

UNIVERSITY COURSE ON ENGINEERING PRODUCTION

by

LIEUTENANT COMMANDER (E) J. P. KINGCOME, R.N.

H.M.S. Vanguard

The first post-graduate course in the principles of Engineering Production and Management to be held in the United Kingdom took place at Birmingham University from October, 1949, to July, 1950.

This article describes briefly the syllabus and indicates the advantages to be gained by learning something of the modern methods of measured fact-finding and operation analysis employed by many industrial firms. It is considered that a knowledge of these scientific methods is important to engineers engaged in either production or use of equipment of any kind.

DETAILS OF THE COURSE

The first course lasted one academic year and was taken by twelve students of graduate status, the majority of whom were sponsored by local industrial firms.

Main Subjects

The lectures dealt with the organization and management aspects of industry, and with scientific methods for measuring and analysing production problems. This entailed breaking new ground even if one did remember the College Notes on Economics of Engineering.

- (i) *Work Study*. Several lectures were given on Work Simplification and on Work Measurement ; some knowledge of these subjects was considered helpful to an engineer in any walk of life. A brief survey of what was involved in the statistical analysis of variables enabled one to appreciate its applications and its limitations. The lecturer in this subject was a top-grade statistician, and on several occasions some high M.P. grease was required for slide rules which had lain rusting for too long.
- (ii) *Motion and Time Study*. Several lectures on the principles of motion and time study were illustrated with practical work. The chronocyclegraph method was used for studying body movements ; the flashing light attached to the finger enabled the hand movements to be measured in winks ($1/2,000$ second), and unnecessary motions were spotted and corrected. This method has its uses but was only economically justified when it was necessary to analyse an operation performed thousands of times a day, a situation not encountered in the Navy. However, a knowledge of the principles of Methods Study and of Motion Economy is undoubtedly of great value to all Technical Officers. The nine months course was just long enough to teach us the scope of the different techniques and to enable us to recognize situations when it would be advantageous to call in the experts. The Admiralty have their own specialists in Motion and Time Study with their Headquarters in Queen Anne's Mansions. Since writing the rough draft of this article I have been able to study the methods of this Motion and Time Study Unit at close quarters. I hope this Unit may shortly be persuaded to describe its activities as I, for one, would welcome the opportunity to learn more about its work.

Discussions and Works Visits

Besides the lectures and laboratory work the syllabus allowed for at least one session with the Professor each week of the course, except during Christmas week and examination periods. At these meetings a short talk was given by members of the course, or by lecturers from the other Faculties. Sometimes papers were presented for discussion by experts on topical problems connected with various aspects of engineering production and management. Also special visits were made to engineering firms, after which discussions were held on such subjects as production control, motion and time study methods, materials handling, incentives and training schemes.

Thesis

Concurrently with all these activities time had to be found to prepare a report of masters' thesis standard on some subject selected by the Admiralty. The two subjects investigated on this first course were—'Standardization' and 'Line Overhaul of Internal Combustion Engines in the Royal Navy'. The time spent in collecting the necessary data, and in developing a logical argument was time well spent. The advice of the University Staff who helped in the preparation of the thesis was invaluable.

LINKS WITH INDUSTRY

Post-graduate courses of this type at Universities have come to stay. New courses are being started at Birmingham this year in Mechanical Engineering, Mining, and Metallurgy, and in other subjects when buildings and staff become available. A few Engineer Officers have already spent some months at this same University doing specialist training in the subject of 'fuels technology'. These officers will, I feel sure, agree with me that the benefits gained by N.Os. attending the University were not measured solely by the knowledge acquired. Other factors had to be taken into account, such as the opportunity to make friends with the embryo leading executives of industrial firms and to hear their views, the chance to broaden ones own outlook and to correct some of the industrialists misconceptions about Naval Officers. The opportunity to spend a few months in the Birmingham District and to have discussions with the top management of industrial firms was excellent value since Birmingham was found to be the centre of a very wide range of engineering works.

CONCLUSIONS

The course entailed intensive study, as may be judged by the brief outline of the main subjects described in this article. Examinations were held at the end of the term and Diplomas in Engineering Production and Management, will be awarded to the successful candidates. The application of the principles of engineering production and of work study and analysis can undoubtedly increase the output per man considerably even in repair yards.

It is considered that such courses are excellent value as they help to develop a scientific objective approach to problems, they enable one to appreciate the usefulness and the limitations of methods used by industrial firms and they foster friendship and understanding between the men in Industry and their opposite numbers in the Royal Navy.