

exposure

December 2020

The combined magazine for the nuclear community

In Memory of
Robert 'Bob'
Stanley Ireland

10th July 1936 –
16th August 2020



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Foreword

“All we can do is love – and see what grows”

Emma Grace.

“peace, goodwill among people”

Lk.2:14



Christmas in 2020 will be as never before. Our letters to Santa will include very different list of gifts that we wish to receive. Yet, I believe that we all should be grateful for shared experience of the last year.

This Christmas I know my neighbours from our street much better. I started to say thank you to people around me even more often, I appreciate afternoon walks or jogging with greater attention. Yet, this time of the year, I must remind myself that Christmas is not about me or what I can receive, but about others and what can I give, share or contribute.

For instance, finding the old notebook with the names and addresses of my friends and relatives and then, making this personal effort to select and buy appropriate Christmas cards with the message of love. This year I wish to do more than to sign a card with my name. I wish to add a sentence that may put a smile on somebody's face: “let's try to meet up”, “please call when you have a moment”, “I am thinking of you”... The year has brought lots of suffering, worries, tears and isolation, still it has taught me that I take so many things for granted.

My previous busyness and speed of life suddenly lost its pace. Never questioned priorities abruptly fell like the autumn leaves from a tree. It has been the year of a massive change, still a year of a new potential. I hope that also you will see your life as a gift, I pray that you will share that gift with others and that we all will grow in love.

Piotr Ashwin-Siejkowski

Anglican Chaplain at Brunel University London

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A Flying Start

How a dream to become an RAF pilot became a reality

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NAVAD 2020

A pictorial report from this years socially distanced and very wet NAVAD

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The NCCF

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CHRC

Ionising Radiation and Cancer: Part 1

In this article we discuss cancer as a health effect which may arise as a consequence of exposure to ionising radiation

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‘BOB’ Robert Stanley Ireland

10th July 1936 – 16th August 2020

It is with great sadness that we announce the unexpected passing of Bob Ireland. Bob’s long service to the Nuclear Survivor Community had just been marked by the awarding of the first Honorary Membership of the NCCF following his retirement as a trustee earlier this year.

Joining the Royal Engineers at 21 Bob served at Christmas Island, in an article he wrote for the BNTVA Bob recalled:

“

I well remember the first test (Grapple Y) I witnessed in April 1958, the ‘device’ was dropped by a Valiant bomber; I was told that we would be 78 miles away from the explosion. Years later I know that the distance was more like twenty-five miles. I can agree with the descriptions of other servicemen who have put pen to paper describing the events. Yes I did feel the heat on my neck and see the bones in my hands; and turning around to face where the detonation had taken place, seeing absolutely nothing except a brilliant whiteness, then after a few seconds, from the edge of my vision the horizon was gradually restored but in the centre was a giant fireball and mushroom cloud forming.

I know we were all stunned at the sight and the realisation of the awesome power that had been released. I doubt if any of us were prepared for what we had seen that day. Was it called a ‘device’ because it was an experiment?

Later in the year in August and September, I witnessed the ‘Grapple Z’ series of tests consisting of two airdrops and two Balloon suspended air bursts, this brought to an end British nuclear testing.”

Following demobbing in 1959 and having enjoyed the camaraderie of service life Bob joined the Merchant Navy which was to become his main career.

Joining the BNTVA as it became a Charity Bob served in a number of roles culminating in the Organisational Manager position in which he arranged the annual conferences.

When the NCCF was created Bob continued to serve both organisations as a trustee because he believed the veterans should always be represented.

Having helped the new BNTVA deliver its initial conference at Weston Super Mare Bob retired from that organisation to concentrate his efforts on assisting the NCCF to deliver its Care Wellbeing and Inclusion Fund.

Bob was a very active member of the grant panel with practical compassion and understanding that greatly enhanced the quality of the panel’s decisions.

We had visited Bob only a couple of weeks before he passed away, he was in fine spirits and was looking forward to the NCCF Chairman’s Dinner where he and Jeff Liddiatt would be guests of honour.

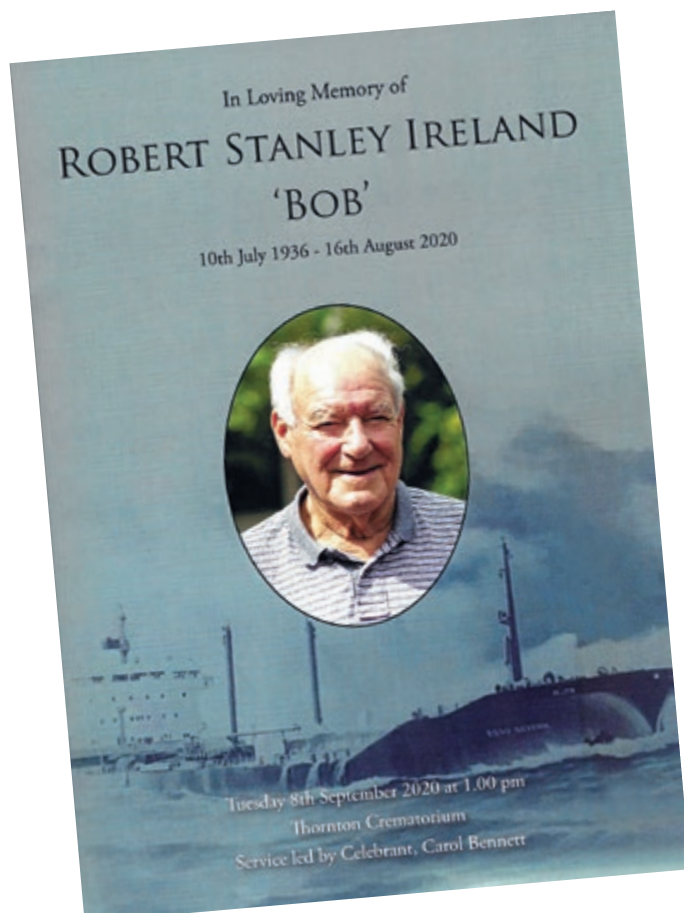
There will now be an empty place set at the Chairman’s dinner, a reminder of those who have gone before and in particular our good friend Bob.

*As ships that pass in the night
I have met the twain
I did go down to the sea
I would do it yet again.*

**Down to the sea in ships -
Charles W. Mitchell**



Top Left: BNTVA AGM 2016, Bottom Left: BNTVA AGM 2017, Right: Bob in early August 2020



Bob's funeral took place on Tuesday 8th September at Thornton Crematorium, Thornton, Liverpool at 13:00 hours.

Numbers were strictly limited because of the virus situation however as a mark of the joint respect of both the Nuclear Community Charity Fund and the British Nuclear Test Veterans Association, a trustee representing each charity were able to mark Bob's service to the organisations.

A Flying Start

This is a tale of encouragement for the air-minded youngster of today. My dream of becoming a Royal Air Force pilot started very early, in the middle of the World War and, as I grew, so did my total conviction that was what I wanted to do with my life. Later, I gave up any thoughts of further education so as to pursue my dream just as soon as I could.

Back to the beginning

Looking back, I think I first became seriously air-minded at around the age of 8, and it got worse as I got older. That might seem very young to the reader, but remember those were war years when the population's daily existence was focused on the conflict and all of us, adults and kids alike, followed closely everything our forces did.

Wartime

I mention this early period of my life to illustrate how strongly a wartime environment can influence a young mind. We lived then in suburban London and like all my contemporaries my existence was centred around our survival during the Blitz, the war news, school by day and nights in shelters, food rationing, shortages – and in the war effort generally. These distractions were the norm and the phrase “Remember there’s a war on!” covered most situations. Young and old alike, we all ‘did our bit’. In my case this meant joining the school stirrup-pump team to help put out any German incendiary fires that might come our way. I was also coerced into helping on someone’s allotment in the ‘Dig for Victory’ campaign to grow vegetables and as I grew older, I would also sweep up the metal swarf on a Saturday morning in a local factory that machined aircraft components. All this was fairly commonplace in those wartime days but what really stirred me was the war in the air.

I marvelled at the contrails one could see of the daylight battles over London and cheered our Spitfires and Hurricanes every time I saw them climbing away from our local airfield to meet the enemy. By night, whenever I could slip away, I would find some vantage point during the raids to watch for enemy aircraft coned in the searchlights. I devoured the news about air battles and our raids on the Axis, and young as we were, my friends and I would stand aghast at the toll of death and destruction we saw on occasion caused by enemy bombs.

Towards the end of the war we learned to respect the V1 flying bombs (or ‘doodlebugs’ as they were known) and to dive for the ground when a passing V1’s engine suddenly stopped and the thing itself dove to earth. I still remember the thrill of seeing a Spitfire chasing a ‘doodlebug’ to its destruction. I don’t recall being worried about the German V2 rockets because one never knew when or where they might arrive, and could do nothing about safeguarding oneself anyway! Like most boys I collected shrapnel and anything else that might once have been part of an aeroplane and like them, I could identify just about anything seen in the sky. At the closing stages of the war I went away to boarding school, but with my enthusiasm for aviation undampened.

At Peace Again

When the war in Europe ended I was home from school and we were on holiday on the south coast. One glorious summer’s day I persuaded the family to an outing in the country and, by a highly-engineered coincidence, we ended up picnicking just off the end of the runway at RAF Tangmere, near Chichester. We watched as a steady stream of aircraft passed just over our heads on their final approach: there were dozens of them – Lancasters, Yorks, Fortresses, Halifaxes, Stirlings, Liberators, Dakotas, and a whole variety of American-owned aircraft. Every turret, window or opening was crammed with men waving wildly. What we were seeing was the homecoming of our Allied POWs from Germany, some of them after years in enemy hands. We cheered as the succession of Army lorries rolled by packed with these ‘Kriegies’ as they were called (from the German for POW – ‘Kriegsgefangener’) on their way to a dispersal centre, still dressed in their tattered uniform remnants, most deliriously happy. As they passed us, whether they laughed, wept, shouted at us, bantered with us or were silent and withdrawn, they all seemed so obviously relieved to be home at last, safe and unscathed. It was a highly charged experience for me and I confess to a few tears myself at the time.

One other thing I recall about that day. During a lull in the arrivals I watched an American Boston land. It seemed to have a much higher landing speed than other machines and as it touched down the left main wheel broke off. The aeroplane slewed off the runway and finally came to rest in a cloud of dust – but the wheel bounded ahead and was last seen disappearing into the far distance, still bouncing. I remember thinking at the time “If that thing hits anyone it’ll kill ‘em!”

Into the ‘Blue’

The very day I was old enough I joined the Air Training Corps (the ATC) and for the first time, saw myself in ‘Air Force Blue’. I desperately wanted to see whether this flying business was actually as I had imagined it to be. At the tender age of, I think fourteen, my first flight was in a Percival Proctor cabin monoplane from the then airfield at RAF Hendon. The sound, the smell of the cockpit and the sensations were all and more than the stuff of my young dreams. From that moment on I was hooked, and determined that someday somehow I would be a pilot. At that stage all I could do was to absorb all I could about aviation and make models of all the ‘warbirds’ I could afford. Still, it was a start and I knew exactly what I wanted for the future.

Boarding school and studies apart, most of my spare time as a teenager was spent on matters aerial! I learned to glide, first on an open-frame Dagling machine. Real wind-in-the-hair stuff this – sitting unprotected on a projectile which itself was attached by a long length of elastic stretched in a V between two lines of willing helpers. At the signal these chaps ran forward until the elastic took control of the proceedings and the machine lurched into the air. A sort of horizontal bungee-jumping I suppose, except for the rebound.



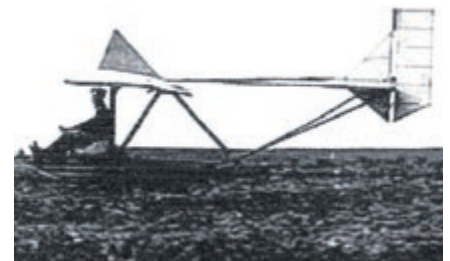
1945 - The Kriegies Return



The Proctor

The Dagling

Once we had got used to the ‘wind in our hair’ some 10 feet off the ground in the Dagling, we progressed to dual instruction in the Sedbergh machine and once competent, we flew solo circuits in the Prefect. Gliding apart, there were never enough people to do all the tasks at the gliding school. About the age of 15 I learned to drive, a necessary evil between flights since somebody had to drive the tractor on the airfield to recover the winch cable for the more advanced gliders. Also, I learned my first engineering skills helping to maintain the powerful Ford V8 engines of the glider winch, backed up by the most excellent ATC instruction. In those immediate post-war days there was so much surplus ex-RAF equipment available that cadet forces could and did acquire more than their fair share of technical items to strip, to mend and to rebuild. A first-rate grounding and one not so readily available later on.



The Dagling



Dual in the Sedbergh



Solo in the Prefect



The Venerable De Havilland Dragon Rapide

The ATC was not all about aviation. They taught us drill, discipline and weapon training. I know that by the time I was 16 most of us could strip and reassemble a pistol, rifle and a machine gun and perform usefully with them all on a firing range. With a view to the future they taught us how to read a map, some rudimentary air navigation and the rules of the air. Every so often we would go to summer camp on an RAF station where we could put into practise what we had learnt. I recall that at a summer camp, one of our senior cadets tried to frighten us about our forthcoming map-reading flight, because it was forecast to be turbulent. He described how bad it might get and warned us to take vomit bags with us. When we heard that he was detailed for the same flight, we duly prepared ourselves. The trip in an old Dragon Rapide was a bit rough but as we had suspected, the only person a little green about the gills was our erstwhile tormentor. At a critical stage, a couple of us produced some fatty bacon we had smuggled aboard with us – and that was the last straw for him. He threw up (and never forgave us thereafter).

Hendon was my nearest RAF station and since it was part of suburban London, it also housed several foreign air force detachments, there to support their embassies.



The Dakota

The most liberal attitude towards the young aviation fanatic was from the US personnel and many an unauthorized ride I had in their communications aircraft. The trouble was that they usually flew from Hendon to some other destination, and my problem was how then to get back to boarding school (or home) before I was missed. I remember I overstepped the mark twice too often.

A 'phone call one day told me that a Czechoslovakian Air Force Dakota was leaving Hendon that morning bound for Prague, but that it was landing first at Manston in Kent to pick up cargo. "Would I like a ride?" – would I! Having got to Manston I realised that I had a little problem. Perhaps I did have enough time to get back to school before questions were asked, but I had no money at all for the train fare. Nothing daunted a trip to the local police station and the kindness of a sergeant there solved the problem, but it cost me my pocket money for ever and a day to repay him – and I was late and got a wiggling for it!

Another time, my contacts with the US airmen found me aboard a Dakota of theirs going to Holland. I won't admit to truancy but because they had said "Out early and straight back", Geography private study offered me a window of opportunity. The flight out was a benchmark; the pilot taught me the rudiments of flying straight (occasionally) and level (rarely), that is until we went into cloud and I was asked to go back with the other passengers.

Also with us were three bored US marines who, having nothing to do, asked me to explain the mysteries of cricket to them.

We chalked a wicket on the toilet door at the rear of this empty aeroplane and, using a paper 'ball' bound with string, I started the demonstration. Each took his place at the crease to bat with a trenching tool. Quite fun really, until one of the crew beckoned me from the cockpit door with "Hey, bud, the captain wants to see you up front." The pilot was a jolly nice chap but I thought him a bit strained as he voiced his complaint about what we were doing. When our burly batsman at the rear had hit the ball, he would pound up the fuselage to score his 'run'. As we heard his 'thump, thump, thump' from aft the pilot would have to haul back on the control column and wind madly back on the trim wheel to relieve the load. No sooner done than our batsman would thunder back to his wicket and the damned wheel had to be hastily wound forward again. The pilot's language was quite colourful and made me understand better why Americans never really took to cricket.

The Dakota

I hadn't then appreciated that aeroplanes sometimes go wrong; and this one did. Instead of arriving back at Hendon by about mid-afternoon, we had an enforced overnight stay in Holland. Our hosts turned a blind eye to the British 'schoolboy-in-uniform' among them and were most helpful: but in the long run, it cost me all the exeats for the

rest of the term, still more of my pocket money and severe parental disapproval. For the life of me I couldn't see why my mother didn't view the piece of genuine Dutch cheese I brought her as adequate recompense for my sins – mind you it was a bit smelly by the time she received it! My ATC gliding progressed well and I was able to take better advantage when, at age 16, I acquired a motor bike and was able to roam more freely so as to fly and to glide. I suppose it was inevitable that as soon as I was old enough, I should seek selection for the Royal Air Force. Suffice to say that in the late 1940s, I started pilot training as an RAF Cadet.

Flying Training

I have few memories of the initial pre-flying stage of my training but three particular incidents have stood the test of time. My Entry had cause to celebrate something, I forget what, and we had congregated one evening to mark the occasion. Feeling off colour I had backed out early and gone to bed. In those days we cadets slept upstairs in a barrack block and somehow, without waking me, my peers had lifted me in my bed, taken us both out into the corridor down the stairs and out onto the barrack square. In the morning I awoke first to the cold, then to the strange sound of birds chirping and finally to roars of laughter. When both eyes were open I had to face the awful task of towing my bed back barefoot – before authority saw me. Thank God I had been wearing pyjamas!

We all had to reach a standard of fitness and immediately prior to our very first weekend pass, we had to qualify in a fitness test – part of which was the maximum number of 'push-ups' and 'sit-ups' that each could manage. Simply, if one didn't pass then one spent the weekend instead getting fit to re-take the test. For some reason we were all so enthusiastic that we gave it all we'd got!

We all passed but by the Sunday at home, I had seized up and was a muscular wreck.

I dreaded the embarrassment of traveling back in that state and to meet the jeers of my peers. I need not have worried, at the London rail station to catch our train back north, civilian travellers must have been highly amused at the number of uniformed young men on the platform all sheepishly creaking along bent double at the waist. As a complete irony, I had to pass by an Army officer on the station and he obviously thought I was 'taking the Mickey' by failing to salute as I lurched by doubled over. He did accept my explanation – particularly as he became aware of other distorted cadets in exactly the same predicament. That, of course, was merely the start of our 'trial by fitness'.

As an experiment some cadets were to be given initial glider training and, for comparison, others on the same Entry were not. The object was to see if glider-trained pupils would fly solo on powered aircraft sooner than those starting from scratch. With my ATC gliding background I was a natural for the scheme and I remember our group spending glorious weekends gliding on the airfield, while our less fortunate colleagues were committed to much more mundane tasks. In the event, the gliding did little or nothing to affect our flying prowess, but sometimes things went right for me!

The start of flying training began with the issue of our flying kit: woe betide him who was seen preening in his kit before we took to the air. This was also the period for our first weapon training and field exercises – playing soldiers as we expressed it. Explosions were simulated in the field by use of a Thunderflash, a black powder device which made a loud bang but which was limited in blast effect to a few feet.

One of our number who had swaggered in full flying gear before we'd seen an aeroplane, had also let us down during a field exercise. He was spied going into a barrack block loo cubicle and, on the spur of the moment, we decided to teach him a lesson. With no excuse for our stupidity, someone lobbed a Thunderflash over the open top of his cubicle and we retired to await the bang. We hadn't thought about the effect in such a confined space and after the enormous explosion there was.....dead silence. Scared stiff at what I might find, I was boosted up to peer over the door. There he was, trousers round his ankles, sitting dazed and speechless – and totally black from boots to midriff. I draw a veil over the retribution, but we deserved everything we got.

Flying the Percival Prentice proved to be heady stuff for all of us. Many authors have romanticised about their first solo flight but personally, it was more a feeling of relief when my instructor said to me "I'll get out now and have cup of coffee. You do one circuit of the airfield then land: and don't bend it because I don't want to walk home." To explain, pre-solo training then was all done at a satellite airfield and we both had yet to fly back to base. The more apt pupils had already soloed, and there was intense competition and not a little money riding on the number of flying hours it took each of us to reach this milestone. I didn't win any cash but at least I didn't disgrace myself; and we didn't need to walk home that day either!



The Percival Prentice – distinctive with its bent-up wingtips!

The mysteries of spinning, aerobatics, navigation exercises, flying on instruments, landing solo away from base, flying at night; all these added spice to our newly learned trade. I found aerobatics troublesome: whilst I savoured the sensations they created, in those days I could never fly the manoeuvres themselves really accurately. Various instructors had a go at improving me but it became obvious to me that I wouldn't reach the standard for entry to the aerobic trophy competition. At best I was adequate but lacked the instinctive natural flair of some of my colleagues. This caused me much grief since I had set my long term aim to becoming a fighter pilot – flying jets of course!

Our Training

Learning to fly was our primary goal but officer, general and technical training formed as great a part of our curriculum. The world at large barely appreciates just what care goes into the preparation of its future military officers: nor, I'm sure just what is demanded of them in their early days. Very few of us had any idea of what 'Noblesse Oblige' (privilege carries responsibility) would mean to us later but this doctrine of responsibility and care for our subordinates was much emphasised. We learned that a General Duties officer (such as we hoped to be) could be called upon to do almost anything – the phrase used to us was "Anything from flying the latest and greatest to defending a man for murder!" We took it all in good part but didn't really absorb just how this span could, and my case would, involve us later.

I, for one, had no idea just how widely my future peripheral duties would range. I had no conception then: I ask you, how could a would-be pilot also expect to find himself as an accountant, an aide, an auctioneer, an auditor, a civil negotiator, a foot soldier, a legal functionary, a military 'expert', a performer, a personnel manager, a



The Harvard

persuader, a planner, a presenter, a project deviser, a stage manager, a stock keeper, a teacher: and all in all – an organiser of people, events and things? It couldn't possibly happen; but of course it did to some of us!

We progressed from flying the sedate Prentice initial trainer to the more lusty American-built Harvard. With its big radial engine and its noisy, smelly fighter-type (of that day) cockpit this was more the real thing. Once we had mastered the basics of the new beast, we delved into more advanced skills: longer range navigation, sorties away from base to develop our self-reliance, formation flying, instrument approaches using radio aids and the like. Without realising it we were transiting from the sheer joy of flying to the more serious operational aspects that would soon be needed.

It was about this time that I realised that flying could be dangerous, particularly if one allowed one's attention to wander. This hit home one day when we heard that at another training school a Harvard had crash landed and its pilot, a cadet like us, had been killed. Apparently he had forgotten to put his wheels down before landing and the aircraft had hit on its belly, bounced and turned over when it came to rest. It was not badly damaged but when they got to the pilot, he was hanging upside down on his straps and tragically, his neck was broken.

By sheer coincidence, shortly after this I was waiting one wintry day by the runway for take off clearance when another Harvard reported that his landing gear wouldn't come down. He was instructed to belly land on the snow alongside the runway with care, and I watched and waited with bated breath to see what might happen. He touched down perfectly and slid for a bit in a flurry of snow before he stopped. The canopy was flung back and the pilot (a fellow cadet) shot out onto the wing prepared to run in case of a fire; run he did, he hurtled off the wing and ran straight into the tailplane! He bounced off and only stopped when the crash wagon pulled alongside to pick him up. He did a good job but with a bruised belly and a wounded ego we let him off lightly with our wisecracks.

Sheer Enjoyment

The Harvard was getting too old and the RAF was considering its replacement with one of two more-advanced types of trainer. The Avro Athena and the Bolton Paul Balliol were in competition for the task and one of each type arrived with us for the instructors to evaluate. Two Senior Entry cadets were co-opted to help and I was allocated to the Balliol, to fly with the instructor and to give my opinion of it as a student. Our Balliol performed that year at the Farnborough show and I was lucky enough to do all the rehearsals, albeit as a passenger.



Bolton Paul Balliol

That was my first introduction to the precision of display flying and I found that I very much enjoyed it. I recall that the aircraft itself, with its powerful Rolls Royce Merlin engine, was grand to fly but it had dreadful spin characteristics and, as far as I know, neither type came into service.

Oops!

On the lighter side, back into course-work and I was in trouble again. For one long-range sortie I had had one cup of coffee too many before flight. To cater for the thoughtless like me, in the Harvard there was a 'pee-tube' at the front of the pilot's seat down between one's legs and covered by a lid. If desperate one loosened one's straps, performed and snapped the lid shut. The golden rule was that if one had used the facility, one emptied it after flight. That day I had been called to someone's office as I left the aircraft and had forgotten the golden rule. With my luck the next sortie for that aeroplane had been for the flight commander to practise his aerobatics. You've probably guessed already, while upside down under negative 'G' force the damned lid had come open and our flight commander had received the full libation! More loss of privileges for me and a thorough dressing down. Typically, the chaps thought it very funny.

I have to relate though, that the same episode benefited me. Having come to his notice the flight commander took a particular interest in my progress. He had been an RAF aerobatic specialist and, seeing my then weakness, undertook to give me extra instruction himself to see if he could develop in me the flair for aerobatics. Whatever else, he succeeded in kindling a love for the 'sport' which persists to this day.

Confidence Dawns

The first time I realised that one really could rely entirely on one's instruments in the cockpit was when, on a grey drizzly day during our Harvard training I had to do a dual navigation exercise, landing elsewhere with a night away from base. With my instructor I took-off, went immediately into cloud and didn't see the ground again until two hours later we broke cloud at 200 feet perfectly positioned for a landing at an airfield I had never seen before. That situation is, of course an everyday one for modern pilots but 60 years ago and at my 'level-of-incompetence' it formed an indelible impression on my young mind. However archaic it may now seem, we had used a radio Standard Beam Approach system (SBA). Depending on where one's aircraft was at the time the SBA sounded on one's headphones either an 'A' (in Morse code dot-dash) or an 'N' (dash-dot).

When both signals overlapped the effect was one continuous note and this, coupled with markers at set points formed both a navigation system and a beam on which we could approach to land.

Graduation time approached and we were caught up in the flurry of final exams, flying tests and the delicious prospect of soon having to put into practise what we had been taught. I recall visits from several officers from operational squadrons all intent on impressing us with their particular way of life. In truth, the only one we relished was the visit of the two Meteor pilots and their jets from one of the fighter squadrons, who dazzled us with their flying display and told us exactly what we all wanted to hear! We were able to relate directly to these godlike individuals since both had been in senior Entries a year or so earlier. Before we could qualify as pilots, there were still two major hurdles to go. We first had to pass the instrument rating test which would allow us to fly solo in cloud within certain weather limitations. This qualification, or 'White Card' as it was named, was the minimum necessary for any RAF pilot, and the annual re-test was to become a part of our lives for many years to come.

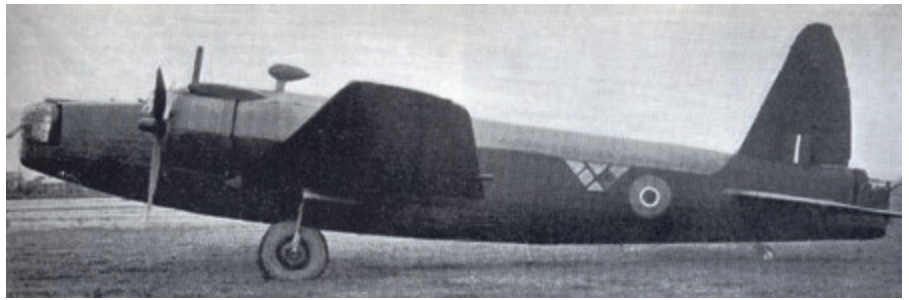
(Over)Confidence?

Towards the end of our training I suppose we thought that we'd got to grips with this flying business, and began to be more adventurous when authority couldn't see us. In my case it centred around low flying along the dykes and fens in East Anglia, when I'd vie with a chum to see just how low we could go without scaring ourselves too much! I wasn't part of another conspiracy in which some stalwarts tried a height contest to see just how high they could fly in a Harvard. The winner photographed his altimeter showing 21,500 feet which, since the Harvard had no oxygen, I considered at the time to be "Bl**dy dangerous!"

A Testing Time

We also had to pass a final handling test, usually with the Chief Instructor or his deputy. In my case, I had the deputy, then a Squadron Leader. The test went well enough until when returning to base he asked "What would you think if the propeller suddenly stopped?" I reasoned that if the engine had just lost its power, the prop would still windmill at flying speed, so I took him literally and replied "I'd consider, Sir, that the engine must have seized." "Are you trying to be funny young man?" he said "just get on and show me a forced landing!" At the debrief afterwards I was in a cold sweat until he told me that all he had wanted was for me to commit to a forced landing after a supposed engine failure. He actually apologised for his loose terminology and commended me for the right answer – and passed me on the test. I breathed again! By coincidence, I came to know this officer well many years later when he was my boss in Germany as a Group Captain.

As part of our general preparation to become officers we cadets had become very familiar with the traditions of formal 'Dining In Nights' in the Officers Mess – including the lore of rowdy games and the like to let off steam. Our final Dining In Night was something of a landmark – both for us and for the RAF station. Our Chief Flying Instructor (a much decorated wartime hero and a very popular character) possessed a small 'bubble' car and had made the mistake of parking it outside the Mess that night. When he came to leave in the wee small hours, he couldn't find his car; we knew where it was and hinted that it was "Probably out of the rain somewhere in case it rusted". He found it – tightly wedged in one of the Mess corridors! He took it in good part but paraded us early next morning complete with hangovers to provide the muscle to lift his car out bodily. That same night our course rose to a



The last of the 'Wimpeys'

challenge and by morning, the ante room in the Mess had had its ceiling redecorated. The Mess awoke to a trail of sooty barefoot prints which started at the base of one wall, went up and across the ceiling and down the opposite wall. Quite a number of us that night had ended up as members of 'The Blackfoot Tribe' and we left the station with a legacy that following cadets had to better.

'Wings' Day and Graduation

All hurdles straddled and the day came when we were finally to be awarded our 'wings', and at the same time our commissions as the most junior of officers. Looking back we were exhilarated at the prospect of the former, but somewhat cowed by the responsibilities so often impressed upon us about the latter. I have now but two lasting memories of graduation day; the intense feeling of relief that I had at long last 'made it', and the jolt of reality at my first salute from an airman on my way back from the graduation parade. We all went on leave that night not knowing our future, exhorting each other that we would meet again at one or other of the jet advanced flying schools, and each secretly praying that this would indeed happen to him.

Advanced Training

A change of focus, Joy upon joy, towards the end of my leave period the long awaited telegram came. I was to report to one of the jet advanced schools in Yorkshire to be trained on Meteor aircraft. Perhaps I really was destined to become a fighter pilot after all!

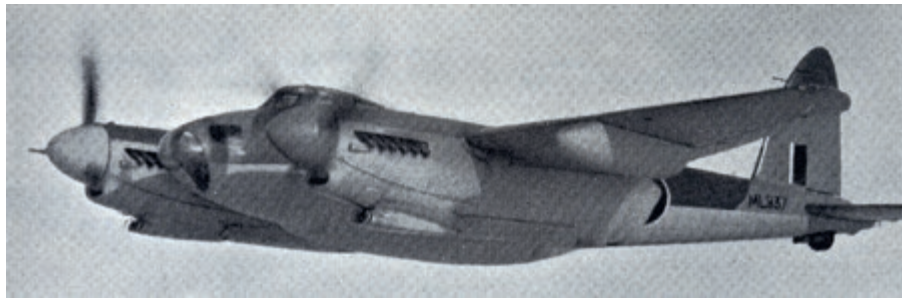
On the evening before the course started all of the new young hopefuls met in the Mess. There were a couple from my Entry but the majority were strangers from the many basic flying schools then at home and abroad. Next morning, after the usual introductory homilies we started on the first lecture for the course. We were deep into the mysteries of the Martin Baker ejection seat when the chief instructor came in and announced that due to a mix up by the postings people, there were 24 of us for a course that could cope with only 22. He put all our names in a hat and drew out the unlucky two. As you will have guessed one of those names was mine. The other unfortunate opted to go for maritime training but, because I argued my case to fly jets, the chief instructor arranged to send me to another school for training on the Mosquito piston-engined aircraft. His premise was that, once qualified there on that type, I would automatically be posted to a Mosquito night fighter squadron all of which were then converting to jets. This sounded good to me and off I went.

It was not to be. At the next training school their chief instructor explained that all Mosquito training was shortly to cease but that I would join the very last course there to be trained on the Vickers Wellington (an ex-World War 2 bomber). He claimed that this could ultimately give me what I wanted because once I was qualified on the 'Wimpey' (as the Wellington had always been called), he could arrange for me to go to the Operational Training Unit flying

Lincolns, and thence to a bomber squadron. The Avro Lincoln, successor to the famous wartime Lancaster, was a four-engined bomber with a crew of seven. By careful posting he reckoned that I might well end up at the station where Lincolns were soon to be phased out in favour of the world's first jet bomber – the Canberra. I accepted my fate and started my training.

Our 'Wimpeys' at that stage were very much on their last legs. To me now they are but a distant memory and I can recall only two things about them. The first was that one could be caught out by the violent trim change when one put the final bit of flap down to land. The second was the difficulty we had in keeping them flying so as to complete our course. I remember that my final night exercise I had to repeat three times, once due to suspect engines and once again because fabric had begun to strip from either the wings or the fuselage of the aircraft I was flying. Interestingly, the 'chap in the back' could hear the loose fabric slapping after some had come adrift and one took no chances on a disaster. One good thing though – I was introduced to the concept of having someone else to rely on in the air; my 'chap in the back' was a real live navigator!

Looking back, it was the best thing that could have happened to me. I gained early experience on classic aircraft before they passed into history. I got to fly the De Havilland Mosquito (or 'Mossie' for short) in my spare time and soon realised what a delightful aeroplane it was – faster than many piston-engined fighters of its time and highly manoeuvrable. I count it an honour now to have flown it! Flying larger aircraft as a captain with a full crew taught me responsibility and made me grow up, fast. Within 18 months I did get my chance to convert to jets so it all worked out well in the end. But back to the story.....



The superb 'Mossie'



The Lincoln – space for 7 inside!

Fruition

Scampton, in Lincolnshire, still evokes memories of the wartime dam-busters; but in my young days it was home to the training school for crews destined to join the then Bomber Command. Lincoln bombing operations in those days were still very much the World War 2 concept, but before I could be concerned with them I had to learn to fly this monster and how to cope with a crew. I had to get used to a flight engineer who sat beside me and watched every move I made, and a navigator who would tell me in the air where to go (and in practise very often on the ground as well). Then there was a navigator/bomb aimer steeped in mysteries beyond me. Also a signaller who passed cryptic messages to all and sundry (and who often forgot and left his intercom open to all the cheepings and burpings of his trade) and finally, the two air gunners whom one never saw when in the air but who were excellent lookouts.

Wiser heads than mine crewed me with two officer navigators – who both had wartime operational experience and were much senior to me, and four national service sergeant aircrew who were new to the flying game. All-in-all a daunting prospect to a lowly 19-year old Pilot Officer, but one which worked out successfully and made me new friends.

There was one memorable event for me while at Scampton. We were taught routinely to land the Lincoln with one of the 4 engines shut down and on one trip with my instructor, we returned to land on 3 engines, right in the middle of a large storm. Late on the final approach Nemesis struck. The squally wind swung round and blew hard in the wrong direction, making it impossible to get the aircraft on the ground in the right place and equally impossible to go round to try again. The brakes failed, we careered off the runway end, went through a hedge when part of the undercarriage collapsed and the aircraft ended up in the inevitable ditch.

As a perfectly trained (student) captain, when the aircraft came to rest I ordered my crew "Out...out!" "The same instant I turned my head at sudden movement outside and realised that the instructor and myself were the only persons left in residence. So much, I thought, for leadership in time of crisis!

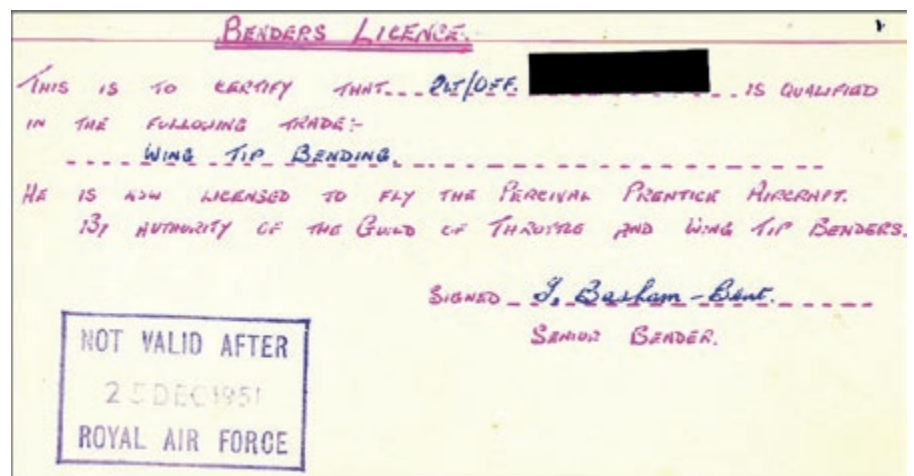
Having once learned the bomb-dropping business we progressed to gunnery training. In those pre-missile days to evade an attacking fighter one was taught the 'corkscrew' manoeuvre. As the name suggests a violent horizontal change of direction and height a la corkscrew, during which one's gunners would attempt to draw a bead on the attacker. Gunners and pilot excepted, the rest of the crew hated this manoeuvre which was highly conducive to airsickness to those who couldn't see out.

On to Operations

My First Squadron. Once qualified, we were posted as a crew to No.12 Squadron at RAF Binbrook in Lincolnshire - which was indeed the first station due to receive the Canberra jet bomber some months later. No sooner had we arrived on our first squadron than I well and truly blotted my copybook. Taxying out one evening in a stream of aircraft for our first night bomber exercise, my brakes were playing up and my wing struck a projecting hangar door stanchion and knocked about a foot from my starboard wingtip. Whatever the circumstances, as captain of the aircraft I had no excuse. I later learned that I was to have been 'up before the station commander for him to give me a rocket' - but he was on leave. His administrative deputy had other ideas! Before I knew it, he had me formally charged and sent to the Air Officer Commanding (AOC) for consideration of a court martial. I truly believed at the time that my short career was ended before it had really begun!



Not what was Intended



The mysterious card

One very scared Pilot Officer went to group headquarters where the AOC himself gave me instead an informal reprimand. I later learned that on his return, my station commander had spoken beforehand to the AOC on my behalf. As evidence of the great rapport which exists between those who fly and those who look after their aircraft, I still treasure this mysterious card which appeared shortly afterwards in my mailbox.....

We soon settled down and those months and the few hundred hours of flying the venerable Lincoln taught me much about airmanship and practical leadership. Bomber Command mass exercises brought home to me the risks of collision when flying at night as one of a large number of aircraft, all bound on the same track for the same

target at the same height, and all with no sight of one another. Exciting it was - and I often gave thanks for the sharp eyes of my two gunners! We had missions to the Continent, exercises to the Middle East, liaison visits to other forces and life for me became interesting in the extreme. I grew a moustache (to make me look older) and bought a 1934 model Lanchester car because it was cheap, and was big enough for all seven of us plus a crate of beer.

An incident one night could have had disastrous consequences. We had been airborne at height for several hours when my nav./bomb aimer came up on the intercom with "I really don't feel too well." One of the crew checked him over, could find nothing wrong and I accepted that he himself wanted to 'press on' with the sortie.

A few minutes later we heard "Oh God, I feel terrible....I feel awful.... Aaaah" – and he was out cold! We quit the bomber stream, made a rapid descent and put him on an emergency oxygen bottle. He came round and we took him straight home to the doctor. What had happened was that his oxygen tube had chafed part through at the rear so that whenever he bent forward over his chart table, he had little or no oxygen into his mask. During the time at height he had slowly but surely succumbed to anoxia, and we had missed it when he was examined in the dark because the split tube wasn't obvious. Apart from a thumping headache he soon recovered, and afterwards suffered no ill effects.

Most of my Lincoln sorties were routine and have long since slipped from my memory. One however was notable enough to have survived the years. When airborne from Binbrook on a long flight, when still way north of the British Isles, we received weather information that fog was closing airfields in much of the UK. As we drew closer to base we were told that all available airfields were now fogbound, except for one master diversion airfield in the South of England where special facilities existed, and that we should attempt to land there. On radio contact with this airfield I was instructed to try a ground controlled approach and was told that they would activate the "FIDO" system for our landing. I'd heard of this ex-wartime system but few had ever seen it. **FIDO (Fog Intensive Dispersal Operation)** consisted of petrol pipes laid each side of the runway which could be lit along their length to provide a fiery dispersion of local fog and low cloud. It had only ever been installed at the wartime emergency airfields which had runways wide enough to keep the intense heat away from landing aircraft – as it was I was clearly advised to keep my Lincoln well in the middle of the runway on landing.



Not me – but a wartime Lancaster doing the same thing!

It was a fascinating experience to use this system. Out of the murk at about 200 feet on the final approach there was first a glow ahead in the fog which brightened to become two fiery lines (between which I was obviously expected to deposit the aircraft). It worked beautifully and we were much relieved to be down on the ground – but could actually feel the heat from the flames as we taxied between them. The system was so expensive to use in peacetime that it was rarely used, and I believe I was one of the last pilots to use it operationally before it was taken out of service.

Binbrook at that time had many ex-wartime overseas pilots still serving. Prior to the arrival of the new Canberra jets, authority decreed that these officers and aircrew were to be offered alternative posts. One notable Polish pilot elected to go to air traffic control, and was given the chance beforehand to try out his hand. His command of English would slip somewhat when he got excited, and I heard him one very busy flying day lose his cool and exclaim on the control radio "Everybuddy on ze ground hold, every person in ze air go round again!" The real duty controller took over instantly to sort out the ensuing chaos.

The time came when we lost our 'steam-driven' Lincolns, said goodbye to most of our crew members and made ready to welcome the RAF's first twin-jet bomber – but that's another story.....

Epilogue

How did it all turn out? I served for some thirty-six years, flew over 70 different types of aircraft in total, became a senior officer, had command of a squadron, served with Army special forces and those of other nations and, over the years, was involved with the many and varied tasks I've mentioned.

I've never since regretted the determination I had as a youngster which brought all this about!

The right of Patrick Peters to be identified as the author of this work has been asserted by him in accordance with the Copyright, Designs and Patents Act 1988.

Disability Discrimination Act 25 years old

The 8th of November 2020 marked the 25th anniversary of the passing of the Disability Discrimination Act (DDA) 1995.

The act made it unlawful to discriminate against disabled people in relation to employment, the provision of goods and services, education and transport with some of the protections implemented in stages.

The act was written into law after tens of thousands of activists lead the movement for change and proved to be the driving force behind the legislation.

The late Professor Mike Oliver, a leading academic and disability rights campaigner, spoke about the campaign and movement that brought about the act:

“

We had no resources but we created a movement, which mobilised at its height hundreds of thousands of people.

Professor Mike Oliver



New Africa - Shutterstock

Professor Oliver was clear in his views that it was barriers put up by society as a whole, such as the lack of accessible public transport that excluded and discriminated against disabled people, and was wholly down to the way society was run and organised.

Since 1995 the act was amended in 2005 to take public authorities into its remit.

In 2006 the Disability Equality Act placed a duty on public bodies to, for the first time, promote disability equality.

While it is clear that the DDA wasn't going to solve all of the problems that disabled people faced, it did paved the the way for a change in the way society viewed disability.

The anniversary of the act should now be a time to take stock of how far we have come as a society. There is still a long way to go to ensure equality for disabled people.

The BBC has commissioned disability-related programmes to be aired in 2021.

Charlotte Moore, BBC's chief content officer, said:

“

Our content now and into 2021 will be exploring the significance and impact of the act as well as showcasing the creativity of disabled actors, presenters, producers, directors and writers.

I hope that enabling disabled people to tell their often unexpected and surprising stories will challenge stereotypes and make us all think about the world we want to live in.

The Nuclear Community Charity Fund

NAVAD 2020

A report from this years socially distanced and very wet NAVAD

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The Nuclear Community
Charity Fund



Making that difference

NAVAD 2020



The NCCF and the BNTVA joined together in unison to mark this years Nuclear Veterans Awareness Day at the National Memorial Arboretum.

Following strict guidelines issued by the NMA a small group of people assembled at the arboretum to mark the National Atomic Veterans Awareness day.

The ceremony was officiated by Rev Sian Gasson - Vicar of Dingle. In attendance were trustees of the BNTVA, the NCCF and veterans of the tests.

Hopefully for NAVAD 2021 we will be back to more normal circumstances and will see the large attendance we have seen in previous years.





Top: BNTVA Chair - Ceri McDade, Sian Gasson - Vicar of Dingle, Liverpool

Second Row - Left: David Taunt - BNTVA Trustee, Middle: Tracey Morris - NCCF Secretary, Right: Nigel Heaps MBE - BH Associates.

Third Row: The wreaths and dedications from the BNTVA, NCCF and BH Associates, The last post Bugler

Bottom: All who attended the Ceremony that day

Photographs: Steve Bexon- BH Associates



Remembrance Day 2020



Don James on behalf of the BNTVA and the NCCF at the Field of Remembrance at Westminster - November 2020.

To mark Remembrance Day the Field of Remembrance at Westminster Abbey was officially opened on Wednesday 4 November. Due to the COVID-19 restrictions, unfortunately the Field was closed to the public this year. However The Poppy Factory have placed a video on YouTube to enable you to view the Field in the safety of your own home. The video can be found at: <https://youtu.be/wXu3WnqtcdA>

The British Nuclear Test memorial can be found at 1:20 of the video.

A big thank you goes out to Ron Watson of the BNTVA for supplying the lists of those to be remembered and to Don James of the NCCF who has tended the memorial for many years.



Benefits for BNTVA Members

Are you a member of the BNTVA? If so we have a range of new options and initiatives that can get you specialist help from the NCCF Care Wellbeing and Inclusion Fund.

The BNTVA are the only other recognised UK Charity working within the British Nuclear Community. With the change of leadership a great opportunity for the two organisations to work closer for the benefit of the community has been created. It is with great pleasure that we announce the first fruits of this new beginning.

The Benefits

1

Expedited CWI Fund Access for BNTVA Members

The BNTVA and NCCF have agreed a data validation conduit which will enable applicants for help from the Care Wellbeing and Inclusion Fund to submit their application without the need to obtain additional supporting evidence.

Currently the NCCF has to validate an applicants Entitlement, Identity and Residence before the application can be placed before the Grant Panel. Under the new scheme any BNTVA member will simply have to provide their membership number. This will be sent to the BNTVA who will confirm the required details.

2

CWI Fund Training for BNTVA Volunteers

The BNTVA are undertaking a significant upskilling of their BNTVA Welfare Service, This will provide a much needed support service to the British Nuclear Survivor Community and the NCCF has agreed to provide training and guidance to the volunteers to enable them to help and encourage people to apply for support from the NCCF. This training will be rolled out over the coming months.

3

BNTVA Welfare Service to Supply Supplemental Information for CWI Fund Applications

Along with the training the NCCF will be providing to the BNTVA Welfare Service we will also be developing a protocol to allow volunteers who obtain the consent of community members wanting support from the CWI Fund to be able to submit supplemental information relating to their situation and needs directly to the application process. This is already a feature of the CWI Fund interactions with the SSAFA charity Case Workers and we look forward to the additional benefit it will bring to applicants from the BNTVA.



The Nuclear Community
Charity Fund

Making that difference



Education, Education, Education!

Education is one of the core functions of the NCCF and our involvement with the creation of the Centre for the Health Effects of Radiological and Chemical Agents (CHRC) has allowed us to exceed our initial aspirations.

Besides all the research and articles published in Exposure Magazine the CHRC have been busy developing a series of education projects, from articles and features on their website to engagement in the STEM process a wealth of educational knowledge is now available.

If you have not already visited the CHRC website www.chrc4veterans.uk we would urge you to make the trip! Within the sites Knowledge Hub is a wealth of information specifically developed to clarify and explain the science and research associated with our community experiences. The interactive section on basic information is particularly informative.

The Knowledge Hub is a unique asset which carries a comprehensive, fact based resource accessible to anyone.

In education **STEM** is an acronym which stands for the disciplines of **Science, Technology, Engineering, and Mathematics**. STEM education is the principle of learning STEM subjects through an integrated approach offering hands-on and relevant learning experiences.

In the UK the STEM vision is to achieve world-leading education for all young people across the nation. Supported by a unique partnership of Government, charitable trusts and employers, they are dedicated to raising young people's engagement and achievement in STEM subjects and careers.

STEM Impact:

- Young people from all backgrounds have the aspiration, knowledge and skills to thrive, with more progressing into STEM-related careers
- Employers can gain access to knowledgeable, talented people with strong STEM skills, increasing productivity, competitiveness and diversity
- Teachers of STEM subjects continually develop their STEM knowledge and experience, maximising their impact and own job satisfaction
- Families and communities recognise the value of STEM to young people, encouraging and supporting them in STEM-related studies and careers.

STEM Achievement:

- Reach - 100% of UK Secondary Schools, Post 16 and FE Colleges and 75% of Primary Schools
- Inspire - Over 2 million young people benefit from the 20,000 Teachers taking part in the expert led, professional learning programmes every year
- Impact - 90% of young people increase their engagement in STEM after working with STEM Ambassadors.

The CHRC and NCCF are working on the development of a new STEM activity and we will bring you more on this exciting project during 2021

The CHRC Annual Report can be viewed at <https://chrc4veterans.uk/home/about/chrc-annual-reports/>



Managing Finances in the NCCF

Running a charity is a serious undertaking. Every trustee is legally liable for every single penny that passes through the charity.

At the NCCF we made financial controls our priority from day one. Our business partners developed a comprehensive system of checks and balances that ensure every transaction is tracked, authorised, scrutinised and recorded along with its provenance with full records which are maintained so that they can be recalled and audited at anytime.

This year we appointed the firm of Newby Castleman as our auditors.

Newby Castleman are Charity Specialists and they currently act for a diverse mix of clients including: Unincorporated Charities, Incorporated Charities, Charitable Incorporated Organisations and Community Interests Companies. Their extensive knowledge of the sector and forward thinking advice means that they provide help and advice with all the financial aspects of running such organisations, as well as assisting with the ever increasing demands on charities and not for profit organisations.

We are pleased to confirm that our financial control systems have been found to be fully compliant with charity legislation and the best practises of financial management with a robust anti fraud policy and financial abuse monitoring system in place, we have every confidence that the monies we manage and spend are completely secure.

When considering applications on the Care Wellbeing and Inclusion Fund, particular focus is made to ensure the support offered addresses an element of suffering that could not be alleviated by any other means, that the ultimate expenditure is essential, within the organisations charitable purpose and is within the need to address the public good.

When paying invoices our system uses an auditable control form which records all details of the transaction and links to records documenting the decisions taken regarding the expenditure and the actual invoice documentation. This is all compiled and presented in a secure electronic format within the charity by our Office service provider.

The financial movement package is then presented to the initial approver who after checking, certifies approval and passes it to the Treasurer for review and initial payment action, This is then referred to a third Trustee, who acting as the treasurers deputy again reviews the transaction and conducts the secondary approval with the bank. At any stage the people involved in the financial process can raise questions and halt the payment until they are satisfied the expenditure is genuine and correct.

This system has already identified and prevented a major fraud attempt against one of our subcontractors and numerous incidents of suppliers misquoting bank details.

In addition to this robust multi-validation system, financial responsibility extends further into the charity. The NCCF maintains a register of 'Related Party Transactions' and a list of all related parties our officials are involved with. This even includes relatives serving as trustees. Subject to regular review a risk assessment is conducted which identifies all these related parties and advocates practical policies and practises to ensure that the risk of potentially inappropriate financial transactions is negated.

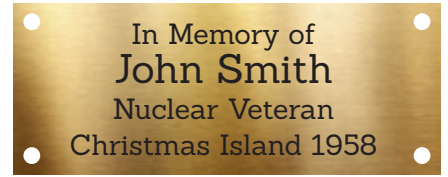


As an example: two related trustees may serve on a grant panel considering an application but only where the panel numbers at least three other unrelated trustees and no related trustees may operate in the financial approval chain if their relative is already in the chain.

We often read of horror stories where charities are found to have been paying out monies without any checks and balances, thousands of pounds paid through to relatives or even laundered through a trustees own business coffers! Thankfully because of the robust controls implemented at the NCCF from day one this is a position our charity will never experience.

The NCCF Audited Accounts will be presented to the Charity Commission by the end of January 2021 and made available for public viewing on their website shortly after.

NMA Memorial Plaque



An update on the plaques for the memorial at the National Memorial Arboretum.

In the Autumn of 2019 we announced that we would be taking orders for brass plaques to be installed onto the back of the memorial stones at the NMA at Alrewas.

All of the plaques ordered have been with the NCCF stonemason since the start of the first lockdown in March 2020. Due partly to the lockdown and to unforeseen circumstances we have been unable to finish the installation.

We are now pleased to announce that we have now been given the go-ahead from the NMA to get the ordered plaques installed on the memorial. Arrangements will be made for the stonemason to visit the site as soon as possible to complete the task.

We regret to inform you that the NCCF will no longer be able to take any more orders of plaques for the memorial.

The NMA are no longer accepting plaques for individual service personnel for installation onto memorials, but they do offer the the chance to purchase dedicated individual plaques for placement on benches or trees nearby. For this service please contact the NMA directly.

As soon as we have a completion date for the installation we will make an announcement.

Fancy a Challenge?

Have you got what it takes to become a trustee? The NCCF are recruiting individuals who would like to join our expanding team of Trustees, we are particularly eager to hear from the offspring of Nuclear Veterans.

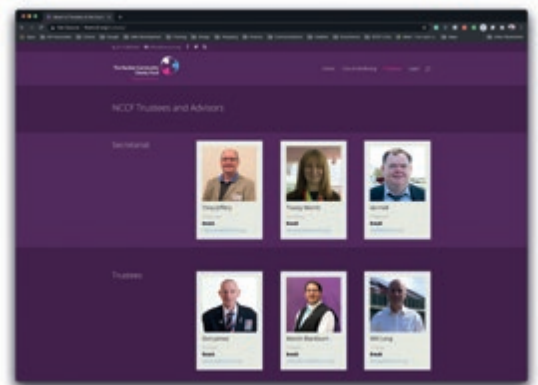
The time commitment is around five hours a month and all expenses are paid.

Trustees are equipped with a dedicated Chromebook to access our secure systems, all they need is a broadband connection. It doesn't matter where you live, the NCCF only has one physical meeting a year, almost all the work is done on-line via email, forum and video conferencing.

We have an evolving programme of personal development for trustees initially equipping them with the knowledge, suits and understanding to discharge their legal duties and extending to enhance skills in team management, fundraising, communication, needs assessment and grant management.

So if you are a rising star looking to develop and evidence personal development or a safe pair of hands looking to becoming part of caring for their community the NCCF has a place for you.

If you are interested in becoming involved why not have a chat with one of our Trustees (see back page) or email: **editor@exposure.press** and we will put you in touch with the right people.



NCCF Motorchair Giveaway

Are you or a member of the British Nuclear Survivor Community you know in need of an electric wheelchair?

The NCCF are looking to gift a new Rascal Powered Wheelchair to a member of our community.

All you have to do is write to the editor of exposure magazine at: editor@exposure.press and tell us how much difference a chair like this would make to your life. We will pick the most deserving application and will arrange to have the chair delivered. Due to the high shipping costs the offer is only open to community members resident on the UK Mainland.

As with all assistance from the NCCF the beneficiaries remain anonymous unless they wish to share their story.



Rascal P327 XL Profile

The Rascal P327 XL is a heavy-duty 4 mph Mid-Wheel Drive outdoor/indoor powerchair, with durable full suspension and comfortable cushioned Captain's seat mounted on a larger base.

The P327 XL delivers great performance with its 55Ah batteries contributing to its excellent range, outstanding manoeuvrability and a smooth ride.

Main features:

- Flip-up fully adjustable armrests
- Full suspension
- Swing-away joystick
- Convenient joystick charging port
- Adjustable Captain's seat
- Flip-up footplate

P327 XL Specification

Type Class	B / 2
Overall length	112cm / 44"
Overall width	69cm / 27"
Floor to seat height	54-56.5cm (min-max)
Seat width	52cm / 20.5"
Seat depth	45.7cm / 18"
Maximum carrying capacity	204kgs / 32 stone
Battery voltage and capacity	12V / 55Ah x 2
Maximum speed	6.4km/h / 4mph
Ground clearance	5cm / 2"
Maximum kerb height	5cm / 2"
Range* - standard battery pack	up to 32km / 20 miles
The maximum safe slope	6°
Turn-around width	120cm / 4'
Colour	Red

Important Information - Please Note

The powerchair is very heavy and weighs 105kg without a passenger which is about 16 Stone, It is also very powerful and could cause damage to persons or property if driven erratically. We recommend it be used outdoors and be kept in a secure location such as a garage or a shed, in close proximity to an electrical point for charging. If the only access to your property is via steps or you have nowhere secure to store the chair we would advise against applying.

New Veterans Railcard Launched

In November the Government launched the New Veterans Railcard that gives military veterans up to a third off the cost of train travel. Read how the new scheme works and how you can apply for one.

The card is now on sale supporting UK Veterans and their families with discounted rail fares valid for travel from 5 November 2020.

The Benefits

The Veterans Railcard is on sale for an introductory price of £21 for one year, until the 31st of March 2021, which saves £9 off the normal retail price of £30. A 3-year Railcard is also available for an introductory price of just £61, if purchased before 31st March 2021, the normal retail price is £70. The card offers savings of 1/3 on rail travel, with the bonus of being able to nominate a companion to get 1/3 off when travelling with you and up to 4 children travelling with you get 60% off.

The Railcard can be used to get discounts on rail travel in England, Wales and Scotland.

Eligibility

If you have served for at least one day or more in Her Majesty's Armed Forces (Regular or Reserve). Merchant Mariners who have seen duty on legally defined military operations are also eligible.

Proof of service documentation will be required and ranges from, a copy of either your military identification card (MOD Form 90), Veterans Recognition (ID) Card, Veterans UK Status card, Certificate of Service or Certificate of Discharge

Defence Discount Service cards are also accepted if they display the wording 'HM Armed Forces Veteran'.

Compensation certificates, payment advice slips and war pension documentation are also valid.



If you are unsure of your eligibility you can visit:

<https://www.veterans-railcard.co.uk/eligibility-documents/>

How to Buy a card

Online

You can save yourself time by buying your Veterans Railcard online. The only things you'll need are:

- Evidence of your eligibility as a veteran
- A good quality digital passport-style photo ready to upload
- A debit or credit card.

What happens next?

Digital Railcard: if you opt for a digital Railcard, we'll send you a download code once your application has been approved (which can take up to 5 working days) and once you download the Railcard app and upload the card onto your phone, you can start using it straight away.

Physical Railcard: they aim to dispatch your Railcard within one working day of it being approved (which can take up to 5 working days), but it's probably best to allow up to five working days for your Railcard to arrive.

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In this article we discuss cancer as a health effect which may arise as a consequence of exposure to ionising radiation

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In the last edition, we outlined some of the work the University had been doing to design and implement new covid-secure buildings and working practices. Getting all of our laboratory-based facilities open and research moving again was a key goal for everyone.

So, I am very pleased to let you know that as of October our re-start began and as of now, we are back-up to speed with our processing and analysis work. Because of the measures put in place, we have not been affected by the second lockdown in any way and given the welcome news about the roll out of vaccines, we do not anticipate any further restrictions moving forward.

Clearly the timeline for all of our projects has been affected and this includes our 'Genetic and Cytogenetic' study. As a brief reminder, at the time of closure, we had already received over 80% of the samples for this study, and we had a small number of families who were in the process of providing us with blood samples. It is heartening to report that even in the current crisis, our volunteers and their GP practices have been supporting us by completing the process of providing us with their samples. We expect this to continue through the early part of next year and, are very appreciative of everyone's efforts involved.

Indeed, our progress on all CHRCs projects is continuing in as timely a manner as possible with expectations for submissions for peer-review publications from all of the projects on the horizon. You can see more details of our projects, their progress and how they relate to each other by reading our 3rd Annual Report <https://chrc4veterans.uk/wp-content/uploads/2020/12/CHRC-3rd-Annual-Report.pdf>.



Brunel University London

Within this Report, we also outline some of our work underway with Brunel Universities STEM Centre and how we are sharing information on veterans of the nuclear testing programme and CHRCs research with school children through educational activities.

In this edition of Exposure, we continue our series of articles which encompass 'Radiation and Health' with Part 1 of 'Ionising Radiation and Cancer'. In this two-part article we begin by introducing the prevalence of cancer, the survival rates and the common causes of this medical condition. We then cover the hallmarks of cancer (the traits of a cancer cell) and the different biological mechanisms for carcinogenesis (how cancer arises) that have been proposed.

I would also like to highlight that our 'Basic Information' series is now available as flip-books in addition to the interactive versions.

Both are available through our Knowledge Hub page <https://chrc4veterans.uk/knowledge-hub/knowledge-hub-basic-facts/> on our website and also available to order as hard copies.

I would like to finish by wishing everyone a very safe, if quiet, Christmas and New Year. We very much hope that 2021 will bring change for the better.

CHRC staff remain working and are contactable via email at CHRC@brunel.ac.uk. During this period there may be a delay in replying. But please get in touch if you have any queries and please all keep well. Christmas and New Year closure dates will be from, Monday 21st December until Monday 4th January 2021.

Dr Rhona Anderson, Director, CHRC

Ionising Radiation and Cancer: Part 1

In this article we discuss cancer as a health effect which may arise as a consequence of exposure to ionising radiation. In Part 1 of this two-part article we begin by introducing the prevalence of cancer, the survival rates and the common causes of this medical condition. We then cover the hallmarks of cancer (the traits of a cancer cell) and the different biological mechanisms for carcinogenesis (how cancer arises) that have been proposed.

In Part 2 (in a future issue of Exposure) we will move on to discuss the findings of researchers who have investigated the occurrence of radiation-induced cancers in defined groups of people.

Cancer

Cancer refers to a group of over 200 diseases which can affect many different parts of the body and which involve the abnormal growth and spread of cells. Globally cancer is the second leading cause of death after cardiovascular disease and there were an estimated 9.6 million cancer death worldwide in 2018¹. In the UK, it is estimated that one in two people born after 1960 will be diagnosed with cancer at some point in their lives². Figure 1 shows the most common types of cancer that have been diagnosed in both men and women in England³.

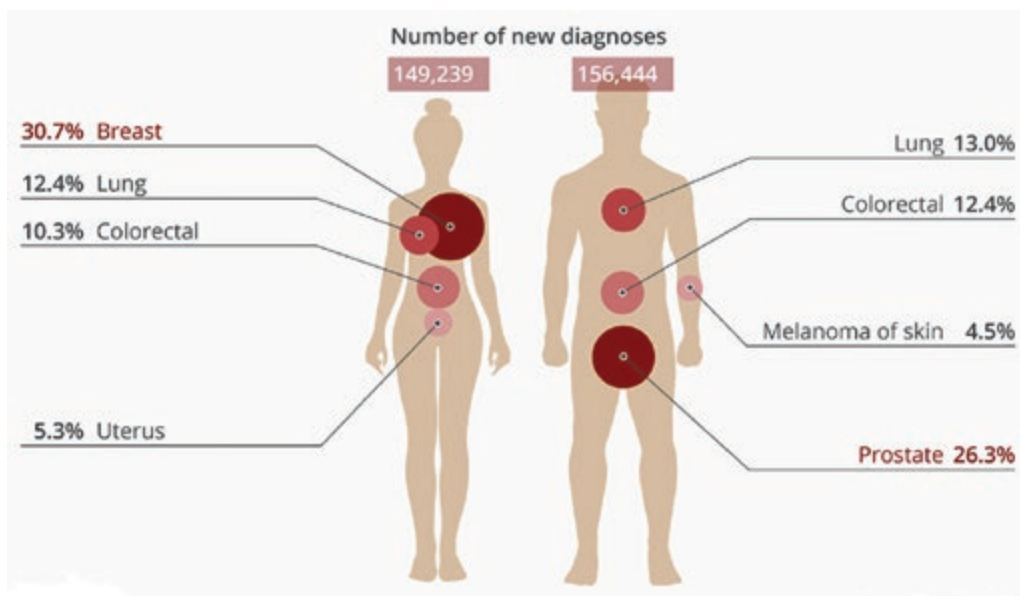


Figure 1. New Cancer Diagnoses, England, 2017 (Office for National Statistics).

Cancer survival rates have improved and survival in the UK has doubled in the last 40 years with half of those diagnosed living for ten years or more². The use of radiation, in the diagnosis (e.g. x-rays) and in the treatment (radiotherapy), has been a critical tool in this advancement. The number of survivors also depends upon the type of cancer that people have, e.g. 84% of men now survive prostate cancer and 56% of men survive bowel cancer². Figure 2 shows the survival rates for the most common cancers in women in England and Wales².

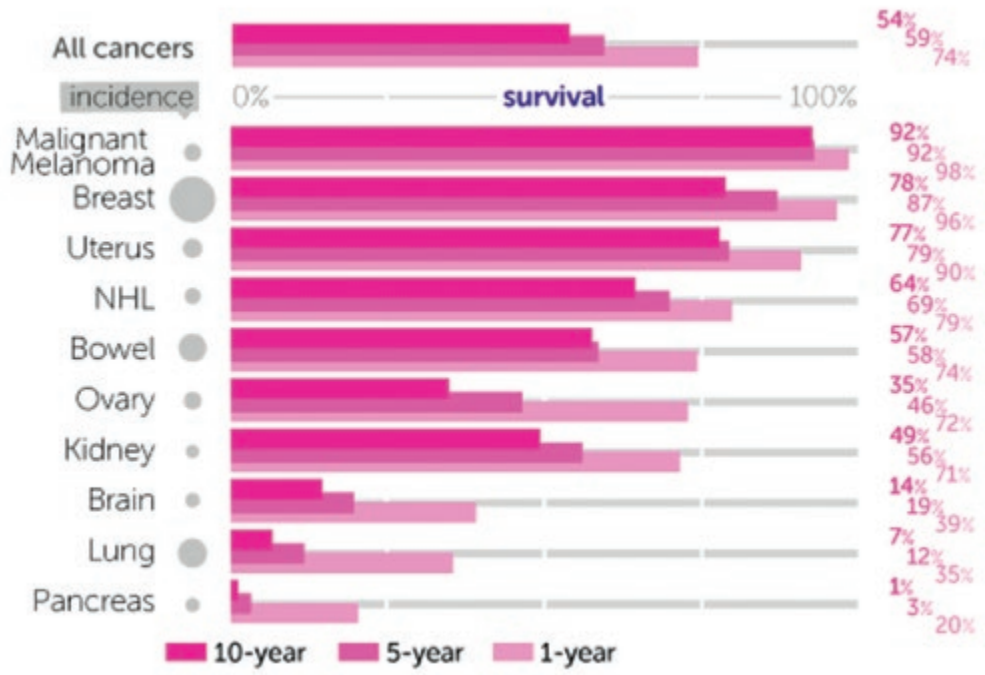


Figure 2. Survival for the 10 most common cancers in women, England and Wales (Cancer Research UK).

The major causes of cancer are tobacco use and being overweight, having a poor diet and not taking enough exercise⁴. Ionising radiation is associated with less than 2% of cancers⁵ (Figure 3).

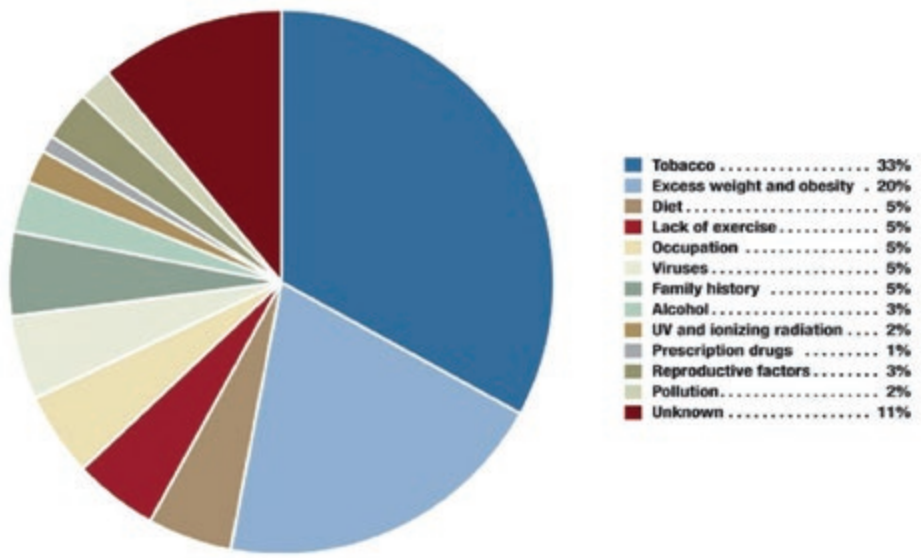


Figure 3. Causes of Cancer (American Association of Cancer Research).

Carcinogenesis

The process by which a normal, healthy cell becomes a cancer cell, known as carcinogenesis, is complex and much remains to be known. It is understood by scientists that a cell must undergo multiple mutations (alterations to DNA) to become cancerous. There are at least 80 gene mutations associated with cancer, including about 12 associated with driving the progression of this disease.

The scientists, Hanahan and Weinberg, have observed that a cancer cell can be described using a small number of traits, produced by mutations, which they have called the “Hallmarks of Cancer” (Figure 4)^{6,7}. These traits refer to the ability of cancer cells to increase in number, to grow rapidly and to spread to other parts of the body.

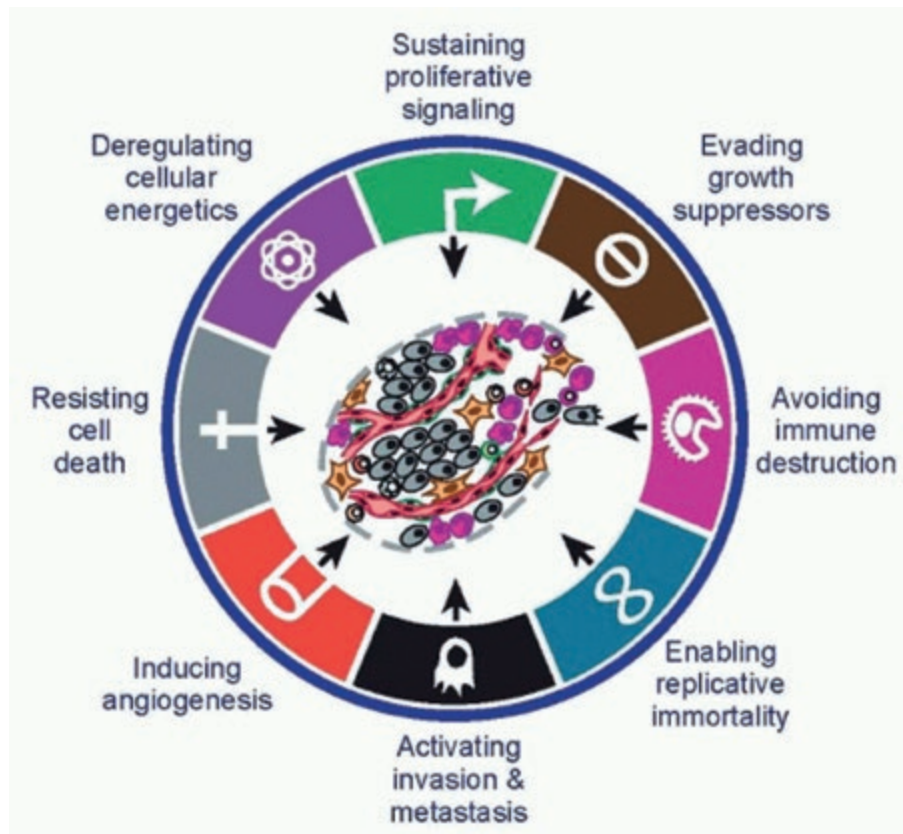


Figure 4. Hallmarks of Cancer

Hallmarks of Cancer

A cancer cell:

- Controls its own growth (sustaining proliferative signalling).
- Will not accept instructions to stop growing (evading growth suppressors).
- Evades being detected and killed by the immune system (avoiding immune destruction).
- Keeps making copies of itself (enabling replicative immortality).
- Invades other tissues in the body (activating invasion and metastasis).
- Creates blood vessels to provide nutrition for tumours (inducing angiogenesis).
- Will not order its own death (resisting cell death).
- Changes metabolism to get energy to grow fast (deregulating cellular energetics).

Mutations to our DNA occur throughout our lifetime and the causes of them can arise inside our bodies from normal physiological processes (endogenous) or from the environment due to exposure to different agents such as chemicals and viruses (exogenous). Ionising radiation is another example of an exogenous agent which can cause damage to our DNA (Figure 5).

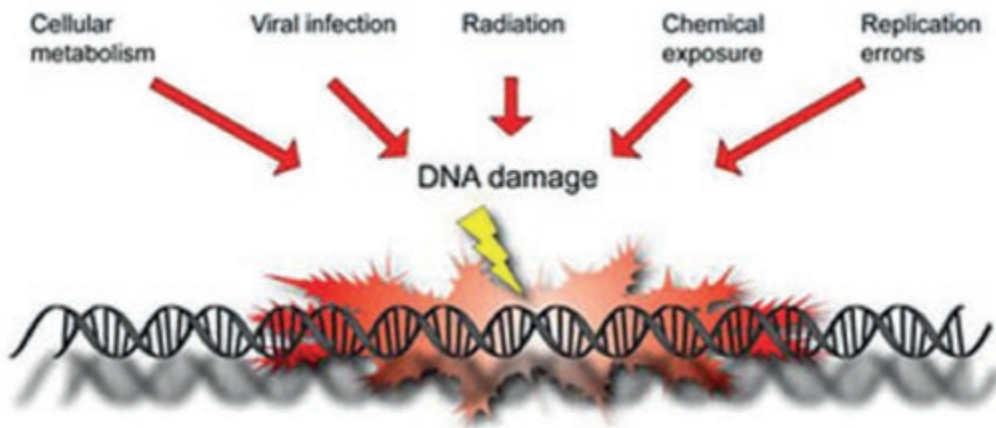


Figure 5. Causes of DNA Mutations

It is extremely unlikely however that a single incident of DNA damage will progress to a mutation. There are alternative responses which cells are very efficient in, such as DNA damage repair and, controlled cell death (Figure 6).

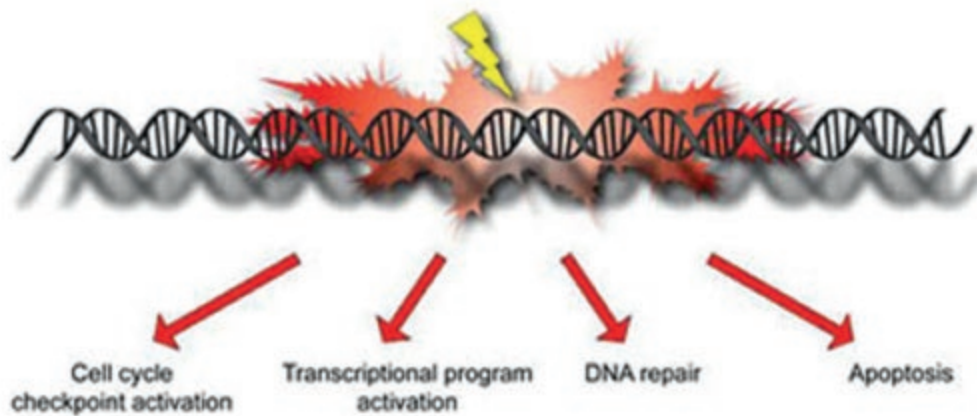
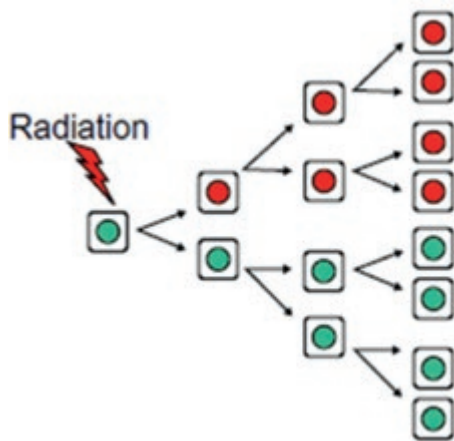


Figure 6. Responses to DNA damage

Furthermore, many DNA mutations which do arise will have no adverse impact on health at all; indeed, some take place as part of the normal process of evolution.

According to the mechanism of carcinogenesis accepted by most scientists, if a cell does acquire a mutation, then all cells which are descended from this will have the same mutation (Figure 7). So, for instance, in the case of prostate cancer, then all newly formed prostate cells from this mutated cell will carry the same mutation. In addition, this mechanism states that cells may go on to gain further mutations before a healthy cell may eventually become cancerous.

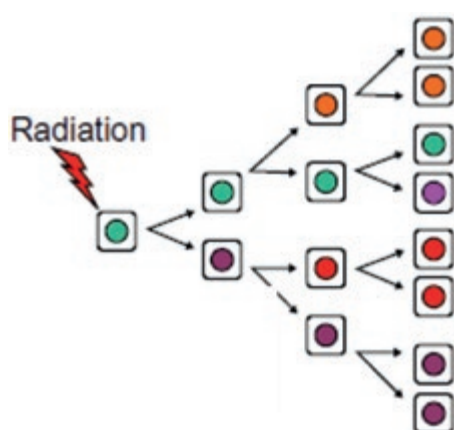


- Agent e.g. ionising radiation induces DNA damage
- DNA mutations / chromosome aberrations (red) may arise
- Clonal cell daughters will show same mutation

Figure 7. Classic theory for radiation-induced carcinogenesis.

Genomic instability

Hanahan and Weinberg (Figure 4) argue that a cell must have an enabling characteristic known as genomic instability in order to acquire all of the mutations which are associated with the Hallmarks of Cancer^{6,7}. Genomic instability refers to a phenomenon where a cell contains multiple mutations and has an increased tendency to afford daughter cells containing further genetic alterations. In other words, the cell has lost both the ability to sense that its DNA has been damaged and, the ability to respond to that damage. This means that the genomes of cancer cells can evolve and acquire many different genetic changes.



- Agent e.g. ionising radiation induces DNA damage
- Surviving cells may (purple) or may not (green) contain DNA mutations / chromosome aberrations
- Clonal cell daughters acquire new non-clonal mutations (e.g. orange, pink and red)

Figure 8. Radiation-induced genomic instability.

Genomic instability has been proposed as a possible mechanism for radiation-induced carcinogenesis^{9,10}. For example, it has been observed, that genomic instability can arise in otherwise normal cells as a consequence of past exposure to radiation (Figure 8). The mechanism of genomic instability is not fully known and is currently being researched.

Overall, the process beginning with DNA damage in a cell and ending with an individual having cancer is a complex multi-step series of events often taking place over years. Only one aspect of this is summarised here. Cancer is described as a stochastic effect of exposure to ionising radiation meaning it may or may not arise as a consequence of exposure⁸. The likelihood (or risk) for such an outcome will increase as the radiation dose to the individual increases (figure 9).

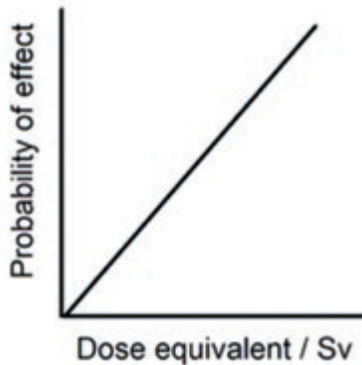


Figure 9. An increased dose (amount) of radiation received results in an increase in risk.

Summary

In this article we have provided information about the prevalence of cancer, the survival rates and the common causes of this medical condition. We have discussed the Hallmarks of Cancer (the essential traits of a cancer cell) and their relationship to DNA mutation, genomic instability and, radiation carcinogenesis.

We at the CHRC do hope you have found this article informative and references are included for further reading. Please also refer to the Basic Information series which can be found on the CHRC website: <https://chrc4veterans.uk/knowledge-hub-basic-facts/>.

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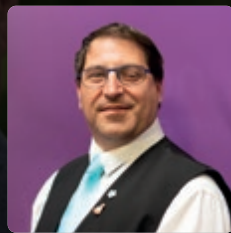
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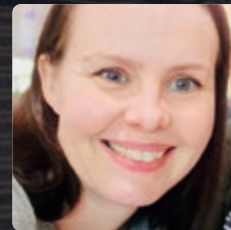
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