

## A Short History of the Military College of Science\*

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THE beginnings of the Military College of Science, like those of many of our most venerable institutions, are somewhat obscure, and the exact date at which it can properly be said to have come into existence is a difficult, not to say controversial, question; but for the student of its origins the most natural starting point is the year 1772, when two young gunners, Williams and Jardine, founded the Military Society of Woolwich for the theoretical, practical and experimental study of gunnery. Eight years later the Society was swept away by the exigencies of war, though fortunately it left behind a tradition which has never died. During the years of war in the early part of the nineteenth century the scientific ideal was preserved by military men like Mudge, Leake and Douglas, the last of whom in addition to being a General was an F.R.S. Shrapnel, Millar and others saw to it that war stores supplied had a quality and excellence which might have been taken as a model by any nation. After Waterloo came the usual post-war period of retrenchment, illuminated only by the genius of Sabine, who was not only elected F.R.S. at the comparatively early age of 30 but later became President. He kept alive the idea of the importance of science in the Army and very fortunately inspired some of his brother officers to think on the same lines.

In 1839 two of these officers, Eardley-Wilmot and Lefroy, proposed that an Institution should be set up for the study of science and modern languages, a proposal which found favour and led to the establishment in 1840 of the R.A. Institution. As the Institution had at first to be supported by voluntary contributions, its existence was very precarious, and it was not until 1850 that a Director of Artillery Studies was officially created and a grant of public money made to carry on the instruction of gunner officers. The Institution was able to provide lectures on various subjects, and by establishing relations with the instructional staff in the Royal Arsenal and with the Ordnance Select Committee, it provided the necessary facilities for any officer wishing to study his profession.

### Enter the Advanced Class

As the years passed it became evident that with the great changes in artillery, present and to come, the acquisition of the necessary scientific knowledge could not be left to voluntary studies. Consequently a proposal to establish a special course of instruction was boldly put forward by Lieut.-Colonel J. H. Lefroy

\*Much of the early history of the College has been taken from *Some Notes on the History of the Advanced Class 1866-1926* published in 1926. Reference has also been made to two papers by Colonel J. R. J. Jocelyn, "Two Regimental Institutions" and "Some Additional Notes and Corrigenda," published in the *Proceedings of the R.A. Institution*, Vol. XXXI, No. 4, and Vol. XXXII, No. 11.

(Secretary of the Ordnance Committee), Major C. F. Young (Director of Artillery Studies) and Major C. H. Owen (Professor of Artillery at the R.M.A.). The proposal was at first regarded with disfavour by the authorities, but was eventually adopted, and in 1864 the Advanced Class for Artillery Officers came into being (R.G.O. No. 492 of 2nd November, 1863). The course was of two years' duration and successful candidates were granted the p.a.c. award—'passed advanced class.' It was conducted under the control of the Director of Artillery Studies, who was given certain additions to his staff and allotted 'rather exiguous' accommodation in the R.A. Institution for the work. Instruction was given in Mathematics (including Mechanics and Hydrostatics), Physics, Chemistry, Metallurgy, 'the . . . Steam Engine, etc.,' and what were known as Professional Subjects, comprising Guns, Carriages, Small Arms etc. The Staff does not appear to have been very numerous and apparently consisted only of the following:

The Rev. F. Bashforth, B.D.	Professor of Applied Mathematics.
Major C. F. Young, R.A.	Director of Artillery Studies.
Capt. Brackenbury, R.A.	Assistant Director of Artillery Studies.

with the following as visiting lecturers:

Dr. J. Percy, F.R.S.	Lecturer in Metallurgy (Professor of Metallurgy, Royal School of Mines).
Professor T. M. Goodeve	Lecturer in Physics and Practical Mechanics.
Mr. C. L. Bloxam	Lecturer in Chemistry.

Apparently instruction in 'Professional Subjects' was given by the staff of the various departments in the Royal Arsenal.

Seven officers completed the first course, of whom six were recommended for the p.a.c.

#### Red Barracks, 1885—1939

The number of officers comprising each subsequent course seems to have been restricted to eight and their instruction continued in the R.A. Institution until 1885, when the Department was renamed the Artillery College and moved to a few rooms in Red Barracks, Woolwich. Red Barracks was originally built as a Royal Marine Hospital and occupies the site of a one-time country house known as Mount Pleasant, but the only relic of the old house which remained was a large mulberry tree and it died of old age in the early 'thirties.

At the same time the Advanced Class, which had till then been restricted to officers of the Royal Artillery, was thrown open to the whole Army and the Royal Marines, and from the 10th to 18th it was called the Senior Class, Artillery College. On more than one occasion before this the Class had come perilously near to extinction owing to lack of entrants for the preliminary examination, in which the inclusion of calculus was the stumbling-block. After the 4th Class it was agreed to drop the calculus but only one candidate presented himself for the 5th Class in 1872 and no examination was held. Two years later the course was again notified with better results, there being nine candidates for eight vacancies, but it still remained rather unpopular as changes in the Service threw open an

increasing number of appointments to officers who had passed the Firemaster's Course, also held at the College, which lasted one year instead of two and did not entail mathematics. This course, which started in 1860 and was designed for Inspectors of Warlike Stores, was abolished in 1899 and a new course, the Ordnance Course, open to the Army and Royal Marines, substituted for it; there was an entrance examination in elementary mathematics and sixteen vacancies were allotted. At the end of the first year eight officers might be selected to undergo a further year's study in the Advanced Class, this older name being substituted for that of Senior Class. This arrangement remained in force till 1921, except for a break from 1914 to 1917 when owing to World War I no courses were held. After 1921, the regulations were amended so that up to twenty officers, including those from the Dominions, could be selected for a preliminary six weeks' course in mathematics, and from these twelve could be chosen to form the Advanced Class proper, which lasted a further  $2\frac{1}{2}$  years. The six weeks' entrance course in mathematics was abolished in 1938 and replaced by an entrance examination in Mathematics, Physics and Chemistry held externally at convenient centres all over the world, the papers being set by the staff of the College.

The name 'Artillery College' was changed to 'Ordnance College' in 1899 but in 1921 'Artillery College' was restored. As, however, the College dealt with courses other than those for purely Artillery purposes, the more general name of 'Military College of Science' was introduced in 1927.

#### Growth of the Staff

During the latter part of the nineteenth and the early part of the twentieth centuries the permanent staff of the College had been gradually increasing. The number of Professorships had been raised to three by the creation of Professors of Chemistry (1900) and of Electricity (1903); and the 'professional' side had been catered for by the creation of sections dealing with Guns, Carriages, Ammunition, etc., and staffed by military instructors. A further development followed the conclusion of the 1914-18 war when a Professorship of Physics was instituted and that of Electricity widened to include Mechanical and Electrical Engineering. The number of other grades of academic staff was also increased, the total civilian staff reaching 22 by 1939; and, in general, the College ran more on the lines of a University. The whole of the accommodation in Red Barracks was taken over, and was occupied by the academic branches—Mathematics and Ballistics, Chemistry and Metallurgy, Physics, Mechanical and Electrical Engineering—together with one military branch dealing with Fire Control Instruments (originally Range Finding), while the other military branches were housed in the Arsenal. In addition, the College controlled large Workshops, situated in the Repository, which dealt mainly with the training of Artificers, R.A., and in 1926 a new branch dealing with M.T. was developed in the same place.

#### Dispersal and Reunion

At the outbreak of war in 1939 the College was evacuated very hurriedly from Woolwich to the old artillery ranges at Lydd, in Kent, where a new militia camp

was being constructed, which the College eventually occupied. (The full story of this emergency exodus must, however, be told elsewhere.) A new establishment came into being in which the 60-year-old branches were degraded into sections and placed under the control of the Chief Instructors instead of being directly under the Commandant. The Advanced Class as such was cancelled, although the two classes actually with the Collège completed their instruction on a much abridged syllabus. A new senior course, known as the Advanced Mechanical Course, which was to start in November, 1939, was also cancelled, so that for a time the main energies of the College were expended on special war courses for O.M.Es., I.O.Os., etc. In point of fact these courses actually became so numerous that the staff left could not cope with them, and many additional teachers had to be engaged.

With the fall of France, it was clear that Lydd would come into the front line, so that a second and even more rapid evacuation of the College was ordered at the end of May, 1940, and this time no single spot could be found to house it all. It therefore split into three parts: the first, dealing with Artillery Equipment, going to Stoke-on-Trent; the second, dealing with Fire Control Instruments, going to Bury; and the third, concerned with M.T., going to Rhyl. All three parts, however, remained under one Commandant with Headquarters at Stoke. (At a later stage in the war the M.T. portion was separated from the College and became the R.A.M.T. School.)

The unfortunate death of the Commandant in 1940 caused an unexpected hiatus, which was filled (though against the wishes of the staff) in 1941 by re-naming the Stoke portion the Artillery Equipment School and the Bury portion the Fire Control Instruments School, each 'school' having its independent local Commandant, though fortunately civilian administration was allowed to remain centralised at Stoke. This was followed in 1942 by the creation of the School of Tank Technology at Chobham, Surrey, because sufficient accommodation could not be found at Stoke as was originally intended.

The above mentioned divisions of the College persisted until May, 1946, when the first part of the reunion took place with the move of the Stoke and Bury portions to Shrivenham and a new organisation for the College came into being. Briefly, this divides the College into four Faculties (Mathematics and Physics, Chemistry, Mechanical Engineering, Instrument Technology), the one-time purely military sections being brought under academic control within the Faculties. In addition to the Commandant (now graded a Major-General) there is a Dean, who is regarded as head of the academic staff and is Chairman of the Board of Studies. There are also three Military Directors of Studies dealing with Weapons, Fighting Vehicles and Fire Direction, while the analogy with a University is strengthened by the inclusion of a Registrar in the establishment.

The College has received recognition by London University as an Institution in which students may suitably be prepared for its external degrees. The proximity to Oxford has already proved very beneficial to many of the staff and it is hoped that the ties with the oldest British University will be strengthened as time goes on.

### War-time Courses

It was noted earlier that the Advanced Classes as such came to an end in 1940, when the 57th completed its instruction. History, however, repeated itself, and just as it was found necessary to rectify this mistake by re-starting the Advanced Class in 1917 after its cancellation in 1914, so in 1941 it was decided to start a series of special war-time Advanced Classes which allowed for a high degree of specialisation. Eventually there were four such courses in operation, covering Ammunition and Explosives, Artillery Equipments, Fire Control Instruments and Tank Technology, while the old Small Arms Technical (Long) Course, which like all other senior courses had died in 1939, was revived in a modified form in 1940 and continued alongside of the Advanced Classes. These courses were considerably shorter than the peace-time course; but as most of the students already held University degrees in the basic subjects of their particular course it was possible to proceed more rapidly with instruction in the applied subjects, and frequently a higher standard was attained than in peace-time.

In addition to these Advanced Classes, the courses for O.M.Es., I.O.Os., etc., already mentioned were continuing, and to these must be added special courses for American and Polish officers and also for civilians employed by C.E.A.D., etc.

### The Guy Committee

Early in 1944 a strong Committee under the Chairmanship of Dr. H. L. Guy was set up by the Army Council to consider the future technical training of Army Officers, and it naturally dealt very extensively with the College. Although not all the recommendations of this Committee have yet been implemented, the most important of those which have, and the effect given to them, may be summarised as follows:

- (a) 'Officers of certain arms and corps such as R.E., R. Signals, R.E.M.E., etc., should receive a thorough professional training.'

Arrangements have been made by which officers leaving the R.M.A. Sandhurst will be able to study at the College for the London external degree of B.Sc. (Eng.) or B.Sc. (General), and courses are now in being for this purpose.

- (b) 'A relatively small, but increasing, number of officers of all arms and corps require a high standard of advanced technical and scientific education to fit them for technical staff employment.'

This has been met by the creation of the T.S.O. Course to replace the Advanced Class. Two courses (each of about 75 students) have been completed and two are at present running.

- (c) 'Refresher Courses for technical staff officers should be provided.'

Post-graduate courses are recognised as one of the functions of the College.

- (d) 'Adequate facilities should be given to the permanent staff to encourage independent research.'

These are developing slowly as laboratories are completed, and the College can already boast a substantial record of original papers.

Although the re-formation of the College at Shrivenham is, in a sense, complete, now that our share of the F.V. Wing has been reunited with us (the rest having taken on an independent existence as the S.T.T.), it will take some time for it to strike roots here comparable in depth with those it had managed to develop in the far less favourable soil of Woolwich. Once again, it has had to make do with buildings designed for quite other purposes. The adaptation has been surprisingly successful on the whole; but they remain a makeshift, and we shall continue to hope, however remote the prospect may seem at this moment, that the new academic buildings (for which plans exist) will materialize some day, and that when they do they will be worthy of the long and dignified tradition of the College.

## The Garden Party

THE College Garden Party was held on 10th June, 1949, and was well attended. It is a source of satisfaction that so many of those who have been associated with the College in the past came considerable distances for this function and were rewarded with perfect weather which placed the occasion against a memorable background.

This year, with perhaps an uncanny degree of weather forecasting, only one indoor attraction was staged, the Photographic Society's exhibition in Beckett Hall, which drew a continuous and admiring throng. Otherwise the guests circulated in the warmth of the afternoon and renewed innumerable acquaintances and friendships, this being the real object of the gathering. For many, it appeared that the insistent loudspeaker call to the departure buses came all too soon. The atmosphere was that traditionally associated with garden parties and was heightened by the music of the band of the 3rd Carabiniers (Prince of Wales's Dragoon Guards) and the restful but stimulating cricket match between the College Eleven and the Gloucestershire Gypsies.

One could detect among the older College graduates a feeling, not of envy so much as of rueful appreciation of the steady development of the College, but tinged with satisfaction that they had had a hand in laying the foundations over the years past upon which the present College is so soundly based in this pleasant place. This was the type of function which all enjoyed and appreciated. It did not attempt to combine popular instruction with hot summer weather—always rather an incongruity—and it is for consideration whether in fact the occasion of the garden party is a good time to publicise the scientific and technical facilities of the College. If this year's phenomenal long-range weather forecasting can be repeated, then here is the prototype of future parties. A gorgeous June afternoon, beautiful surroundings and, above all, a setting wholly fitting for those seductive creations with which the ladies charm us on these occasions. I for one remain to be convinced that the feminine visions that descend upon us annually are seen to real advantage against a background of, shall we say, an engine test bed, no matter how spotless the latter may be. And where would the garden party be without the ladies? The answer? It would not be.

INITIATOR.