well that these facts should be brought to the notice of the profession as a warning against the use of this preparation. It nearly caused a catastrophe of a particularly distressing nature.