

## **War Service: July 1941 - August 1945**

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#### **Petersham**

After graduation I went immediately with three or four others into a short crash course in the Physics Department of the College on electromagnetic wave theory and various allied topics - a course which proved to have virtually no relevance at all for what we did subsequently in the wireless and radiolocation courses at Petersham, Surrey. I joined Group 16 of these courses at the end of July, by no means the only biologist to have been scooped up during C P Snow's university tours. E W Yemm, later to become Professor of Botany in Bristol, had been on a preceding course, and had astonished his mentors, and I suppose himself, by passing out first in his group, sailing ahead of physical science graduates from various universities.

The Petersham establishment was a curious kind of hybrid. We were civilians, theoretically under the Ministry of Supply; but the school was under military command, with a mixture of civilian and army instructors (some of whom were difficult of classification; thus we had lectures from 2nd Lieutenant Professor Nevill Mott). I found the courses highly congenial. The theoretical work was mostly undemanding for anyone with a background in amateur radio, and the practical work I found enjoyable.

Much of the programme concerned anti-aircraft gunlaying radiolocation (later radar) equipment, notably GL Mk1, designed and built by Cossor Radio. Each set comprised two cabins, one housing the transmitter, the other the receiver. Power was provided by a large Lister generator of great reliability. The sets we worked on were deployed in Richmond Park. The pulse-generating transmitter was based on a squegging oscillator, the theory of which was explained to us by a seconded physics lecturer, whose presentation provided in itself a fine example of squegging - one could rarely catch the end of his sentences. The receiver was in a rotating cabin, with a Lorenz-type aerial system for azimuth determination. The beams were established by dipoles held on massive arms on each side of the cabin, the required directional switching being achieved by a troublesome little device, the switching pre-amplifier (SPA), which also controlled the CRT presentation. The aerial array intended for elevation determination was held on a tall central tower. The function of the system depended on the use of ground reflection,

and in the operationally deployed sets this required a level site. To achieve this the receiver cabin was surrounded by a huge, carefully levelled area of wire-netting - the 'mat' - borne on wooden posts. Monkey-like agility was required to get under the mat, crawl across to the receiver, edge through the trap door, into the cabin and up the various parts of the aerial system when this was required.

Towards the end of the course we were called to a special meeting under tight security, and were introduced to the magnetron, the radically new device for generating centimetric waves invented and by Randall and Boot at Birmingham University and developed by TRE with the electrical and electronics firm, British Thompson-Houston. We were allowed to handle a prototype, but none of us came near to understanding the theory of it (indeed it seemed pretty clear that the lecturer himself was no expert). But we did dimly realise that the magnetron had the potential of being a war-winning invention as we began to see what it could mean for the future development of radar. No-one had any conception then that it was to become one of the key electronic devices of the second half of the 20th century, with applications from satellite communication to cooking.

During the course I came to realise that there was no disadvantage in being a biologist, at least in the practical job of maintaining and repairing radar equipment. Learning the circuitry was the hardest part; but once one had this truly in hand, tracking down faults offered no particular problem - provided, that is, that one treated the matter as a sort of intellectual puzzle, and the instrument itself as a kind of awkward, self-willed organism. When Course 16 ended at the beginning of September I emulated Yemm and topped the final examination list.

My departure from Petersham was not without its minor crisis. We had some degree of choice in where we might be posted, and with such locations as Bradford and Barrow-in-Furness on the list I had no hesitation in putting my name down for Orkney: here surely was the opportunity of getting to know another idyllic Scottish archipelago. However, it so happened that I had a near namesake in another Group, and when the time for posting came we found the names had been interchanged. His choice had been Wolverhampton, and the idea of going to Orkney appalled him to much the same extent as I was dismayed at the prospect of ending up in the Black Country. We hastily sought an interview with the Commandant, and to our common relief achieved a transposition.