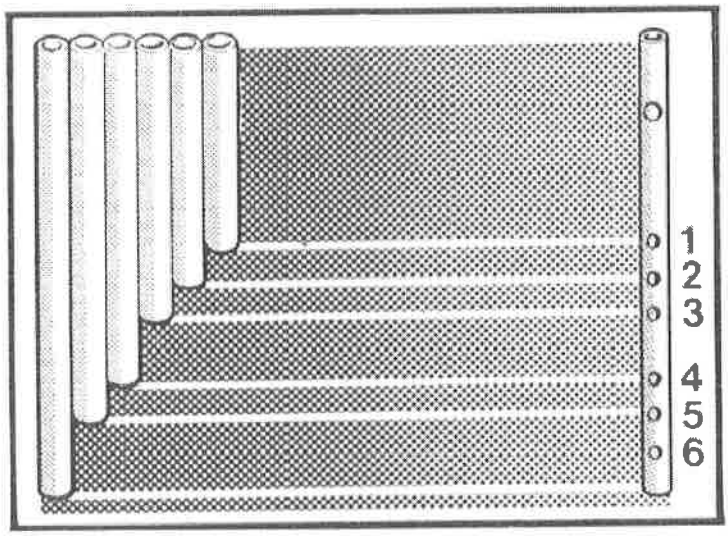
0510. The column of air inside the tube may be lengthened or shortened by covering or uncovering the finger holes along the side. To illustrate this point further, the diagram of pan pipes shows different lengths of tube bound closely together, and a single tube representing a flute. The single tube can produce all the sounds of the pan pipes by simply covering or uncovering the finger holes as previously explained. By covering hole No. 1 on the flute a short column of air is produced in the tube since the air will only vibrate between the embouchure and the nearest uncovered hole. So by covering each of the holes in turn from one to six the column of air in the tube is lengthened to produce lower sounds. With all six holes covered the whole column of air inside will vibrate.



Comparison of Pan Pipes and Flute

Overblowing

0511. To increase the range of notes that can be played on the flute, a process known as 'overblowing' may be used. By increasing the velocity of the air stream at the embouchure, the player can increase the speed of the vibrations in the tube to a point where the column of air cannot respond fully. For example, if all six finger holes are covered to produce the lowest note, the same note may be reproduced eight notes higher, without rearranging the fingers. This is the most important aspect of wind instruments since it is this principle on which they are all based.

SECTION 29. — HOW THE BUGLE WORKS

Producing Sound

0512. This instrument too works on the principle of a vibrating column of air inside a tube. The tube of a bugle is about four feet long; it is only coiled into its familiar shape for convenience.

0513. The actual method of causing the column of air to vibrate is slightly different to that

CHAPTER 9

THE BUGLE

SECTION 40. — GENERAL

0901. A certain amount has already been said about the mechanics of the bugle but there is still a good deal to learn about the instrument. There are probably as many Corps of Drums using the bugle as their principal instrument as there are those using the flute. As has been indicated in Chapter 5, the bugle has some limitations due to its restricted harmonic series. That is not to say that the bugle should not be given serious consideration, it should, and it may even be said that since the bugle is such a limited instrument, there is some challenge to use it to its best advantage by clever writing and arranging of bugle music. What better example of this could there be than the buglers of the Light Division!

0902. This section deals with the bugle components, identifying each part in turn. As with the flute, it is an advantage if the trainee drummer has an instrument in his hands.

0903. There are fewer moving parts on the bugle than on the flute so maintenance is comparatively simple and largely a matter of common sense. However, in order to maintain the bugle in a clean and hygienic condition there are a number of points which need regular attention.

Description

0904. The bugle described is the standard issue low pitch (LP) B flat bugle. The large open end from which the sound is projected is called the bell. This is reinforced by a double layered brass rim to prevent damage and splitting. At the opposite end, on the large tube coil, is another double layered brass cap. This too is for reinforcement and protection since this and the bell are the two most likely areas where damage can occur. At the narrowest end of the tube, a heavy brass pipe, the mouthpipe, is soldered on to give reinforcement to and protection of the main tube. The mouthpipe also provides the socket into which the mouthpiece fits. There are usually one or two other brass sleeves fitted to the bugle coils. These are simply sleeve joints where, the bugle having been manufactured in sections, each section is joined to the other. Each turn of the tube is soldered to the other to strengthen and support the instrument. Below the mouthpipe, on the narrow tube coil, is a chain ring or holdfast to which the mouthpiece is attached by a length of chain to avoid loss when on the march. To identify a low pitch (LP) instrument, the letters L P are stamped on the underside of the bell near the forward tube coils.

Maintenance and Cleaning

0905. Cleaning the instrument is best carried out with normal metal polish (except silver bugles – in this case use a metal polish such as Silvo or a silver cleaning paste) and a soft duster. The appearance of the instrument may be further improved if great care is taken to remove all surplus polish from the narrow channels between the tubes. This is easily done with a matchstick. Black pencilling the solder joints between the tubes removes the polish residue and gives them the bright gleam of graphite. The inside of the bell should be

0912. Mouthpieces too alter the tone of an instrument and there are several types from which to choose. For instance, a deep funnel shaped mouthpiece will usually give a smoother tone, shallow, trumpet like mouthpieces give a more brilliant sound.

0913. Individual technique makes a great difference to the overall sound and it will be seen in later chapters how a good technique may be built upon to produce good tone.

Shanks and Tuning Bugles

0914. Bugles when sounded in conjunction with a band are often tuned to the cornets by means of either a shank, which lowers the pitch of the high pitch (HP) bugle, or by means of a tuning slide. With the introduction of the low pitch (LP) bugle the shank has largely been discontinued in use. The tuning slide is growing in popularity and is soon to feature as a standard fitment to service instruments.

0915. There are one or two aspects of the shank and tuning slides that require explanation since, often, their purpose is not fully understood.

0916. The basic difference between HP and LP bugles is the length of the tube. A HP bugle may be converted to LP by adding the shank. This effectively lengthens the tube by about two and a half inches and flattens the bugle to a pitch more or less equivalent to B flat concert. Since the shank is not adjustable, any imperfection in pitch remains.

0917. Tuning slides can be either short or long. The short tuning slide is fitted to LP bugles purely for the purpose of tuning out the imperfections of individual players. The long tuning slide is dual purpose and is known as the high/low shank. With the slide pushed fully home the bugle is HP. When the slide is adjusted to the reference mark machined on its surface, the bugle is converted to LP again. Individual pitching can be adjusted out. The reference mark only gives a common starting point, it does not indicate that all the bugles will be in tune.

Other Types of Bugle

0918. The standard brass or copper LP bugle has obvious limitations in its flexibility due to its restrictive harmonic series. These limitations can be effectively reduced by thoughtful employment of two other types of bugle; the bass bugle and the alto bugle. Both instruments are LP and pitched in B flat concert. They both have the same five note harmonic series but the bass bugle sounds an octave lower and the alto, though sounding at the same pitch as the standard bugle, has a much rounder, more colourful tone. Both are usually equipped with tuning slides for fine tuning.

0919. All that has been said regarding maintenance applies equally to the bass and alto bugles. The cost of these instruments is fairly high so care, as outlined beforehand, is essential to preserve the instruments in good playing order.

CHAPTER 13

PLAYING THE BUGLE

SECTION 51. — BUGLE TECHNIQUE

Introduction

1301. This chapter outlines the basic technique for playing the bugle. The technique, like the instrument, is quite simple and the only difficult part is training the facial muscles to form the embouchure, particularly for the upper notes. Despite the simplicity of the technique and the ease of application of it, there have been many methods expounded in the past, both in training depots and in published bugle tutors, that are totally incorrect. In many cases these techniques have been handed down from one generation to another, each totally unaware of the deficiency of the method they have employed. Worse than this, some training establishments have remained resistant to change in spite of advice of an informed nature being given.

1302. Anyone can pick up a bugle and blow it to produce noises, but in order to perfect a good tone and build stamina for prolonged playing (e.g., when on the march) the correct technique must be employed – the technique outlined here has been proved in service and, though perhaps not the producer of quick results, will certainly pay dividends later.

Producing a Sound

1303. In Chapter 5. — Understanding Sound, it was explained that a bugle produces its sound by a vibrating column of air, and that the column of air is set in motion by the player vibrating his lips against a cup shaped mouthpiece. A good deal of time must be spent on the art of vibrating the lips against the mouthpiece as this is the most basic and critical part of the technique.

Posture

1304. Before beginning to learn the basic technique it is important to be comfortable and relaxed. Whether standing or sitting the posture should be the same for the upper body and arms. The player should be in an upright and comfortable position (not rigid) and should hold his shoulders back, without straining. The right arm should be held with the elbow away from the body, the left arm may be rested in a comfortable position (usually hanging naturally at the side).

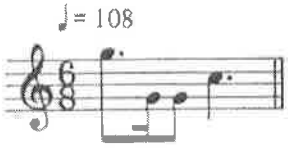
Forming the Embouchure (Stage 1)

1305. This part of the technique may be practised without the mouthpiece or instrument. The lips should be drawn back in a half smile as if pronouncing the sound "Mmmm". Keeping the lips firmly together in this fashion, a stream of air should be blown through the centre of the lips by sharply pronouncing the syllable "Tu". The aim of this exercise is to cause the tensioned lips to vibrate (rather like a double reed) and to produce a sound as if blowing a raspberry. This is not difficult to achieve but it does require some practise in order to sound every time. The player should continue to produce this sound in groups of eight to

harmonic series, will depend greatly on the ability of the novice in forming and controlling the embouchure. To achieve the notes above bottom C it will be necessary for the novice to fully understand the overblowing technique. As explained in Chapter 5. — Understanding Sound, overblowing tricks the instrument into vibrating a shorter column of air than it actually has. This is done by increasing the velocity of air and therefore the frequency of the vibrations at the mouthpiece. This is not accomplished by blowing harder or by increasing the pressure of the mouthpiece to the lips (two techniques that, strangely, have some popular support) it is accomplished by tightening the muscles of the face to cause the lip tension at the embouchure to increase; decreasing the hole through which air passes and increasing the frequency of the vibration of the lips and subsequently the column of air in the tube. In short, the higher the note required, the tighter the 'lip tension'.

1314. This tightening and relaxing of the embouchure takes place fairly rapidly throughout, say, a routine bugle call. The following calls illustrate rapid changes of 'lip tension'.

Signallers Call



Warning for Parade

1315. In the first example the change is indeed rapid, ranging from top G (the highest note) and drops immediately a full octave to lower G.

1316. The second example indicates a progressive change or series of changes over six bars where, having begun at bottom C the player must make rapid adjustments to his lip tension so that he can pitch each note right up to top G.

1317. This rapid alteration of lip tension is termed 'lip flexibility' and requires considerable practise to master. There are some excellent initial exercises contained in 'Trumpet and Bugle Calls for the Army' (Army Code No. 14163) some of which are reproduced in the next section.

Tongueing

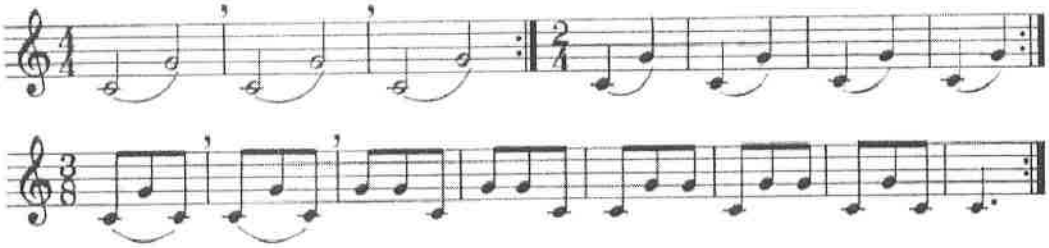
1318. There is one other aspect to bugle technique so far not covered – that of 'tongueing'. This technique is explained in Chapter 12. — Playing the Flute. The application is the same for bugle although probably more difficult to execute on this instrument. It should be incorporated in the daily practice schedule.

Conclusion

1319. As with any instrument, learning to play is fairly easy – mastery comes only after

Two Note Exercise (C and G)

1323. *Lip Flexibility and Tone.*



1324. *Lip Flexibility and Counting.*

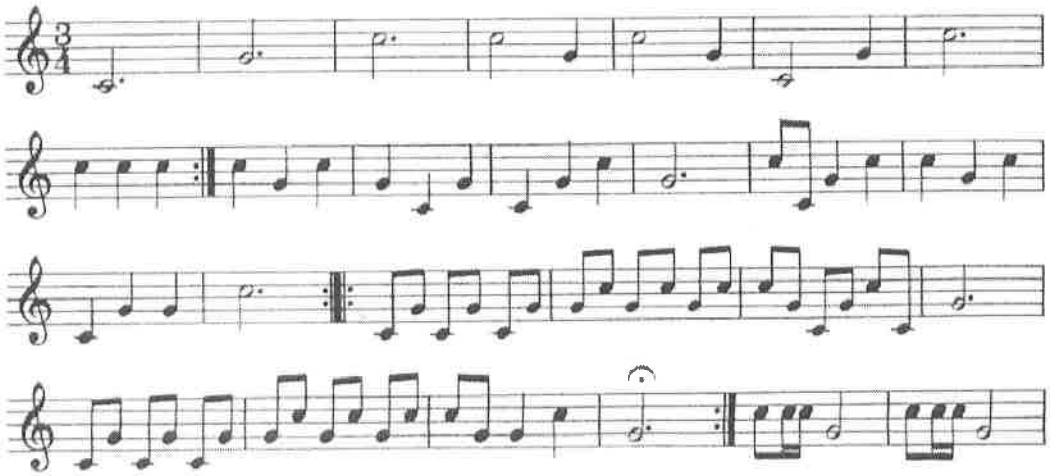
Single Note Exercise (Middle C)

1325. *Long Notes (Middle C).*

1326. Repeat the single note exercises in paragraphs 1321 and 1322.

Three Note Exercise (C, G and Middle C)

1327. *Lip Flexibility and Tone.*



1332. *Tone, Pitch, Embouchure and Ear.*

Simple Bugle Calls

1333. *Men's Meal Call.*

1334. *Lights Out.*

1335. *Orderly Corporals.*

Note. $\frac{6}{8}$ time has only two beats to the bar, *see* Chapter 15, Section 58, Paragraph 1570.

Single Note Exercise (Top G)

1336. *Long Notes (Top G).*

1339. *Lip Flexibility and Pitch.*