

OUT OF THE ARCHIVES

Some Recollections of Porton in World War 1 Commentary

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Chemical weapons now regularly feature in news reports and the threat from them has become widely recognised by the public at large. Terrorist actions such as the Tokyo subway incident in 1995, coupled with the persistent use of agents such as sulphur mustard and Sarin by the Iraqi regime over the last 20 years in the Iran/Iraq war and against the Kurds of Northern Iraq, make it easy to think that chemical weapons are a new phenomenon. This paper reminds us that many chemical agents were developed during WWI; indeed the first use of a chemical agent was the release of chlorine gas – a choking agent – by the Germans over the battlefields of Ypres in 1915. Porton Down remains at the very heart of chemicals and biological weapons research, albeit in a purely defensive capacity; few of the old buildings remain and the idyllic lifestyle in the Officer's Mess at Idmiston Manor has long since disappeared. These recollections provide a fascinating insight into scientific research at the time of World War I.

SOME RECOLLECTIONS OF PORTON IN WORLD WAR 1

Sir Austin Anderson, Kt.

A year or so ago we published the experiences of Inspector General F.W. Innes in the Indian Mutiny and sent copies of the publication to his descendants, one of whom was Sir Austin Anderson. The latter with great generosity presented the Historical Library with a most interesting series of Peninsular War letters written by his direct forbear—Inspector General John Murray—and now adds to our indebtedness by giving us his experiences as a young officer at Porton in World War I. Although the recollections have been deliberately written in a light hearted vein they do not hide the dedications and bravery of those who worked at Porton and who so fearlessly explored the unknown. When the crude “tools” at their disposal are considered the achievements of the Porton staff are all the more outstanding and admirable.

These recollections are therefore of importance and value and we have no doubts that our readers will share the interest and amusement which they gave to us when we first saw them. EDITOR.

I went to the gas experimental station at Porton in the autumn of 1917, which, I think, was about a year after it had been established. I had been invalided out of the

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R.M.A. Woolwich, and had specialised in science before I left school. Thus Professor Barcroft (later Sir Joseph), who had known me from childhood, thought I could be usefully employed in devilling for the team of eminent physiologists he had assembled at Porton to research into the toxicity and effects of various substances used in chemical warfare. These physiologists all had commissions in the R.A.M.C. and were generally referred to by their colleagues at Porton as ‘The b-- body snatchers’. I was given an honorary commission in the General List—and became ‘a snatcher’.

Porton in those days centered on the main camp, which contained laboratories, engineering shops, ammunition stores, administrative offices, and accommodation for the troops working on the various experiments. Many of them had served with the Special Brigade R.E. There was a network of trenches in the middle of the ground, which could be exposed to clouds of gas released from cylinders, shells, Stokes mortars, and Livens projectors. These trenches were equipped with a large number of electrically controlled vacuum sampling bottles to measure the concentration of gas in the cloud and, on some occasions they were ‘manned’ by a contingent of tethered goats, whose respiration rate was—I was told—much like that of a man. The guns, sited on a hill about 2000 yards away from the trenches, were mainly manned by gunners recovering from wounds. They claimed—with what truth I know not—that they received ‘danger pay’ for shooting experimental gas shells at goats, but it automatically stopped when they returned to France to be shot at by the Germans. The Officers’ Mess, where most of us lived, was in a delightful old house, Idmiston Manor, near the main entrance to the ground.

The Physiological Section, where I worked, was at Boscombe Down Farm about half a mile away from the main camp. It consisted of an old brick building and about half a dozen wooden huts. These housed laboratories, offices, and a small gas chamber entered through an airlock and equipped with a vapourising spray operated from outside. There was also accommodation for the goats, monkeys, dogs, cats, rabbits, guinea pigs and rats on which we experimented. I carried out the orders of Professor (turned Major) A. E. Boycott, who

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was an inspiring master and an ardent pacifist. However, although he considered World War I to be the greatest manifestation of Anglo-German folly, he saw no alternative to making his maximum contribution towards an Allied Victory. The day after the Armistice, however, he flatly refused to have anything more to do with gas warfare. Our experiments consisted of exposing the whole range of animals to various concentrations of gases for various times and noting the mortality rate. From these results we plotted graphs which compared the relative killing power of various substances. When it came to measuring the blistering, lachrymatory or sternutatory powers of things like mustard gas or the arsenical smokes we had to rely on our own skins, lungs and eyes, but provided we took sensible precautions there was no danger of any human guinea pig suffering any serious damage.

There was, however, one occasion on which our much admired leader Professor Barcroft did subject his life to a wisely calculated but definite risk. We all had the greatest affection for him and could well believe the truth in the remark attributed to him, "In war I find it very hard to reconcile my instincts as an Irishman with my convictions as a Quaker". The following incident is but one illustration of his habit of proving the accuracy of his theories by trying them out on himself.

We and the French were both experimenting with the efficiency of Hydrogen Cyanide as a killer gas. They manned their experimental trenches with dogs whereas we used goats. A high percentage of their dogs died in the HCN cloud whereas most of our goats survived. Thus a fierce argument was raging as to whether in his susceptibility to HCN a man was like a dog or a goat. Experiments in our gas chamber at Boscombe showed that exposed to HCN dogs first went unconscious and then after breathing in more gas died far more quickly than goats and – what seemed more significant – monkeys. One night Barcroft without telling anyone of his intentions waited until the rest of us at Boscombe had gone back to the mess. He then got hold of a Corporal to help him and to act as a witness. He then raised a fairly high concentration of HCN in the chamber, and accompanied by a dog on a lead walked through the air lock into the gas without a gas mask. He waited the few minutes necessary for the HCN to knock out the dog and came out of the chamber very much on his feet. When he got back to the mess he reported what he had done but went to bed early because he "still felt a bit muzzy". Otherwise he suffered no ill effects in proving that the French were over-estimating the value of HCN as a killer.

Another difference of opinion with the French produced an incident to which we

with our crude sense of humour thought funny, though I do not think the French victims did. A few breaths of the arsenical smoke e.g. that produced by heating diphenyl-chlor-arsine (D.A.) produced a distinctly painful choking effect which was somewhat alarming until experience had taught you that the pain passed off in less than an hour. When we were experimenting with these smokes we used to carry small ampoules of chloroform as sniffing at them mitigated the pain. The military advantage of these smokes was that they penetrated the respirators then in use unless they were fitted with special filters to keep smoke out. The French maintained that their respirators offered complete protection and needed no modification. Our experiments with French respirators led us to the opposite conclusion. We, therefore, asked the French to send someone over to Porton to demonstrate the efficiency of their respirator by walking about in D.A. cloud accompanied by some of us wearing modified British respirators.

They did so and the poor man got a very painful lesson in his superiors fallibility. He used up so many chloroform ampoules to alleviate his suffering that he passed out after telling his British companions that his life had been endangered by their diabolical negligence. However, I do not think that he bore us any ill will after he had recovered.

Captain "Bunny" Peters, M.C. (later Sir Rudolph) and Captain (I think Professor) Dunn were prominent and very congenial members of our team at Boscombe, but in my very junior capacity I had no contact with the research they were doing. I fancy Peters was starting his distinguished career as a biochemist and I remember Dunn deep in the study of microscope slides of gassed lungs. I do not remember any photographs being taken but we had a tame artists (Captain Stainer) who had a full time job painting gruesome pictures in oils for Dunn's records of organs taken from post mortems on gassed animals. Barcroft, who was the only one of us who wore civilian clothes, only spent part of his time at Porton. He made fairly frequent visits to G.H.Q. in France, where I am sure he did not conform as closely to the regular soldiers' conception of a University boffin as did his good friend and intellectual sparring partner Professor Haldane from Oxford. Haldane was sent out on a visit to France soon after the Germans first used gas in April 1915 and I was told was the first person to suggest protecting yourself against chlorine clouds by urinating on your handkerchief. I was told his donnish appearance and manner shook the brass hats to the core, especially as they thought it inconceivable that a civilian scientist could contribute anything towards improving military efficiency. Barcroft also acted as a very skillful conductor of the "working tea breaks" we had every afternoon at

Boscombe. These were often attended by visitors such as the Chemical Advisors from the various Armies in France, scientific pundits like Sir Hartley, and American scientists both civil and military. The subjects discussed varied from the completely frivolous to the highly technical, and I am sure these teas did much in promoting new ideas and general co-operation between all concerned.

We had to experiment with a wide range of chemicals which various people thought might help to make life unpleasant for the Germans. Many proved quite useless. However, we were told that a very eminent British physiologist had turned down a suggestion that we should use mustard gas months before the Germans did in fact use it, on the grounds that you could not get a high enough concentration into the air to kill people after a short exposure. This is true, though he entirely missed out on its ability to cause enormous casualties by its blistering potential. We had, therefore, to be careful that we did not miss an obvious trick in the same way. One of the worst flops was powdered glass, which was keenly advocated by people who presumably had studied the Borgias. Nobody knew how we were supposed to insert it into the German anatomy. We blew it in the faces of various animals who didn't mind in the least and even goats, who seemed to regard rubber tubing as a delicacy, would not eat it. Another flop was a kind of concentrated essence of cayenne pepper which was suggested as a filling for gas shells. I remember sitting in a dugout on a particularly cold day waiting with several others to dash out and sniff the cloud produced by a lot of trench mortar bombs containing this essence electrically exploded near the dugout. As far as I can remember none of us even sneezed.

The two poisons we handled with the greatest respect were phosgene (CG) and mustard gas (HS). Fortunately for us nerve gases had not been invented in those days. Both of them were insidious and the after-effects of a very small dose of either was enough to remind you to be more careful the next time you handled them. We therefore approached our first sample of Lewisite with great caution as it had had a tremendous propaganda and psychological warfare build up from the Americans as a horrifying secret weapon. However, I do not think it was described as the 'dew of death one drop of which can kill all the population of a large town' until after the first war. Lewisite was supposed to combine and multiply the potency of both CG and HS but in our view after trying it out it fell a long way short of doing so. Incidentally as we had some – admittedly somewhat diluted–drops of it on our arms without having anything to compare with the blisters caused by an

equally diluted drops of HS.

I do not think that anyone at Porton ever doubted that the large number of experiments we carried out on animals were essential if we were to get on with our job. Incidentally some of our dealings with animals were sometimes entertaining. There was a highly intelligent and friendly little monkey that the men loved so much that they made him a little khaki coat with corporal stripes, christened him the A.P.M., and gave him the free run of the animals' quarters. He never went into the gas chamber and I think survived the war. There was also the horrifyingly large billy goat, which broke its head rope when being led into the chamber and knocked two lads for six before he vanished into the darkness. I was told that the next morning he was discovered "loitering with intent" outside the Colonel's office in the main camp. There was a large and very fierce baboon which managed to open his cage after he had been put into the chamber. The result was that Boycott, who had been stowing some other animal cages on the floor of the chamber suddenly raised his head to find himself confronted with a very nasty looking set of teeth at a range of about 18 inches. He not surprisingly took speedy evasive action and the baboon shot through the open air lock. He promptly encountered one of the men, who ran for his life and then foolishly fled up a ladder. The baboon followed him to the top, gave him a fierce nip on the seat of his pants, and then returned to base.

On Armistice night some of those in charge of the animals celebrated the general rejoicing by releasing most of the monkeys. As far as I know they were never seen again except by some agricultural labourers. These men were peacefully eating their lunch under some trees a long way from the camp when they were frightened out of their lives by some hideous chattering and grinning faces in the branches above their heads. They fled in terror, and when they cautiously returned all that remained of their lunch was some paper fluttering down from the tree tops.

Being by far the youngest and probably the best cross country runner of the 'snatchers' I got all kinds of odd jobs. I was posted to the deep field about a mile away from the point at which arsenical smoke clouds were released. I then had to watch their progress across country, get into them, and judge their potency by sniffing. As the clouds were apt to change direction unexpectedly, considerable fleetness of foot was needed to get into position to receive the cloud. My ability to do this job led to my being a member of a fairly large party from Porton which was sent out in November 1918 to do a large scale experiment with the discharge of arsenical smoke (DM) at the French Gas Experimental Station at Entresen near Arles in the Bouches du Rhone. We were told by

the experts that the existence of the Mistral in these parts guaranteed a wind constant in a precisely predictable direction over a stretch of flat and more or less desert country. Either the Meteorologists or the Mistral failed to do their stuff, as soon after the canisters generating the smoke had been let off the wind changed direction. The result was that the cloud (after passing the close range sampling bottles) instead of coming for me went over a party of Indo-Chinese labourers, working on a French aerodrome. Their tearful lamentations in Chinese had to act as a substitute for my evidence that the smoke was doing all that was expected of it at long ranges.

Another job of mine was trying out the efficiency of a small piece of apparatus which bubbled air through some liquid intended to change colour with the minutest traces of mustard gas vapour. This was supposed to indicate whether ground which had once been shelled with German Yellow Cross (i.e. mustard) shells was now fit for occupation by troops. We created a small artificial mustard gas shell hole at Boscombe and I used to go out and test it once a day. To start with the liquid changed colour immediately, but after a month of very hot weather with numerous heavy thunderstorms it ceased to do so. I gave it another week to be on the safe side, and then went on with the next test which consisted of strapping a small pill box containing earth from the shell hole on my arm. I was young, foolish, and in a hurry to

go on week-end leave. I therefore anticipated what should have been the final test and put a drop of alcohol on the earth to pick up any mustard that was present. It was present all right, and I went on leave with my arm in a sling and bear the marks of my folly to this day. Quite rightly, I got scant sympathy from my colleagues, but some of them found my blistered arm quite useful for trying out experimental cures for HS burns.

Life at Boscombe was pretty strenuous and Boycott and I spent a lot of time dodging in and out of gas with our gas masks on or at the ready. However, there was no real risk of suffering serious damage unless you did something silly and allowed familiarity to breed contempt of the poisons we handled.

I was very kindly allowed to visit Porton again in the 1950's and found myself completely lost in the huge number of large brick buildings that have replaced the relatively few and small wooden huts of 1917. The size and sophisticated technology of the microbiological laboratories impressed me enormously, especially when I contrasted them with our crude research methods of over 50 years ago. Presumably the files giving the details of our researches are buried somewhere in the basement of the Porton of today and will only be of interest to the military archaeologists of the future. I hope, however, that my recollections of life at Porton in the last years of World War I will provide some interest and amusement to anyone who reads them.