

## CHAPTER I

### BASIC SURVEY ORGANIZATIONS IN THE UNITED KINGDOM

Page

*The following diagram is relative to this chapter:—*

Diagram 1. *The British Military Survey Organization (May, 1945)* 4

#### SECTION 1. DIRECTORATE OF MILITARY SURVEY (WAR OFFICE) (GEOGRAPHICAL SECTION, GENERAL STAFF)

##### **Pre-war status and functions**

For many years before the 1939–45 war, the responsibility for dealing with Survey matters at the War Office had been vested in the Geographical Section of the General Staff, known as M.I. 4. This section, which operated under the Director of Operations and Intelligence, was headed by a Royal Engineer Colonel, and worked on a branch level. The officer staff consisted principally of R.E. officers with survey qualifications, assisted by one or two R.A. or infantry officers.

The staff, other than officers, consisted mainly of technical civil assistants and clerks, and a small number of Royal Engineer other ranks. The total number employed at M.I. 4 during the early part of 1939 amounted to about 70.

The principal functions of M.I. 4 during peace included the following items:—

- (a) The preparation and supply to British forces, both at home and abroad, of all maps required for defence, local administration, military training and any local operations which might arise.
- (b) The preparation and supply, to all branches of the War Office staff, of all standard or special maps which they required in connection with their work.
- (c) The collection of information about, and, if possible, copies of, all maps which were current or were newly produced by foreign countries, so as to build up a War Office map library and ensure that map material was available for the preparation of operational map series in the event of war.
- (d) The collection of data concerning foreign survey systems and their triangulation networks, in order to build up a War Office technical library dealing with such subjects.
- (e) Advice to the General Staff on all subjects of survey policy concerning training and preparation for war, and the arrangements for implementing such approved policy. This included such items as the design and formation of survey directorates and units, the provision of survey equipment and stores, and the issue of general instructions as to survey methods and practice.
- (f) The initiation and execution of all necessary programmes of mapping, and the preparation of survey data to meet the probable requirements of an Expeditionary Force in the event of mobilization for war.

- (g) Advice to the Colonial and Foreign Offices on matters concerning Boundary Commission Surveys and any special survey work required in any of the Colonies, and the provision of assistance regarding the formation and equipment of survey parties for carrying out such work.

#### **Pre-war organization**

The pre-war organization of M.I. 4 was inadequate both in size and general arrangement for dealing with all the problems that arose when preparing for a major war. An "Organization" sub-section was responsible for all matters concerning the design, formation and mobilization of survey staffs and units and the provision of technical equipment and stores. It proved to be very much under-staffed for this purpose. The mapping organization was largely based on a system of geographical regions whereby sub-sections, controlled by separate officers, made a special study of particular continents or areas, collecting all the relevant information thereof, and supervising the preparation of maps of their own region. This often led to an unequal and uneconomic distribution of work, and to compensate for this it was customary to allocate *ad hoc* jobs to one sub-section or another, cutting right across the regional organization. A geodetic sub-section concerned itself with the acquisition of foreign survey and triangulation data, and with the day to day technical investigations and work connected with geodetic problems both at home and overseas. M.I. 4 had under its direct control a staff of high-grade topographical draughtsmen and a small map-reproduction installation comprising cameras, lithographic printing machines, and all the other necessary ancillary equipment to enable map production and printing to be carried out on the spot on a limited scale. The Map Library concerned itself with the acquisition of map specimens from all parts of the world and cartographic intelligence data.

#### **Preparations for war**

In the spring of 1936 the evidence that Germany was intending and preparing to launch another world war became so strong that the D.M.O. and I. authorized the start of a large programme of new mapping at a scale of 1/50,000 to cover the whole of north-eastern France and Belgium. Other ancillary mapping was also authorized, and the Treasury was approached for the necessary financial provision. Funds ten times in excess of the normal annual vote for M.I. 4 were made available in April, 1936, and the extensive mapping programme was initiated by Colonel P. K. Boulnois who was at that time at M.I. 4. The amount of work entailed was so great that it was decided to allocate practically all of it to the Ordnance Survey for execution by them under War Office control. After the Munich meeting it was considered advisable to hasten production, and an extra officer was added to the establishment in order to exercise specific control of this vital programme. An additional officer was also obtained for duties connected with survey organization in the event of mobilization, but this was by no means adequate to deal with the situations that arose as the date for mobilization drew closer.

#### **M.I. 4 moves to Cheltenham on the outbreak of war**

In the event of war it had been intended that many of the War Office departments should move to Cheltenham. These moves were contemplated mainly in order to provide room in London for the expansion of those branches which

it was deemed essential should stay in Whitehall, and in some measure also to give protection against air attack.

In spite of urgent representations as to the unfortunate effects of such a move M.I. 4 was ordered to transfer to Cheltenham in September, 1939. As things turned out very few of the other War Office branches left London until late 1940, and the move of M.I. 4 had the serious effect of putting it out of daily touch with the General Staff at a critical period. Further, the Map Library, which obviously had to be located alongside M.I. 4 at Cheltenham, where it was required for new map compilation, was now cut off from General Staff officers still working in London.

Another difficulty created by these conditions was the distance which now separated M.I. 4 from its main Map Depot at Alperton, in one of London's north-western suburbs, where it remained during the whole war.

#### **Organizational changes in M.I. 4**

With the outbreak of war M.I. 4 was organized into three main sub-sections:—

- (a) One for map design and production, under which was placed the Map Library.
- (b) One for general organization, *e.g.*, all "A.," "Q.," and "S.D." matters and technical stores.
- (c) One for geodesy, grids, trig records, etc.

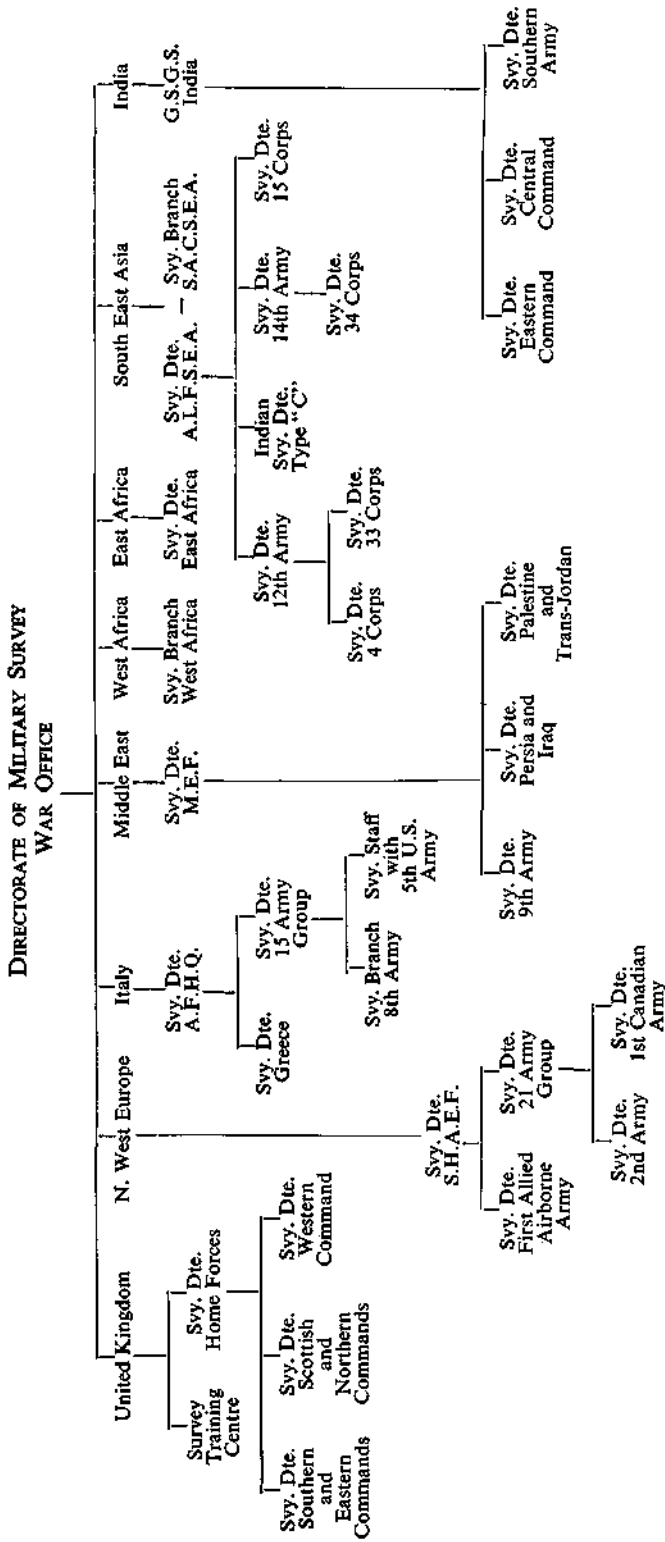
#### **War Office-Air Ministry mapping policy**

At this stage it is necessary to consider the arrangements that existed between the War Office and the Air Ministry concerning map policy and supply for the Royal Air Force. As far back as 1919 it had been agreed that the War Office should accept responsibility for Air Ministry and R.A.F. mapping requirements. During the pre-war years this was implemented by the formation of a map section at the Air Ministry which was under the technical supervision of one of the M.I. 4 officers, and maintained a small staff of clerks and draughtsmen held on Air Ministry establishment. The officer, as representing M.I. 4 (Colonel), was the technical survey and mapping adviser to the Air Staff and, when policy agreement was reached on matters of map design, production, and supply for R.A.F. requirements, M.I. 4 was then responsible for putting the programme into execution. It was not a satisfactory arrangement even in peace-time and, during the early war years, it proved so unsatisfactory that, as will be seen later, it gave place to a more efficient and economical system.

About the same time as M.I. 4 moved to Cheltenham, the Air Ministry Map Section was moved to Harrow, and this wide geographical separation between the two produced the undesirable situation of the Air Ministry Map Section functioning more or less independently. Quite apart from the vital necessity of having and maintaining one firm, central mapping policy and control, especially with the ever increasing need for Army/Air co-operation, it was essential that the arrangements for meeting overseas map demands and their subsequent shipment should be centralized under one control. This would prevent duplication of map orders and despatch, with its attendant confusion and waste of material and effort.

During the latter part of 1941 Colonel M. Hotine succeeded Colonel P. K. Boulnois as head of the Geographical Section, and held the appointment till the end of the war.

The British Military Survey Organization  
(May, 1945)



NOTE:—The Australian Survey organization, which was operating in the Pacific under U.S. control, is not included in the above, nor are the American or other Allied Survey organizations.

### **G.S.G.S. moves back to London and is reorganized**

The unsatisfactory situation whereby M.I. 4, located at Cheltenham, was separated from the Operations, Intelligence and Planning Staffs at the War Office and from the Air Ministry Map Section at Harrow, continued for some months, to the disadvantage of all concerned. Unsuitable and inadequate accommodation at Cheltenham added to these difficulties, especially in view of the augmented staff of draughtsmen, increased map printing plant, and rapidly growing map stores. It was realized that the complete move of the whole Section at a critical stage of the war might cause a serious dislocation of work, but on balance it was decided that such a move was essential for the following main reasons:—

- (a) To re-establish close and constant daily touch with the General Staff.
- (b) To absorb the Air Ministry Map Section from Harrow.
- (c) To obtain bigger and more satisfactory accommodation.

Suitable premises were eventually found at Eastcote on the outskirts of London, and the move of M.I. 4, now redesignated G.S.G.S., was satisfactorily carried out. At this juncture a new Distribution Section was formed to handle the rapidly increasing volume of work involved in the assembly and despatch of map stocks to all parts of the world, and the supply of maps to the various overseas expeditions which were now beginning to take shape. At the same time it was decided to divide the actual mechanics of map reproduction from the staff planning side with a view to reducing the load on the latter. The staff planning side would then be able to exercise a better and more even control over all production, whether this was carried out in the directly controlled War Office reproduction installation, or by some outside agency such as the Ordnance Survey or civilian printing firms. Unfortunately the accommodation at Eastcote was not sufficient to allow the drawing and printing installation to be housed alongside the rest of the Section, which would have been the ideal, and it was necessary, by force of circumstances, to put up with its geographical separation a few miles away at Hanwell, in a suitable factory building known as "Hygrade," where its productive capacity was doubled and it was re-equipped with modern equipment.

In view of the extensive map printing resources which exist at the Ordnance Survey and, with the civilian lithographic printing firms in Great Britain, it might be well to state some of the principal reasons why it is essential for the War Office to maintain under its control an adequate printing plant of its own:—

- (a) During peace and, to a much greater extent during war, there are always countless demands for special maps, diagrams, situation overprints, etc., which are required at short notice by the various War Office branches. Many of these are of a high security nature, involving very close control, which precludes the possibility of having the work done outside.
- (b) During peace, the Ordnance Survey printing resources are usually stretched to capacity with their own programmes of national mapping, and it is essential that the War Office shall be able to produce without delay stocks of any maps which are urgently required for training or other purposes, when time is short.

- (c) During war there are constant requirements for urgent, last minute, high-security map stocks for special purposes such as commando raids, special air operations, etc., and these jobs must be done under direct close control in order to ensure secrecy and punctual delivery. A very striking example of this was in connection with some of the many planned airborne operations during the last year of the war. Very often there were only a few hours available to prepare special maps, print stocks of large scale maps, and deliver them to the waiting formations.
- (d) When considering new map design, it is necessary that the War Office shall be able to carry out its own experimental research and trials.

### **G.S.G.S. becomes a War Office Directorate**

The extension of active operations over wide areas and the large amount of planning that was involved made it more and more necessary that the War Office Survey staff should be kept fully and punctually informed as to current operational situations and future plans. The Geographical Section, so long as it remained on a "Branch" level, was not getting sufficient information, even though headed by a full Colonel. Most matters of policy in the War Office were circulated on a Directors' level, and it was always possible that the Directors of Operations and Planning might fail to detect a survey repercussion in such policy directives. The survey organization was in any case under-graded for the responsibility which it was by now undertaking. Action was therefore taken to have the Section re-established as a Grade "B" Directorate with its various sub-sections graded as branches, which could thereby deal direct on an appropriate level with other branches in the War Office.

The move of the Geographical Section to Eastcote and its reorganization as the Military Survey Directorate brought to a head the necessity for the recognition by the Air Ministry of an integrated Survey staff to serve both Services. This was at last effected with the result that the entire Survey Service, both at home and overseas, became recognized as a common user service, which was to everyone's advantage.

The responsibilities and activities of the Directorate of Military Survey will be appreciated from a study of Diagram 1. This shows in skeleton form the general organization of the Military Survey Service which was operating under the Survey policy control of Brigadier M. Hotine, who was Director of Survey at the War Office during the last three years of the war. The Directorate of Military Survey was responsible also for the training of Survey personnel and the design and provision of technical survey equipment and stores.

## **SECTION 2. THE ORDNANCE SURVEY OF GREAT BRITAIN**

The Ordnance Survey has, during both World Wars, played such a prominent part in the production of maps for the armed forces that it is well to consider its organization, characteristics and potentialities, and to discuss the relations between it and the War Office, not only as they have existed in the past, but also as they may be affected in the future.

The reputation and achievements of the Ordnance Survey, not only as the official British national mapping institution, but also in its relation to Inter-

national cartography and geodesy are well known. The national maps of Great Britain are second to none in their variety, accuracy and quality of reproduction. In the day to day administration and general activities of the country, Ordnance Survey maps, especially those on large scale, play a leading part in connection with town planning, engineering projects, land registration and conveyancing, and a host of other purposes. They are accepted as evidence in courts of law. The smaller scale maps, such as the One-Inch, Quarter-Inch and smaller, have always had a ready sale with the public for walking, motoring, etc., and they are the official maps for military training, defence and other such purposes. The organization has, in short, always been one of high repute and efficiency, and its contribution towards the production of maps for the ground and air forces during two wars has been remarkable.

Although originally founded under the Board of Ordnance (hence the name Ordnance Survey), the Department has for many years been controlled by the Ministry of Agriculture and Fisheries. Since its inception it has always had, as Director General, an officer trained in the Royal Engineers, and it has always been customary for R.E. officers to fill the remaining senior appointments in the Department. With regard to the rank and file, before 1939 there was a mixed staff of civilian and military personnel. A number of R.E. other ranks, held on an establishment known as the Survey Battalion R.E. and paid for out of the Ordnance Survey (O.S.) vote, were employed on every form of technical duty, working alongside their civilian colleagues. As a general rule these men completed their full Colour service with the Survey Battalion R.E. and were then retained for work at the O.S. as civil servants until reaching the normal age limit for retirement. Thus a large proportion of the civil staff consisted of ex-R.E. personnel. There were also a number of direct civilian entrants to the Department for both clerical and technical duties.

The principal peace-time duties of the O.S. during the period leading up to the 1939-45 war were:—

- (a) The establishment of a new triangulation network over the whole country to replace the old out-of-date system.
- (b) The production and maintenance of the levelling network.
- (c) The maintenance of existing small and medium scale maps of Great Britain and the production of new ones.
- (d) The maintenance of the large scale maps of the country, their revision, and the production of new editions. This task of field revision was a major one during the years between the two wars owing to the complete cessation of revision work during the 1914-18 war, the post-war cuts in the strength of the Department, and the extensive development of new roads and housing that took place.
- (e) The preparation of special maps for Land Registration and other such purposes.
- (f) The printing of maps required for military training and defence purposes by the War Office, and the production of special maps for overseas areas for the War Office, on an agency basis in preparation for possible or probable operations.

The technical personnel, both military and civil, embraced roughly the following categories:—

Trig Surveyors (for work on the new triangulation).

Levellers (for the levelling network).

Field Revisers (for the revision work in the field on all scales, but more especially for the large scale maps on the scale of 1/2,500).

Draughtsmen (for the drafting of new maps).

Lithographic Printers, Photographers, and other technicians employed on the actual reproduction processes and printing of the maps.

The reproduction workshops were equipped with up-to-date cameras, printing machines and other plant in a wide and extensive variety. Thus it will be appreciated that the Department possessed large potential resources both in personnel and static equipment for mass map production in time of war, and a part of their peace-time work, especially map drawing and reproduction, was of a somewhat similar nature to that which would be required for war purposes.

During pre-war years it was accepted policy that, not only would the O.S. be called upon to assist largely in the production of maps for war purposes, but also that the officers and other ranks required for the mobilization of the early Survey Directorates and units would be drawn very largely from the O.S. This, of course, was a not a very suitable arrangement for the Department itself because, just when it had to take on large war mapping programmes, it lost a large number of technical personnel required for mobilization, including officer supervision and control. Fortunately, during the immediate pre-war period, an extensive programme of expansion had been in force at the O.S., and large numbers of youths had been recruited as technical civil assistants, principally for large scale revision. It should be emphasized here that, during the war years, a great deal of map drawing and other forms of technical work was carried out by women who were recruited and specially trained at the O.S. for such tasks, and who proved very competent. This facilitated the release of large numbers of the young male technical civil assistants for duty with the Field Survey units.

There is no question that the established traditions of the O.S. produced a number of technical tradesmen who possessed unrivalled skill in their respective categories and a high sense of individual responsibility. Some amongst the R.E. personnel so employed had been fortunate to gain experience of topographical field survey on Boundary Commissions and Colonial Surveys where they had learnt initiative and how to make good under difficult conditions. On the whole, although continuous full-time service at the O.S. could not be regarded as an adequate preparation for survey duties in war, the groundwork was of considerable value both for officers and other ranks. On active service it is often necessary to sacrifice a meticulous standard of finish for speed in execution and many of those mobilized from the O.S. took some time to adapt themselves to the changed conditions.

Before the war there was no effective military survey service and no survey representation with either the home commands or field formations. The unfortunate effects of such a situation have already been stressed in the Historical Note preceding this chapter. It would seem, therefore, that notwithstanding the undoubted value of the technical experience gained by service on the O.S., it is desirable to maintain an adequate military survey organization in peace-time, including representation at staff level, and survey units for carrying out productive work for the Army and the Royal Air Force. This organization should take part in regular survey training for war.



The relations between the War Office and the O.S. under war conditions demand some consideration. It had always been accepted that the O.S., on the outbreak of war, should reduce its civil mapping commitments to a minimum and become fully available for whatever mapping tasks the War Office might require. In September, 1939, this principle was implemented, and the O.S. became, in effect, a War Office controlled factory for map production, though it still remained under the administrative control of the Ministry of Agriculture and Fisheries.

M.I. 4 (Colonel) who, as head of the Geographical Section at the War Office, was responsible to the General Staff for the control of mapping policy and its execution, found himself placed in a somewhat anomalous position as junior in rank to the Director General of the Ordnance Survey (a Major-General), whose technical activities for war mapping now came under War Office control. The maintenance of administrative control by a civil Ministry also produced some complications and difficulties. There were many occasions, in cases of accommodation for example, when the War Office, having calls on higher priority, had to take appropriate action in order to overcome administrative difficulties and intolerable delays. Even in the War Office itself it was often difficult to persuade a constantly changing staff that the Army had a very vital interest in the efficient and punctual working of the O.S. which was administered by another Ministry.

By good common sense the effect of these difficulties on the vital work of production was reduced to a minimum but, looking to the future, it may be found desirable to devise a formula which will eliminate some of the anomalies and organizational difficulties which were experienced concerning the control and administration of the O.S. under war conditions.

### SECTION 3. THE SURVEY TRAINING CENTRE R.E.

Survey Directorates for G.H.Q. and 1 and 2 Corps, one (Army) Field Survey Company R.E., two (Corps) Field Survey Companies R.E., and one Field Survey Depot R.E. were mobilized to accompany the British Expeditionary Force to France in September, 1939. The majority of the personnel for these units was drawn from the Survey Battalion R.E. which, before the war, held on its strength the Royal Engineer survey officers and other ranks who were employed with the Ordnance Survey Department at Southampton. There existed at that time, under the administrative and technical control of the Director General of the Ordnance Survey, a small Survey Training Unit and depot located at Fort Southwick, near Fareham, Hants. Through this unit passed all newly recruited personnel destined for the Survey Battalion R.E. It also ran courses and a small amount of military training for existing Survey Battalion personnel and formed the nucleus around which, and by whose aid, the newly forming units were equipped, disciplined, and given some essential final training before going overseas.

The original intention was that, on mobilization, two identical training units should be formed, to be located at the neighbouring Forts Southwick and Widney, but this was altered, and a new establishment for one training unit only was submitted to the War Office. Meanwhile the original Survey Training Unit moved to Fort Widley and the first few field survey units were being mobilized at Fort Southwick. As soon, however, as the field units had gone overseas, the Training Unit became free to undertake its proper commitment

of receiving and training officers and other ranks as military survey personnel, for maintaining the existing field survey units, and for forming new ones.

In April, 1940, the Survey Training Centre was authorized with an establishment of approximately twenty officers and 630 other ranks. Its original organization divided the unit into eight groups as under:—

- H.Q. Staff.
- Military Training (Recruits).
- Cadet Training (Military and technical).
- Field Survey technical training.
- Air Survey technical training.
- Reproduction technical training.
- Quartermaster Stores.
- Mechanical Transport.

The above organization was later revised. Three Companies were formed and the new formation became:—

- H.Q. Staff.
- Administration. "A" Company.
- Military Training. "M" Company.
- Technical Training. "T.T." Company, which was subdivided into three wings:—
  - F. Wing. Field Survey.
  - S. Wing. Air Survey.
  - P. Wing. Reproduction Trades.
- Officers' Technical Training, under the supervision of O.C. "T.T." Company.

From its formation until about March, 1941, it was divided between Forts Southwick and Widley, near Fareham, Hants. In January, 1941, the S.T.C. began its move to Wynnstay Hall, near Ruabon in N. Wales, the seat of Sir Watkin Williams-Wynn, where part of the house itself, and other buildings were used for accommodation and lecture rooms, and the stables were converted for the erection of litho printing machines, proving presses, cameras, and other plant necessary for instruction in the reproduction trades. In addition, a hutted camp was erected in the grounds for the men's living and dining accommodation.

The following officers served as commandants at the S.T.C. during the war:—

- Lt.-Col. E. B. Elkington, from Sept., 1939–July, 1940.
- Lt.-Col. H. A. Shewell, from July, 1940–Oct., 1941.
- Lt.-Col. C. K. Davies, from Oct., 1941–Aug., 1943.
- Lt.-Col. A. C. James, from Aug. to Sept., 1943.
- Lt.-Col. R. P. Wheeler, from Sept., 1943–June, 1945.

The Survey Training Centre was under the direct control of the Director of Military Survey at the War Office. Its main function was to train officers and men as military surveyors, who would then be available to act as reinforcements for existing survey units, and for the formation of new units. From the outbreak of war, recruits were sent direct to the S.T.C., so it was imperative to form a military training branch there to train them as soldiers as well as surveyors.

Officers holding Emergency Commissions, including Colonial Survey officers and others already experienced in technical field survey practice, and many executives from commercial printing firms already experts in their own line of reproduction technology, began to report for duty at the S.T.C., and arrangements had to be made to give them the specialist training in field survey or reproduction duties necessary to fit them for service with field survey units and, in particular, to train them to undertake military and administrative duties.

Officer cadets then appeared, so a Cadet Training Wing had to be organized. The cadets consisted partly of recently recruited personnel and partly of ex-regular soldiers of the pre-war Survey Battalion R.E. who were recommended for commissions as a result of their experience with survey units in the B.E.F. in France during 1939-40. The syllabus for their training course had to cover full military and technical training. All of them received instruction in administrative duties, and on the technical side the cadets were given a full training in the particular branch of survey for which they were qualified, with a brief run through the remaining trades. For example the field survey cadets were given an insight into the reproduction trades and *vice versa*.

Recruits' military training included the use of the rifle, automatic weapons, hand and rifle grenades, anti-tank bombs and weapons, tank-traps, obstacles, wiring, demolitions and booby-traps, mines and, finally, training over a full assault course. The result of this training was found exceedingly valuable as, in many cases in the operational theatres, mines and booby-traps were found on roads, tracks and other approaches to trig points, and even the cairns and beacons on the hill-tops were found to be mined. On many occasions also survey troops took their share in military action against the enemy when occasion demanded it.

Every opportunity was taken to exercise men in day and night tactics in co-operation with the local Home Guard in the Ruabon area. This not only was good military training for the survey personnel, but also served to show up weaknesses and gaps in the Home Guard defensive plans.

Technical training was divided into three main categories:—

- (a) *Field Survey*, comprising triangulation, computations, and topographic surveys. Preliminary and advanced courses in each were given. The preliminary stage taught the basic principles of the subjects, including the use of all the instruments involved. The advanced courses were based on field exercise lines, and were confined very largely to methods for rapid surveys such as would be required under active service conditions. Normal triangulation, including resection and intersection methods, levelling, subtense, tachymetric and traverse methods were taught. Astronomy included star and sun azimuths. The use of the plane table was taught, but experience in most theatres indicated that not sufficient prominence was given to this most valuable and basic fundamental of topographic training.
- (b) *Air Survey*. This dealt with the compilation of contoured maps from air photos, with special emphasis on the production of accurate, large scale maps (e.g. 1/25,000) for use by the artillery. Basic training was given using the "Arundel" method of graphical plotting, the instruments chiefly in use being the ZD 4 Topographical Stereoscope and the Parallax Bar. Then followed the use of the Slotted Template equipment and, at a later stage of the war, training in the use of the Multiplex plotter.

- (c) *Reproduction trades.* Many of the recruits who passed through the S.T.C. were personnel from the printing trade who already had experience in one or other of the various activities connected with litho printing, proving or photographic work. It was necessary, however, to train them in the use of the types of equipment which were standard for the survey units in the field, and the technical methods which had been laid down as standard in the military Survey Service.
- (d) *Officers' technical training.* The courses for field survey officers included triangulation, astronomy, computations, topography, the compilation of a composite map from various types of material, and air survey methods. Printing officers took a full course in the reproduction trades. They all received instruction in administrative duties, and were given a general working knowledge of the work of other branches of survey work besides their own.
- (e) *Clerks.* These were trained in military clerical work including a knowledge of regulations, pay, messing, and Quartermaster procedure.
- (f) *Cadet Wing.* This closed early in 1942 when all cadets were receiving military training at O.C.T.U.s, and were then posted as commissioned officers. The Cadet Wing then became the officers' technical training wing of "T.T." Company.

The above brief notes indicate the general scope, purpose, and organization of the Survey Training Centre, R.E. During close on six years of war the Survey Service expanded to an extent undreamed of in September, 1939. The achievements of the S.T.C. in training officers and other rank personnel for new units, and for maintaining existing units, were outstanding. It served also as a centre and research nucleus of military survey thought and development. Looking to the future it would appear that the maintenance of some form of military survey training school is of considerable importance. The lack of one in the pre-war years undoubtedly added to the difficulties of mobilization in 1939.