

CHAPTER 1

INSTRUCTION AND INSTRUCTIONAL TECHNIQUES

Drill Training in the Air Training Corps

1. Drill is a mandatory feature of all stages of the Air Training Corps Syllabus of Training and it should be the aim of all squadron commanders to develop and maintain a high standard in drill, deportment and personal appearance in their personnel.
2. Drill training begins in the probationer stage and continues through the second class cadet stage with the aim of preparing cadets for the first class cadet examination. This training includes instruction in the uniform and how to wear it correctly. The significance of this training and examination is that it qualifies cadets to visit Royal Air Force stations in uniform and, in order to avoid embarrassment to themselves or to any member of the Royal Air Force, it is necessary that they should by then have acquired a military bearing, be able to march and salute correctly — and, of course, be able to recognize whom to salute.
3. After the first class cadet examination, drill instruction is continued in order to maintain a high standard in discipline and deportment, to introduce rifle drill and formation drill and to teach both officers and cadets their parts in the ceremonial of squadron and wing reviews. Squadron cadet NCOs are to be trained to take charge of squads and flights and to take their place in executive positions in squadron parades and reviews.
4. Confidence can be instilled into a squad by “continuity drill”. This is simply the putting together of several drill movements in a progressive sequence, to be carried out in succession after the starting word of command. Sentry drill is a basic form of continuity drill. In squad continuity drill, sequences can be arranged to suit the needs of the squad, their capabilities and the area of ground over which they can work.

The Nature of Drill

5. Drill is included in the training of all military forces because it promotes mental alertness, self-control, steadfastness and ready obedience to orders; qualities of value at all times, but particularly in times of stress. In addition, drill is essential for the orderly movement of men from place to place, and when smartly and correctly carried out is a source of great pride to the unit and Service concerned.
6. Drill could be defined as “an instruction or exercise in military evolutions” or as “rigorous discipline” or as “exact routine” or as “a means of producing a calculated instead of an instinctive reaction in times of stress or danger” and this is a most important aspect. Instinctive reactions in many emergencies are wrong and can be deadly. Men must often be drilled to react in opposition to their instinct in emergencies. The skin-diver at great depth in an emergency feels an overwhelming desire to get to the surface as fast as possible — but this could cripple or even kill him. In fires the instinctive reaction is to get away, open doors and windows — but this could lead to panic and needless death. In emergencies amongst crowds of people the instinctive reaction of the individual is to save himself at the expense of his neighbours — but this is a situation that must at all costs be controlled in accordance with predetermined drills and routines otherwise the unnecessary loss of life could be

considerable. Drills are an essential part of the operation and control of aircraft and in our Service they start with parade ground drill.

7. Drill is a routine which must be learned; it is not an instinctive reaction. All learning needs concentration and application and so does drill. It is learned by repetition, by constant practice, by doing the same thing over and over again, not only as an individual but also as a squad or body of men all learning to react in the same way to words of command. The aim is to produce an exact, disciplined response to a given situation which results in order and discipline.

Drill Instruction

8. Contrary to anything you may have read or heard, there is no such thing as a "born" drill instructor. Some have more ability than others, but all have been made by training, practice and experience. Drill does not come naturally to anyone; it must be taught — but the instructor, too, must learn and maintain his knowledge through constant practice and repetition. Thus, anyone can become a good drill instructor if he applies himself to the task with the necessary degree of concentration and application and observes the techniques described in the following paragraphs. These techniques have been evolved over the years and must be followed if good results are to be achieved.

Instructional Techniques

9. The sequence of instruction in all drill movements is:

- | | |
|------------------|---------------------|
| a. Demonstration | } by the instructor |
| b. Explanation | |
| c. Imitation | } by the squad |
| d. Repetition | |

This sequence should *always* be rigidly observed. However, during a repetition stage a squad may be broken down into small groups of two or three for practice on their own, the instructor supervising all of the groups in a general way. Students often learn more quickly from each other in a relaxed atmosphere. A good instructor will then take the best small group and gradually enlarge it by adding other groups as they become more proficient until he has the entire squad back together again. The better students can very often be used to teach and encourage their slower colleagues.

10. An instructor should identify himself with his squad from the very beginning. The use of words and phrases indicating any division should be avoided. He must present every goal and every difficulty as "ours". Today "we" shall do this; "we" must do that; "we" — you and I together — "we" are a team. However, every problem, difficulty and obstacle facing the squad are not the squad's — they are the instructor's. But the praises must go to the squad.

11. Incorrect drill movements must *never* be demonstrated. To repeat any incorrect movement made by a student is to emphasize it on the impressionable minds of the others. It is sufficient for a student simply to be told that he is not correct and then to be *demonstrated* the correct method and encouraged to *imitate* that correct movement. However, even a good instructor who prepares his demonstration carefully may make a mistake — perhaps a forgotten word of command, an incorrect word of command, a turn in the wrong direction. If and when it happens the instructor should stop his instruction immediately and

bring his squad to a position of AT EASE and then accept responsibility. He should then instruct the squad that the move will now be repeated but this time correctly.

12. An instructor must never forget that he is dealing with individuals whom he is welding into a team. His own personal standards must be high, but he must remember that drills have to be learned and that the learning process varies with individuals who will have their own particular strengths and weaknesses. The degree of progress of the slowest students must be allowed for; but the progress of the squad should not be held back. The slower ones should be given individual extra tuition.

13. An instructor must always be in control, constantly checking, encouraging and praising; but he must be strict and firm with mistakes. However, highlighting the mistakes or inabilities of any individual in the squad for the amusement of others is both demeaning and dangerous. It is not only wrong for an instructor to threaten, humiliate and embarrass; it is also destructive of the aim. No one works effectively for a bully or for a domineering, bad-tempered man. All instructors become frustrated from time to time but a good instructor never lets his frustration show. Patience and perseverance must always be maintained.

14. A common fault in drill is a disease known as "tick-tocking" *ie* swinging the right arm in time with the right foot and left arm in time with the left foot. It is most difficult to do it deliberately but there is always someone in almost every squad who will "tick-tock". The cure is lots of practice; initially with the arms checked—or hands in pockets—and then swinging first one arm then the other, *separately*. Under no circumstances should a student who "tick-tocks" be taken out of the squad or be told to follow along behind. He cannot be detailed to be a guide or marker, nor should he be placed in the first file of threes; he should be positioned in the centre rank in the middle of the squad.

15. Note the following:

- a. There is no such thing as an untrainable student; there are simply instructors who do not always teach effectively.
- b. The good instructor learns by teaching. Learning is finding out what one already knows; doing is the demonstration that one knows.
- c. Instructing is showing others that they can do what the instructor can do if they have the determination and the application.
- d. An instructor teaches best when he most needs to learn.
- e. We are all learners, and we are all capable of instructing.
- f. Of all the qualities necessary in an instructor, the most important are *honesty*, *patience*, and *a sense of humour*. Without these the instruction may be meaningless.

16. Initial instruction should be varied. Begin by teaching BY NUMBERS or by using the BALANCE STEP in slow time (Annex B); practise in slow time, quick time and double time.

Note: The introduction of bending the knee. (Annex C)

17. Periods of instruction should be short enough to avoid the instructor or trainee becoming overtired and the squad should always be stood easy when the instructor is demonstrating or explaining. The instruction and practice should be varied in order to avoid monotony.

DRILL, CHAP 1

Words of Command

18. Words of command are divided into:

- a. A cautionary word or phrase.
- b. An executive word; normally a word of one syllable.

The cautionary word or phrase is to be given deliberately and distinctly. The executive word, which is the signal for the movement to be carried out, is to be given sharply and distinctly, care being taken not to lower the voice. A pause is always to be made between the cautionary and executive words

NO 1 FLIGHT (deliberately)—pause—HALT (sharply)
 NO 1 FLIGHT, INTO LINE, RIGHT (deliberately)—pause—TURN (sharply)

A person giving an order at the halt is to stand to attention. On the march or when marking time the executive word is to be given on the correct foot (see Annex A).

19. Instructions should be included in the cautionary phrase. For example if a movement is to be carried out BY NUMBERS as demonstrated and explained by the instructor, the words of command would be

RIGHT TURN BY NUMBERS, SQUAD (distinctly)—pause—ONE (sharply)
 BY NUMBERS, SQUAD (distinctly)—pause—TWO (sharply)

Timing

20. A drummer using a metronome may be used to beat the correct time. Cadets are to note the time carefully, after which they should call the time, the drummer tapping out the right timing at intervals as a check.

21. The correct timing is:

SLOW TIME60 paces per minute.
 QUICK TIME
 STEPPING FORWARD/BACKWARD .. } 120 paces per minute; this is equal to 90
 MOVING SIDEWAYS } ms (100 yds) per minute.
 DOUBLE TIME180 paces per minute; this is equal to 182
 ms (200 yds) per minute.

Length of Pace

22. The length of pace in marching is:

MOVING SIDEWAYS 30 cms (12 ins)
 STEPPING SHORT 53 cms (21 ins)
 SLOW MARCH 75 cms (30 ins)
 QUICK MARCH 75 cm (30 ins)
 STEPPING FORWARD AND BACKWARD 75 cms (30 ins)
 STEPPING OUT 83 cms (33 ins)
 DOUBLE MARCH 100 cms (40 ins)

Nevertheless, squadron commanders must be practical and must use their discretion. If cadets are unable to reach 75 cms (30 ins) paces then the length of pace must be adjusted to their capability. However, the correct timing must be retained, whatever the length of pace.

Intervals

23. Each individual should occupy a lateral space of 105 cms (42 ins) in the ranks. Nevertheless, because young cadets may not fill anything like this space, squadron commanders must also be practical in introducing this dimension and must adjust as necessary. It applies mostly in measuring out a parade ground and setting up markers — squadron commanders must know the frontage of their flight or flights.

24. The lateral space between units is to be measured in paces of 75 cms (30 ins).

Distance

25. The distance between ranks is to be 75 cms (30 ins) measured from heel-to-heel.

26. The distance between units in formation is to be measured in paces of 75 cms (30 ins) from the heels of the front rank of one unit to the heels of the front rank of the unit next in succession.

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FOOT ON WHICH COMMANDS ARE GIVEN

<i>Command</i> (in alphabetical order)	<i>When EXECUTIVE Command given</i>
(a)	(b)
About - TURN	When the left heel strikes the ground.
Break into double time, double - MARCH (from quick time)	When the right heel strikes the ground.
Break into quick time quick - MARCH (from double time)	When the right foot strikes the ground.
Break into quick time, quick - MARCH (from slow time)	When the right foot strikes the ground.
Break into slow time, slow - MARCH (from quick time)	When the left heel strikes the ground.
Change - STEP (when marching)	When the right heel strikes the ground.
Change - STEP (when marking time)	When the left foot strikes the ground.
Eyes - LEFT/RIGHT/FRONT (in quick time)	When the left foot strikes the ground.
Eyes - LEFT/RIGHT/FRONT (in slow time)	When the right foot strikes the ground.
For - WARD (Squad/flight) - HALT (in double time)	When the left foot strikes the ground.
(Squad/flight) - HALT (in quick time)	When the left foot strikes the ground.
(Squad/flight) - HALT (when marking time)	When the left heel strikes the ground.
(Squad/flight) - HALT (in slow time)	When the left foot strikes the ground.
Left in - CLINE	When the right foot strikes the ground.
	When the right heel strikes the ground.
Left - TURN	When the right heel strikes the ground.
Mark - TIME	When the left heel strikes the ground.
*Quick - MARCH	When the right heels strike the ground.
Right in - CLINE	When the left heel strikes the ground.
Right - TURN	When the left heel strikes the ground.

(*To move off in time with a preceding unit/flight)

DRILL, CHAP 1, ANNEX A

To the left/right and officer passing
front -
SALUTE (in quick time)

When the left foot strikes the ground.

To the left/right/and officer passing
front
SALUTE (in slow time)

When the right foot strikes the
ground.

*Slow - MARCH

When the right feet strike the ground.

Step - OUT/SHORT

When the left heel strikes the ground.

(*To move off in time with a preceding unit/flight)

THE BALANCE STEP

Introduction

1. The Balance Step is an effective method of teaching cadets to control the muscles and limbs and to acquire correct balance and erect carriage. It is also a useful preliminary in training cadets in drill movements. When a cadet is able to carry out each separate movement of the Balance Step correctly, the interval between successive words of command is to be reduced until each movement forward is made after only short pauses.

Marching

2. On the command

BALANCE STEP, LEFT FOOT - FRONT

the head and body are to be kept in the position of attention with the arms steady at the sides. The left foot is to be advanced smartly to the front about 38 cms (15 ins) and turned outward at the same angle as when halted, with the toes pointing towards, and 5 cms (2 ins) from, the ground. The left leg is to be kept straight and the body is to be balanced on the right foot.

3. On the command

FOR - WARD

the left foot is to be advanced forward in an even movement to complete a pace of 75 cms (30 ins) ensuring the small toe of the boot/shoe touches the ground first. At the same time the weight of the body is to be transferred to the left foot, keeping the right foot at its original position with the knee bent and the toes on the ground.

4. On the command

RIGHT FOOT - FORWARD

the right foot is to be advanced smartly about 75 cms (30 ins) beyond the left foot, the leg is to be bent enough for the foot to clear the ground, and is to be straightened as it comes forward. The foot is to be stretched and turned outwards at the same position as when halted. The toes are to be pointed towards and about 5 cms (2 ins) from the ground. The small toe of the boot/shoe touches the ground first, the weight is transferred to that foot and the left foot remains 75 cm (30 ins) behind it with the knee bent and the toe on the ground.

5. The sequence of commands at para 3 is then continued as necessary.

Halt

6. On the command

DRILL, CHAP 1, ANNEX B

BALANCE STEP - HALT

which is to be given when the right foot is forward and on the ground, a pace of 38 cms (15 ins) is to be completed with the left foot, bend the right knee, and then place the right foot smartly down in line with the left foot; movement ceases at the position of attention.

Turning on the March

7. The detail for the Balance Step movement to the left is the same as that for the right except that the word left is to be substituted for the word right. On the command

BALANCE STEP, RIGHT - TURN

which is to be given when the left foot is forward and on the ground, a full forward pace is to be completed with the right foot. The left foot is to be turned diagonally to the right and is to be placed on the ground, with the instep about 8 cms (3 ins) in front of the right toe. The weight of the body is to be turned to the right (through 90 degrees). At the same time the right foot is to be advanced smartly about 30 cms (12 ins) in the new direction, and is to be held clear of the ground with the foot stretched and the toes pointing downwards. (In this position both knees are to be straight and the arms are to be steady at the sides.)

8. On the command

FOR - WARD

a forward pace of 75 cms (30 ins) is to be completed with the right foot and marching resumed.

BENDING THE KNEE

Introduction

1. For many years prior to 1981, basic foot movements in Royal Air Force and Air Training Corps drill entailed minimum bending of the knee, the foot normally being raised only sufficiently to clear the ground. The moving foot was usually to be brought smartly in to the stationary one, without stamping.
2. Emphasis has now changed and one particular movement in foot drill, to be described as "bend the knee", will frequently form part of a sequence.

Bend the knee

3. "Bend the knee" should be demonstrated to trainees before embarking on drill training.
4. In "bend the knee", while one leg is kept braced back with the foot flat on the ground, the opposite leg is raised in front of the body, with the knee bent. The foot is to hang naturally, with the toes directly under the knee and 15 cms (6 ins) from the ground. The leg is then to be straightened and the foot placed on the ground so that on contact the ball of the foot reaches the ground first. The whole movement is to be completed swiftly and smoothly, but exaggerated stamping can be injurious and is to be avoided.

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100
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RESEARCH REPORT

The first part of the report deals with the general principles of the theory of the structure of the atom. It is shown that the structure of the atom is determined by the laws of quantum mechanics and the laws of electrodynamics. The second part of the report deals with the application of these principles to the structure of the atom. It is shown that the structure of the atom is determined by the laws of quantum mechanics and the laws of electrodynamics.

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