

## Love Affair of a Different Kind

by G3KAU

Like Derek G3GRO, I have also come into contact with the BC453 receiver early after the war and used it as a "Q Fiver" IF strip, to improve the selectivity of my mediocre main receiver. It sure worked wonders!

But this is a story concerning the use of this excellent, small and for its time, relatively light weight receiver in the environment it was designed for, in an aircraft.

Having returned to the UK after eleven months of POW captivity in Germany, the war in Europe being over, my first action was to get back to flying. There were thousands of native Brits with the same idea of course, and most of them had hours of multi engine aircraft experience while I was an ex fighter pilot, Spitfire and Mustang were the largest beasts I was in the sole command of. My future aviation prospects were not very rosy. However before I was demobbed The RAF in its wisdom attached me to the Metropolitan Communication Squadron based at Hendon. There I flew several types of light aircraft on communication flights and calibrating various navigational aids. This recent flying experience allowed me to take the test to acquire a civilian commercial pilots licence, the coveted "B" licence. Then came the demob and I was launched into the turmoil of civilian life.

There was no hope of a charter nor airline pilots job with my single engine experience but I gravitated towards Blackpool, Squires Gate airport where a friend of mine Jan Bartelski, ex Coastal Command, was temporarily a chief pilot of a local air charter company and flying school. (He later flew for KLM and became the president of the International Federation of Airline Pilots Associations and his son Conrad became a member of the British Olympic Skiing team). I did some occasional flying for his outfit and on the quiet Jan converted me to twin engine aircraft, enabling me to get my licence endorsed for multi engine aircraft. Eventually Jan moved to Holland and the charter company withered. Fortunately for me Jan introduced me to a trio of his flying pupils before he left. One of the trio was an owner of an engineering factory, one was a consultant surgeon and one a managing director of an ICI Alkali Division Factory. These Three Musketeers just about qualified for their

private pilots licences and combined to buy a light aircraft, an Auster. They needed some more navigational and flying experience and I often accompanied them in their ever more audacious cross country flights. Before long they decided to buy a bigger, higher performance aircraft. There were no Cessnas in those post war days, but the RAF released some communication aircraft on surplus market, one type was a Percival Proctor. This was a development of an earlier racer aircraft. A commodious, single engine, low wing four seater with a 210HP Gipsy Queen engine, constant speed propeller (something like a continuously variable gearbox in a car which would keep the engine rpm constant regardless of load or the amount of throttle applied).

The Proctor cruised at 150mph and had a range of 800miles with four passengers and a good load of baggage. It was a very good aircraft even by today's standards but it was quite a bit more complicated than the simple and forgiving Auster and needed careful handling. The Three Musketeers had a demonstration flight and decided to buy the Proctor. The factory owner Musketeer proposed that he would employ me in the drawing office and I would give the trio further flying tuition and fly the aircraft on business trips.

All went well at first but very soon the Musketeers became more and more ambitious in their flying. The business trips became more frequent and longer in ever worsening weather and later into the night. We flew to Dublin, Paris, Geneva, Madrid, Marseilles, Gibraltar, Hamburg, Copenhagen, Rome in general all over Europe. We had no radio of any kind and navigation was all by map reading or "dead reckoning".

Air traffic control was very lax in those days and almost non-existent as far as private aircraft were concerned. Eventually it all became very unhealthy! Imagine letting down through the clouds at night hoping that you were near Le Bourget and praying that the Eiffel tower was not the first thing you would see in front of you at 300feet while ambling at 110 mph. Flying rapidly started losing its charm, I was frequently sweating blood while wearing a fixed smile of confidence on my face for the benefit of my boss/passenger.

You may well ask why I persevered in this dicey

foolishness. I had to eat and needed a roof over my head. The only jobs the Ministry of Labour offered was coal mining or labouring at Barrow in Furness docks. My boss was strangely reluctant to spend any more money on the radio equipment for the aircraft

Then I had a brainwave! Americans installed a network of radio-ranges all over Europe. These were medium frequency transmitters sited near important airports and traffic hubs. Each of them transmitted four beams in a form of a cross. When an aircraft was on the centre line of a beam a continuous tone was heard, on one side of the beam letter "A" was heard in Morse, on the other side of the beam letter "N" was heard, thus one could follow the centre line just listening on a simple receiver. When passing overhead the radio-range the signal strength rapidly increased then faded to nothing (cone of silence) and then reappeared so giving exact fix. The beams of adjoining radio-ranges were interlaced, one leg of Burton Wood range near Manchester pointed north towards Prestwick eventually intersecting the southern leg of the Prestwick range. The southern leg of Burton Wood range pointed towards London and eventually intersected the Bovingdon range leg. The eastern leg of Burton Wood range pointed towards Ottringham on the East Coast and eventually linked with Amsterdam range and so on all over Europe. All one needed for reasonable navigation was a simple medium wave receiver! The BC453! But that was not all. During the war Germany installed a medium wave navigational network called Consol to facilitate navigation for the U Boats. This consisted of several high power transmitters one in Norway at Stavanger, one in Bushmills in Eire, one in France at Ploneis, one in Spain in Lugo one in Seville and some others. Each station transmitted a pattern of curves similar to Decca. The curves were superimposed on navigational charts. The patterns consisted of dots or dashes. On tuning to a station you would hear the call sign followed by a long dash then you would hear a series of dots or short dashes at one second intervals. The total number of which was always 60. If the count started with dots you were in a dot sector, if it started with dashes you were in the dash sector. So to recap you tune Stavanger, you hear its call sign followed by a long dash then you hear dots and start counting them. Lets say

you hear 10 dots. The dots start clear but gradually a background appears and eventually you just hear a continuous tone. After a few seconds you begin to hear dashes superimposed on the tone and you count them. Lets say you counted 44 dashes when the signal stops. The total number of dots and dashes you heard is  $10+44=54$ . But we know that the total sum of dots and dashes is always 60. We have missed 6 characters during the transition from dots to dashes (this depends on your hearing and the noise).

We can safely assume that we have missed 3 dots and 3 dashes. Therefore we look on the map for a line from Stavanger labelled 13 dots. You then tune one other convenient station lets say Bushmills and repeat the sequence. Lets say you count 30 dashes followed by 20 dots. The total is 50 characters so you missed 10 characters, that is 5 dashes and 5 dots. Therefore corrected count is 35 dashes. You look for a line from Bushmills labelled 35 dashes (remember this time the count started with dashes).

Your position at the time of Bushmills count was the intersection of the two lines. It sounds complicated written down but in fact it was quite simple and took less than two minutes. The accuracy depending on the angle of cut of the two position lines and the distance from the transmitters was about one to three miles. All that was needed again was a simple MF receiver. The BC453! That was when I stopped sweating blood and fell in love with the BC453. With practice and a bit of cunning I used to be able to break cloud over the destination airfield.

Having demonstrated the advantage of radio the purse strings were soon loosened and a 4channel VHF transmitter was acquired (a surplus ex American Air force SCR522 home modified to 16 channels). Followed by a variant of the BC453 with a loop antenna input and followed by version of command receiver designed for the SBA (standard beam approach) allowing blind landings in very bad weather. The last addition was a small American two-valve fan marker receiver, which worked with the SBA and the radio range beams.

With this lot and a fixed frame aerial inside the back of the wooden fuselage (all clandestine, not ARB approved) the old Proctor took us all

the way from Blackpool to Durban in South  
Africa and back without getting lost!

73 de G3KAU