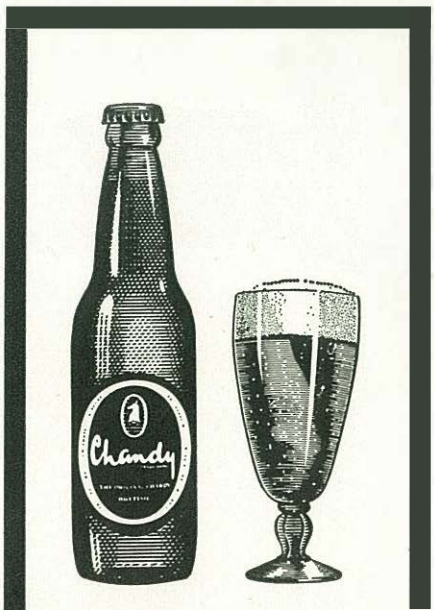
Sport Parachutist

3s.

Chandy CHAMPIONS

The Chandy Trophy is awarded for the Scottish Open and National Parachute Championships



Blue sky, hot blazing sunshine, small white "umbrellas" growing bigger, gently cascading and floating to the Dropping Zone.

Jostling, bumping, thirsty Parachutists and Spectators – *thirsty, really thirsty,* edging and elbowing to the bar to drink Chandy.

Now edging and elbowing out from the bar
—later to drop in again.

Chandy

The finest thirst quencher in any bottle or can

THE CHANDY BOTTLING COMPANY, 52 CHISWELL STREET, LONDON E.C.1.

THE JOURNAL OF THE
BRITISH PARACHUTE ASSOCIATION

Sport Parachutist

Volume 3, No. 1 Spring 1966 Three shillings
(Ex U.S.A.)

British Parachute Association,
Artillery Mansions,
75 Victoria Street, S.W.1. Phone: SUL 3760.

(Cover) Ken Vos looking for John Meacock (behind)—photo by Charles Shea-Simonds.

CONTENTS

"COPY-DATE" FOR SPORT PARACHUTIST

The following dates are the FINAL dates on which "Copy" will be accepted by the Editor;

Spring Edition: January 31st Summer Edition: April 30th Autumn Edition: July 31st Christmas Edition: October 31st

With regret, the Editor will not be able to undertake the return of any material printed in the Magazine. All such material will remain with the B.P.A.

EDITORIAL

"GROUPY" TO RETIRE

Everything seems to go in phases or cycles—from parachuting to politics and in that order, for our purposes.

I mention this because early members of the B.P.A. will remember what a struggle it all has been during the last five years. Members joining later have found a thriving Association with efficient H.Q. Office and Staff and a tremendously enthusiastic Chairman and Council meeting very frequently to discuss points put before them by Association members.

It would not be true to say that the B.P.A. was the brainchild of our Secretary-General—it wasn't, but only by his sheer guts and determination to make it work has it succeeded as well as it has.

Not many of you may know that for many years Group Captain Caster, M.C., was concerned with non-military parachuting affairs at the Ministry of Aviation, after which he decided to continue his efforts to further sport parachuting in this country. This he has done with great success since he joined us over four years ago, and much of our rapid progress during this time can be attributed to his knowledge, hard work and foresight.

It is ironic that it is he who assisted us in getting promised Government aid to the value of £1,500-£2,000 p.a. for his replacement, while he has been doing this same work for nothing, apart from travelling expenses, for over four years. His retirement marks the end of an exciting era, for so much has been accomplished in such a relatively short time—we shall always be in his debt.

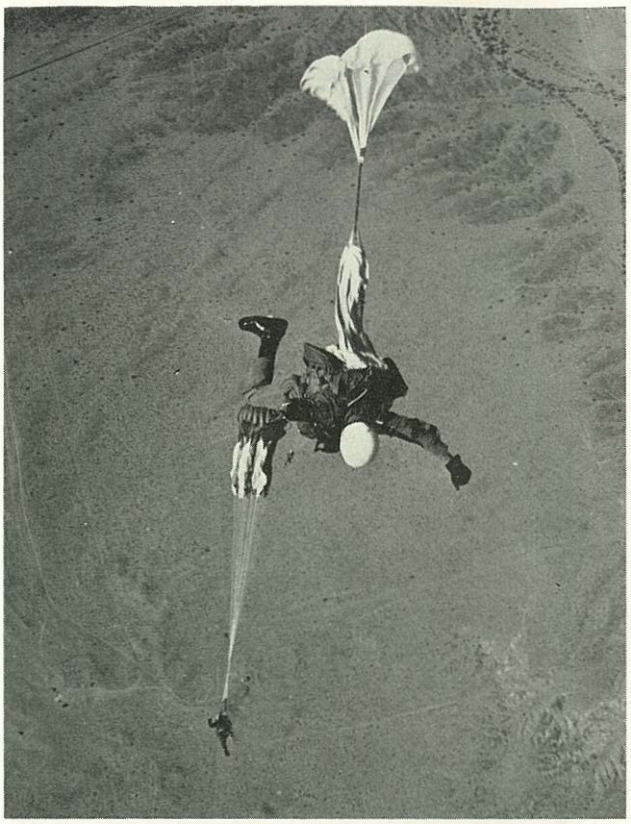
It was Aristotle who said,

> *"Happiness is a kind of energy, and an energy is evidently produced and not like property, merely possessed",*

which to the ordinaries, like you and me, means get cracking and give like "Groupy" for a change instead of always taking. We shall miss him badly, and wish him all the best.

The past year saw a great advance in Sport Parachuting but at the same time a sharp increase in accidents. Whatever the causes of those accidents may be, known or unknown, it is true to say that too little thought given to the safety factor must be largely responsible. There will be more accidents this year—see that you are not one of the victims!

Perhaps the biggest difficulty in the way of the B.P.A. is the nature of the thing itself. As parachutists, most of you are members of clubs, and therein should lie your enjoyment. For you the B.P.A. should represent Safety, Progress, Administration and Organisation, and most of all a concerted and united effort towards every aspect of Sport Parachuting. Does it? *I* think so, but if you don't, I would make two observations. Firstly, if it doesn't, then it's your own fault and no one else's. You are the Association and it is there for you and only you. If you don't help it and take an active part in its affairs, you have only yourself to blame—don't blame the Association. Secondly, everything takes time and time in the hands of some is not so well utilised as in others. From virtually nothing, five or so years ago, to the position of a Government grant of £1,500-£2,000 p.a. is something in my opinion, and so, if you want to help, and think you can, write your sensible and constructive views to the Secretary-General and we'll all be grateful. Safe and happy jumping in 1966!



Above: Two Golden Knights at the opening point. Note the well-balanced stable position, also the double drogue.

Below: Another Golden Knight, Sgt. Harris, combining concentration, skill and almost effortless ease to ensure that he lands right on the button.

BRITISH PARACHUTE ASSOCIATION

Approved Advanced Parachute Instructors

CATT, W. R.		Parachute Regt. F/F Club
CHARLTON, A. F., A.F.C.	(P)	R.A.F. S.P.C.
CLARK-SUTTON, B. T.	(P)	R.A.F. S.P.C.
DENLEY, P.	(P)	Scottish P.C.
GREEN, B. A. N. ..	(P)	British Skydiving Centre
GRIFFITHS, R. ..	(P)	Green Jackets P.C.
HOFFMAN, J. N. ..	(P)	R.A.F. S.P.C.
HUGHES, D.	(P)	A.P.A.
JICKELLS, T. G.		S.A.S. Skydivers
MCKERN, D.		Parasport Skydiving School
MCLOUGHLIN, J. ..	(P)	R.A.F. S.P.C.
PORTER, B.	(P)	Scottish P.C.
REID, R.		Army Peregrines Scottish P.C.
ROBERTSON, DR. C. A.	(P)	Scottish P.C.
SHERMAN, P. W. ..	(P)	S.A.S. Skydivers
TURNER, P. W. ..	(P)	R.A.P.A. and Army Peregrines
VATNSDAL, S. ..	(P)	Parachute Regt. F/F Club
WILSON, BRIG. R. D., M.B.E., M.C. ..	(P)	Army Peregrine

Approved Parachute Instructors

ACRAMAN, R. S.		A.P.A. Centre
ANDERSON, B.		S.A.S. Skydivers
ANGEL, B.		British Skydiving Centre and Green Jackets P.C.
BALLS, J. E.		British Skydiving Centre and Parachute Regt. F/F Club
BASNET, J. T. ..	(P)	B.P.C.
BURDETT, A.		R.A.F. S.P.C.
CLARK, J.		British Skydiving Centre
CASHMORE, M.		B.P.C.
CRAWLEY, T.		British Skydiving Centre and Green Jackets P.C.
COLE, A. J. N.		B.P.C.
DAVID, B.		Parachute Regt. F/F Club
DICKSON, T. G.		Scottish P.C.
DON, W. J.		B.P.C.
ETCHELL, R. C.		British Skydiving Centre
FLAMBERT, MISS H. ..		British Skydiving Centre
FRANCOMBE, D. ..	(P)	R.A.F. S.P.C.
GARDENER, E. A. J. ..	(P)	Parachute Regt. F/F Club
GOWENS, O.		Parachute Regt. F/F Club
HALL, W.		Scottish P.C.
HARRISON, J.		British Skydiving Centre
HOGG, J. E.		B.P.C.
JACKSON, M. L.		Sapper Skydivers
JACOBS, K.		R.A.F. Abingdon S.P.C.
JONES, B. A.		R.A.F. S.P.C.
JONES, K. R.		Parachute Regt. F/F Club
MRS. D. KNIPE		Severn Skydivers, Staverton
LANG, P. M.		Independent
LETTS, R. D.		Green Jackets P.C. and S.A.S. Skydivers
LOWE, J. P. T.		B.P.C.
MCCARTHY, D. P.		S.A.S. Skydivers
MACNAUGHTON, D.		Parachute Regt. F/F Club
MARTIN, M. A.		Parachute Regt. F/F Club
MAPPLEBECK, K.		R.A.F. S.P.C.
MEACOCK, W. J.		British Skydiving Centre and Green Jackets P.C.
O'BRIEN, M.		B.P.C.
O'GORMAN, T.		Green Jackets P.C.
PEACOCK, D. ..	(P)	Cyprus Combined Services F/F Club
REDDICK, J.		Army Parachute Assoc.
REEVES, M. R.		S.A.S. Skydivers
REES, B.		S.A.S. Skydivers
ROBERTSON, R.		R.A.F. S.P.C.
ROWBERRY, E.		Parachute Regt. F/F Club
RUNACRES, J.		
SCARRATT, W.		Parachute Regt. F/F Club
SEEGER, R. A. M.		Independent
SHEA-SIMONDS, G. C. P. ..		Parachute Regt. F/F Club
SLATTERY, W. P.		Navestock School of Sport Parachuting
SPARKES, J. A. S.		R.A.F. S.P.C.
SMYTH, D.		British Skydiving Club and Green Jackets P.C.
STARKIE, P.		
STEPHENSON, E. W.		R.A.P.A.
ST. JOHN, L. N. E.		B.P.C.
SWEENY, A.		R.A.F. S.P.C.
UNWIN, A. J.		Poddington P.C.
VOS, K.		Bristol Skydiving Centre
WALLACE, D.		British Skydiving Centre
WALMSLEY		Parachute Regt. F/F Club
WEST, M.		British Skydiving Centre

FOOTNOTE: *All* instructors are requested to notify the B.P.A. in writing when they are no longer complying with the Association's instructor status requirements, in order that their names shall be removed from this list.

(P) Panel of Examiners. This list cancels all previous lists of B.P.A. Approved Instructors, and is correct at October 26th, 1965.

"TAKING THE MICKEY"

(with apologies to William Hickey)
Dave Waterman

Left : Claude Bernard goes up for a one-man jump.

Below : A touch of the pioneers as Claude Bernard goes to jump alone.

Top (right) : Two French canopies—the Stromph, with his legs open position, can be seen at the bottom of the picture.

Bottom (right) : The Stromph.

During the last three months nothing much has been moving in the parachuting world. Mainly due to the time of the year, weather, etc.

The trip to Chalon which I am helping to organise is going along great guns, mainly due to the generosity of the Ford Motor Company at Warley, Essex. Through Harry Carlton in the Press Office they have given us the use of a Ford Transit 12-seater bus. And I would like to use this column to say "Thank you". A full report of the trip, together with pictures, will be published in a later issue of the magazine. Among those coming along are Terry Crawley (Green Jackets), John Saar (Green Jackets), Helen Flambert (Thruxton), Harry Ferguson (Stapleford), Nadia Abish (Stapleford), Charlie Harding (Stapleford), Ian Walsh (Hereford).

Nadia, who was born in France, will be our guide. She has had dealings with the natives before and will no doubt advise us on what trinkets and beads to take them. Her knowledge of the language will enable us to barter for food.

One meets many characters in parachuting. The one which Chalon immediately brings to mind is "The Stromph", which translated means the Gnome. He is a little Frenchman with a bushy beard, looking very much like his namesake, who, so the story goes, was in the Foreign Legion Paras in Indo-China. Captured at Dien Bein Phu. A mere shadow of his former self after being released he was discharged with a pension. All of which he spends on Skydiving. His exit from the Chalon Rapide is to be seen to be believed. . . . From a distance of some two yards from the door, he takes off . . . diving and turning at right-angles towards the tail as he passes through the door. Without touching the aircraft. . . .

I remember seeing him miss dead centre by about two feet, stand there cursing in French and stamping his feet. When he saw his audience was English he immediately cursed in Anglo-Saxon, which with a French accent sounded very funny. He also experiments with his own mods and birdman attachments, which he uses in Italy because they are outlawed in France.

Back to England. . . . Belated congrats to Lawrie St. John and the ex Miss De la Salle on their wedding. Now we know who was the model for the free-fall figures on the mugs and ash trays. I can just see Lawrie hanging from the ceiling in a free-fall position whilst his wife etches free-fallers all over beer mugs and ash trays.

Dick Wallace from my old Battalion, 3 Para, is leaving the army (and parachuting) after a leg injury. Sorry to see you go, Dick, but I am sure you will all join me in wishing him the best of luck. Mr. and Mrs. Ram Seeger are back in the country from East of Suez.

One question many people are asking. . . . When are the Royal Aero Club going to reissue licences. Some who are waiting for a C will shortly have enough jumps for a D.

Seen in a Salisbury pub . . . the double of Helen Flambert, pulling pints! Could not have been Helen as she works in Salisbury Hospital and a girl of her means does not need the money.

John Clark has left British Skydiving for Australia . . . mothers of Thruxton . . . you can now unlock your daughters.

John Cole at Blackbushe is hoping to do some relative work with a huge Teddy Bear. Watch it, John, remember what happened to Goldie Locks.

I am now the proud owner of a motor-driven Nikon camera which, during the coming season, I hope to use for free-fall pictures. The Pullin Camera Co., which is one of the Rank Group, and the importers of this camera, are very kindly fixing it on to a helmet with a sight. Mr. Shea-Simmons and Joe Gonzales, please note. . . .

Members of the Green Jackets Display team at the Stapleford Airshow. Terry Silber, 'Griff', Dave Waterman, Terry Crawley ; the young lady was there to promote E.P. petrol. 'Griff' is looking the other way, as he has just caught sight of his fiancee. They were married the following week.

A NIGHT JUMP WITH THE TERRITORIAL ARMY by a Signalman from 305

Into the lorry and we are on our way to R.A.F. Benson. Night has descended early this winter evening; the air is cold but still; the lights of Chelsea are warm but we are no part of that. Soon we are on the Motorway and we chat idly, smoke cigarettes or just sit silent with our own thoughts. We are jumping tonight.

An hour and a half since we left the King's Road and we are at the airfield. We draw parachutes and carefully adjust the seeming mass of straps and buckles to our own requirements. Satisfied, we relax, having checked both main parachute and reserve. The containers we will jump with weigh 95 lb. There are 24 of us and we have been checked and rechecked, documented and redocumented. We form two bedraggled lines, heave the heavy containers on to our shoulders and stagger towards the Argosy. All round is a profusion of coloured lights and flashes and glares. We clamber into the aircraft, helped with our loads by willing hands. At last we can sit down, with our backs to the aircraft-side, facing each other across the centre of the fuselage which is a confusion of reserve parachutes, containers and helmets. The four engines burst into life suddenly, one by one, slowly at first, a cough, a splutter, a burst of flame, a powerful roar and then the slow whine of idling turbo-props.

The doors are closed; we are all strapped in; the despatchers have made their last-minute checks. We move away from the arc lights and into the gloom of the taxiway, and stop at the end of the runway. Our pilot eases all four engines on to maximum revs. In coarse pitch, the wheel brakes hard on. The red light on the control van changes to green and we start to move forward again. But this time this is no amble along a taxiway. There is a sense of urgency. More speed, and more. We are all pushed sideways by the surging aircraft like reeds in a wind; the nose tilts and the aircraft is climbing rapidly, almost pleased with itself. There is no turning back now; it's a one-way trip. Some of us have taken off in an aircraft dozens of times but have never landed in one!

It will not take long to get to Weston-on-the-Green, tonight's DZ.

"Prepare for action!"

At last! We stand up, unclip our reserve parachutes and push a leg through the strap on the container, attach the suspension cord to the parachute harness. We clip the containers to the D rings on our harnesses and bend involuntarily under the weight. We refit our reserves. Our static lines are attached to the wire runner in the roof of the aircraft. We are ready to jump. Conversation ceased a while ago—everyone has their own private thoughts and fears.

There are 24 of us, 12 on each side. On the first run six will jump from port and starboard and on the final run six more. I'm lucky this time. I'm the first man in the second starboard stick.

The doors are opened and the night rushes past. The main lights in the aircraft have been extinguished and there remains a pale blue ghostly glow from the emergency lights.

I tuck my book inside my smock—someone shouts, "Is that a Bible, then?" and a few people laugh rather too heartily. Sickening.

The first stick has gone. There were 12 men—then none.

The Argosy carries out a wide sweep to approach the D.Z. once more.

"Stand in the door!"

I'm first.

About three minutes to wait.

I stand in the open doorway, unsteadily, with the container pulling down on my chest. I feel strangely detached as I see cars with headlights full on, sweeping through the country lanes. The despatcher taps my shoulder, gives me a grin and a "thumbs up". I suppose my inner feelings must be showing outwardly. The red light throws a baleful glow over the exit. I tense up and look at the nothing out through the door. I feel all right now—it's not the action that makes one apprehensive—it's the thought.

A green light; a smack on the shoulder and—

"Goooooooo . . . !"

I leap into the night, I feel myself turned in the slipstream. The noise is tremendous. The parachute flaps for a split second, then it has opened and I'm hanging in space.

Three seconds have elapsed. The aircraft is roaring along no more than a few hundred yards away but I don't hear it. All is strangely quiet and I seem to be the only person in the sky. There is lots to do. I'm on my own; no one can help me now; whether I land safely or not depends on my decisions.

"Check the canopy—it's open O.K.; rigging lines not twisted."

The ground is invisible in the black except for a flare.

"Pull down on the front lift webs to counteract the pendulum motion."

"Hello! Something wrong!"

The lift webs cross from back to front just above my shoulders—an inverted canopy.

"Decision."

"Plenty of time."

"Think it out."

"Logically everything should work as usual."

"To Hell with logic!"

"It's night-time."

"You remember what they said on the course? 'When in doubt. . . .'"

"Plenty of time."

"Finish the drill."

I pull the slip on the leg strap of the container and look to see if there is anyone below. No one, *anywhere*!

"Slip the hooks."

The container drops 15 feet and there is a slight tug on the harness as the cord tightens.

"O.K., so far."

"Still can't see the ground. Must be there though!"

"Plenty of time."

"When in doubt pull the reserve, they say."

The red handle comes away easily—a flurry of white.

"Funny, I've always wanted to do that."

"Where's the bloody thing gone?"

With the slow descent on the main canopy the reserve has fallen below me but then it struggles up in front and above me like some white robed spirit. I'm now descending on two parachutes, a white one and a brown one.

"Two's better than one."

The night is still like pitch, the ground is invisible and the flare has expired.

"Feet and knees together, chin in, elbows in."

"There's the ground!"

CLUB NEWS

NORTH LANCASHIRE PARACHUTE CLUB

This was the first club in Lancashire to provide the means by which local parachutists could take part in the sport without having to travel enormous distances.

The decision to create a new club stemmed from the growing number of inquiries received from civilians by the Pegasus Club, a thriving but semi-exclusive parachute club, catering primarily for Airborne R.E.M.E. personnel.

"The Four"—Frank Leck (Secretary), Stan Palin (Treasurer), Bob Parry (Equipment Officer), and Jim Reynolds—were all experienced military parachutists. Each had some previous organising experience as members of the Pegasus Club and were well aware of the difficulties involved.

Armed with four complete rigs, a D.Z./airfield with permanent clearance to 12,000 feet, the use of an aircraft and services of a first-class pilot, they set out to tackle problems which at times seemed insoluble. Nevertheless, the additional assets of safety consciousness and discipline, instilled by years of military training, very soon began to pay dividends. Membership increased, funds started trickling in, equipment was bought, until, within a very short time, the club had all the hall-marks of a well-established organisation.

On our first anniversary, we looked back on what can best be described as a highly successful year. The number of aircraft employed have been varied: Jackeroo, Auster, Tri-Pacer, Cessna 182 and Aermacchi A160—and the availability of pilots has been a very minor problem. We not only have an excellent D.Z. with permanent clearance, but the choice also of two other well-jumped locations as a stand-by, plus sufficient rigs to keep members and aircraft busy on club week-ends. Above all, we are financially solvent!

All this is extremely gratifying, for we have received no material assistance from outside and have had to rely mainly upon subscriptions and "airborne initiative".

The arrival of several G.P.s gave us a big break. A money-earning display team, which we soon used to fullest advantage and after 13 well-received displays, we feel we have really "arrived". Small time? "Great oaks from little acorns grow." We hope to double our performance next year.

Novices are well catered for by the North Lancs P.C. Of the 200 descents made during the season, over one-third were made by novices who took their first jumps with us. Apart from the past services of Ted O'Gorman and Tony Unwin who, we hope, will be back with us again shortly, we rely for initial instruction upon our old indefatigable—Frank Leck. Frank is a qualified Army Parachute Jumping Instructor with many years of experience behind him. He is also W.O.II R.E.M.E., so woe betide the bods who come for a giggle during working hours. Their feet just don't leave the ground. A hard man is our Frank, but a wizard for all that. Hence our accident-free record.

The initial club fee is £10. This includes club membership, ground training, exit and flight training and the first descent. Thereafter each member pays a monthly subscription of £3 10s. This covers all parachuting costs: aircraft, pilot fees and hire of equipment, etc. Although the subscription may seem a little stiff to some, it is actually the reverse, for apart from B. and B. and beer money, each member may attend club week-ends free from the worry of parachuting expenses, and may, on those rare fine week-ends, add more descents to their score than would otherwise be covered by £3 10s.

No account of the clubs would be complete without a brief reference to our "drivers"—Commander E. Bibby and Mr. Russ Whyam. Commander Bibby, who has been with us since our inception, is pilot/owner of the Cessna 182 and an enthusiastic participant in our activities. He is also a highly competent spotter, as many of us have come to realise with gratitude. Incidentally, how any man can fly so expertly in bare feet with the door off and dressed in shorts is beyond me.

Russ Whyam, another old friend of the club, is a Director and Chief Instructor of Blackpool Aero Club. It is a condition of club membership that all personnel should be members of the Blackpool Aero Club (10s. per annum) in return for which we are able to enjoy the extensive airport amenities. Russ, who wields a great deal of influence in local air affairs, has pulled many rabbits from his hat for us. In fact I would go so far as to say that without his assistance we would, on several occasions, have remained grounded.

It seems a shame to deal so briefly with the club's two most important assets, but it is sufficient to say that between them Commander Bibby and Mr. R. Whyam have about 60 years of flying experience. A source of immense comfort to us all.

I have dealt rather scantily and perhaps not very expertly with the birth and growth of the North Lancashire Parachute Club, so if there are any complaints, I must plead lack of time and (ask the Ed.) lack of space. However, the act of drawing our light from beneath the bushel is sufficient. If anyone should ask, "Why haven't we heard from this shower before?", I must point out that time alone can decide the future of a new parachute club. The chances were that we should founder soon after our launching, with the resultant ignominy of "Finis" being placed as an epitaph over our activities. Northern caution prevails. As it is, we are in the happy position of being able to offer to all inquirers the ample facilities of a healthy club. By the way, the lighter side of club life is not to be ignored, although a detailed account of our extra-curricular activities is out of the question as the Ed. and the public censor must be considered.

In conclusion—all inquiries are welcome and should be addressed to:

The Secretary,
North Lancashire Parachute Club,
9 Beaufort,
Formby, Lancashire.

SCOTTISH PARACHUTE CLUB

V/STOL Parachuting

The S.P.C. recently tried out a Helio Courier, V/STOL aircraft belonging to Strathallan Air Services Limited, at Strathallan Castle, Auchterarder, Perthshire. There are only three such aircraft in Britain, so it may be that this is the first time the type has been used for parachuting in this country.

It is a high-winged monoplane without underwing bracing struts (see photo). The engine is a 300 h.p. Lycoming with a three-bladed prop. Its system of slots and flaps gives the aircraft a speed range of 30 m.p.h. to 160 m.p.h. at cruising speed; the climb rate is 1,500 ft. per minute, and it can land and take off in truly miniature areas. The flying for the parachute drops was done from what could excusably have been mistaken for the castle lawn.

It carries four parachutists and the pilot. The exit is from the spacious rear door on the starboard side (see picture). Static liners are hooked up to a metal bar which is part of the fuselage beside the door. Students sit facing forwards, with the jumpmaster kneeling behind the pilot's bench seat on the port side.

The exit without the help of the accustomed wing strut or wheel looked as if it might pose a problem at first, but as it turned out, this worry was unjustified. On the command "Slow down", the pilot dropped the speed right back. At 55 m.p.h. the slots came out with a mighty clang, the aircraft nosed up into its slow speed configuration and the speed dropped right off to 30 m.p.h. It is advisable to start the dropping run 300 ft. above exit height for static line stick drops, because the rate of sink increases as the speed is reduced. Alternatively, run is slightly faster.

On the command "Feet out" the first man sat forward into the doorway with his left hand on the door sill and his right well up the door edge behind him. At the word "Go", he propelled himself out vigorously, simultaneously twisting to face the line of flight, spreading stable and looking up at the slots. Number two and three men followed rapidly.

Not everyone managed to face fully forward on exit, but even those who went off at nearly right-angles to the aircraft were able to remain stable, and at the debriefing opinion was unanimous that the lack of strut and wheel was no disadvantage.

An incident which added a droll touch to the occasion was a report phoned in by the local police after the first drop (three instructors, one of whom carried smoke) that an aircraft had been seen in trouble with its engine stopped; three people had baled out, and one of those had his leg on fire!

At £15 per hour it may seem an expensive aircraft to operate, but the rates of climb and descent are so great and the stick exits so speedy that it is quite economical at the usual club rate of 30s. per student jump.

Although the airfield by the castle is too small to use as the D.Z., there is plenty of wide open space in the surrounding countryside. It is likely that the club will jump increasingly often at Strathallan Castle as the season progresses, although it is intended to make some use of Loganair's new Cherokee 6 at Glenrothes.

It is hoped to run a course for S.P.C. members at Strathallan during the week July 9th to 15th, just prior to the Scottish Invitational Championships at Arbroath. On this course it may be possible to take some students from other clubs, provided that they have their own main 'chute, fully documented, and are B.P.A. members. They will have to join the S.P.C. (£4) but otherwise there is no course fee. Jumps will cost approximately 30s., and visitors will have to find their own accommodation, although Strathair hope to help to put people up locally. Interested persons should contact George E. McEwan, Club Secretary, at 82 Croftmon Avenue, Glasgow, S.4. Tel: CROftfoot 7405.

George Philips practises his exit.

CYPRUS SCRAPEBOOK 1965

A significant moment in local parachuting occurred last month when the 10.30 Comet for Athens, Rome and London was held up for five minutes at the end of Nicosia Runway 32 to allow the Auster to drop its human payload from 12,000 feet. With the Comet skipper's fuel bonus vanishing in a haze of paraffin vapour and his ire no doubt mounting in sympathy with his jet pipe temperature, we knew that the Cyprus Air Traffic Controllers had their priorities right. Big day, too, for Tony Dale—his first 60-second delay.

The season opened, I suppose, early last March.

Twenty-second. Made 40-second delay into Sports Stadium for Squadron birthday party. Landed 10 metres from beer tent, to receive congratulations of D.Z. party.

JULY

Tony announced water-tight plans for three-week visit to CHALON. Leave dates, air passage, course dates, medical, all fixed. Departs on 24th.

Twenty-third. Tony falls off scooter and breaks right leg.

Twenty-fourth. Visited Tony in hospital to cheer him up. Quoted Robbie Burns and offered him job on D.Z. Neither appreciated.

Twenty-sixth. Approached local Controller for permission to soften up target area. Permission granted. Permanent amenities of Nicosia International Airport now include a 20-metre sandpit.

AUGUST

Squadron Leader Garry Wilson elected as Club Chairman. Celebrated by two-metre landing. Must spot him myself next time.

OCTOBER

First. Heard rumour that Parachute Regiment Rapide was *en route* for BAHRAIN.

Seventh. Cyprus team departed by Comet for triangular competition in Bahrain as guests of 1 Para. Met by Geordie Charlton and Leo McArdle.

Twelfth. Jumping commenced at Zallaq airstrip, in company with 1 Para. and the Regimental Team who were winding up a busy season in U.K. with three displays over here.

Sixteenth. Triangular competition cancelled, due to recall of two-thirds of Cyprus team. Geordie, Leo and self started basic course parachuting, with abundant assistance from the Regimental Team. Eight lifts per day, thought I was back in CHALON, except for camels on D.Z.

Twenty-second. Returned from Bahrain feeling much refreshed after 19 descents.

Twenty-fifth. Dropping programme at Akrotiri held up for one hour by Prime Minister *en route* for Rhodesia. (Obstruction at the highest level.)

Twenty-sixth. Demonstration descent for visiting V.I.P.s. Encountered divergence of opinion as to opening point.

NOVEMBER

Fourth. Sun set 17.05. Tony and John Robinson made 40-second delay into Dhekalia arena for tattoo rehearsal. Declined first pass. Live run made at 17.15. Arena lights switched on by alert senior officer. Tony claims first night free fall in Cyprus, but he always exaggerates and both made arena.

Sixth. Dhekalia tattoo. Jump time brought forward to 16.30 by even more alert senior officer. George and self obliged 7,000 crowd with batôn pass and stand-ups.

DECEMBER

Fourth. Jumped with George from 4,000 feet into local school playground for Christmas fair. Both dodged goal-posts and miscellaneous infants for successful demonstration.

Fifth. Reported in *Cyprus Mail* that intended free fall did not take place due to low cloud, and a normal (*sic*) parachute jump was made instead. Presume static lines were 2,000 feet long.

Tenth. Interviewed on Forces Broadcasting Service. Satisfactorily disposed of first question. "Did it help to be mad?" Confess to being floored by second, on aerobatics, "Could I go up?"

Fifteenth. First for Pete McGurk—off the static line and into a copybook five-second delay.

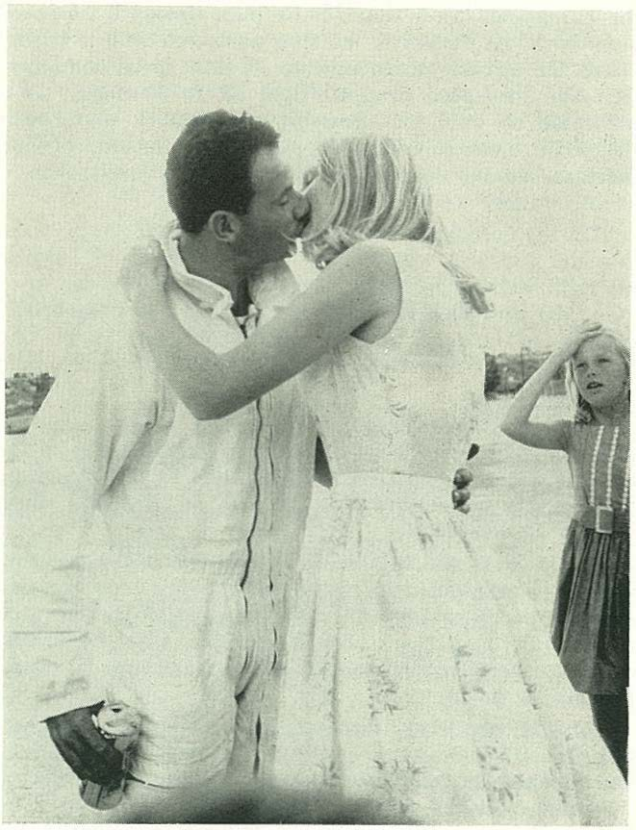
Thirtieth. First for Willie Reid, sixth static and first five-second in space of half an hour.

If the majority of these jottings concern displays it is only because Club Training programmes are normally uneventful and we try to keep them that way. Over 200 injury-free descents have been made by students, four of whom make the 160-mile round trip to Dhekalia each week-end, often only for one descent and de-brief. Willie Reid, Dave Brewin, Pete McGurk all keep coming back for more.

Plans for 1966 include a new club-room and centralisation of all facilities at Nicosia, a redoubling of dropping programmes and maybe a team for the Nationals.

New students scheduled for jumping include a United Nations course of Danish, Finnish and British troops. With the recent purchase of three new rigs, and the weather only just around the corner, it looks like a full year ahead.

This is what they do in Cyprus!



PARACHUTING NEWS FROM MALAYSIA

Green Jackets Parachute Club

". . . and keep it climbing on the run-in!" With a club headquarters in Victoria, London, and D.Z. at Penang, Malaysia, the Green Jackets Parachute Club has a flying time problem. We calculate that the flying time on one Britannia to Malaysia would keep us going up and down like yo-yos into the 1980s. The Ministry of Defence are not quite seeing it our way, yet.

Between spells of soldiering in Borneo, 2nd Battalion, The Royal Green Jackets have made 60 descents. That may not sound many, but the six parachutists began with a minute amount of kit and no instructor. A feverish search by Lieutenant Roger Ker and Major Val West located an instructor—Bob Milligan of the Royal Australian Air Force, a D.Z.—Bayan Lapas airport, and an

aircraft—a Cessna 172 of the Penang Flying Club.

With 12 students and a mixed membership of Green Jackets and Australian Gunners, the Penang Parachute Club was in business. Over the New Year, Bob Runacres and four Sapper Skydivers came up from Singapore. "We enjoyed having them, we picked their brains, and we hope they come back."

When their present spell in the jungle is over the Battalion's parachutists hope to follow up their first successful display and initiate some of the half-hundred waiting to join the club.

Meanwhile, back at Buckingham Gate. . . . Owing to the low girders in our drill hall loft, United Kingdom members are easily picked out on the D.Z. They come in two sizes: crouching like large dwarfs or tall and bloody. Regular Monday-night training sessions all through the winter have produced a fine crop of students for the new season. Most got their first jump during a wintry afternoon's session at Stapleford. One incident there caused Corporal Terry Crawley's hair to stand on end and practically sprout through his helmet. His analysis and suggested solution of this simultaneous deployment with a happy ending will appear in a later edition of SPORT PARACHUTIST.

Coached by club instructors, Eton College boys have passed their ground test with flying colours and should by now have at least one entry in their log books.

All through the dreary winter the "old men" of the display team have valiantly shown more interest in opening points than times. Setting down their grand-daughters they strode with creaking limbs to the aeroplane and did defy gravity and Father Time to practise on their Para-Commanders. Despite opening shocks that rattled their teeth and creased their pension books, they reckon to go "on" at a string of displays.

With the greatest reluctance the club has relaxed its octopus hold on Roy Trustram Eve. After starting the Green Jackets Club and guiding it with a sure hand, he has retired to give more time to the B.P.A. He has parachuted himself and introduced dozens of others to the sport, but there is no doubt he has a bigger role to play in the national development of the sport as B.P.A. vice-chairman. We wish him luck, although "it's us that need it more".

With apologies to the U.S. Navy team, our Shooting Star of the Year has been Captain Robin Letts. Fast relative work in the Borneo jungle, where he is on loan to the Special Air Service Regiment, won him a Military Cross. Lieutenant Jeremy Palmer Tomkinson distinguished himself in another sport with a brilliant first in the National Ski Championships.

Smothered by requests for fan pictures and rather more personal souvenirs, Des Smythe, cover boy of the last issue, has fled to Australia. Our band can never be the same without his cymbal playing. John "I can fly on a biscuit" Meacock has abandoned us temporarily (we hope) for New York and points East. New arrivals include Army Peregrine Sean Friel and Lieutenant John Saar, both on transfer from 10 Para. T.A.

Anyone prepared to mix parachuting and soldiering in gentlemanly quantities is welcome to join us. Meanwhile, no parachutist need feel lost in London on a Monday night. At 58 Buckingham Gate our bar is open. . . .

Any queries to J. Saar, 1 Redstone Road, London, N.8. Telephone: day—ARC 4381, ext. 15; evening—MOU 1438. After February 13th to Captain C. J. M. Haines, LRB/R.

BRITISH PARACHUTE CLUB REVIEW

The last two or three months have been busy for us. At long last we have finished our target pit. It looks pretty small from the air, but with practice we'll be getting a few gravel rashes, I hope.

The club is putting at least one team into the Nationals this year, and the pit will give us a lot more confidence in going for the disc.

We welcome Peter Groves to our club; he came third in the U.S. Nationals the year before last, and we are hoping he will give us some help and training for *our* National teams.

Andy Porter has returned from the States and is, we know, very hot on accuracy, so we should not disgrace ourselves at Netheravon.

We held our A.G.M. on December 11th, 1965, and two new directors were elected to the Board: Trodger Green, who is now our equipment officer, and Geoff Orchard, taking over from Fred Gayler the formidable task of Correspondence Secretary. All applications and club inquiries should be directed to Geoff in future.

Two Honorary Life Members were unanimously voted in: Lee Guilfoyle, manager of Parachutes Incorporated at Lakewood, New Jersey, U.S.A., and Bill Ottley, Horizon Parachute Club, Applegarth, and P.C.A. Director living in New York.

Both were voted in for their generosity and help towards visiting members of this club. Lee has been in hospital recently with an ulcer, and on behalf of all those who have had the pleasure of meeting and jumping with him I wish him a speedy recovery and a healthy 1966. (See you soon, Lee!)

We started First Jumps Courses again on December 5th, 1965, and kicked off with 18 students; we have been bugged by rough weather but at the time of writing 15 of them have done their first jumps, all very satisfactory, and only one minor injury—a sprained ankle, landing in a frozen field.

We have the use of some fields at Woodmancott in Hampshire, kindly loaned to us by Mr. Lovell of Manor Farm. It is a pretty near perfect location, and well off the beaten track.

We hope to start another course in the middle of February.

Our current course has four ladies in it, which is rather heartening; let's hope they will all progress well and come along to join in on our many social evenings.

We had a pretty good evening organised for New Year's Eve. Bill Freeman, our Aircraft Manager, had laid on a flarepath for us and at midnight we had hoped to put two sticks out of our Rapide. Sort of "jumping-in the New Year", but, as is so often the case, our "lovely" weather decided otherwise. After waiting for hours for the 800 ft. cloud haze to lift we decided to conform and have a "wet" New Year.

The sky over Blackbushe seems to have quite a lot of P.C.s in it these days and a few of the lads have X-BO piggy-backs. Keith Holmes brought a Crossbow canopy back from the U.S. last year and is rather unfortunate at the moment in being in hospital at Harrow, having an operation on a knee. He says there's no connection!

About 10 of the boys are going to France this summer to get some sun as *well* as the jumping, although I don't believe they have decided which centre to go to yet.

Well, that just about rounds off the news from our end of the woods. Here's to a Happy New Year!

SAFETY . . .

BPA INSTRUCTORS' CONVENTION
November 20th, 1965

The meeting approved the Chairman's proposals for altering the Safety and Training Committee as follows:

(a) *Safety and Training Committee,* to meet at quarterly intervals under the chairmanship of Brigadier Wilson, at different parachuting centres.
(b) *Technical Committee,* to be convened as required by the Chairman, Squadron Leader Hearn.

Chairman invited all clubs to submit to B.P.A. Council their recommendations on subjects to be considered by the Safety and Training Committee during 1966.

PACKING CERTIFICATES

Agreed by majority that the packing certificate should remain uncomplicated and should involve one test for main and one test for reserve. It was also agreed that it is up to the instructors to make themselves familiar with all types of parachutes and that they should stress the importance to students of familiarising themselves with the characteristics of any new type of parachute which he uses. It was decided unanimously that ground training should include instruction in these responsibilities.

RECOMMENCING PARACHUTING

Persons recommencing parachuting after a "lay off" should behave as follows:

(a) Restricted Permitholder to carry out static line or short delay after period of two months or more.
(b) General Permitholder to carry out delay of not more than 10 seconds after period of six months or more.

DOCUMENTS

Documents should be standardised as far as possible, with colour code and numbers.

Method of issue of F.A.I. certificates should remain the same.

It was stated that the simplified version of the B.P.A. medical certificate was now in operational use.

TRAINING AIRCRAFT

Agreed that limitations on aircraft were not justified, but that a note should be incorporated in Safety Regulations requesting care in the use of aircraft with limited space. It was decided to compile a list of aircraft suitable for use when training students.

It was noted that pilot/despatchers in Tiger Moth aircraft were not allowed.

RESERVE PARACHUTES

Clubs were asked to submit views to the Safety and Training Committee on the question of reserves, as raised in letters from M.O.A. and Mr. Slattery.

It was recommended that students use centre-pull reserves in light aircraft whenever possible and that instructors should emphasise the need for care in this matter.

SAFETY REGULATIONS

Instructors were asked to comment in writing on the draft Safety Regulations. The following amendments should be made in the draft Safety Regulations handed out to all instructors. Appendix category system 6—the parachutist is to demonstrate the ability to turn in each direction /// 8—not less than 40 descents /// 9-50 delayed opening, 5, 30-second delays /// 10-10 thousand feet instead of 12 thousand feet.

F.A.I. "D" LICENCE

The matter of reducing the 60-second delays to 50 seconds had already been fully discussed and confirmation was sought; this was agreed. Also that the number of jumps for a "D" licence should be 200.

REPORT FROM SAFETY AND TRAINING COMMITTEE

The Safety and Training Committee assembled at the A.P.A. Centre, Netheravon, on January 2nd, 1966.

The following Instructors were present:

Brig. R. D. WILSON, *Army Peregrines (in the Chair)*
Mr. J. CLARK, *British Skydiving Centre, Thruxton*
Sgt. B. T. CLARK-SUTTON, *R.A.F. Sport Parachute Association*
Miss H. FLAMBERT, *B.S.C. Thruxton (Observer)*
Sgt. R. GRIFFITHS, *Greenjackets Parachute Club*
W.O.II D. Hughes, *Army Parachute Centre*
Mr. J. JOHNSTON, *Australian Para Federation (Observer)*
Mr. D. McKERN, *Para Sport, Staverton*
Mr. J. MOIR, *Australian Para Federation (Observer)*
Mr. A. PORTER, *British Parachute Club (Observer)*
Sgt. B. REES, *Royal Artillery Parachute Assn.*
Mr. L. ST. JOHN, *British Parachute Club*
Mr. A. J. UNWIN, *Podington Parachute Club*
Sgt. S. VATNSDAL, *Parachute Regiment Free Fall Club*
Mr. M. WEST, *British Skydiving Centre, Halfpenny Green*

1966 BRITISH NATIONAL CHAMPIONSHIPS

After very full discussion the Committee agreed unanimously on the following proposals concerning the 1966 British National Championships, and requested the Council's agreement.

Events. There should be three events as follows:

(1) Individual Accuracy (divided into Class A and Class B).
(2) Individual Style.
(3) Team accuracy.

Individual Accuracy Event—Class A

(1) There should be six jumps with five to count, or if this should not be possible, four jumps with three to count.
(2) The maximum height should be 3,200 feet and the minimum height 2,000 feet.
(3) The judges should decide the height and delay limits for each round immediately before it is due to begin.
(4) There should be NO eliminations.
(5) Scoring should be based on a 25-metre circle, with one point per centimetre (2,500 points for jump).

(6) No result will be declared if fewer than four descents are completed.
(7) The event will be open to General Permitholders with Certificate "C" (minimum of 75 Free Fall descents).

Individual Accuracy Event—Class B

Conditions the same as for Class A with the following exceptions:

(1) The event will be open to General Permitholders with between 50 and 100 Free Fall descents.
(2) Competitors in this class may NOT take part in the Team Accuracy Event.
(3) Parachutists with between 75 and 100 Free Fall descents may choose which class they wish to enter.

Style Event

(1) The event should be open to General Permitholders with "C" Certificate.
(2) Each competitor should bring with him a Certificate signed by a Club Chief Instructor (C.I.s to sign their own) stating that he is capable of completing all Style series within the available time in safety.
(3) There will be two rounds (both to count).
(4) The series to be completed in each round will be decided before the competition begins by means of a draw which will apply to all competitors during the round.
(5) Judges should be permitted to eliminate parachutists who are judged to be below the standard necessary to score points.
(6) Parachutists should exit between two placed bars on the ground and should they fail to do so will be disqualified for the round in question.

Team Accuracy Event

(1) A Team should consist of four General Permitholders (with the option of a fifth as reserve) who hold Certificate "C".
(2) There should be four jumps with three to count.
(3) This event should, as far as possible, be conducted during the week-ends.
(4) The scoring circle should be the same as in Event I unless the conditions of the 1966 World Championships are different, in which case the Committee would wish to reconsider this point.
(5) Either one or four targets should be used according to the current conditions for World Championships.
(6) There should be no bonus points.

Scoring relationship between events. The Committee withheld their judgement on this until the conditions of the 1966 World Championships had been received and considered.

Entry Fees. Whatever the entry fees may be, the Committee recommends that there should be 50 per cent late entry fee imposed on all competitors whose entries arrive in the B.P.A. Office after August 1st, 1966. Prior payment should include messing charges.

Aircraft. It was agreed that an appropriate rate for the hire of de Havilland Rapide aircraft would be £16 per flying hour. It is suggested that four aircraft should be available, if possible, and that the Secretary should contact the following without delay:

The A.P.A.
The Parachute Regt.
The R.A.F. Sport Parachute Association
British Parachute Club
Staverton Airport (Mr. Badger)
Podington Parachute Club.

Messing. As far as possible similar arrangements should be made to those of 1965.

DECISIONS REQUIRED FROM THE COUNCIL

Apart from obtaining their agreement to the above recommendations, the Council should consider the following points.

(1) Sponsors (which may affect Entry Fees)
(2) Prizes
(3) Director
(4) Judges
(5) Programmes
(6) Publicity
(7) Liaison with A.P.A. on all joint problems.

MISCELLANEOUS

Hang-up procedure—Rapide aircraft. It was agreed that in the event of a static line hang-up from a Rapide aircraft the procedure should be as follows:

> If the parachutist can be pulled back into the aircraft this should be done (it has been achieved recently) providing it is not likely to result in the deployment of either parachute in the process. If it cannot be done, the parachutist should be cut free (this procedure should be included in initial ground training of all novices).

List of approved aircraft. The Committee considered the list of approved aircraft recently issued by the Ministry of Aviation. They compiled a complementary list of suggested additions which will be handed to the Technical Sub-Committee for their consideration. In any event, they recommended that all aircraft used for parachuting in the Services should automatically be added to the M. of A. list.

SAFETY REGULATIONS—Proposed amendments

Add to the appropriate section of the 1966 Safety Regs:

> "No B.P.A. member will parachute independently outside the organisation of an Affiliated Club, etc., unless he has been classified as a Category VIII Parachutist."

Displays. The Committee recommended by a majority vote that the Council should authorise the following amendments to the current regulations covering Dropping Zones and Displays, and inform the Ministry of Aviation accordingly:

(1) Established demonstration teams who so desire may ask for a waiver from the B.P.A. Council to use arenas of not less than 50 yards diameter.
(2) "D" Certificate Holders may use Restricted areas as defined.
(3) Parachutists with not less than 100 descents who are led by a "D" Certificate Instructor may use Restricted D.Z.s of not less than a circle of 100 yards diameter.

N.B.—*At a later meeting of the Council, amendments proposed above under Displays*—(1) *and* (3) *were not agreed.*

REPORT ON RESERVE DEPLOYMENT STAPLEFORD 15.1.66

Club: Green Jackets Para. Club.

Jumpmaster: T. Crawley. D.119 (Main only).

Student: *B4 (LL)—Reserve. *Static line.

Aircraft: Tri-Pacer. Starboard Door. Co-Pilot's and rear seat removed.

Height: 2,500 feet.

Despatching student on his first jump. Student had left the aircraft and had one foot on the step and one on the wheel with both hands on strut when I noticed the white of the Reserve showing. In the interests of safety I despatched him immediately. The Main came out first but the Reserve appeared to deploy fully before the Main. The student did not panic, remained stable and made a good landing.

The Reserve—an X Type converted to side pull—and other equipment was checked on the ground by Dave Waterman and in the aircraft by myself.

On examining the Reserve and fully discussing the incident I have come to the conclusion that the only way in which the Reserve could have deployed was by coming in contact with the door frame.

I have decided that in future when using this aircraft to change the exit so that the right hand reaches for the strut and the reserve handle is well clear of any obstruction. I also maintain my hold on the student's harness until he has both hands on the strut.

The Safety and Training Sub-committee also recommend another type of exit, whereby a student sits on the door sill, exits and does a half-turn to the right and stabilises.

T. Crawley—D.119

AIRCRAFT APPROVED FOR PARACHUTING

As you are probably aware, the Ministry of Aviation has recently issued a revised list of aircraft approved for parachute descents. A copy of the revised list is attached.

It will be noted that certain aircraft previously used for parachuting are now omitted from the list. The Ministry, however, has said that in some cases the Board would be prepared to review the decision if evidence could be provided to show that a particular aircraft had a history of safe operation in the parachute role and had been in continuous use until the issue of the revised list.

Clubs are asked to review the list and to submit a report to the Technical Committee on any aircraft which has been deleted despite a "good record". Clubs with experience of such an aircraft are asked to submit a report, even if they no longer use that particular aircraft. Reports should contain the following information:

(a) Type recommended for reconsideration.
(b) Period during which the aircraft has been used.
(c) Number of descents during this period—
  (1) Static line
  (2) Free fall
(d) Details of accidents, if any.
(e) Any further modifications to the aircraft which would improve the safety factor.
(f) Any further comments on safety (or otherwise) of the aircraft.

The facts that we present to M.o.A. to support a case for retention of any aircraft which they have deleted from the list must be accurate and conclusive if we are to avoid costly examinations and test flights by the Board.

It should be noted that military aircraft cleared for parachuting do not appear on M.o.A. lists.

Auster 5 J 1—5 D—5 J 5—J 1 U—J 5 F J 5 L—6 A	TAS restricted to 120 miles per hour. Right-hand door and right-hand controls removed.
Aermacchi Lockheed AL. 60. B1	TAS restricted to 140 miles per hour. Door removed.
Beagle A 61	TAS restricted to 120 miles per hour. Right-hand door removed.
Beagle A 109	TAS restricted to 120 miles per hour. Near door removed.
Cessna 172 Cessna 175 Cessna 182	TAS restricted to 120 miles per hour. Right-hand door removed.
C 47 Dakota	TAS restricted to 184 miles per hour. Rear door removed.
DH 84 Dragon	TAS restricted to 100 miles per hour. Door removed.
DH 104 Dove	TAS restricted to 167 miles per hour. Rear door removed.
DH 89A Rapide	TAS restricted to 120 miles per hour. Door removed.
DH 82A Tiger Moth	Front cockpit controls removed.
DH 87B Hornet Moth	TAS restricted to 100 miles per hour. Right-hand control column and door removed.
E.P.9	TAS restricted to 120 miles per hour. Rear door removed.
Helio H. 395 (Super-Courier)	TAS restricted to 120 miles per hour. A minimum of 70 miles per hour when parachute descents are made. The starboard door to be removed.
M14A Hawk Trainer	Front cockpit controls removed.
Piper PA 22	TAS restricted to 128 miles per hour. Rear door removed. Cannot be approved with front door removed.
P.40 Percival	TAS restricted to 138 miles per hour. Controls removed from front compartment.
SC.7 Short Skyvan	TAS restricted to 144 miles per hour.
Thruxton Jackeroo	TAS restricted to 100 miles per hour. Right-hand door removed.

It has been suggested that the list of aircraft approved by M.o.A. for parachuting (as above) might be extended to include the following:

Allouette	„ 210
Auster IX	Chipmunk
Beagle Terrier	Dornier 27
Cessna 150	Dornier 28
„ 170	Handley Page Herald
„ 180	Piper Carribean
„ 185	Piper Chipmunk

P. G. HEARN

HAVE ANOTHER GRAPE JUICE

"We're giving a little display at Winston Salem on Sunday. Would you boys care to jump with us?" "Yes" —quick as a flash, before he could change his mind. "Where's Winston Salem?" as an afterthought. There was a vague north-westerly wave. "Somewhere up country. . . ."

It was during a visit to Fort Bragg. We had been made honorary members of the Sport Parachute Club of the 82nd Airborne Division, had enjoyed the facilities of their excellent clubhouse, and had jumped with them in practice on to one of the vast, sandy dropping zones of Bragg. We had been impressed by their high standards of performance and by their undemanding friendliness. Their hospitality had culminated in this invitation.

So we flew "somewhere up country" in a C123. Myself, with Sergeants Paul Hewitt and Dave Francombe of No. 1 P.T.S., were to do the jumping. Squadron Leader Dick Mullings was with us to do the laughing.

Winston Salem, North Carolina. Where the cigarettes come from. It had been a warm flight. We sought a cold-drink stall. "Have a grape juice," someone said.

After lunch, we all trooped outside again to have a look at the dropping zone. We stood outside the airport terminal, looking across a wide expanse of dazzling concrete to the green airfield beyond. It looked fine. We wondered which part of all that grass they were going to use.

"Where exactly is it?"

"What?"

"The D.Z."

"The what?"

"Sorry . . . the Dee Zee."

"Oh. . . . Right there."

He pointed, not to the airfield, but to a patch of grass in the middle of the "apron". It was about the size of a tennis court. It make your ankles wince to look at it.

We didn't say anything. Just gazed in thoughtful silence. When we were quite sure that he wasn't joking, we mustered our British phlegm and nodded approvingly. We then cast quick and shifty eyes around the horizon for soft overshoots, and went back for another grape juice.

At that stage in British display jumping, I should add, you were pushing your luck trying to land a team of 12 on a football pitch, let alone aiming for something the size of the penalty area. Not to worry. . . .

There was a reasonable crowd there to watch the fun. A smiling, pleasant crowd. In fact, the whole atmosphere was pleasant. None of the ear-splitting, neck-stretching urgency of a British air display, where what you do sometimes seems less important than doing it on time. Here, there was one aircraft doing slow rolls across the airfield, and nobody much watching him either. As for the jump, conditions were ideal. A cloudless sky and just enough breeze to give a definite wind line. Only trouble was, there seemed to be some problem over the aircraft. Isn't there always? "There'll be a delay, fellows. But don't worry, we'll fix it," Lieutenant Tom Olsen assured us. "Just relax . . . have another grape juice."

We strolled back to where the C130 was parked on the grass. People were sitting in the shade of its wings.

Have you noticed how British display crowds tend to treat you as something of a freak? They nudge each other and whisper, "Ooooo, look, a skydiver!" These Americans weren't like that. Their smiles were open; their interest sincere. They came to us and asked, in voices like warm molasses, "You-all from old England?" and shook our hands when we told them that indeed we were. Parents brought their children to see us; other children brought their parents. Then someone brought Miss Winston Salem. She was all raven hair and throaty voice. "You-all jump?"

"Jump? Oh . . . yes, rather!"

Her publicity manager produced a photographer. I pinned an Irvin badge on her all-American bosom, and had another grape juice.

Then Tom was back, and the jump was on. As we kitted up, we tried to find out some of the details.

"What exactly are we doing?"

"Doing? Why, we're jumping, man!"

"Yes, but what height? And where do you want us in the stick, and do you want a track pattern or what?"

He looked at us curiously. "Don't you worry—we'll work something out. . . ."

Everyone, in fact, seemed a little hazy about the details, but extremely confident of the outcome. It was going to be one of those every-man-for-himself-from-as-high-as-we-can-get type of jumps. We decided that we would tag on at the end of the stick and "pull" a little high.

Small boys insisted on carrying our reserves to the aircraft. We were jumping from a Caribou. It eventually climbed 15,000 feet into the clear Carolina sky.

"Don't you worry about oxygen?"

"Wassat?"

We had plenty of time to ponder on that little green island in its sea of concrete. On the run in, someone gave us each a hand flare and said "Let's go!" and suddenly it was rush hour. We went off the tailgate at a run. I did a couple of perfect but involuntary back loops while I tried to read the instructions on the smoke flare, then, stable and smoking nicely, had a look below. Bodies were zipping too and fro like happy bees. We did a little zipping ourselves, finally tracking upwind of the main bunch to open up a little below 3,000 feet, like true chicken-hearted limeys.

I was trying out a modified T10 canopy. It didn't seem very keen to go anywhere at all. Not even downwards. It followed the others at a respectful distance—a reluctant grandma. I was still dawdling at 800 feet as they started landing. In a mean sort of way, I found myself hoping that someone would miss the target, to make my own eventual arrival a little less conspicuous. But they didn't, fortunately. One after another I watched the coloured canopies spill over the grass, until there was no more green, but a big patch of nylon confetti. Much to my surprise, "grandma" made it, dropping me in with unbecoming violence, as though glad to get rid of me. Dave Francombe and Paul Hewitt were there too. In fact, all 12 were there.

We tried not to look too impressed. "WOW!" everyone was saying to everyone else, 'How about that, man?"

We had another grape juice, and went home.

"And some fell among stony ground. . . ." Some Falcon team members on the D.Z. at Teheran.

THE FALCONS 1965
THE ROYAL AIR FORCE PARACHUTE DISPLAY TEAM—Flight Lieutenant Stuart Cameron

As winter approached after the successful season culminating in the Farnborough Air Show, we saw the pile of warnings for postings from Abingdon begin to mount. Many of the veteran team members were due to leave Abingdon and, it was with considerable regret that we learned that we would soon be losing Sergeant Charlton, the 1964 British Sport Parachuting Champion and Sergeant Hoffman, a unique and well-known figure among British Sky Divers. Flight Lieutenant Thirtle prepared to start the task of team building. During October 1964 a number of instructors from the staff at the Parachute Training School were selected as potential team members.

After the usual problems of parachuting in English winter weather, the free-fall element of P.T.S. left the winter behind in February and went to Idris in North Africa for three weeks to complete the training. A second detachment in Idris in March was to be used for polishing the team display. In spite of losing Flight Lieutenant Thirtle with an achilles tendon injury which made him a non-starter for the season, the team training continued with Flight Lieutenant Cameron as team leader.

The season started with a successful drop into the International Air Fair at Biggin Hill, sponsored by the Royal Aero Club. The following week came the first of our visits to France. It is always a delight to demonstrate in France and the panache with which the French mount the most attractive air displays is always a pleasure to see. This display was typical of many in which we have participated and to describe it will illustrate perhaps why French air displays are such an attraction.

Clermont Ferrand was the venue for this display which was to be held on the Sunday. We arrived late on Friday afternoon. The briefing was held on Saturday morning and was conducted with great expertise by an organising genius called General Baudet, who manages to reorganise a programme with pencil, rubber and a delicately poised "Gaulloise", all three of which pass rapidly between his hands and his mouth. The atmosphere created by the French at these displays, which are held regularly at various centres in France throughout the summer, is something we do not encounter anywhere else in Europe. It is akin to that of a circus. All the performers are known to the French crowds for their various idiosyncrasies. There is the vivacious "Pom Pom", a daring young girl who flies a "Stomp" and kisses and is kissed by all the French Air Aces (watched somewhat enviously by the British), Le Chevalier d'Orleans, who will climb outside the cockpit of his aeroplane, and Jean-Claud de Bois, the parachutist who landed on the summit of Mount Kilimanjaro. All these and many others, as they arrive and during the rehearsals, keep the Press and the crowds in a mounting state of excitement culminating in an air display which might almost be described as a festival.

On Sunday, as often happens in Central France, the wind was extremely variable, and we watched while many of the other parachutists, having dropped their wind drifter in a flat calm, were carried several hundred yards away from the crowd by the vagaries of the wind. We do not use the normal wind drifter but rely on a system using small, hydrogen-filled balloons which are released from the

ground and are tracked with a theodolite before each set of dropping instructions are worked out. We take our first instructions from the ground at 20 minutes before the jump, and our final instructions are given to us 10 minutes before our jump. The 20-minute instructions looked fine and we were given an opening point only 100 yards from our landing area, which was marked by two crosses; these were positioned 50 yards apart and 50 yards from the crowd. We waited confidently. The 10-minute instructions destroyed this confidence; the balloons had evidently scudded across the airfield in a wind of 15 to 20 m.p.h. and opening point was now 1,000 yards from the crosses and right over the crowd and car parks. We had no way of knowing if the wind would continue to blow or if it would slacken to land us ignominiously among the crowd. The display consisted of an aerial tracking pattern by all 12 team members, who were to track away from the release point at 12,000 feet and then back to the opening point to form a wine-glass pattern with the smoke attached to their heels. The green light came on and we were all falling and tracking; we looked for the opening point, we tracked for it and we opened our parachutes in the usual stack pattern from 2,000 feet up to 2,500 feet. Try the wind, turn the chute. Is the wind still up? Mercifully it was, and we all landed in front of the crowd and the television cameras. The great thing about the French is that they always welcome you with wine. . . .

The season continued with displays throughout Great Britain, but the displays at the Paris Air Show and in Ghana were cancelled. We were favoured with good weather for many of them. We were also blessed with an ace navigator from Australia, Flight Lieutenant Reidy, who managed to find several dropping zones in spite of up to 6/8 cloud cover. One particularly memorable occasion was the display at Hucknall when we did not see the D.Z. until we were immediately over the top of it. When we were released we fell the whole way down one side of a huge white cumulus cloud, which served as an excellent back-drop for the demonstration. Even our own D.Z. party thought this was a good display.

The season ended with a drop in Teheran on the Iranian Air Force Day in the presence of the Shah. Since Teheran is at 4,000 feet above sea level and most dropping zones in Europe are under 1,000 feet, we decided to put up our jumping altitude from 12,000 feet to 14,000 feet to give us more time in the air. We thought that, if we stayed at this height for too long, it might involve us with oxygen problems, and therefore took the precaution of having some oxygen kits available in the aircraft. We decided that, for the 20 minutes before jumping, we would all use the oxygen sets and then discard them just before jumping. With only five seconds to go, some of us were still taking a few last gasps and when we jumped we left behind us a clutter of masks and oxygen sets to be unravelled by the air quartermaster, Flight Sergeant Nicholas, himself an ex parachute jumping instructor and sometime member of the free-falling fraternity. Apart from the altitude, the Teheran dropping zone was probably the most rocky I have ever seen. The thinner air at 4,000 feet was certain to cause an increase in the rate of descent; this, and the stony ground led us all to expect a hard landing; we were not disappointed. I think that, much as we enjoyed our visit to Teheran, we were all pleased to be able to walk back aboard the aircraft and return to the annual struggle of parachuting throughout another English winter.

Above and Below : Ken Vos and John Meacock taking advantage of some bright weather to engage in relative work and be photographed by Charles Shea-Simonds.

Opposite : Sgt. Clark Sutton expresses relief and delight in getting out and away.

A Desire to Command the Commander

Dave Becker

After having read Daryl Henry's fine article on the Para-Commander (Command the Commander) I agree it was about time something was put in writing about this relatively new canopy. Being a firm believer in this vehicle for accuracy, as well as fun and demonstration, I completely enjoyed the article. Having nearly 200 jumps on the P.C. and being a devoted accuracy jumper, I found his article to be an enlightening piece of work. The article is an excellent description of the facts and behaviour of the P.C.

I had nearly completed Daryl's article the second time when it dawned upon me that the majority of jumpers do not have a great number of jumps on the P.C. In fact, the majority of jumpers who read his article, in all probability, have a few number of jumps period. I am sure that those jumpers who own or intend to own a P.C. would enjoy a better understanding of the methods of canopy control pertaining to the P.C. If not to become ardent accuracy jumpers, rather just to understand this canopy for safe jumping of any kind. So, let's discuss this sensitive air machine just as a jumper with a desire to better understand the Para-Commander.

This article will cover proper packing techniques (field and table), spotting, approaches, canopy control, final approach and salvaging, tips from watching the P.C., and safety precautions.

Packing

Before we go into the proper methods of table packing, let's cover some of the proper field packing methods. Care should be taken when landing to assure that when the canopy collapses it does not intertangle, if this is possible. When landing, if immediately the risors are grasped and shaken to the direction of the wind, the canopy will fall away from the jumper, usually not tangling.

Do not drag the canopy at any time! If when landing the wind causes the canopy to remain inflated or causes the canopy to drag out, pull one or the other of the control lines down as if making a turn. The canopy will rotate towards the ground and deflate itself. Never release the capewell *unless* it is absolutely impossible to collapse the canopy any other way.

After releasing yourself from the harness, remove the sleeve completely from over the crown lines. Pull a light amount of tension on the crown lines and the tangles will be readily evident. Remove any tangles or cross-overs by threading the sleeve and pilot chute through the tangles in reverse. The canopy will separate into two halves, with all crown lines straight. This should be the first step in field packing.

Next pull the sleeve completely over the canopy. While this is being accomplished, raise the apex so that any stones or dirt will fall towards the skirt of the canopy and eventually out. (Note: Because of the tremendous opening of the P.C., these small objects will penetrate the canopy during opening.) It is better at this point to rigger-roll the canopy and lines vice the line chain method. Although this is probably a minor problem, it is the minor problems that lead to major repair. If all the minor repairs were properly attended to, there wouldn't be as many major repairs as there are today.

Small tears and burns that have gone unattended are generally the cause of larger, more expensive repair. Remember, the canopy will not heal or get well. The major causes of P.C. malfunctions and subsequent damage is usually due to improper table packing, caused primarily by not knowing the proper methods. Too many packing methods are picked up by word-of-mouth procedures rather than by the methods outlined in Pioneer's booklet on the proper packing procedures of the P.C. These booklets are supplied with each new canopy and can be obtained by writing any Pioneer outlet.

The packing procedures outlined in this manual are the proper packing methods. The only particular item that I might add is when stowing the sleeve retainer line, ensure that it is stored tightly in both binders and that both binders are doubled. Check that both ends of the sleeve retainer line have just enough slack to allow the pilot chute bridle cord to put tension on the sleeve loop without dislodging the sleeve retainer line. Other than this, if the outlined procedures are followed carefully, the canopy life and condition will be greatly lengthened and improved.

Along with proper packing, use of the proper equipment is very necessary. There is much controversy surrounding the P.C. sleeve and 40 in. pilot chute. After watching many low- and high-speed openings, I have come to the conclusion that the 40 in. pilot chute either of a high (white canopy) or low (red, white and blue canopy) porosity must be used. The crown lines depend on the extra drag created by the larger pilot chute for clean deployments. Cases of some pilot chute hesitation caused by using the larger pilot chutes has been overcome by shortening the pilot chute bridle cord and in some cases by adjusting the opening position so as to allow more air flow over the back pack for quicker removal of the deploying pilot chute. In Daryl Henry's words, "Experienced jumpers should not continue to be plagued by pilot chute hesitations." I will have to agree.

As far as the sleeve dispute goes, I believe that the long sleeve will give the jumper a slightly sharper opening. However, not enough to cause any problems. The long and short sleeves are equally as safe. One other tip that has to do with packing and damage control: when you have stretched your P.C. out for the first time, rub beeswax on the portions of the control lines that pass through the metal eye which attaches the single lower control line. *Do not* put wax on the lower control line where it passes through the grommet on the risors. These wear points should be carefully checked prior to each packing. All panels and control line attaching points should be checked at every packing. If any stretch or indication of damage is observed, the canopy should immediately be taken out of service and sent or taken to a loft that does P.C. work. Check with a Pioneer dealer to assure yourself that where you are having your canopy repaired is a loft that has the proper materials and equipment.

I recently had a P.C. nearly completely rebuilt at Parasystems in Van Nuys. I checked the canopy before taking it to Harry Schmall's loft and estimated that I would need one control line replaced and one panel patched. We stretched the canopy out and, using a damage

chart, discovered one panel completely unstitched, two more in need of repair, all control lines in need of replacement (top and bottom), and all the crown lines replaced. The moral of this story is damage is not always so evident that it can be noticed easily. Again, an ounce of precaution is worth more than an expensive pound of cure.

Spotting the P.C.

Many stories have been concocted about spotting the P.C. since its entry into the parachuting world. One of these stories is the one that the P.C. is just a good excuse for a bad spot. Another wild rumour is the one where you should spot the P.C. about three times as far out. Or the one where it doesn't make any difference where you spot the P.C., it will make up for it in performance. Well, I will have to admit the P.C. is a good performer. However, make no mistake, the spot is still a critical thing in accuracy or exhibition jumping.

The P.C. has a unique but not so different spotting technique. In the following chapter on approaches we will find that with the P.C. we desire a straight-in type approach. Where at all time you are facing the target. With the tremendous forward drive of the P.C., this leads us to believe that our spot should be extremely long. However, in another chapter in this article on stalling and steering, we see how the forward drive is nearly all shut off during approaches. So now we wouldn't spot so far out or, as some say, we would spot short. Neither is completely true. We know now that spotting as if we were jumping a lo-po would be just about ideal in no wind conditions. The higher the wind, the farther out we would spot; if we were jumping a lo-po or 1.1, this distance would increase respectively to the amount of wind. Spotting the P.C. in the case of moderate or high winds becomes critical. Not only does the wind line become more important, the distance of the spot becomes increasingly important. This, of course, takes observations and practice.

A good rule of thumb is in winds of 5 to 10 m.p.h. with an average aircraft speed of 80 m.p.h., one full second of time past the target centre for every m.p.h. of wind. Example, if the winds are 8 m.p.h., we would wait 8 full seconds in the aircraft after passing the centre of the target before exit.

In the case of winds over 10 m.p.h., 1½ seconds per m.p.h. of wind. Now this is if the winds are that speed from opening altitude to the ground. If, perhaps, we watched canopies, and there were not noticeable winds until the jumpers were at 1,000 feet and then the winds remained steady at 6 m.p.h., we would spot about 3 seconds past the centre of the target. Due to the fact that the winds did not effect us until we were about half way down, the rule of thumb then being 6 seconds divided by effective wind $\frac{1,000 \text{ ft.}}{2,200}$ = approximately $\frac{1}{2}$ of $6 = 3$. Confusing? Well, not after you use this method for a while.

In winds of over 20 m.p.h., the general rule of thumb is "stay on the ground!"

Approaches

We have packed safely and spotted correctly—now what? We mentioned before we want to face the target directly forward during a normal approach. In this chapter we will mention the windline, the wedges, low and high wind, target, target points, depth perception, and angle of approach.

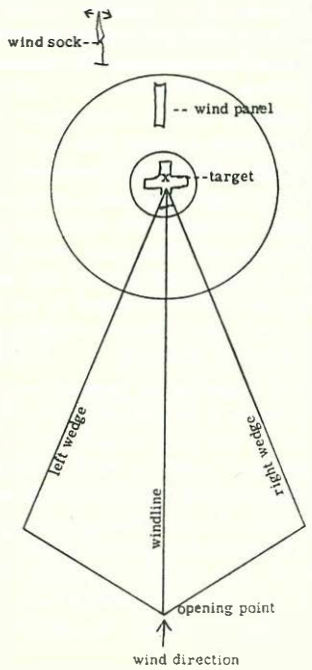
The *windline* is that imaginary line that is caused by the direction of wind. This would be the line drawn from the perfect exit point on the ground through the centre of the target. The windline does not vary with light, varying winds. It is an average of constant wind directions during the period of the jump. The wedges are the right triangles that would be drawn by drawing a line from the far limits away from the windline that you could travel safely and still reach the target. The right wedge would be that limitation to the right of the windline as you faced the target and left would be the left side limitations. We will refer to low wind as the condition where there is a definite wind and definite wind direction, although the P.C. will still travel to some extent in all directions, even against the wind. The high wind condition is when the P.C. will no longer move against the wind. The target we will refer to is that portion of the circle called the centre disc or dead centre.

The target points are such points as the edge of the circle, the ends of the panels, wind sock or indicators of many types. Depth perception is ability to judge distances not only to the ground but also distance to the target at any time during the descent. Angle of approach is that ideal angle that is caused by a controlled rate of descent and controlled forward speed so as to reach the target with as little effort as possible.

In no- or low-wind approaches, the canopy may travel within the boundaries of the wedges. The width of the wedges depends upon the speed of the wind and how much it varies in direction.

An attempt to remain on the windline and facing the target at all times should be made. This can be accomplished by proper control of the canopy. In high wind conditions the straight-on approach will yield the best accuracy; but in the event of gusty winds the straight-on approach is difficult because of the high speed of the approach.

The most popular high wind approach is the shoulder approach. This approach is where either your left or right shoulder will be pointing towards the target. The control lines will be down as far as possible without stalling, so as to maintain as slow as possible approach on the target. This, of course, takes much practice in knowing when to make the final turn in on the target so as not to under- or over-shoot. This will be covered later in "final approaches".



There are many other factors affecting approaches and spotting, such as humidity, heat, layers of wind, etc. If the air is heavy with water particles, the canopy will glide better and react quicker. The same is true when it is cold or late evening or early morning. We must be aware of the extra glide and reaction time of the canopy. The reverse is the same during high humidity or hot weather. We can expect a faster rate of descent with very little glide and a fairly slow reaction time. The altitude of the DZ must also be considered. At Oceanside, California vice Elsinore, California, although the difference in altitude is only 1,000 ft and humidity difference is probably only 20 to 40 per cent, the glide ratio is changed a great deal. At Elsinore the P.C. will glide about 10 ft. forward to 10 ft. down in no wind. At Oceanside the difference is about 14 ft. forward to 10 ft. down. All these factors must be considered in planning spots and approaches. Put all this together and we have the proper approach.

Canopy Control

In this chapter we will cover turns, stall turns, stalls, recovery and trimming. After opening and checking the canopy, pull both control toggles down to a point just about "D"-ring level. This level will vary with individuals and individual canopies. Let's call this position neutral. I find that in no- or low-wind conditions my control toggles are about reserve level at neutral. This is about six inches above the no-wind stall point. (The stall point is that point at which the toggles must be placed to cause a stall condition. The stall condition is when the canopy loses forward speed and lift. All P.C. drivers should become very familiar with where the particular stall point is on their P.C.s. This point will vary with conditions: wind, humidity, etc. The jumper will notice the stall when suddenly the canopy will shudder, dip to the rear, and sort of slide out of the sky.) When referring to canopy control, we will assume that the toggles are somewhere just above this stall point.

There are basically two types of turns. The first is the cross-control type turn, where, when turning to the right, the right control line will be pulled or pushed down and the left will be let up. To stop this type of turn, both control lines would be returned to neutral simultaneously. The amount of distance pulled and speed at which pulled and let up will control the amount and speed of turn . This, however, causes some oscillation.

The second type of turn is that type where if a right turn is desired, the right control line will be pushed down while the left control line will remain in place. The amount and speed of turn depends upon the amount and speed at which the control line is pushed. To stop this type of turn, the control line that was pushed must be raised quickly to a point just above that point where the turn was initiated and then returned to neutral. All turns must be made with the control toggles low so as to maintain a high state af stability.

The stall turn is a particular type of turn used when the jumper desires to make a 180-degree turn without travelling forward. Such as in the case where you are facing away from the windline and want to turn around and face the windline, so as not to travel beyond the limits of the wedge. The situation is: you do not want to turn away from the target for fear of losing the proper depth and angle. On the other hand, if you turned towards the target, you would be pushed too close to the target to maintain a good approach. This, then, is where the stall turn comes into play.

We have mentioned the fact that the canopy will stall. In order to stall the canopy both toggles would have to be pulled down past the stall point. In order to stall just one side of the canopy, that is, to cause just one side of the canopy to lose its forward speed and lift, we would have to pull the control line down considerably further. Now when just one side of the canopy loses its lift the canopy will sort of drop slightly and back around. So in order to turn sharply to the left, or you might say back around to the left, we would push the left control toggle far down into the stall area. At the same time hold the right toggle steady. The canopy would then start into a stall and back around to the left. When we have reached the point where we desired, the left control toggle would be brought up sharply above the original position and quickly returned to neutral. Daryl calls this my double-clutching method. I guess that is as good a name as any. Practice is required of each of these turns to perfect the individual turning technique.

We have mentioned stalls several times. Now let's find out what we have been talking about. A stall, we said, is when the canopy loses lift and forward speed. A stall can be caused merely by over-controlling both toggles. However, a stall might well be unintentional. A stall point of any particular canopy will vary with wind velocity, humidity, weight, etc. Supposing you were travelling along at 1,500 ft. with the brakes on and the toggles nearly in the stall area, when suddenly the canopy stalls without any toggle movement. Remember, all conditions affect the canopy performance. The faster forward the canopy is travelling, the lower the stall point. The same would be true if your DZ were at a lower altitude or if the humidity were high. The opposite is true also. If the day is hot, or low humidity or low winds, or if the DZ is at a high altitude, the stall point would be much higher or easier to stall.

I asked myself why have a stall available if it were so unpredictable and unstable? Well, first of all there is a way to eliminate the stall effects. Secondly, it is a valuable condition if used properly. We know that ideally we would like to face directly towards the target all the way from opening to disc. Proper use of the stall will aid us in this accuracy endeavour. We are now able to face the target, and if we do get too close we can effect a controlled stall to slow our approach and lose some unwanted altitude. To do this, we push both toggles down until we feel the stall begin, now hold the toggles down until the stall is well under way, three to five seconds. Bring the toggles up slightly but not above the stall point. If the canopy tries to turn, just turn it back as if making a stall turn. The controlled stall takes much practice and it is advised the practice be kept above 1,000 ft. until you have it down pat.

Recovery from a stall (intentional or unintentional) will be the same as recovery from the stall turn. There are two methods. One is to slowly return the toggles to neutral. This, however, induces oscillation and is time consuming. That leaves us with the double-clutch method of recovery. This method of recovery can be used on normal turns as well as stalls. When in a stall, to recover, bring both toggles up quickly to about shoulder height and then quickly back just below neutral and slowly back to neutral. Make sure you do *not* enter the stall area on the down motion. Try this a few times. You will find it to be a slapping-type motion. This again takes much practice. With a perfected stall recovery, a jumper can successfully stall while as low as 50 ft.

An important part of canopy control is the ability to change the direction of travel without using the control lines. This becomes very important in accuracy approaches. By shifting the weight we can cause the canopy to slide or change direction. Three common situations are being either off to one side, off the target, or in too close or out too far. By use of the legs and arms, you would be surprised just what you can do with this canopy. How many times was the spot too long or the wind died? Remember the phrase "I just ran out of gas". Next time this happens lift both legs, extend them and your arms out in front of you and lean towards the target and watch that P.C. shift into high gear.

On the other hand, if when you are making your final approach and are in slightly too close, by moving your legs behind you, you can slow the forward speed down. Be careful not to unintentionally stall the canopy. Practise holding the control lines rigid and turning the canopy by moving your legs from left to right. This again takes much co-ordination and practice.

Final Approach and Salvage

This is the portion of the jump that makes or breaks an accuracy jumper. What to do in those last few seconds before touchdown? Those critical few feet will make the difference between just close or being on the target.

First of all, while first learning the P.C., it is a good idea to set up the final approach so as to fall slightly short of the target centre, allowing the canopy to edge closer on each jump until you have the feeling of proper height and angle. The approach should be set up from the time of opening until touchdown, so as to glide slowly and directly to the target centre, with a minimum of canopy control. The biggest problems encountered during the final approach are the negative arm or negative legs. The negative arm would be the arm that is not actually causing a turn at the last seconds. Supposing we needed a light left turn to get on the target. It is that right arm that will cause the trouble. Usually, unless the jumper really concentrates, the right arm will come down to help soften the landing; bringing with it the toggle, which will counteract the original turn. By keeping the toggles in front of you at all times it will minimise the negative arm problem.

The same problem is encountered with the negative leg, that would be the leg that is not involved in the actual reach for the target. On many occasions a place has been lost because of the back leg touching down first. The best cure for that problem is always reach with both legs. This also helps in the length of the reach and safety of the landing.

Another important factor in the final approach is that because of the very slow rate of descent of the P.C. that last second effort may well pay off. Never say die!

If you have approached too close, quick stalling and stall turning may give you those extra few inches you need. That final plunge and reaching effort towards the centre may just do it. This is called salvaging a would-be bad jump. Of course, safety first. Never land too soon with the P.C. Sometimes it is hard to adjust to the fact that you're not quite down yet, so don't start landing too early. A good final approach will outlaw the need for a salvage. Although keep in shape, for the need for a good salvage is always a possibility.

Watch the P.C.

Just a few tips that might help. The P.C. is a real accuracy machine, but it keeps no secrets while descending. The colour scheme is perfect. When the blue is towards the target and the red area is pushed up into a tail, we know that the jumper has a good spot. Why? Because the blue is in front and when the control lines are in the pulled-down or in a neutral position causing a tail effect, we know that the jumper is satisfied with his spot. If, however, the blue area is pointed towards the target and no tail is evident, we know that the jumper then is running towards the target with the control toggles all the way up. He must have spotted too far out.

Watch what the jumpers ahead of you do as soon as they open. This will also indicate what is right or wrong with their spot, by indicating whether they are too close or too far. Watch the wind layers that have an effect on the P.C. Either from the air or from the ground the effects are easily seen because of the bright colours. Timing of the descent of the P.C. will tell just about how well the P.C. will glide today or how heavy the air is, whether to play in tight or hang out. There are a lot of other tips learned by watching the P.C., but most of those tips are learned by watching while hanging under one.

Safety Precautions

A few safety tips. Pack carefully and cautiously, by the book. Because of the tremendous glide during initial opening, stagger openings during relative work to eliminate the possibility of collision. Don't react to two-stage openings too quickly. Sometimes the P.C. opens in two stages. Because of the low pressures in the blue area it will often hesitate for a moment before opening. If it hesitates for any length of time, try shaking it out by pulling on one or both rear risors. If a true malfunction occurs, attempt to shake it out, if your rate of descent is still rather slow. Be very careful of feeding a reserve into a malfunction. Never slip with a P.C., especially a front risor slip. There again, because of the low pressure front. Try not to wear a loose harness or open head down, for the P.C. will set you straight. Put at least two or three five-second delays on your P.C. prior to terminal openings. On the other hand, less than five-second delays are not recommended.

Do not try landing down wind until you have become acquainted with your P.C. Never try to pump the toggles or risors to soften the landing. P.L.F.s are still in season. Do not begin your jumping in a P.C. A few jumps on a 1.1 double "L" or something similar is not old fashioned. The student, for the first 10 jumps or so, has enough to think about without adding a course in P.C. handling to his or her agenda.

Conclusion

The P.C. is a tremendous air machine, and with a little understanding and careful handling you will enjoy this canopy. It may not be the answer. However, until the Mark II, or whatever comes along next, there is nothing to compare with the Para-Commander!

DIARY 1966

B.P.A. Week-ends at Netheravon

1. May 13th to 15th
2. July 15th to 17th
3. September 23rd to 25th

National Championships:

August 19th to 29th

Next Instructors Convention:

April 3rd at Thruxton

In Council, on your behalf

These are condensed extracts from B.P.A. Council Meetings

November 11th, 1965

The question of election of Mr. Dickson to the Panel of Examiners was again raised and it was agreed that in view of his recommendation by both Dr. Robertson and Mr. Denley he would in fact become a Panel member. This was the wish of the Council and he was to be informed to this effect.

Mr. St. John raised the question of the progress in the investigations being made in connection with premature openings of reserve parachutes. Mr. Lang assured the Council that this subject was still in hand and that further information from a pilot at Stapleford was awaited.

Appointment of Secretary-General and B.P.A. Staff

The Chairman reminded the Council of the Association's approach to the Government for financial assistance for a salaried Secretary-General or an equivalent in order to run the B.P.A. office and administration. He went on to remind them of the Government's offer of £1,500 and possible further £500 if a suitable case was put to the Sports Council for clerical expenses. It had been previously agreed at a Council meeting that the Association might be able to offer a sum of £2,000 per annum in total salary and expenses to a really experienced candidate for the post.

The Chairman went on to ask the Council what the Association was looking for—the Council would expect considerably more time and work from a salaried Secretary-General than had been reasonable to expect an Hon. Secretary-General to give to the B.P.A. They would hope for an administrative officer to run the office and carry most of the burden of the organisation of the National Championships, also to be able to negotiate on the B.P.A.'s behalf with the Government, the Ministry of Aviation and Royal Aero Club. His job would include public relations with a special view to fund raising, overtures to industry and the Government, and putting the B.P.A. image before the national Press and the public. He thought that the Council were looking for a very experienced man of considerable calibre and wondered if one man were able to do all this, especially in view of the fact that none of the Council members were certain how long they could continue to serve the Association, due to sudden postings abroad or business commitments. The Chairman suggested that perhaps the Council should consider having two individuals—one part-time executive officer on a semi-salaried basis to raise funds, visit industry, etc.; and a secretary with a suitable background in the office.

Mr. Pierson suggested to the Chairman that for the next year the Safety Committee should carry out a crash programme of training and review whilst the new appointment/s took office; the Chairman agreed and said that this was the theme which he hoped to put before the Instructors' Convention next week.

Applications for B.P.A. Membership since October 1st, 1965

Ninety-one applications for membership were received during the above period and these were put before the Council for their approval. After prolonged consideration the applicants were elected to membership.

Consideration of the Ministry of Aviation List of Aircraft for Parachuting

After lengthy discussions, Mr. St. John said that he thought that a considerable list of aircraft were not on the proposed Ministry of Aviation list. The Chairman suggested that the list should be returned to the Ministry together with a letter saying that the B.P.A. cannot understand why a number of aircraft are not included on this list which were on the previous one, and the explanation for this should be requested together with the reinstating of certain listed aircraft.

Safety Committee

The Chairman spoke at some length of the work of the Safety Committee; he felt that due to the difficulty in convening meetings the Committee was not perhaps doing its work satisfactorily, this was perhaps not the Committee's fault but he wondered if the right people were sitting on the Committee—he would like to see a Co-Chairman to convene meetings when he was not able to. The Chairman went on to suggest that a charter might be drawn up for the Safety Committee and that the Technical side of its work should now be put to a Technical Sub-Committee of two or three experts, and Squadron Leader Hearn was suggested as the ideal chairman. This committee could seek the advice of the parachute companies and report to the Council.

Air Commodore Sowery suggested that the B.P.A. should hold quarterly Instructors' Conventions; these would be held at different clubs, and expert speakers might be invited to speak at the meetings. The Council unanimously agreed that this was a good idea and they hoped it would be put into practice in 1966.

The Sports Council

The Chairman informed the Council that a meeting of representatives of a wide selection of sporting organisations and those concerned with outdoor activities, to meet Mr. Denis Howell, M.P., the Minister charged with the task of co-ordinating Government assistance for sports, had been arranged, in order to hear of the progress which has been made during the past year and of plans for the future.

After discussion it was agreed that the B.P.A. should be represented by the Chairman, Treasurer, Hon. Secretary-General and, if possible, Sir Godfrey Nicholson.

December 9th, 1965

Election of P.B.A. Members since November 11th, 1965

The 46 applications for membership to B.P.A. received during the period since November 11th, 1965, were passed around the Council table for scrutiny by the Council members. The Chairman pointed out that application for

membership had never yet been withheld, but he invited the Council to raise any objections to those now seeking election. There were no objections and the members were formally elected to membership of the Association.

The Chairman then questioned how the Council would like to make the final decision upon the five names put forward for co-option. It was finally agreed to invite the following to join the Council: Mr. T. Dickson, Major M. Heerey, Mr. P. Slattery and Major S. Elwood.

It was agreed that the four additional seats on the Council should be left vacant at present.

Mr. Lang suggested recruiting an accountant who could become Treasurer, but the Chairman thought this would not be acceptable legally. Mr. Lang felt that the time was approaching when a qualified accountant would be needed to handle the Association's finances. The Hon. Secretary-General reminded the Council of the tight budget which had to be met. The Vice-Chairman said that he had located a B.P.A. member who is a merchant banker and is willing to assist with the accounts. A finance group or sub-committee was suggested, and the Hon. Secretary-General said that he felt that nobody should be allowed to commit the B.P.A. to expenditure without the sanction of this group.

Appointment of a Salaried Secretary-General

The Chairman asked that this matter should be left with him to speed up such an appointment—preferably before Christmas—he added that in the meantime the field was still wide open for nominations for the position, and that there was only one candidate left for examination from the applications so far received. He explained to the Council that the B.P.A. had been in close consultation with the Sports Council—Ministry of Education and Sport. Regarding the allotment of the money already allocated for the B.P.A. Government grant, the Chairman said that he had visited the Ministry of Science and Education in order to request that the conditions should be altered. He said that the B.P.A. could not expect to find one man capable of carrying out the duties of Coach and Secretary-General. He told the Council that his suggestion that the B.P.A. should raise funds for a staff instructor had been received favourably. The Chairman added that if the B.P.A. could produce their Articles, Audited Accounts and Formal Proposals he felt sure that their request for £1,500 for a Secretary-General and £500 for secretarial assistance would be met.

Mr. Lang pointed out that if the grant was only £1,500, budgeting would prove tight, but the Vice-Chairman reminded the Council of the saving on secretarial assistance if a regular person should be appointed.

Approval of Aircraft

The Chairman told the Council that an answer to the letter which the Hon. Secretary-General had written to the Ministry of Aviation had been received. The Hon. Secretary-General had asked for the reinstatement of those aircraft previously struck off the Ministry lists. The reply from the Ministry said that satisfactory evidence was necessary before any of the aircraft in question could be reinstated. The Chairman suggested that this matter should either go straight to the Safety Committee or to the Technical Sub-Committee. Protracted discussions took place regarding the aircraft in question and the merits of the use of helicopters for parachuting. The Chairman suggested that the principal clubs might be asked for their views on additional aircraft to be added to the Ministry lists. The matter was then handed to Squadron Leader Hearn for his attention.

Club Affiliation Scheme

The principles of this scheme were agreed and passed formally by the Council. The Chairman said that he would be interested to have comments as it was imperative that it should be implemented without further delay. The Chairman told the Council it had been suggested that when an instructor is passed he should be asked to sign that he will uphold the B.P.A. rules and recommended procedures. He added that the Safety Regulations will be produced showing what are recommended B.P.A. procedures and what are definite rules. Affiliated clubs will be expected to observe B.P.A. rules and regulations. Applications for affiliation will come before the Council who will reserve the right to expel any unsuitable clubs. The Vice-Chairman said that he would like to see the word "policies" added to the application for affiliation forms. Mr. Green told the Council that his members who want to go on to free fall must first join the B.P.A.; this, he added, was going to be their policy during the coming year.

The Chairman suggested the addition of a clause saying that the B.P.A. understood that in the event of the club becoming defunct, etc., it would be struck off the list of affiliated clubs. It was agreed unanimously that paragraph three should contain the following—"It is understood that in the event of our club disbanding we will automatically be struck off the roll of the Affiliated Clubs. It is understood that the Council of the B.P.A. reserve the right to expel any club, school or association from its affiliation should it disband or otherwise fail to comply with any of the conditions outlined above."

Progress Report on the Classification of Parachute Designs and Modifications

The Council was told that this matter was to be discussed at the Christmas meeting of the Safety Committee. The object was to give dimensions as guidance to the clubs. Sergeant Clark Sutton pointed out that there are already aviation laws regarding modifications.

Parachutes For Sale

The Chairman again raised the question of the team parachutes which were still for sale. Offers had been received and he said that a value should be established. The Chairman felt that a realistic figure would be not less than £50, but Mr. Lang felt that they should not be sold for less than £60. W/O Hughes said that in his opinion there was not much chance of getting as much as £50 for the parachutes in question, and Mr. Green agreed with him.

Other Business

Appreciation was recorded for an accident report compiled by Mr. Don. The formal report was, however, agreed to be inconclusive.

The Chairman asked that the Council should give authority to the Safety Committee to denote some form of encouragement grant to Junior Technician Chrome of the R.A.F. who was interested in developing miniature receivers in helmets. He thought that J/T Chrome might be invited to attend a Safety Committee meeting and if his work was thought worth while some grant might be given to assist him. This was agreed.

Election of Members to the B.P.A. since December 9th, 1966

Thirty-one applications for membership of the Association had been received in the office since the last meeting, and the application forms were circulated amongst the members of the Council for their consideration. The detail of one application was queried, and the Secretary-General was asked to write to the person concerned asking him to give more complete details of his experience. The remainder were accepted.

Letter from the B.P.A. Solicitor

The Chairman read a letter received in the office from Mr. Staple on the subject of the proposed limited company being registered as a charity. The problem was discussed and it was agreed to seek a second opinion from either Sir Godfrey Nicholson or the Sports Council on this matter.

Packing Certificates

Further discussions took place on packing certificates and it was agreed that the principle on these certificates had been decided at the Instructors' Convention on November 20th. The Chairman undertook to produce a draft certificate by the next Council meeting.

1966 Programme of Events

(a) *Dates of Instructors' Training Week-ends*

The Council was told that the A.P.A. had allocated three week-ends to the B.P.A. for Training Week-ends at Netheravon on the following dates:
May 13th-15th July 15th-17th September 23rd-25th
During these week-ends the A.P.A. Centre would be at the disposal of the B.P.A. on the usual basis.

Warrant Officer Hughes suggested that the week-ends should be made open to all General Permit Holders in view of the disappointing response last year. Mr. Lang felt it would be a pity to discontinue the idea of Instructor Training and, after discussion, the Chairman pointed out that the three week-ends might be used for different purposes.

(b) *Quarterly Instructors' Conventions—dates and venues*

The Chairman reported that the next Instructors' Convention would be held on April 3rd, 1966, at Thruxton, the meeting starting at 10.30 a.m.

(c) *Other Events*

The only other event so far planned for 1966 was the National Championships—August 19th-29th, 1966.

The Chairman reported that there was a possibility of the B.P.A. and the A.P.A. joining with the *Daily Telegraph* and the Army for a joint day on August 29th. Mr. Lang hoped that the B.P.A. would be able to show a profit out of such an event and it was generally agreed that any profits should be shared 50/50 but the matter would have to be negotiated in detail. Sergeant Clark-Sutton proposed an R.A.F. display at Netheravon, and the Chairman pointed out the necessity to start planning the National Championships at the earliest stage.

Manchester Skydivers

With reference to Mr. Crawley's report on the dangerous piece of equipment he had found when visiting and instructing this club, the Council suggested that the matter and the whole question of dangerous equipment should be discussed at the next Safety Meeting on February 6th, and Mr. Crawley should be invited to attend and bring the canopy in question with him. There was no suggestion that the club was at fault in any way.

Technical Committee

Squadron Leader Hearn told the Council that the Technical Committee would not be a standing committee but would co-opt experts from all fields qualified to discuss the question under review. Representatives from both the parachute manufacturers would be invited to attend.

His committee were at present considering automatic opening devices, and he told the Council that both the Cooper and the Irving device were still undergoing trials. He said also that he had arranged a meeting with Sir James Martin for the following week. He asked for reports on Kap 3s from Mike West and the Parachute Regiment.

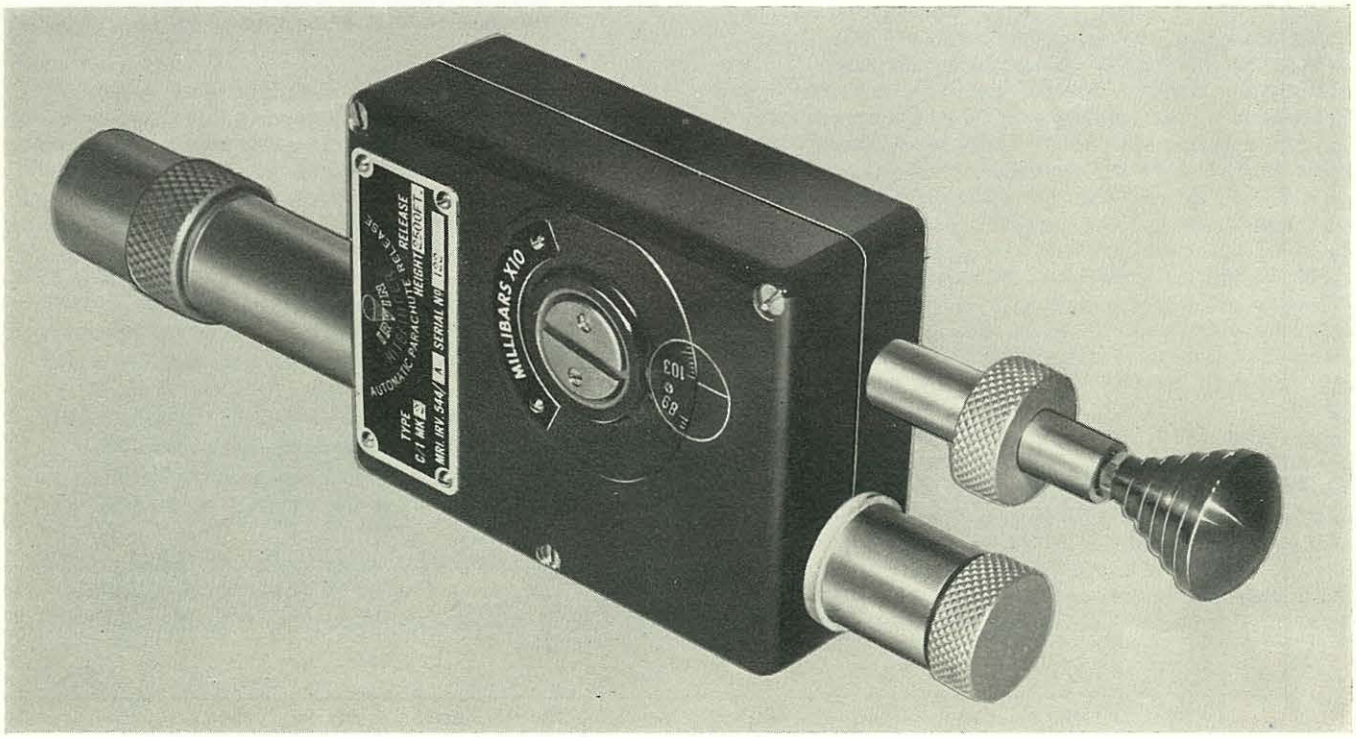
The Technical Committee was also reviewing the list of aircraft suitable for parachuting and he was seeking the views of the clubs; when the findings were finalised he suggested that he arrange a meeting with the Ministry of Aviation.

Squadron Leader Hearn also agreed to set up a Technical Committee suitable to consider the approval of standard and modified parachutes; it was agreed that this matter was most urgent and that the question of Aviation Law should not be overlooked.

Mr. St. John queried why the Ministry of Aviation asked for a log book when an application for a General Permit was made by someone not holding a Restricted Permit. He suggested that this was not necessary as the Instructor signing the application form would have already inspected the log book. The Council felt that the Association should abide by the existing legislation.

Design and Development of an A.O.D.

E. D. KENZIE



With the rapid evolution from the flying machine to the present-day aircraft came the obvious development of more complex emergency parachute systems. One can imagine that escape from some earlier type aircraft in distress was relatively simple when compared with the difficulties of escaping from modern sophisticated aircraft. We now have to consider, among other things, high speed/low altitude and high speed/high altitude when designing the parachute and its associated equipment for maximum safety.

It was to provide certain safeguards that the automatic opening device (A.O.D.) was originated. The function of the A.O.D., as used in nearly all emergency parachute systems today, is to provide for automatic withdrawal of the rip pins at an altitude usually between 10,000 feet and 15,000 feet A.S.L., depending upon the general height of the terrain over which the aircraft are flying. If an escape is made below the fixed operating height, then a time delay is provided by the A.O.D., to enable the parachutist to clear the aircraft before deployment of the parachute takes place. When considering what order of operational tolerances may be allowed for this type of A.O.D., one can say immediately that for the height settings used, these may be fairly wide. So long as the tolerance is not so wide as to veil any inherent mechanical errors which might prejudice reliable performance, a thousand feet is neither here nor there and reasonable variations in height of terrain and changes from day to day in barometric pressure need not be considered. It is a sure fact that Messrs. de Salis and Lowe didn't care whether their A.O.D.s, set to operate at 13,000 feet, actually functioned within 2,000 feet of this figure when making a successful escape from their disintegrating Canberra at 56,000 feet.*

The time delay tolerance is a different kettle of fish. It has recently come to be realised that this is far more critical than at first thought. If the time delay is too long, the low level escape will be less likely to succeed, and if too short, at the exit speeds likely to be involved, there is a chance that the canopy will break up. It is almost certain that the nominal time delay should be somewhere between one second and two seconds, but to which end of that very small range should the optimum be fixed, is still being argued today. Trying to establish checkable tolerances with such a fine basic limit, is an obvious problem.

Sport Parachutists' Requirement for an A.O.D.

It is a well-recognised fact that in quite a high proportion of the fatal accidents resulting from free-fall parachuting, lives would have been saved by the use of an A.O.D. Unfortunately we cannot interview the victims of the accidents to ascertain exactly what is needed to save lives in the future. So the designer has to glean as much information as he can from those who are qualified to give it. Also, it is essential that the designer understands the people who indulge in the sport and to be sympathetic to every individual idea on the subject of A.O.D.s. Only then can he hope to give the free-fall parachutist an acceptable A.O.D.

Design of the A.O.D.

The Irving Air Chute of Great Britain Limited, having had many years' experience in the design and manufacture of A.O.D.s for emergency type parachutes, have embarked upon the design and development of an A.O.D. for the free-fall parachutist. The first thing to be realised, was the glaring fact that a free-fall parachutist deliberately jumps from a flying aeroplane, whereas nothing short of dire emergency would induce the average crew member to part

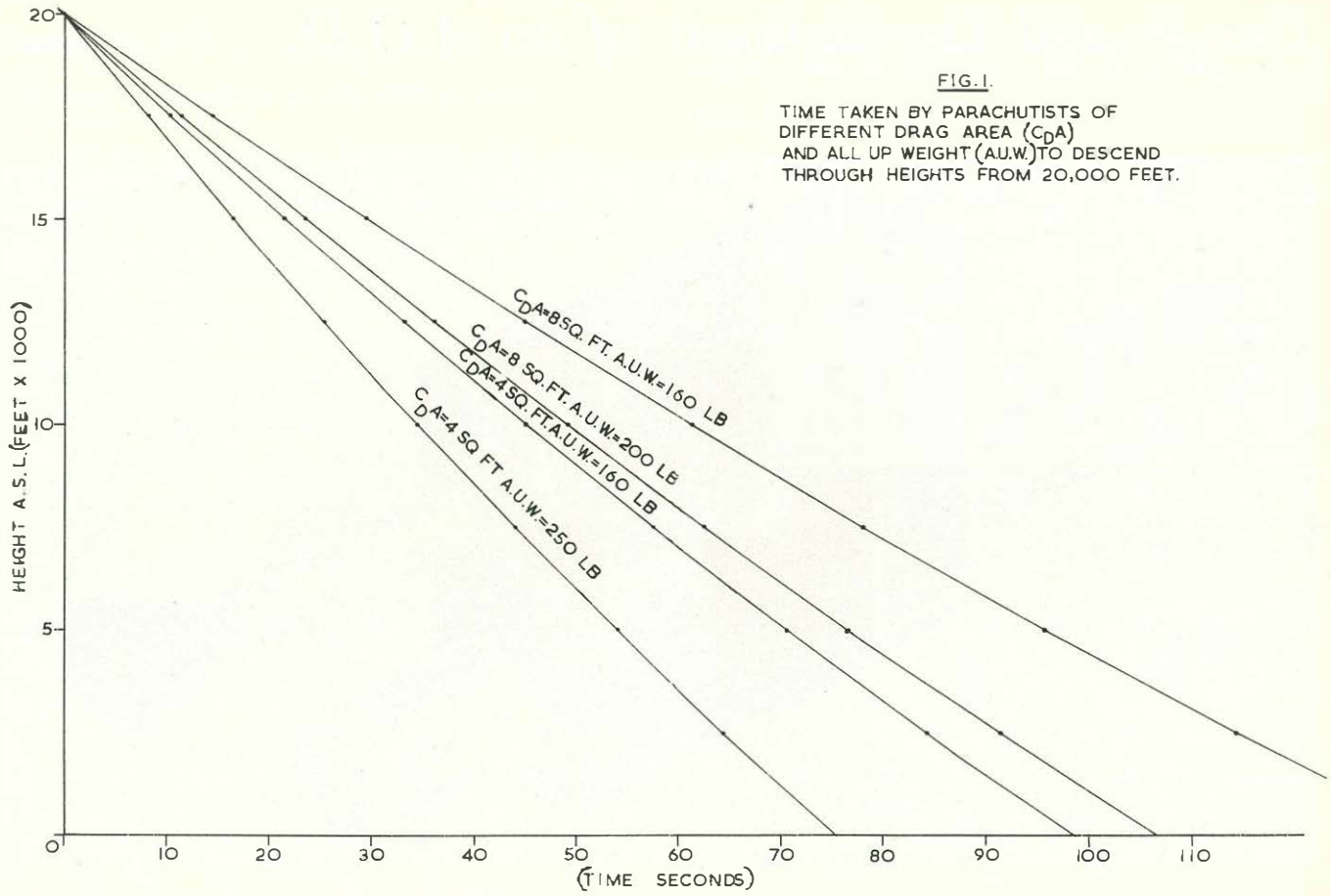


FIG. 1.

TIME TAKEN BY PARACHUTISTS OF DIFFERENT DRAG AREA (C_DA) AND ALL UP WEIGHT (A.U.W.) TO DESCEND THROUGH HEIGHTS FROM 20,000 FEET.

company with his machine. It was obvious that an entirely new approach to the design of this particular A.O.D. was required. Some of the world's leading authorities on the art of free-fall parachuting were consulted and it was agreed, as a basic requirement, that the device would operate at a height of 1,500 feet A.G.L., with a tolerance of plus or minus 200 feet seeming to be acceptable. With the operating height fixed at this figure, sufficient height should remain after every foreseeable eventuality for complete safety and manual operation of the rip pins, at the normal pulling height of 2,000 feet would not be denied the parachutist. Operation within the desired margin was considered impossible to achieve by the use of a timing device, because of the wide variations in terminal velocities of different parachutists in differing attitudes, as they fall through the gradually increasing density of air. Reference to Fig. 1 will show that for Mr. W., having a C_DA (drag area) of 8 sq. ft. and an A.U.W. (all-up weight) of 160 lb. will take 118 seconds to fall from 20,000 feet to 2,000 feet; whereas for Mr. Z., having a C_DA of 4 sq. ft. and an A.U.W. of 250 lb., will take only 66.7 seconds to fall through the same distance. One might argue that the C_DA and A.U.W. for an average parachutist is 5 sq. ft. and 200 lb. respectively, but we cannot cater for "Mr. Average" alone.

The opening height would, therefore, have to be sensed by barometric pressure and an aneroid capsule employed in the mechanism for this purpose. The capsule would be manufactured to give a defleotion characteristic linear with barometric pressure to within the closest possible tolerance. Adjustment of the capsule would be arranged to compensate for a change of barometric pressure due to weather conditions and/or height above sea level of the D.Z., by means of a dial graduated in millibars. The mechanism to trigger off the release of the power source for withdrawal of the rip pins at the desirable altitude would involve a system of levers. The power source would be a compression spring exerting a minimum force of 60 lb. and the arrangement of levers would reduce this to a few ounces at the point where the capsule acts to hold the device in a locked position.

Locking Height

We will try not to bore the reader with too many technical details, but it is necessary to mention the matter of the "locking height" and to explain briefly what we mean by this. It is the height at which an A.O.D. can be armed without operating prematurely. In other words, if an A.O.D. is calibrated to operate at 1,500 feet A.G.L., it is the height above this at which the aneroid capsule will have expanded sufficiently to lock the mechanism. Keeping the locking height to a minimum is obviously essential and is complementary to obtaining the greatest degree of operating accuracy from the mechanics of the system to be employed. This proved to be one of the main difficulties which presented itself during the development of the original basic design: to control accurately enough the axial play in the final trip lever as the aneroid capsule deflects to the precise position where the lever can move to set the release mechanism in motion. Consider a capsule deflecting 0.0020 inch per 1,000 feet altitude, then for an accuracy better than plus or minus 200 feet it means that, without taking into account other possible errors, the trip lever must not be allowed to wander more than 4/10

thousandth inch. For the device to perform repeatedly with very much greater accuracy, axial play in the trip-lever must be even less than 4/10 thousandth inch.

This problem was eventually overcome by a unique method of tracking the trip-lever between precision steel balls which can be adjusted to the finest limit without incurring striction.

Laboratory Tests

Following the manufacture of some prototype A.O.D.s for sport parachuting, comprehensive laboratory tests were carried out firstly on the prototype A.O.D.s and then on a production batch of 25. Results showed that the device can be expected to lock within +750 feet above the set nominal operating height. However, it must be stressed that this is under controlled laboratory conditions of 1 g. static and room temperature.

Results of other tests made to discover the general performance showed:

(a) errors less than plus or minus 100 feet at temperatures between 0°C. and +30°C.

(b) a gradual increase in error of −7 feet per 1°C. decrease in temperature below 0°C.

(c) a gradual increase in error of +5 feet per 1°C. increase in temperature above room temperature 18°C.)

(d) no significant effect upon performance accuracies during accelerations of up to 5 g.

(e) errors of up to plus or minus 220 feet during an acceleration of 15 g. depending upon the direction of the applied g. force.

Deviations of this order are tolerable without involving the complexities of temperature compensating and anti-g. balancing systems.

Live Parachuting Trials

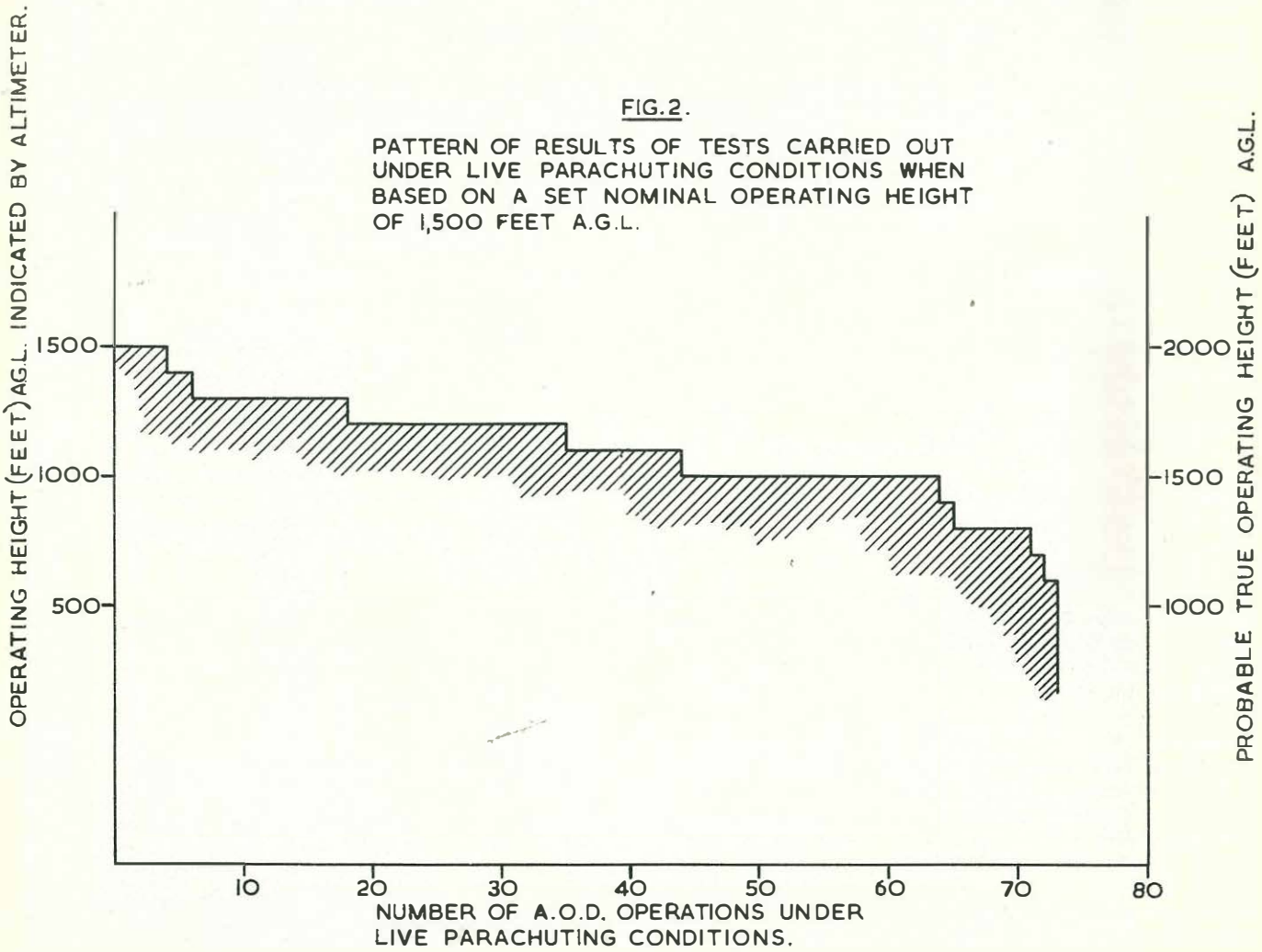
Nearly 100 live parachuting descents have been made so far to check the performance of the Irvin A.O.D. On several occasions subjects reported probable inaccurate observations of the A.O.D. operation, due to concerning themselves with their safety. These were accepted and the material reported was discounted. However, results from 73 descents were obtained by members of the R.A.F. Sport Parachute Club. Fifteen A.O.D.s were used and engineered on to parachute assemblies so that manual operation of the rip pins was possible if the device failed. The A.O.D.s were set to operate at a height above that at which it is normal to pull manually the rip cord at 2,000 feet. In this way it was possible to establish at what height, according to the frontally situated altimeter, the A.O.D. operated.

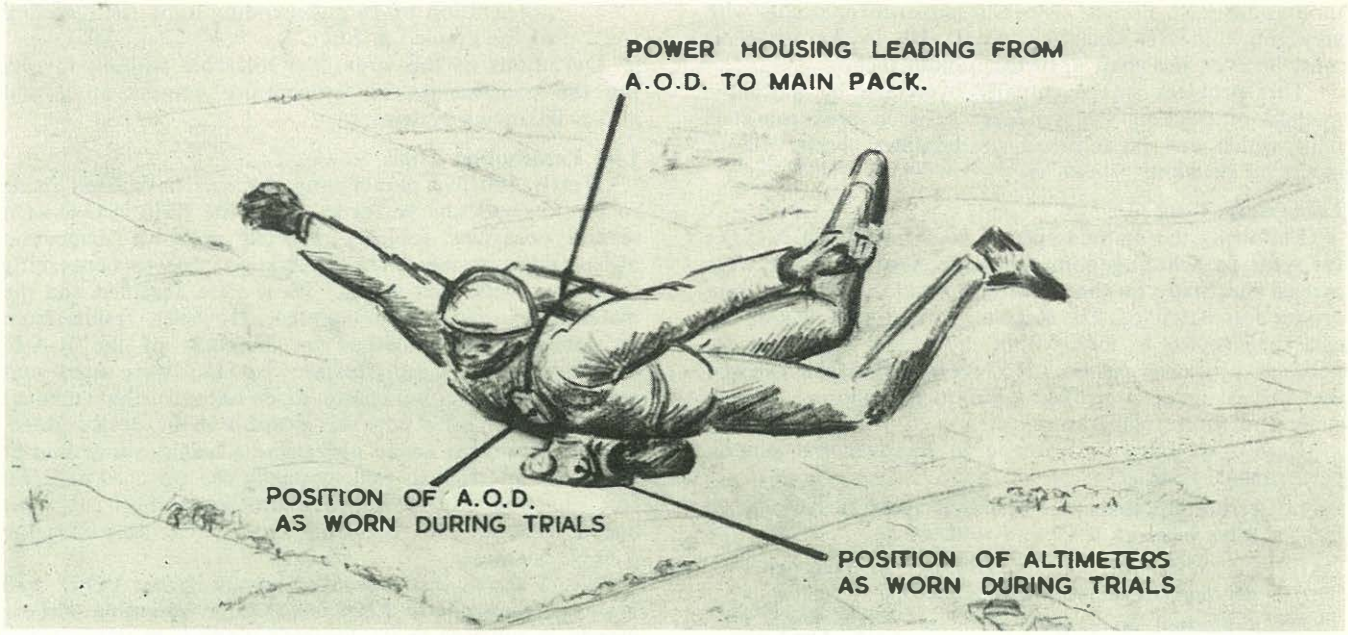
Fig. 2 shows the pattern of results if the A.O.D. had been set to operate at 1,500 feet A.G.L., assuming that air density is constant at the heights involved. It will be seen that with the results related to the frontally situated altimeter, most operations of the A.O.D.s were between 200 feet and 500 feet below the nominal set height.

This discrepancy pointed to the obvious fact that either or both the altimeter and the A.O.D. were being influenced

FIG. 2.

PATTERN OF RESULTS OF TESTS CARRIED OUT UNDER LIVE PARACHUTING CONDITIONS WHEN BASED ON A SET NOMINAL OPERATING HEIGHT OF 1,500 FEET A.G.L.





by a dynamic air pressure and were not detecting true static pressure.

To verify this, several experiments were conducted by venting one of two (sometimes three) frontally situated altimeters to the rear of the body and observing the indicated readings on the altimeters as the parachutist descended in free-fall. Photographic evidence proved conclusively that a total difference of up to 700 feet exists between the upper and lower surfaces of a parachutist descending in stabilised free-fall. When the parachutist—during these experiments—manœuvred to fall momentarily on his back, the indicated readings of the altimeters were reversed.

If the altimeter situated at the front of the body is being influenced by a pressure P_1 greater than that of true static by as much as $+\frac{1}{2}\rho V^2$lb./feet^2 this, when calculated, represents at altitudes above 2,500 feet a measure of +512 feet. What, then, in plain terms does this mean? It means that it is fairly certain that, for the parachutist descending in stabilised free-fall in face-down attitude, his altimeter is indicating an altitude about 500 feet lower than true height A.G.L. This, of course, may vary from person to person, depending upon his C_DA and A.U.W.

Now, since the total pressure difference observed during the experiments was 700 feet it means that a low pressure representing −200 feet ($-2/5$ ($\frac{1}{2}\rho V^2$)) exists at the rear of the parachutist and it appears from the results (Fig. 2) that it may be this lower pressure which the A.O.D. is sensing.

So, if we now accept that, during the parachuting trials the altimeter indicated a height x feet when true height was x + 500 feet, we can say that the A.O.D. operated within +300 feet and −200 feet of its set nominal release height (see Fig. 2).

Comment

For an experienced jumper, in stabilised free-fall, and fully in command of the situation, the Irvin A.O.D. will operate at a lower altitude than that indicated by his altimeter (upon which he must rely implicitly, whether or not it records true height) thus giving him ample time in which to deploy his chute manually. On the other hand, in an uncontrolled fall, whether due to injury or inexperience, the A.O.D. will operate at a higher altitude, as indicated by the altimeter—thus providing a greater margin of safety.

From the scientist's point of view things are not perhaps as satisfactory as he would like. There is still the answer to the 64,000 dollar question for him to find. Where, on a parachutist in free-fall can true static pressure be detected?

Comparisons with other A.O.D.s

For accuracy under laboratory conditions the Irvin A.O.D. is probably better than any other available A.O.D. Comparisons between performances under live parachuting conditions cannot be made because we have no information on the performance of other A.O.D.s under these conditions. However, it is probably true to say that the Irvin A.O.D. performs at least as well, if not better than any other available instrument.

Conclusion

In almost every case involving a fatal parachuting accident the uninformed blame the poor old parachute. "It didn't work," they say. Some day there may be a fatal accident involving a parachutist who was equipped with the latest and most reliable A.O.D. The uninformed will still blame the parachute but others will look to the A.O.D. So, please remember that, whichever A.O.D. you eventually choose to wear, it will not have magical properties!

---

* During the autumn of 1958, whilst flying at 56,000 feet, a Canberra started to disintegrate. The pilot, Flight Lieutenant de Salis, and his co-pilot, Flying Officer Lowe, ejected, unaware that they were about to set up an unofficial record for the highest emergency bale-out and the longest free-fall. As the ejector seat of de Salis separated from the Canberra, a piece of flying wreckage sheared off the stabilising drogue parachute; the seat promptly somersaulted and spun violently. Seconds later an automatic device released him from the seat and de Salis found himself flung downwards in a rapid blur, revolving like a high-speed gramophone record. After falling more than eight miles, an Irvin automatic opening device opened his parachute. Despite his eyes having been affected by four minutes' violent rotations and only being able to see through small slits, de Salis managed to make a good landing in a small field. He was soon reunited with his co-pilot, who had made a more orthodox descent.

LLOYD'S

All members of the British Parachute Association are insured here under a Third Party Policy included in their subscription.

BRITISH PARACHUTE ASSOCIATION
Conditions for Club Affiliation

1. Affiliation to the British Parachute Association is open to all British Parachute Clubs, Centres, Schools and Associations subject to the following conditions:

(a) Each Club, Centre, School or Association (hereafter referred to as "BPA Club") seeking affiliation, must do so by authority of its Constitution, or by the decision of its appointed Committee, or by the consent of the majority of its members.

(b) To be eligible for affiliation a "BPA Club" must have at least 10 paid-up BPA members on its membership list, or produce evidence of having proposed a similar number for BPA membership within the past year, or be the parent body of one or more such clubs.

(c) "BPA Clubs" will conduct parachuting in accordance with BPA Rules, Regulations, Instructions and Policies as are published from time to time.

(d) "BPA Clubs" will follow BPA recommended procedures unless they have sound reasons for doing otherwise which they are prepared to justify.

(e) "BPA Clubs" will do all they reasonably can to persuade their members to become members of the BPA.

(f) "BPA Clubs" will assist the Association in maintaining its records by providing the following information on application for affiliation, and thereafter annually as at January 1st:

(1) Nominal roll of BPA members, giving the names of other clubs to which they may belong, nationality, FAI Certificate and BPA Category rating.

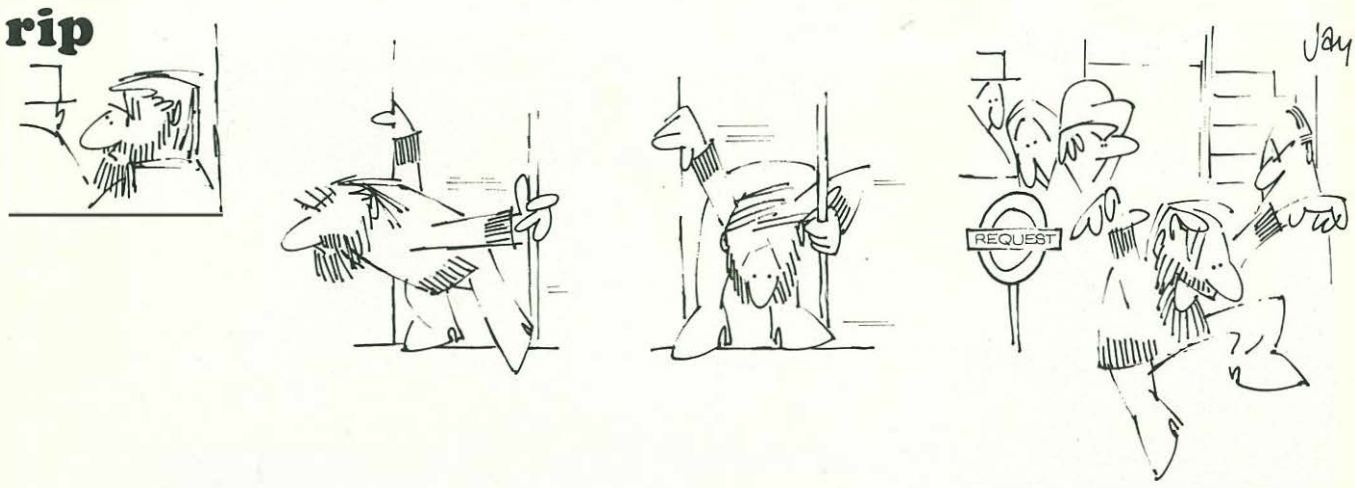
(2) Name and address of the Club Chief Instructor and other Club Officers.

(g) Such concessions and privileges which the BPA may from time to time confer on "BPA" Clubs", or be instrumental in achieving for them, must in no way be abused by enabling non-members to profit by them.

2. Chief Instructors of all affiliated Clubs will automatically become members of the BPA Safety and Training Committee, but may NOT appoint substitutes to deputise for them at Committee Meetings.

3. The Council reserves the right to strike off its roll of Affiliated BPA Clubs those which disband, become ineffective, or fail to comply with the conditions as stated in Paragraph 1 above.

4. The names of all BPA Affiliated Clubs, Centres, Schools and Associations will be published together with their addresses (or those of nominated Club Officers) in every issue of SPORT PARACHUTIST.



MEDICATION AND FLYING

Many flying accidents and incidents have occurred as a result of pilots flying whilst medically unfit. Although common ailments such as colds, sore throats, abdominal pain and diarrhoea may cause relatively little discomfort or hazard in the normal course of events, they can be dangerous when associated with flying, and the more exacting the flying task the more likely are these minor indispositions likely to be serious. The ideal situation, that anyone flying an aeroplane who requires to take one or other form of medication should not fly until he no longer requires it, is not always practicable. Since many common drugs and remedies have powerful side-effects, however, all pilots must know how these may affect their flying performance.

Any form of medication, whether on prescription from a doctor or by casual purchase over the counter, and particularly if being taken for the first time, may have serious consequences in the flying environment unless three basic questions can be satisfactorily answered:

1. Do I really feel fit to fly?
2. Must I take medication at all?
3. Have I given this particular medication a personal trial on the ground at least 24 hours before flight, to ensure that it will not have any adverse effects whatever on my ability to fly?

Confirming the absence of adverse effects may well need expert advice and Company Medical Officers, General Practitioners experienced in aviation matters, Medical Examination authorised by the Ministry of Aviation both in the United Kingdom and overseas, Royal Air Force Medical Officers, and the Medical Branch of the Ministry of Aviation are all available to assist in this matter.

The following are some of the types of medicines in common use which may impair reactions.

Sleeping tablets dull the senses, cause mental confusion and slow reactions. The length of time they act on any one individual varies, but may be prolonged, and pilots must have expert medical advice before using them.

Antibiotics (penicillin and the various -mycins and -cyclines) and sulpha drugs may have short-term or delayed effects which affect pilot performance. They are also of importance, however, in pointing to the fact that a fairly severe infection must be present to warrant their use. Apart from the effects of the substances themselves therefore, the side-effects of the infection will almost always mean that a pilot is not fit to fly.

Fear is normal and provides a very effective alerting system. Tranquilisers and sedatives depress this alerting system and have been a contributory cause of fatal aircraft accidents. You must not fly when taking them.

Anti-histamine drugs are widely used in "cold cures", and in the treatment of hay fever, asthma and allergic rashes. Many easily obtainable nose-spray and drop preparations contain anti-histamines. Most, if not all, of this group of medicines tend to make you drowsy. This, together with the effects of the illness, will often prevent you from answering the basic three questions satisfactorily. Admittedly very mild conditions of hay fever, etc., may be adequately controlled by small doses of anti-allergic drugs, but a trial period on the ground to establish the absence of side-effects is absolutely essential before flying. For those pilots afflicted with allergic conditions requiring more than the absolute minimum treatment, and in all cases of asthma, there should be no flying at all until one of the above-mentioned medical sources of advice has been consulted.

"Pep" pills (e.g., caffeine, dexedrine, benzedrine) used to maintain wakefulness are often habit forming. Susceptibility to each drug varies from one individual to another, but all of them may cause dangerous over-confidence. Overdosage causes headaches, dizziness and mental disturbances. The use of "pep" pills while flying cannot be permitted. If coffee is insufficient, you are not fit to fly.

Drugs for the relief of high blood pressure cause a change in the mechanism of blood circulation which can be disastrous when flying. If the blood pressure is such that drugs are needed the pilot is not fit to fly. If in any doubt about your blood pressure do not hesitate to seek advice.

Anti-malarial drugs in normally recommended doses do not usually have any adverse effects on flying ability. However, ensure that the drug is taken in good time so that Question 3 above can be satisfactorily answered.

Although these are the commonest groups of drugs with adverse effects on pilot performance it should be pointed out that many forms of medication, although not usually affecting pilot performance, may do so if the pilot concerned is oversensitive to the particular drug. You are therefore exhorted not to take *any* drugs or medicines before or during flight unless you are completely familiar with the effects of the medication on you yourself. Again, the medical sources of advice mentioned earlier in this circular should be consulted in cases of doubt.

Alcohol has similar effects to tranquilisers and sleeping tablets, and may remain circulating in the blood for a considerable time, especially if taken with food. You should not fly less than eight hours after taking moderate amounts of alcohol, and larger amounts require a longer recovery period. Alcohol and sleeping tablets form a lethal combination.

Lastly, remember that following local and general dental and other anaesthetics a period of at least 48 hours should be spent on the ground, and if any doubt remains concerning the right time to resume flying, then seek appropriate medical advice.

Mention should be made of the fact that blood donation and flying do not mix. The disturbance to the circulation following blood donation takes several weeks to return to normal, and although effects are slight whilst at ground level, there are risks when flying during this period. It is recommended that pilots do not volunteer as blood donors while actively flying, but if blood has been given, an appropriate medical source should be consulted before returning to flying.

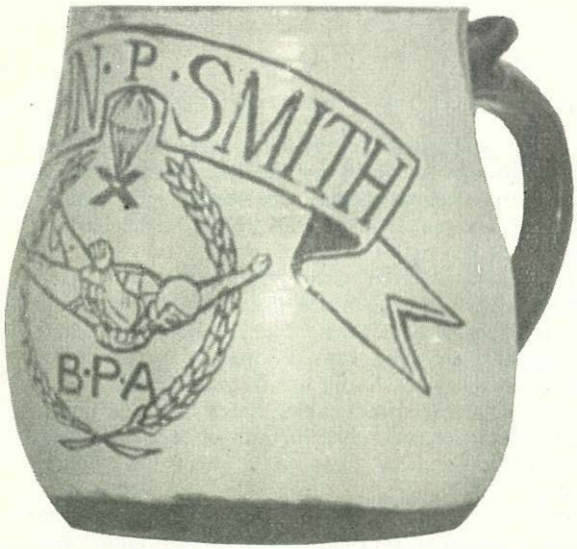
To sum up, the effects of medication on his flying performance are the direct concern of the individual pilot. This Information Circular gives some guidance, but it cannot be comprehensive. If in doubt consult the medical sources mentioned for advice, and should there be any difficulty in obtaining it, contact the Ministry of Aviation at this number: TEMple Bar 1207, Extension 493, when the Medical Branch will be glad to give you all possible assistance.

This Circular was issued for information, guidance and necessary action.

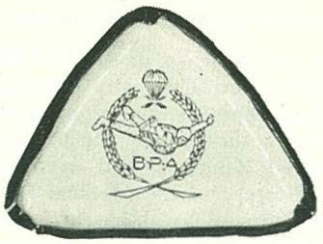
By direction of the Minister of Aviation,

R. G. K. WAY

B.P.A. ENGRAVED POTTERY TANKARDS, ASH-TRAYS.



Each tankard is hand made and individually engraved. Choose from a variety of shapes and colour combinations, details of which are available on request.



WRITE TO: THE DE LA SALLE STUDIO
c/o British Parachute Association, 7c Lower Belgrave Street, London, S.W.1.

WHEN WRITING PLEASE SEND S.A.E.
ASH-TRAYS ARE APPROXIMATELY 6 INCHES ACROSS

ONE PINT TANKARD 30/-; ASH-TRAYS 13/-;
ENGRAVED NAME (ON TANKARD) ADDITIONAL 7/6d.
POSTAGE AND PACKING. 4/6d.

Aim for 'Dead Centre'

with . . .

IRVIN

SKYRANGER

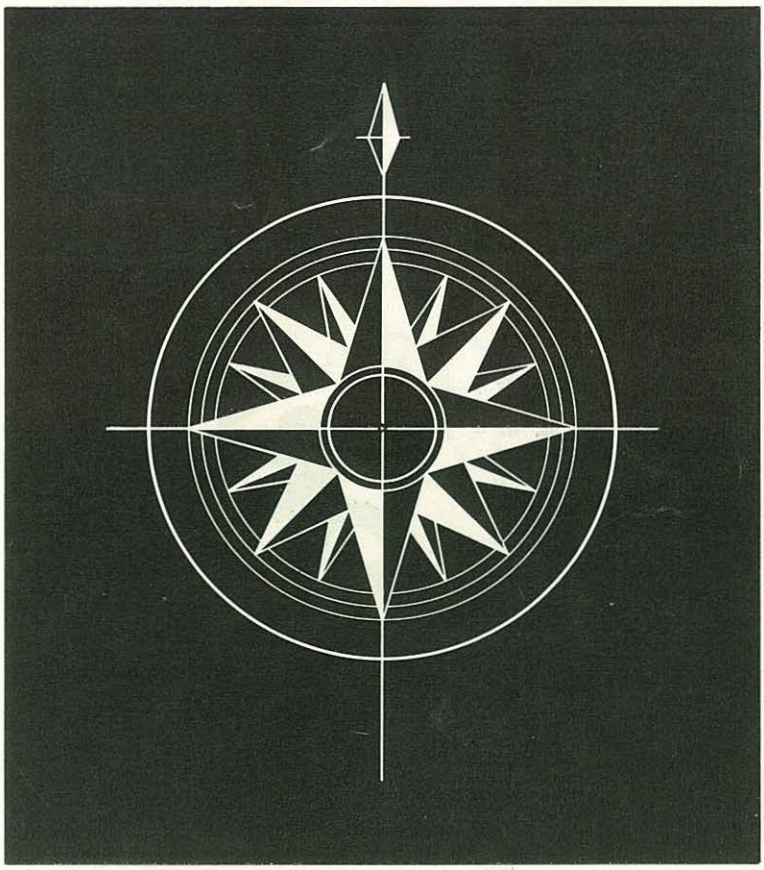
SKYDRIVER

NOW AVAILABLE IN A CHOICE OF 7 COLOURS AT NO EXTRA COST

Full details from Service Manager

IRVING AIR CHUTE of G.B. LTD.
LETCHWORTH – HERTS
Telephone Letchworth 6262

AIR CHUTES
IRVIN
REGISTERED TRADE MARK No. 472809



The world is our dropping zone

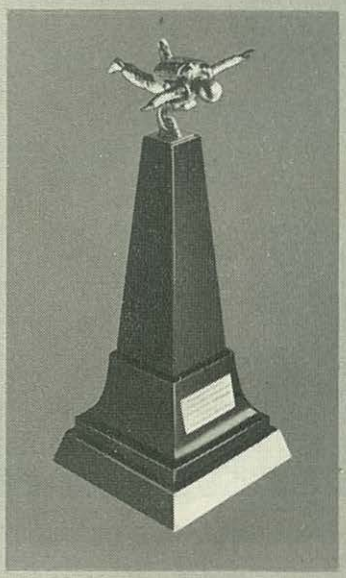
G.Q.

G. Q. Parachute Co. Ltd., manufacturers of RATO Recovery Systems, Missile Recovery Systems, Aircraft Anti-spin Parachutes, Aircraft Brake Parachutes, Life-saving Parachutes, Troop Dropping Parachutes, Steerable Parachutes, Utility Parachutes, Cargo Parachutes—3 ft - 110 ft diameter, Stabilising Systems, Automatic Harness release Mechanisms, Barometric Parachute release Mechanisms, Aircraft Safety Harness, Helicopter Rescue Harness, Stretcher Harness, Industrial Harness, Air Ventilated Suits.

G. Q. PARACHUTE COMPANY LTD.
Portugal Road, Woking, Surrey.
Tel: Woking 61321 Member of R.F.D. Group Ltd.

Printed by STONE & COX LTD., London and Watford

Rothmans of Pall Mall
are proud of their close association
with Sky Divers through
The Army Parachute Association.



The Rothmans of Pall Mall Trophy is awarded annually to the winning Unit team at the Army Free Fall Championships, and has been won for the last three years by a team from the 22nd Special Air Services Regiment.

ROTHMANS—THE KING SIZE NAME FOR CIGARETTES