NEWCASTLE SPORT PARACHUTE CLUB

P.O. BOX 12 TIGHES HILL, NEW SOUTH WALES, AUSTRALIA.

The Instructors
Examination Panel of
the N.S.W. Council.

Attached is the thesis "(Still) Free fall Photography" presented by A.C. Keech for his chief Instructors Rating.

As authorised in the Council minutes of july 30th 1963, you are requested to study the thesis and decide whether it agrees with the terms of the examination and if the council should recommend that Mr. Keech be issued a chief instructors rating on it.

It is requested that your decision be forwarded to Mr. L. Johnston at the earliest convenience.

Yours faithfully,

A.C. KEECH. Fl.

Instructor in charge.

Copies to.

Don McKern.
Allen Jay.
Andy Case.
Louis Johnston.
A.P.F. (2).
File.

Encl.

"(Still) Free Fall Photography.

To begin free fall photography a parachutist must first be aware of the considerable factors which are involved and the effect photography will have on his parachuting.

Cost. To begin with a suitable camera and conversion and installation will cost approximately £100. Subsequent purchase of film, processing and printing will be a continued drain on money he would normally spend on jumping and other equipment.

Jumping. As photography is 100% relative work one will find less experience in other fields that are important to being a good all round jumper, i.e., style, tracking and on occasions accuracy. One must be prepared to sacrifice his competition rating. However, if the end justifies the means, a parachutist will find photography a very satisfying and interesting field.

To become a good and safe photographer it is virtually nezessary to first become a proficient advanced relative worker (at least 30 baton passes), or a lot of drops and cold cash will be wasted.

Before beginning this branch of parachuting a considerable knowledge of the function and limitations of the camera should be acquired. There is usually plenty of helpful advice from the local camera store shop assistants.

The Camera.
Practically all cameras used in the air are 35 mm and are classified as "miniature" cameras because of the small negative provided by this camera. The smaller the negative the smaller the enlargement of the print before grain size becomes apparent so avoid the "half frame" (24 x 24mm) camera, convenient and cut as they may be.

Shutter Speed.
Should be capable of at least 1/500 second in order to freeze movement (and hence detail). This is important for photographing people moving with high relative speeds (as on exit shots where the stage of acceleration for cameraman and subjects are quite different) However, the greatest benefit of fast shutterspeed is to freeze camera shake as camera movement is r sponsible for most of the "fuzziness" in free fall shots.

At this stage you may say "well its simple enough, I'll use a 1/500".

Unfurtulatèly it is not quite as simple as that because as the period the shutter is open is cut down, the wider the aperture must become to bring the same quantity of light onto the film. As the hold (aperture) increases in diameter, the depth of field (the range whereby a subject is in focus) decreases at an alarming rate. This effect is greater as the distance of focus is shortened, and to get a good shot you must be close to the subject. At this atage you may say "well what about using a more sensitive film and thereby be able to keep a small aperture?

Unfortunately the more sensitive the film, the greater the grainsize and the smaller the enlargement before loss of aparent detail, i.e., one must compromise between shutter speed, depth of field and grain size.

Colour Film.

Colour Film is yet another thing. Most colour film is less sensitive to light than black and white and the problem of shutter speed versus depth of field becomes prominent if shooting at close range. However, using Kodachrome 11 at 1/250 second and F5.6 produces good results for most work. High speed colour films are now avaliable which do not suffer to any real degree from grain size, Super Ansco is one such film, however, for true colour reproduction, a good film speed, and a wide tolerance use standard Ansschrome. For really colourful pictures try Perutz (50 ASA)

Types of transport Systems.

As you will wish to fire more than one shot on the drop it is important to be able to transport the film and cock the shutter quickly and easily.

1. Lever Type.

This type of manual - operation is the most common in cameras, the action being made by the thumb of the right hand. This camera cannot be mounted on a helmet (except for one shot) and therefore must be used wither wrist mounted or hand held. However, they are generally cheaper and one can become bery fast at firing with practice.

2. The Automatic Type.

Either Electric or clockwork. These include Yasika, "Sequella" (1/2 frame) Motormatic (suffers from slow shutter speed 1/250) or Nikon with electric drive (as Lew Sandborn has used) or the German Robot Royal (clockwork, 12 shots, the one I use). The advantage of one of these cameras is as follows;-

(i) Can be fired in rapid sequence.
(ii) Can be fired remotely by a hand triggered release whilst mounted on a helmet or on a pistol grip.

3. The Plunger Type.

I know of only one type the "Vitessa" used by Bob Buquor. This camera has a plunger on the left side of the camera and means the transport is made by the left hand, the index finger of the right hand can remain on the button. This camera is one which can usually be obtained inexpensively second hand and most have a high class lens and produce good pictures.

Method Of Mounting.

There are four (4) ways of carrying a camera that are worth considering, all have good and bad points and the method usually used is a result of personal likes and dislikes.

(a) Helmet Mounted Cameras.(The Most Satisfactory Method).

These are remote fires electrically blub or cable r lease. Used mainly a few years ago by Lew Sandborn.

Advantages. - hands free to maneouvre.

Disadvantages -

(i) Requires complicated installation of camera (pointed the right way) sight (ditto).

(ii) A jam or fail free release cable.

(iii) Must be mounted and dismounted regularly.

(iv) Camera must be of automatic wind type and therefore expensive.

(b) Pistol Grip Mount.

Advantages.

(i) Good for firing round corners- only required one hand,
(ii) One line of thought is that the hand is faster than the eye.
(iii) Can trigger again for that opportinity that comes after the camera is fired.

Disadvantages.

(i) Has bad habit of cutting subject in two (is very inaccurate in hands of beginners).

(ii) Requires a cable release (often jams).

(ii) Must be automatic transport type camera.

(iv) Camerman needs completly new flying position.

(v) Cannot see field of view through sights as camers is not held close to the face.

(c) Hand Held.

The simpliest and most widely used method, the camera being held in the left hand whilst steadies and fired with the right. Usually attached to the wrist by a length of suspension line.

Advantages.

(i) Requires no installation.
(ii) Simple to operate.
(iii) Can use hard cocked cameras.
(iv) Uncomplicated - no cable release.
(v) Can be held very steadily at instant of firing.
(vi) Use manufacturers virefinder.

Disadvantages.

(i) Arms are not free to maneouvre while shooting.
(ii) May be easily bumped on heavy landing.
(iii) High rate of fall whilst in firing position, resulting of loss level very quickly and therefore reduced firing time.

(d) Wrist Mounting.

Where camera is mounted on a plate attached to the wrist.

Advantages.

Much the same as for hand held except for installation and steadiness.

Disadvantages.

Much the same as for hand held except for installation and steadiness.

Disadvantages.

(i) Only one hand to steady camera.

(ii) Requires installation.
(iii) Left hand held right across the body.

At this stage we have selected the camera and film we wish to use. Our next step is to select the type of shot required. From the top down they run so:-

The Exit from Below.

In this shot you are firing uphill into the shade areas of the subject so open the apeture one stop. You will also be firing up into a brilliant sky so use a yellow filter to darken the sky. The finished product will still probably require some "holding back" during printing, particularly the bottom surface of the fuselage. However, the areas of the aircraft and subject lit by the sum have distinct outline.

With the subject carrying smoke the impression of action and speed are very pronounced.

Procedure.
Set focus on 30 ft. check all se tings on the camera, make jump-run away from the sum. Time of day preferably 8-10 a.m., 2-5. p.m. as horizontal component of available light is large.
On "cut" and "brakeon", climp out on the wheel for a poised exit, both arms over the strut holding camera and finder on the button, allow subject to perch on the step. On reaching exit point nudge subject with an elbow and dropp off as smoothly as possible with kneex bent, back arched, camera up to the eye, head back. The subject should leave one (1) second later (16 ft behind).

The camera (preferably automatic trans ort type) held in a tight grip, is fired rapidly from this point over the next second. This particularly fleeting opportunity must be used accurately, or all is lost as the rapidly increasing distances between A/C, subject and c amerman make for little interest.

The Individual Shot.

(a) With inexperienced relative worker.

In this case you should know what your relative rates of fall are before trying to photograph with the subject.

(i) If subject Falls Faster.

In this case a subjects higher rate of fall can be used to advantage as the firing position is usually concentrated particularly with hand held or wrist mounts.

Make jump run across sun, poised exit as before with camerman on wheel on the sun side. Both subject and camerman exit together, the camerman making s ow well spread 270o turn to the right. Thisswill bring the camerman out up sun and up hill from the subject about 50 ft. away.

This distance may be decreased by tightening the turn or increased by slowing the turn rate. Ignore the camera and commence to staircase down and across to the subject as if for a baton pass. Remain upsun and hover on level at a range of about 15 ft. (focus 10 ft.) pull camera into firing position and commence to shoot. This should be done quickly as you will begin to glide towards the subject on bringing the camera into the face and therefore you want to get the shots fired off before you get too close or go past (down sun). With practice this tendency to glide forward can be neutralized by bending the knees more and arching the back slightly, this will however give an increased rate of fall but should be capable of being compensated by action on the part of the subject.

(ii) It the Subject Falls Slower.

Instruct subject to use a pos tion of increased fall. Exit one (1) second later than sub ect on jump run towards the sun.
Proceed as for baton pass b t fall into firing position 20 ft. high and sink to level firing when the opportunity prese ts itself.

Unless very competent aviod attempting photography with inexperienced relative workers as they often forget to consult their instruments. This places a disturbing responsibility on your shoulders.

(b) For experienced and reliable subjects.

Explain while on the ground where you want them positioned with respect to the sun and cameraman. Check through the view-finder to get an impression of the result.

On jump run made across-sun, position yourself on the upsun side of the subject for a poised exit. Leave together turn 270° each - and concentrate on relative stability at the pre-determined range (Usually 10-15 ft.), then pull in for shots and let the subject look after the range and sun. Side on shots are more interestin so include it in the jump breifing.

The Opening.

The opening shot is an opportunity to capture action and movement, the pilot chute bursting out of the pack, shaking off with the sleeve, the often ungainly position of the subject. Howeverm this shot should be approached with caution only with an experienced and reliable subject with opening height planned at 3,000 feet or higher. At all times incorporate allowance for at 3,000 feet or higher. At all times incorporate for cancellation at the last second. If subject considers he is too close or closing, the onus is on him to wave away the attempt.

The cameraman then forgets the camera and used the remaining height in separating for a safe opening.

The Group Shot.

Must have experienced and reliable subjects.

Make proper allowance for sun on run in, exit with subject, and align as before with 270° turn leaving level and range to him. The Subject 1 1 door exits close behind and works down for contact on No. 1. Watch for the coming event, prepare and shoot.

For larger groups use the same principal - No. 1 subject working for cameraman all other subjects working on No. 1.

Miscellaneous Points.

1. Pre-brief in detail, the partners wont mind as much as if you botch the drop on them.

2. If at all impatient for getting your results into print (and who isn't) use 12 or 20 exposure cassettes as you may not take any more than this number of shots in a day. This impatience will tone off with time.

3. Expect a lot of heart breaking failures for quite a long time. You may look at your collection of grainy, overblown, blurry prints and say "Well Buquor and Sandborn have nothing to be frightened of here". but stick at it as they had the same problems in the past.

4. Look after your negs.

5. Concentrate on the relative work side of the drop and resist the strong impulse to shoot early.

6. Use the centre range of the apeture settings F 11 - F 8 at 1/500 with black and white film (which should not exceed 150 ASA). For slow colour film use F 5.6 and the fastest spped appropiate to the light avaliable (usually 1/250).

7. Leave photography alone on dull days.

8. Expose for face tone, with colour for "Close in" individual shots.

9. To start, set focus, out round 30 ft. so depth of field extends from 15 Ft. to infinity. Do not get ambitious for a close in shot till you feel you can handle it capably.

10. Use telephoto and wide angle lenses only for special jobs. Remember tele also magnify camera movement, wide angle give distortion if used too close. They tend to push the subject away but advantages include greater depth of field, and give a more panaromic and spectacular effect, recommend for the specialist.

11. A peice of adhesive tape is often useful to lock the ring set ings as they may be bumped while getting out of the aircraft.

12. Keep track of the number of shots left on the roll.

13. Be sure the camera has film in it.

14. Clean the lens regularly.

15. Bulb type releases are prone to deflation on rapid re-entry into dense air therefore it is advisable to incorporate a one way valve in the bulb to allow air in.