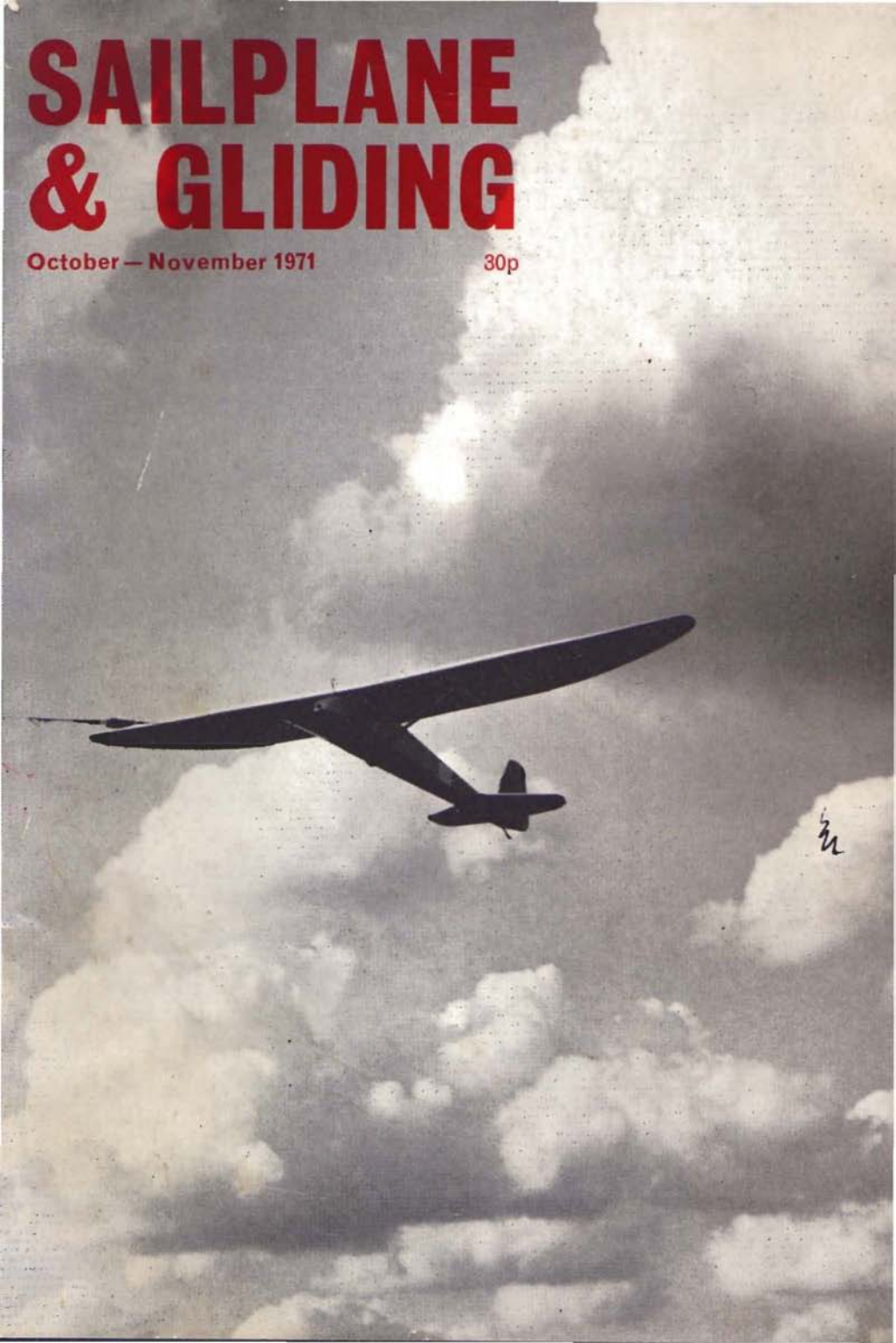
SAILPLANE & GLIDING

October — November 1971 30p



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SAILPLANE & GLIDING

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Cover picture: The Yorkshire Gliding Club T-21B on launch. *Photo by Laurence Hill*

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★ **STOP PRESS** ★

Comparison flying between Derek Piggott in a **17m Kestrel** and George Burton in the first production **19m Kestrel** establishes that the 19m is 5% better than the 17m at both high and low speeds (90 knots and 50 knots)

A DELICATE OLD LADY

OUR cover this month shows a Slingsby T-21B of the Yorkshire Gliding Club being winch-launched into an appetising sky. The first T-21B had its maiden flight in December 1947, and for many years it was the mainstay of both civilian and ATC glider training, with a total of 218 (including prototypes) being built. Although now being superseded by K-13's and other higher performance two-seaters (not to mention motor gliders), it is still very much in the foreground at many clubs throughout Britain.

Gliding is nothing if not essentially romantic, and it would be a tragedy if the old lady was finally obliterated—as Neanderthal Man was superseded by Cro-Magnon Man—by glass-fibre and L/D. For with her open cockpit and high lift/low speed wing section, she is a survivor of those pioneering days of the 30's—the days of the floater.

Of course, many of today's pilots who were trained on the T-21 are not likely to look back on her through rose-coloured Polaroids. Their memories will be of a stubborn old matron who refused to respond to their muscular control movements, who provided blasts of freezing rain about the face whenever a skid or slip occurred, and who generally co-operated with the instructor in inflicting every conceivable indignity and discomfort on the pupil.

But a rare pilot will occasionally get out of his glass-fibre cocoon to give a newcomer to the sport an air experience flight. The only machine available will be the T-21, which nobody wants to fly. It is a nice, summer's day, with a gentle wind against the hill and thermals sprinkled about the sky. The launch will be remarkably gentle. Almost before he has released the cable, he will realise that she is no longer the stubborn old matron, but a delicate old lady. She will respond with leisured grace to every gentle movement of the controls, has a positive affinity for the cores of thermals and, with a little gentle persuasion, will be coaxed to the top of the stack by using all those little bits of lift which the hot ships do not notice in their hurry.

And of course, she has a load of stories to tell. My own favourite concerns the prototype T-21A, used during the 50's by the London club (in those days a veritable storehouse of prototypes) as a joy-riding machine. The ineffectiveness of her ailerons was, I understand, phenomenal. However, the cables which operated the spoilers were accessible to the pilot and if he wanted help with a particular turn, he merely opened the spoiler on the appropriate wing, a system adopted by some very hot ships indeed, such as Sigma.

We would like to print the best anecdotes about the T-21, and invite readers to send in their best stories (not longer than 750 words) to reach the Editor not later than December 1.

GEORGE LOCKE.

OXYGEN IN SAILPLANES

By R. P. SAUNDBY

AFTER the dangers of climbing wooden aircraft in thunderstorms were realised, high altitude soaring in Britain came to a standstill a few years ago and the present sailplane altitude records have stood for many years. More recently, improved skills in wave soaring have increased the number of high flights and this is an appropriate time to review the physiological problems of high altitude soaring.

The first and prime limit on high flying is the reduction of air density and with it the fall in oxygen partial pressure at height. The atmosphere consists of a mixture of roughly 20% oxygen and 80% nitrogen. The relationship of pressure with altitude is not linear but approximately logarithmic. The healthy human body can, however, compensate to some extent for the reduced oxygen tension and so the relationship of physiological effects to altitude is somewhat modified.

If sensitive testing is used, some effects of hypoxia can be detected as low as a few thousand feet. However, for a sedentary pilot no serious deterioration will occur below 10,000ft. Between 10,000 and 20,000ft there will be steady deterioration, and if sufficient time is spent at 20,000 consciousness will be lost.

In the height band 10-20,000ft there is a relationship between height and time. If the exposure is very short, as in a cumulonimbus climb, pilots have ascended to about 20,000ft with no oxygen. I myself once broke off a climb at 19,500ft because of hypoxia, but I had been climbing very fast indeed and spent less than 10 minutes over 15,000ft. In wave flying, rates of climb are usually lower and the need for oxygen correspondingly greater.

Because of this time/height relationship, any laid-down altitude above which oxygen must be used will be disputed by some. Allowing that some deterioration in performance is acceptable in sailplanes, a general consensus of aeromedical opinion is that oxygen should be turned on by 12,000ft, and that it is dangerous to exceed 15,000ft without using additional oxygen. Above 20,000ft consciousness will be lost after a period of illness, and above 25,000ft the onset of unconsciousness is so rapid that the victim is unaware that anything is wrong. The result of this limit is that while "any old unreliable" oxygen system can be used up to 25,000ft, because in the event of oxygen failure the pilot will have time to open his air brakes before he loses consciousness, above 25,000ft unconsciousness will occur with no warning and the result could be fatal.

Therefore, for flights above 25,000ft the oxygen system must be proven and the contents gauges frequently monitored, descent being initiated immediately the contents fall below a preplanned level. For flights above 30,000ft a more generous oxygen supply is required than is provided by most glider systems and for flight above 40,000ft pressure breathing with the associated complex and special equipment is essential. Pressure suits with the necessary life support systems are available as a result of space research, and perhaps someone will extend the present altitude records right into the stratosphere. Such flights would demand far more expert support than can be provided by any written article. There are also other limits on high altitude flying such as decompression sickness.

SYMPTOMS OF HYPOXIA

Should a foolish pilot ascend too high, or an oxygen system fail, he will experience the symptoms of hypoxia. These symptoms are similar to those of alcoholic intoxication, for indeed alcohol interferes with the use of oxygen by the cells of the brain. As with alcohol, the effect varies widely between individuals but common symptoms are a dizziness or lightheadedness, difficulty in controlling hands (even tremor), changes in breathing patterns and a feeling of fatigue. As with alcohol all these may be masked in the inexperienced by a feeling of euphoria. Other maladies, indeed any malady, may occur at altitude but the remedy in all cases is to

Wg Cdr Saundby, a doctor of medicine, is with a training command in the RAF.

open the air brakes and descend.

One factor only is under the control of the individual and this is the rate and depth of breathing. It is possible to produce unconsciousness, even at ground level, by rapid deep breathing. The mechanism is complex but essentially consists of the washing out of carbon dioxide through the lungs. This produces an alkaline state of the body, which, besides causing tinglings and cramps, interferes with the transport of oxygen in the blood and will precipitate any pre-existing hypoxia. Paradoxically, therefore, overbreathing will cause a rapid unconsciousness in a mildly hypoxic subject.

Anxiety will cause overbreathing because our primitive behaviour patterns evolved in an age when fear was a prelude to violent physical activity. This is not true when flying aircraft and at altitude this reflex can be very dangerous. Sailplane pilots should be aware of this danger and be prepared to voluntarily control their breathing, and if necessary deliberately hold the breath after exhalation.

OXYGEN STORAGE

Oxygen can be stored in aircraft in one of three ways—as liquid, compressed gas or in chemical combination. Liquid oxygen systems are now standard in modern aircraft because a greater mass of oxygen can be carried for a given weight. They are not suitable for sailplanes because of the high boil-off rate of small systems and the need for replenishment of liquid oxygen. Compressed oxygen in cylinders is the normal and most convenient method, and two pressures are in common use. Some North American and Continental cylinders store the gas at 400psi while most British cylinders store oxygen in steel containers at 1,800psi. These are smaller in size than the low pressure cylinders and more suited to sailplanes. Cylinders should be obtained from a reputable source because they are not only subject to internal corrosion, which can be found on inspection, but also to metal fatigue, which cannot be determined visually.

Chemical oxygen in the form of perchlorate candles has long been kept for emergency purposes in mines and submarines. Previously the lack of control over their combustion and the fire risk have prevented their use in aircraft. They are now on the market as a source of emergency oxygen for a descent following a loss of pressurisation in general aviation aircraft. These candles with their instant availability, light weight and infinite shelf life offer many attractions for glider pilots. Unfortunately, those at present on the market have too short a duration to be of real use but in the future this method of storage may become more popular.

Oxygen storage systems in aeroplanes are normally fixed inside the structure and replenished from a mobile oxygen trailer. No gliding site in the UK has such charging facilities and oxygen systems in sailplanes are best made removable so that the cylinder and regulator can be taken away for charging. If just the cylinder is removed and high pressure joints have to be remade every time the system is replenished, it is simply a question of time before the leak rate becomes unacceptable. Oxygen systems are heavy and must be properly secured inside the aircraft. Sudden clear air tur-

bulence is not unknown in mountain wave systems and ideally the oxygen systems mounting should be stressed to at least 6*g*. It is perhaps stating the obvious to say that the control cock should be accessible in flight and the contents gauge visible to the pilot, but sometimes these basic points are overlooked. The length of sorties to high altitude is likely to be limited by low temperatures and there is little point in carrying more than an hour's supply of oxygen in a sailplane.

Oxygen is sold commercially for various purposes with different specifications and prices. The specification for aircraft breathing oxygen is similar to other oxygen for breathing but the water content is more tightly controlled. Above freezing level any condensation in the regulator will freeze and cause the system to fail. Oxygen sold for medical purposes is probably dry but cannot be absolutely relied upon for flying above 25,000ft.

Oxygen is manufactured in vast tonnages by the fractional distillation of liquid air. When manufactured it is invariably pure and the differences in specification reflect different standards of storage. Overseas it is not unknown for soaring clubs to purchase welding oxygen from the local garage, and while I could not professionally condone the practice, I have never known harm arise.

Contamination more commonly arises from within the control of the user. Oxygen cylinder pressure should never fall below 100psi otherwise moist air may enter on the descent. If an oxygen system has been out of use for some time and acquires a smell, or has been totally exhausted it will have to be purged. To do this, the system should be charged to 300psi, then heated with a safe form of heater to 50°C and slowly discharged down to about 50psi over a period of 30 minutes. Normally this process has to be repeated several times. A final but most important warning is that oils, greases, organic matter or even metal filings can ignite in compressed oxygen; oxygen systems must therefore be kept scrupulously clean and dust caps always used. Smoking in the presence of oxygen is very dangerous and a fire fed by an oxygen leak is impossible to extinguish. Sailplane pilots should never smoke when carrying oxygen. A less well known fact is that smoking at altitude can cause serious carbon monoxide poisoning and a fatal accident at 17,000ft has been recorded.

ECONOMISER SYSTEMS

Oxygen systems in aircraft belong to one of two fundamentally different types —economiser and demand types. In the earliest and most primitive form of oxygen system a metered flow of oxygen was fed to the mouth through a simple pipe stem. This system was both inadequate and wasteful—inadequate because the constant metered flow was lower than the peak inspiratory flow, and wasteful because inhalation is only one-third of the respiratory cycle and two-thirds of the oxygen supplied was wasted. The solution was to insert a balloon into the system and connect the balloon to the mask by a wide bore tube.

Economiser oxygen systems like this are simple, reliable and have been successfully used in military aircraft up to 40,000ft for many years. Economiser systems for use in aircraft must be fitted with a non-return valve between the mask and the balloon reservoir otherwise saturated exhaled air will pass back into the oxygen supply causing ice formation and failure of the system.

Unfortunately cheap disposable masks designed for use in hospitals or in heated aircraft have been sold for use in sailplanes. In these masks oxygen is fed into a balloon mounted directly on the front of the mask. Below −5°C ice will block the throat between the mask and the balloon, when oxygen pressure will blow the balloon off. These masks are not reliable for use in sailplanes and should never be used above 25,000ft. It is of interest to note that a similar type of mask was used during World War II in the B17 Flying Fortress and a number of air gunners died in their isolated turrets.

It is incorrect to condemn all economiser systems because of this defect. Properly designed systems of this type are very suitable for sailplanes. Military economiser oxygen regulators which may be found on the surplus market include the Mk 10, Mk 11 and Mk 16. The Walter Kidde oxygen set has a very

convenient regulator mounted on the cylinder head.

An economiser regulator is essentially a pressure reducing valve and a variable flow meter. Oxygen flows vary from the two-and-a-half and four litres per minute of the Walter Kidde to the more generous 5 and 7 litres/min of service regulators. Obviously with limited storage capacity the oxygen flow should be just adequate but 4 litres/minute would be insufficient above 25,000ft and result in severe hypoxia above 30,000ft. Seven litres per minute will maintain full oxygenation up to 38,000ft. Very high altitude flights could use two Walter Kidde sets mounted in parallel. The economiser used in military aircraft is mounted in a big bakelite box and is bulky to install.

The service economiser mask, the Type H, is readily available on the surplus market and is a good mask for sailplane use. It has well shielded and duplicated expiratory valves and is very resistant to freezing. A feature of all economiser system masks is that they have a spring loaded cheek inlet valve to admit atmospheric air after the economiser is empty. This topping-up air is admitted last and should only fill the mouth and respiratory passages so that all added oxygen is primarily used in the lungs. This check inlet valve makes the mask unsuitable for use with a demand oxygen system because air will simply be "demanded" through the cheek valve rather than oxygen from the regulator.

The cheek inlet valve should not be confused with a very similar looking "anti suffocation" valve fitted to some demand masks; this valve is intended to avoid inhaling water after ditching and is spring-loaded to a much higher pressure. The Type H mask is compatible with the Walter Kidde regulator but will require an economiser. One method of constructing an economiser is to fit an inlet non-return valve into a short length of tube below the mask and then fit on to the tube the balloon of a disposable mask. This balloon is smaller than ideal but will suffice for oxygen flows of up to 5 litres/min. As with all oxygen equipment it should be stowed with care in a clean pocket otherwise the balloon will be found torn when it is most needed.

DEMAND SYSTEMS

Demand oxygen regulators are more complex. In their simplest form as used in sub-aqua equipment they contain a diaphragm exposed on one side to ambient pressure and the other side to mask pressure. Suction from the mask displaces the diaphragm and movement of a system of levers opens the inlet valve and allows oxygen to enter the regulator. Demand regulators designed for use in aircraft allow air to mix with, and dilute the oxygen passing to the mask. This air mix is controlled by a sealed capsule which expands with altitude and maintains the correct mixture of oxygen and air for all altitudes. Normally above 33,000ft the regulator will deliver 100% oxygen. In military regulators the air mix can be manually closed if there are smoke or fumes, or even water in the cockpit. In sailplanes these regulators should always be used in the "normal oxygen" or "diluter" position.

If the oxygen supply fails air will still be drawn in and there will be no obvious indication of failure. Therefore all regulators of this type are fitted with mechanical or electrical indication of function. If one of these regulators is fitted in a sailplane it is well worth installing 24 volts of dry battery to operate the indicator. A fundamental defect of demand regulators is that with a small leak round the mask, quiet breathing may be insufficient to operate the demand valve. Early German Drager regulators had a small constant oxygen leak through the regulator to ensure the mask was always full of oxygen. Later American and British regulators used a sealed capsule to slightly load the diaphragm above 10,000ft. If there is a leak around the mask these regulators will then give a constant indication of function and there will be a massive waste of oxygen. Most demand regulators have a built-in facility for checking the mask seal before take off and this should always be used. Many demand regulators are designed for emergency operation well above 40,000ft and can deliver oxygen at considerable excess pressure. While this is likely to be beyond the reach of sailplane pilots and requires both specialist equipment and training, anyone operating a lever

labelled "Jerkin Test" while only wearing a mask is in for a nasty shock.

Ex-military regulators which may appear on the surplus market include the Type A-12A (Mk 17, 20 or 21) which is the simplest and most suitable for sailplanes. All demand regulators in RAF service are designed for use with either liquid or low pressure oxygen. If used with high pressure oxygen at 1,800psi they will need a pressure reducing valve and a separate contents gauge. Some small standby demand regulators may be seen, but those which do not provide mixtures of air and oxygen are wasteful and not suitable for gliders.

Currently being introduced into RAF service are some delightful little miniaturised man-mounted regulators manufactured by Normalair. The low altitude version of this regulator would be ideal for the cramped cockpit of a sailplane but at present it is likely to prove too expensive for popular use.

Masks for demand systems are also designed to hold pressure and therefore have a substantial exoskeleton and chain or toggle mountings, together with a reflected sealing edge. The expiratory valve is compensated and is designed to sense pressure in the inlet hose. A characteristic of this system is that a failure of the inlet valve to seat will prevent the outlet valve from opening. If you cannot breath out, cleaning the inlet valve seating will usually cure the problem. Because the inlet valve is vulnerable to biscuit crumbs and other debris it is protected by a mesh guard which should always be kept in place. The two common service masks are called P and Q and they are effectively different sizes of the same mask. Similar ex-USAF masks may also be seen in surplus stores. The P and Q masks may have one of a variety of connectors, any pair of which can be used in a sailplane, or it may even be possible to connect the mask directly to the regulator. A wide bore corrugated tubing should always be used between the regulator and mask. Because of the high cost of new aircraft oxygen systems, ex-service regulators are commonly fitted. While these may be perfectly satisfactory, they should never be trusted above 25,000ft unless they have been checked using the proper test equipment.

LOW TEMPERATURES

Altitude causes problems other than oxygen lack, and a severe limit on high flying in sailplanes is the low temperature. The atmosphere lapse rate is about 2°C per thousand feet and a Diamond height may well be down to −40°C. Some years ago I measured cockpit temperatures in cloud climbs, and these were a few degrees above ambient. In a mountain wave, with powerful solar radiation penetrating a large canopy, and a well sealed, well insulated sandwich glass-fibre aircraft the cockpit temperature could be well above that of the surrounding air, but it will still be very, very cold. For intentional high flights pilots are advised to dress in multiple layers of "wool" and invariably to wear gloves. Because of shadow effect, one's feet are coldest and if high flights are attempted with wet socks there is a real danger of frostbite.

Even today we are having problems with cold and I have seen pilots uncontrollably shivering for an hour or more after landing. As mountain wave flying skills increase, cold may prove to be a more severe limitation than oxygen. The solution will probably be in the use of electrically heated clothing fed from an accumulator.

SUMMARY

There is no simple ideal oxygen system on the market for sailplanes and this is reflected in the variety of systems seen fitted. What is more important is that the best use is made of the systems available and that pilots are aware of the limits of the system that they have fitted to their aircraft.

To summarise, and to quote limits

that have no safety margins and only apply to healthy individuals, oxygen is required above 12,000ft, and is absolutely essential above 15,000ft. The oxygen system must be of proven reliability above 25,000ft and must deliver 100% oxygen by 33,000ft. A height of 40,000ft represents the absolute limit of simple non-pressurised oxygen systems, but above 25,000ft, and especially above 35,000ft, decompression sickness or expansion of gases in the gut may limit the climb.

Lastly, if one is ever in doubt, either about one's personal well-being, or about the workings of the oxygen system, it is absolutely vital to open the air brakes immediately and leave them open. The oxygen can then be checked in the descent which should be continued until either the problem is solved or the aircraft is below 10,000ft.

A TRAVELLER'S TALES 1: Baptism abroad

By THE ARM-CHAIR PILOT

A LONG time ago now I spent a year away from Britain, at a university in another part of the English-speaking world. Soon after my arrival I was put in touch with a man who would be happy to introduce me to the local gliding club. Let us call him John Smith. One afternoon John took me there. It was a pleasant site, a small airstrip five miles or so from a modest range of hills which it was customary to soar from aerotow. John put me in the front seat of an elderly two-seater, and climbed in behind me. "You do all the flying," he said, adding, with true native generosity, "be my guest."

We set off for the hill, releasing from the tug as soon as we could easily reach the ample folds of the bare slopes by drifting downwind. The wind itself was a little along the hill, so that some skill was needed in order to avoid the sinking air contained in each gully. For half an hour we sauntered up and down without a care in the world. The sun lowered itself towards the horizon, making it difficult to see in the direction of the airstrip.

Towards the end of one beat, the end furthest from the airstrip and most downwind of it, John advised that it was time to be heading for home. "I'll work our way up to the other end," I said, "so that we will have less trouble getting home."

"We don't bother to do that," said John, "just fly into the setting sun."

With some misgivings, but bowing to local knowledge, I set off into wind and sun, in the direction of where I was assured the now-invisible airstrip was to be found.

We sank steadily in the quiet air, but the ground sank even faster, and for a while all seemed well. But inevitably the glide angle overtook the fall of the ground, and obstacles, unnoticed on the outward trip, began to loom large ahead. What was that great building in front, low enough, but seemingly covering acres and acres? A close inspection revealed a modern factory. It was surrounded by adequate landing fields, by now some 800ft below.

"Nice fields you have round here," I said over my shoulder, with obvious implication in my tone. "Y-Yes," came the reply, "but we won't need them today."

I flew on in silence, my goal still invisible against the sun.

Next a motorway appeared in front. "How far beyond the motorway is the airstrip?" I asked. "Not very far," came the unhelpful reply.

"Don't you think we should land in that field beside it?" I said.

"No, we'll make the strip. Look! I can see it now." I looked up from a minute examination of the fields below and saw, across the motorway and a dried-up lake bed, the airstrip. Or, to be exact, I saw the hangar and the workshops and the parked aircraft nicely screening the strip itself from view.

We crossed the motorway low enough for me to be worried about being run over, and I shouted, "I've got control." Since I was in any case flying the aircraft I must, in the heat of the moment,

have meant John to understand by this that from now on I was first pilot. I opened the brakes, turned sharp left, and put the glider down amongst the reeds of the lake bed, careless for its safety but very worried about my own. We stopped almost instantly, and apparently without damage.

"Well done," said John, leaping out, "you did that very well. You stay here and I'll go across to the club and get a retrieve crew." He disappeared before I had time to say anything. A few minutes later a car came across from the airstrip, and without any further word passing we extracted the glider from the reeds and returned it to the club. The embarrassed silence was barely broken as John drove me home.

It was another fortnight before I summoned up the courage to visit the club again, this time by myself. I hoped to have a dual check incognito, but alas I was recognised.

"You're the Englishman who landed out with John Smith a fortnight ago, aren't you?" accused the chief flying instructor.

"Y-Yes," I said, it now being my turn to stutter.

"Tell me, who landed the glider on that occasion?" My heart sank into my boots, but, honest to the last, I answered "Well, er, I did."

"I thought as much," said the CFI, "but that wasn't the story we heard. You can fly any glider on this field," he said, "without a dual check."

And with a flourish of his pen he wrote out a licence which enabled me to fly every single type at the club. It is one of my most treasured possessions.

★ ★ ★

A 500km WEEKEND THIS TIME

THEORETICALLY, there is a two in seven chance of a really good soaring day coinciding with the weekend. Glider pilots, eternal optimists that they are, are likely to say that the chances are nearer two in seventy. And as for a pair of cracking days—the soaring mind is incapable of seriously contemplating such an astronomical rarity.

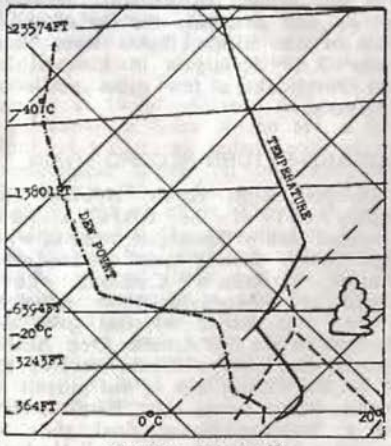
But it happened. On July 17 and 18, at least six 500km flights were done in Britain, including the breaking of the out-and-return record so recently set up by Alf Warminger. There were also at least 16 Diamond goal legs, the breaking of the 300km triangle record and an unguessable number of other flights in excess of 300km.

THE WEATHER

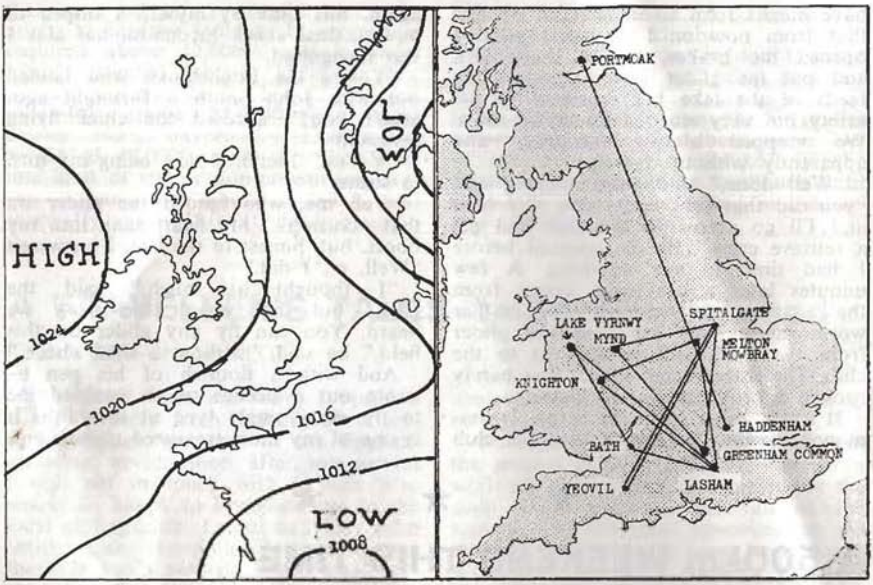
The weather helped, of course. Mike Garrod reports:

"The weather situations prior to the 500km flights done this year have shown some remarkably similar features. Again, for the 17th and 18th, we had high pressure to the west of the British Isles with a ridge extending over southern England. This was preceded by a northerly flow, a cold front having crossed the country by the morning of the 16th (Friday).

"The upper air sounding for Liverpool (see illustration) typified the situation over the southern half of England during the weekend. The main feature was a steep lapse rate to 5,000ft with an anticyclonic inversion above. However,



Midnight, July 17-18



Weather map for noon, July 17, and routes of 500km flights on July 17 and 18

the moisture content at the inversion was quite high, and with very strong convection resulted in some spread-out of cumulus tops. This caught some pilots out, but fortunately did not happen everywhere and vigorous convection continued in most places until mid evening."

A noteworthy feature was the entry of two new sites into the list of those from which 500km flights have been made—RAF Spitalgate in Lincolnshire and Portmoak, a few miles north of Edinburgh.

OUT-AND-RETURN RECORD AGAIN

On the 17th, Barrie Dobson, the deputy CFI of the RAFGSA Four Counties club at Spitalgate, woke up with that 500km feeling and declared the triangle Greenham Common, Long Mynd and Spitalgate. Mike Edwards writes: "As Barrie whistled over the startline in the Std Libelle, Don Austin arrived, and after a record-breaking rig of his Std Cirrus, was in hot pursuit of Barrie. Many hours later Barrie pulled off a 'fingernail-biting' final glide to receive a tumultuous welcome." He took slightly over eight hours. "Poor Don landed within sight of the airfield. A careful map measure revealed that Don too had got his distance, with 501km.

"Two 500km flights in one weekend would seem more than enough to most people, but no, not to be outdone, our Phantom pilot, George Lee, set quietly to preparing a 520km out-and-return to Yeovil airfield. Radio contact was lost on the return leg and everyone thought he'd landed, but no, after a 50km final glide, George suddenly appeared over the airfield." The flight, in a Std Libelle, took seven-and-a-half hours. (Subject to homologation.)

Barrie Dobson's flight represents the RAFGSA's first 500km triangle.

Hugh Hilditch achieved the first 500km triangle in Britain in a wooden glider—he completed his Diamond C with a flight of 519km from Lasham via Knighton and Melton Mowbray on the 17th in his SHK. Chris Lovell (Phoebus 17) also completed his Diamond with a 500km triangle on the same day (Bath, Lake Vyrnwy, Lasham; 510km). Wally Kahn and Tony Burton came to earth on the third leg of their 500km triangle

courses in the late afternoon. David Ince in his LS-1 achieved a flight of about 450km. On Sunday, Chris Day turned just short of his declared turning point—Doncaster airfield—to return to Lasham after a 480km flight in his Dart 17R.

The weekend coincided with the end of the Dorset Regionals, one of the few 1971 British competitions to be blessed rather than cursed by the weather. A 305km triangle was set via Staverton and Odiham airfields, and all but one of the competitors got round, including a Capstan, a K-13 and a K-2. Ralph Jones (Std Cirrus) beat the existing record by rounding the course at 82.2km/h. (Subject to homologation.) Sunday was declared a rest day. Although several 500km attempts were made, efforts were foiled by the presence of strato-cu.

GO SOUTH YOUNG MAN

Frank Reilly's forecast for his flight from Portmoak on July 17 included a tail wind of about 25kts in the north which would taper off as he went south. Thermals strengths would also die off on the way south. He declared Compton Abbas as a goal, safely over the existing record of 579km set up by Nick Goodhart in 1959, who flew from Lasham to Portmoak.

His first launch in the SHK was just before 11:00, and confirmed thermal strengths to be 4-6kts. He climbed to 5,000ft—then had to land to give his crew the car keys.

The second launch was at 11:40. He pulled off at 1,800ft and climbed to 5,000ft at 6-8kts. At 11:50 he was on his way, via Kincardine to the west as it looked as though the sea breeze had already started further down the Forth estuary.

He crossed the river at 4,000ft which, with cloud base at 5,000ft, was legal in that part of the controlled airspace round Edinburgh. Minimum thermal strength was about 4kts and the wind NW but no more than 15kts.

From Kincardine he flew south with the speed-to-fly ring set for a 2kt average, which was conservative as he did not stay in any thermal which did not average 4kts in the first turn. Course was changed to south-east when well clear of the Edinburgh control zone.

Thermals were still good, the wind having died off noticeably, and near Peebles he achieved his best climb of the day with 8-10kts climb over 1,000ft. Once clear of controlled airspace, he did not circle if he was less than 500ft below cloud, but pulled the speed off in the lift and sometimes went a couple of hundred feet into cloud but still on course. If more than 500ft below cloud, thermals of over 4kts were used. Apart from a patch between Selkirk and Jedburgh, thermals were plentiful. Visibility was good.

Sea breeze was evident, and had encroached in a wedge as far inland as Darlington in the south Northumbria area. He kept about 10 miles west of this, and passed the 300km mark and Leeds at about 4pm. He was still only accepting 4kt thermals, but these were now further apart and were the best available. By the time he got to Rugby his exact course was being determined by the best bits of sky, and at Rugby (where he was down to 1,500ft) changed tactics from speed flying to accepting anything. However, at 18:40 he was back to 5,000ft at Coventry.

"A dead sky to the west now forced abandonment of my goal as the only bits of cloud were now to the south-east. The wind was north-east and was no longer of any assistance. I got my last thermal back to 4,000ft near Brackley and started a glide out for Booker, now knowing I would be comfortably over 500km. No more thermals and a cross-wind meant that I was down to 800ft at Haddenham with a newly cut field available, so I flew a good circuit and landed at 19:50—distance 527km.

"Meanwhile, back on the M1, a long Sunblest trailer proceeded south at unmentionable speeds on borrowed cash to arrive within radio range about midnight, a valiant effort. The local police kindly directed the combination to the exact spot. We were on our way by 01:00, stopped for a bite on the M1 north of Birmingham, and at Shap to redeem Tom Docherty's watch from pawn. Tom and Kenny Jamieson had left without money, believe it or not. We arrived back at Portmoak at 10:00 tired but satisfied."

* * *

150km SUMMER WAVE CROSS-COUNTRY

By LYN BALLARD

WHY DO people always choose the good days to take a break from gliding? Sunday, June 20, was such a day. As I crossed the Severn Bridge *en route* for Usk, the wind was fresh, from WNW, and the fifth lee wave off the mountains was bang overhead.

At the site, a small band of regulars and a few newcomers were valiantly throwing the K-13 into a wildly turbulent sky. Upwind, a slot had formed through which could be seen a huge, nerve-tingling bank of cloud, the downwind side of the primary wave. Launch after launch struggled with wind and turbulence, but with no tug there seemed little hope of contacting the vast lift that lay so clearly above us.

By 15:30 there was little demand for launches. Somebody pointed out our K-6E and an unwanted cable lying at the launch point. A good scratch is always fun so I bought it. From the top of a 900ft launch one can reach a small hill that sometimes works in a west wind. Half-way there, the vario squawked and so began the sort of scratch that is only possible in a K-6.

Three miles downwind is the Wentwood ridge, a wooded scarp winding from Monmouth to Newport. If I could reach that, there was a chance of getting higher. The thermal I had was tiny and broken but just enough to maintain altitude as the wind drifted me back. Ten minutes later I was approaching the ridge level with the crest. Now the thermal had to improve or I would be circling in the treetops. Sure enough, it did, but not before I'd selected my fourth field in 10 minutes.

At 1,300ft the lift collapsed as the thermal passed behind the ridge, but other bits of turbulence had decided to become temporary thermals as they climbed the ridge. Sometimes throwing a few circles, but more often just pulling up in the gusts, I edged south to where the ridge was higher. Here were some bigger thermals, large enough to tuck a complete circle into and strong enough not to be killed by the sink behind the ridge. At 3,500ft I was in the murk below an extensive patch of cloud. A call to site, and the hunt for the wave was really on.

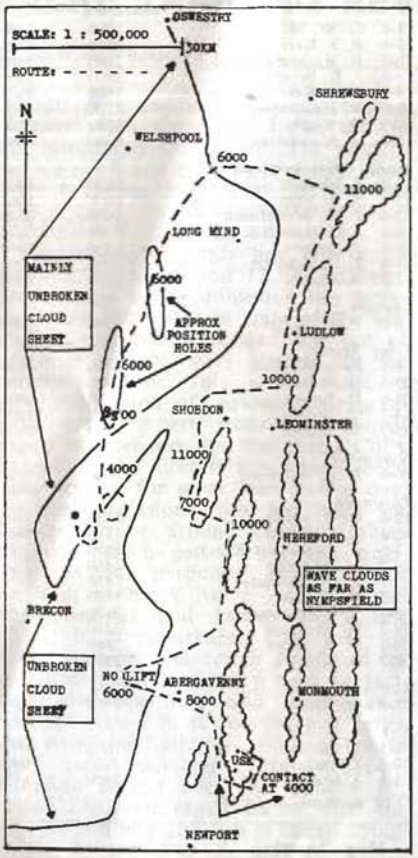
Somewhere to the west was that edge. Taking each lump of lift to hold me at cloudbase, I tip-toed into wind, over the river Usk and on towards the lake. Suddenly, the murk began to clear and there was blue sky ahead.

. . . on to the edge and then ease back to min sink. Horrors, no lift. How strange, try further into wind, no better. Hello, there's a wispy puff of vapour in front of the edge. It's a thermal, tuck into it and drift back towards the edge. After a few circles, cloud is forming all round, but I need every inch of height, so hang on till I'm nearly blind then straighten up into the wind at 3,800ft. Yes, 2kts up and smooth. Bingo, we're in. . .

How sudden and complete the transition was. No more steep turns, slipping and stalling around in the murk, just great banks of cloud under a brilliant sun and smooth, gentle lift. As I rose above the clouds, the set-up was revealed. The uplands of Wales were covered by an unbroken sheet of cloud stretching away north and west as far as the eye could see. But in the lee of the hills, the cloud sheet broke up into about $\frac{5}{8}$ cover with long banks lying across the wind to the north, and eastwards at least as far as Nympsfield where "Woodpecker" and others could be heard, also in wave.

Abergavenny is our favourite local wave centre, so I cruised north and then pressed forward towards the town. It lay just under the large cloud sheet which, on closer inspection, did seem to have a few ragged holes in it. Still in sink, I pressed on over the cloud sheet to investigate the nearest hole. The varios gave an obstinate thumbs down, so it was about turn and back to the proven lift at Usk.

It was 16:45 when I rose again above the cloud tops and looked north at those lines of cloud stretching into the distance. For several years I have nursed an ambition to do wave cross-countries



along the Welsh border. I was hopelessly equipped; no hat, gloves, sun-glasses, food, drink, maps or oxygen. But after all, one doesn't need oxy below 12,000ft and I know the borders well enough by now to do without the map. The rest were luxuries and could be done without. At 6,000ft the thought became a decision—out-and-return via the Mynd was 200km, out of the question at this time of day in thermals but a distinct possibility in wave.

No sooner decided than I was on course moving north along the meandering edge and climbing at 2kts. West of Monmouth I jumped a 4-mile gap crosswind for the loss of 1,000ft, and then gently S-turned up to 10,000ft near Madley airfield. This wave stopped at Madley and an into-wind jump was required. The wind did not seem to be strong, but I pushed the speed up to 80kts and lost about 3,000ft before I was again in lift.

This wave was a beauty, probably off the Radnor Forest, and gave a steady 2kts up at 65kts indicated. At Shobdon airfield there was another gap so I jumped again and shortly recognised the bridge at Ludlow. Still moving north, I edged up to 11,000ft in lift of about 1kt and looked out over the cloud sheet that seemed to cover the Mynd. Looking back over my route the lane of clear air flanked by clouds seemed to stretch back as far as the Severn estuary and I was tempted to zip back home as fast as possible.

Radio calls were coming in from near Oswestry where "181" and "Phoebe" were soaring, so presumably there was lift somewhere in the cloud sheet. The Mynd was now some 10 miles upwind, so taking a deep breath I pushed forward. Eighty knots didn't seem to get me anywhere so I tried 90, which worked rather better.

At long last the Church Stretton valley was behind me and for a second I caught a glimpse of a glider parked on a hill top. By now I was down to 6,000ft and only just above the cloud tops. More lift was needed but the sheet was continuous with a clear-cut edge nowhere to be seen. Strangely, there was a lot of reduced sink just above the clouds and I seemed to go skiing on over a great woolly snowfield for ages. As I rounded each hump I peered down hoping for a clear-cut edge and some lift.

Eventually, the clearing appeared and another gentle 2kt climb began. At 7,000ft I made another jump to what looked like a better bit, and gradually worked up to 8,000ft. By this time my dead reckoning navigation had rather lost track of things but far away to the south-east the bastions of the Black Mountains were recognisable, pointing my way home. At 8,500ft, still in lift, I called base to let them know I'd be home in half an hour, and set off for a bank of cloud over the Black Mountains. Now clear of the cloud sheet, I seemed to be in strong sink and was

down to 4,500ft by the time I reached the Black Mountains. For some reason the leading edge of the cloud produced no lift but as the tops were now above me it barred the way home. Turning on the instruments I prepared to plunge straight through, but the horizon wouldn't erect and even in a 30° bank the turn-and-slip was stuck firmly in the middle.

Suddenly the cloud was forming all round and things were getting tricky. With the mountains below reaching nearly 3,000ft it seemed important to stay visual, so out came the brakes and I squirmed down the only remaining narrow shaft of clear air.

Out of cloud, I found heavy sink and was well out of gliding range of Usk. But three miles away the great slopes of the Black Forest offered hopes of hill-soaring home. I was suspicious that the wind had done something funny but nobody was having a bonfire that would give me a clue. There was only time for one go at the big hill. I turned the glider and drove straight at the mountain face about half-way up. Five knots of wind would have made it work, but it wasn't there. Even tucked tightly into the hillside, the varios read unanimously down. There was no time to search around; the foothills were not a desirable place to land, so I slid away along a subsidiary valley and picked a field.

What went wrong? Well, of course, one shouldn't fly with flat batteries and dodgy switches, the causes of the instrument failure. I think oxygen would have helped; even 11,000ft can take the fine edge off your decision-making, particularly if you are tired as I was. But after all, 150km in two-and-a-half hours is 60km/h even with all the fumbles. There are 15 hours of daylight in June and it's my bet that the wave was working for every one of them. Oh, for a tug at dawn!

WAVE FLIGHTS

Date	*Name of pilot(s)*	*Height wave contacted (ft)*	*Absolute height (ft)*
Abingdon (Chilterns)			
25-7	K. A. Harrison	2250	3250
Aboyne (Deeside)			
17-4	G. Dorward	3300	7200
9-5	G. Dorward	2270	3270
21-6	A. Middleton & pass.	1500	2500
25-6	A. Middleton & pass.	2000	3100
1-8	G. W. M. Neill	2000	5300
1-8	R. J. Kerr	3500	4300
8-8	R. Rothne & pupil	2500	5500
8-8	J. R. Bissett	2300	6800
8-8	R. J. Kerr	1800	9600
8-8	R. Henderson	2200	4500
8-8	W. Clark	3500	5100
8-8	A. Middleton	4200	6600
Hedley (Northumbria)			
25-6	J. McBeth	1100	1450
25-6	A. J. Ivory	1000	1600
25-6	J. M. Williamson	1600	6200
26-6	J. Greenwell & pass.	2000	5200
26-6	A. Brown	1800	7800
27-6	D. J. Osborne	4500	9000
11-7	A. Brown	2200	4100
Lasham			
8-8	P. W. James	4500	4900
Long Mynd			
9-5	Janet Walford	1700	5000
20-6	D. Brown	900	14900
28-6	D. Brown	600	2900
14-7	D. Brown	800	1900
15-7	D. Brown	700	9100
Nympsfield			
20-6	R. A. Sandford	2000	17200
Portmoak			
12-6	R. A. Jarvis	1150	2600
12-6	A. C. White	1100	4400
12-6	C. Donaldson & pass.	1450	2550
26-7	N. A. Dean	1460	3160
27-7	T. P. Docherty	1850	3050
27-7	N. A. Dean	1860	3360
28-7	T. P. Docherty	2150	3050
28-7	K. Buckton	2460	3060
28-7	N. A. Dean	2860	3360
30-7	A. R. Dick	2360	3760
Sutton Bank			
21-8	M. Carter	2500	5700
Usk			
8-5	L. Ballard	1600	6000
20-6	L. Ballard*	3800	11000
1-8	I. Shattock	2600	3300

*For account, see p366

Hog hunting A new use of glider radio equipment which regularly failed to transmit is reported in *The Journal*, Newcastle-upon-Tyne, April 5. If a partner hogged the flying in the syndicate's glider and a member on the ground wanted a flight, the earthbound pilot called up the glider and pretended that he could not receive an answer. He then asked the pilot to execute a 360° turn immediately and to repeat the manoeuvre for confirmation. With skill and cunning from the ground, the pilot could be conned into losing sufficient height to force him to land. The amount of height lost depended on the number in the syndicate, the number of excuses found for requesting the pilot to turn and the gullibility of the pilot.

FALKE TRAINING REVIEWED

By DEREK PIGGOTT

TIME flies and it is now more than two years since the Falke SF-25B was introduced to Lasham. The novelty has worn off and perhaps it is time once again to assess and report on progress.

UTILISATION

The original aircraft has now completed 2,000 hours and 12,300 landings. The average yearly utilisation has therefore been 960 hours in spite of the aircraft having been damaged and out of action in a very heavy landing for the months of June, July and August in 1970, the period of maximum flying in most years. Apart from the normal engine maintenance and the yearly CofA inspection, the aircraft has seldom been unserviceable for more than half a day. On most occasions, this has been for damage on or around the tail wheel assembly which gets very rough treatment on our particular airfield. Since we seem to break Auster and Cub tail wheel springs and fittings every few weeks, it is remarkable how well the Falke survives the rough treatment of up to 80 pupil landings a day. In fact, from the operating and maintenance point of view I think the Falke is better than many light aircraft, and is of course much more economic. The fuel consumption is just over two gallons per engine per hour regardless of what the aircraft is doing and this is cheap flying.

BASIC TRAINING

All the basic training for all students at Lasham is done by one Falke, and this consists of about 3½ hours' dual instruction per student. This is done on a casual basis in sessions of about 20 to 30 minutes or on a concentrated week's course of which the Falke flying occupies about three of the five days.

Although our training sequence in the Falke follows normal glider lines, one or two innovations which take advantage of the machine's capabilities have been introduced. For example, most students repeatedly make the mistake of starting the final turn much too soon so that a very gentle turn has to be made in order to line up with the landing area. This is usually the cause of ending up almost above the landing area so that a long overshoot occurs. When there is a suitable feature such as a hedge or road at right angles to the approach, a very convincing demonstration can be given in a few minutes of the effects of various turns on the positioning. The Falke is lined up immediately above the feature at about 300ft each time so that the position of the aircraft as it completes the turn can be noted. First the turn is started too early and only a gentle bank is used. Once the position over which the aircraft straightens up has been pinpointed, the approach is broken off so that another run over the same feature can be set up very quickly. This time a well-banked turn is used and the advantage of finishing the turn much further back can be seen very clearly. The third approach can show the effect of excessive speed in the turn and how, even with the steeper angle of bank, the radius of turn is very large.

It is not normal or recommended to put the Falke into positions which require the use of power to avoid serious problems. For example, if the landing areas are congested, we make the student sort out the problem as if he was in a glider and the instructor should never use the power. The main advantage of leaving the engine idling is that the aircraft can be climbed away again immediately after touch-down for another exercise. This makes it a practical proposition to demonstrate running out of height and landing midfield without incurring a half hour of manhandling back to the launch point. There is time during training to show pupils the impossible situation which can easily occur through attempting to land back at the launch point with insufficient height to make it. A very realistic demonstration, usually ending with a low turn and a landing across wind, proves conclusively that it is very undesirable to run out of both height and speed. We try to insist on our pilots

judging their height below 500ft and have fitted our altimeters with a plate which blanks off the heights between 250 and 450ft.

The Falke is superior to any glider for practising cross-wind landings. In a few minutes' flying both methods can be demonstrated and it is usually possible to select a distinctive line feature on the ground to land along so that the drift is made more obvious.

With the more experienced pilots I select the white centre line of a runway and a mark on it to give a definite target for touchdown. We then take it in turns to see who can hold the line accurately and touch down on the spot. This is a real precision test since the Falke always bounces if it is not held off properly. So it requires accurate speed and air brake control as well as skilful handling to hold an accurate track along the line in the crosswind and still make a good landing.

Recently we have introduced a compulsory Falke flight before solo aerotowing in order to give the student practice at dealing with a rope break. Many pilots seem to have no idea how to tackle such a situation and although it is not a common emergency, it is still one which could result in an accident.

CONVERTING TO A GLIDER

The glider conversion is mainly a matter of getting used to the launch and the minor differences in the handling of the glider and its dive brakes. With the same instructor all the time this takes about 15 to 20 wire launches, plus an aerotow to cover spinning. If the glider conversion is on to aerotowing it is not unreasonable to complete a very comprehensive course and reach a good solo standard in six or seven days.

Readers may be interested to know that at Lasham we have tried to encourage our instructors to run weekend and weekday evening courses on the gliders. The instructors concentrate on four or five students who have completed their Falke training so that each student does almost all his glider training with the same instructor. In this way, the nominated students get priority treatment for most of the periods up to

first solo and until they are converted to the K-8 after about 15 solos.

This kind of course is very rewarding to the instructor since it is always fun to see the pupil through the first solo. The majority of our new solo pilots come from these courses and even at weekends one K-13 is almost continuously on course flying. For example, one group starts at dawn and has the glider until lunch-time, when it is taken over by another group who fly on until dusk. The other K-13 and K-7 are operated on a first-come first-to-fly basis as at other clubs. With good weather, a keen person can progress from the K-13 or K-7 on to the K-8 in a matter of weeks or months, in fact I find it difficult to keep track of all the new pilots and sometimes find that they are almost up to cross-country standard before I have flown with them myself.

ADVANCED TRAINING

One of the major effects of the Falke training has been to realise how difficult field landings can be at times when all the crops are very long. For a period of some weeks this year we put a total ban on all early cross-country flights in club gliders in spite of the good weather conditions. Early on, both crops and many grass fields were too deep for safe landings. Then some fields were cut and these could be easily picked out. But the crops ripened so quickly that it became very difficult to pick out the cut hay from the ripening corn. Result—Ken Fripp has eight badly damaged machines (mostly from other sites) to repair, many with broken backs and tailplanes.

Solo pilots at Lasham are now given an introduction to field landings soon after they have converted to the K-8 so that in an emergency they know a little about the problems. Later, when they have about 35 hours' solo and 100 flights they do several more sessions culminating in a flight round a 100km triangle. This includes map reading and navigation practice, a diversion to read the signals area of a strange airfield, and several field landings.

In future, all our club pilots will have had some practical experience at finding their way before going cross-country in a glider.

In order to simulate conditions realistically, whenever possible these flights are made in soaring conditions so that the thermals can be used normally. The need to prohibit early cross-country attempts unless the visibility is good becomes very obvious when you see a student in difficulty with map-reading on a hazy day. Poor visibility also adds significantly to the difficulty in selecting a field for landing, a fact which can greatly add to the hazards on a first cross-country.

Throughout the year we have had many visitors for field landing training, some of whom, though passed out for cross-country by their own clubs, would have been very lucky to get into a field of their choosing without damage. Usually the trouble is picking a field which slopes badly, or getting too close or too high for a normal approach. One of the beauties of Falke cross-country training is that it is much simpler to organise than with a glider.

This winter we hope to give more time to refresher training and preparation for cross-country flying and to run special concentrated courses of one to three days both for our own club members and other people who would like this kind of individual training. The main idea is to concentrate on improving the pilots' knowledge and skill by lectures and Falke flying in much the same way as we do for instructors' courses. Many people seem to be able to manage two days off in the week and this can make ample time for a worthwhile course with evening lectures, etc.

We have also started experimenting with teaching competition techniques and there is no doubt in my mind that this is the way to breed champions. What is not so generally realised is that every cross-country flight is a race against time and that the average pilot just will not be able to complete a 300km triangle unless he can work efficiently and maintain a high average cruising speed for six or seven hours.

On good soaring days, the exercise consists of a 100km triangle using all the paraphernalia of modern contest flying including a calculator, speed-to-fly ring and even a camera. The instructor regulates the power settings to give the rates of sink for the speed being flown, so that, for example, the performance

of the Skylark 4 or Phoebus is simulated. This can be done surprisingly accurately and the pilot under instruction is only concerned with the glider instruments and not the engine handling.

The whole tempo of the flight may be speeded up by assisting the thermals with power so that higher rates of climb are achieved. This in turn gives higher between-thermal speeds and the need to select new clouds more often.

The major differences between the really successful pilots and the "also rans" are their motivation and rate of making decisions. This is something which can be improved by this kind of flying when a skilled instructor can show a pilot where the time is being wasted and how to organise his flying and thinking. Many pilots never have the satisfaction of calculating the final glide accurately and the excitement of gliding it out to arrive with only a few hundred feet after a glide of 15 or 20 miles. The Falke can simulate this.

This type of training in soaring conditions gives a good measure of ability since the between-thermal glides are the same as in gliders. Failing to find and get centred quickly in a thermal results in just the same frantic search for lift and if necessary a suitable field must be found. Most pilots find they have some glaringly obvious fault or inefficiency which might have spoiled their prospects for years to come.

These flights are very demanding on the instructor, for whereas the student just has to react to his instruments, the instructor must be checking that the "glider" is achieving the correct performance and making adjustments almost continuously.

1972 will give us our first complete year operating two Falkes, so that there will be plenty of scope for further advanced training. We have not started any training for Motor Glider Licences and if more solo motor gliders come into the country this will be incorporated into our programme. Expeditions into the mountains for wave soaring are also a possibility but judging by this year's crop of field landing accidents it is this aspect of training which must be stepped up in the future.

EUROMECH SYMPOSIUM 26

By F. G. IRVING

AS IS well known to our gentle readers, gliding is a remarkable occupation, not least in the intellectual sense. In various European countries, notably Germany, it has always enjoyed considerable academic respectability, now amply confirmed by Euromech 26, held from July 5 to 9, 1971. This consisted of about 30 people getting together for five days and discussing about 30 papers on the Aerodynamic and Structural Design of Gliders. Euromech Symposia in general have the merit of being quite informal: there is no record of the proceedings and no publication of papers (except as may be arranged elsewhere), so delegates are not fettered by the prospect of being held to ridicule by posterity. This particular Symposium took place at the Mathematisches Forschungsinstitut, Oberwolfach, a marvellous place in the Black Forest. It was built at considerable cost to the Volkswagen Foundation and provides accommodation and a meeting place for mathematicians and gentlemen of like mind to confer in ideal surroundings. Needless to say, the conferring went on well into the night and spread from the Institute to the local Gasthof.

It would be impractical to present a summary of all the papers but some of the topics which interested me personally are noted below. I think it can be said without displaying a lack of modesty that the British contingent acquitted itself well, and not only in conventional matters. George Whitfield put the clock back a few million years with a description of his investigations of pterodactyls, greatly delighting the audience with a little flying model: later, he was to be seen working on a production line of cardboard pterodactyls, some of which gratified Herr Stender by developing flutter. Anthony Edwards

provided a new slant on cross-country flying by a paper rather on the lines of his "Stochastic cross-countries" of some years ago, which obviously came as something of a surprise.

Some general impressions were:

Performance calculations There is a wide degree of accord on such calculations and they can now be carried out to such a degree of accuracy as to be virtually indistinguishable from measured curves unless something unforeseen occurs, such as premature separation. As a result of the papers of Professor Thomas and myself on the optimisation of gliders, it was agreed that the new rule allowing ballast in the World Championships Standard Class is likely to have a profound effect on design: aspect ratios are likely to get lower, coupled with the ability to carry a very large amount of ballast. Professor Thomas' paper implied that an optimised glider with flaps showed surprisingly little improvement over an optimised unflapped glider of the same span.

Performance measurements Both the classical partial glides (Howard Torode and George Whitfield) and comparison with a calibrated aircraft (Treiber of Braunschweig) give excellent results if done properly. In the latter case, the height differences were obtained by photography from a powered aircraft.

In informal discussion, the Polish contingent claimed successful measurements from decelerated level flights over a lake at a height of 10m. How the ground effect was eliminated was not satisfactorily resolved. Likewise, the discrepancies between Paul Bikle's measurements (see *Soaring*) and those of Hans Zacher can only partly be resolved by the differences in Reynolds number at the heights of the tests.

George Whitfield explained his performance measuring device and presented a drag analysis of the Falke.

Flaps Professor Eppler showed a most elegant arrangement for providing a continuous top surface on a flapped wing. The top surface of the wing is joined to that of the flap by a flexible sheet (in practice about 80mm long in the chordwise sense, made of thin glass-fibre). The flap is then caused to move so that the flexible sheet always forms an arc of a circle. This cannot be done by a single fixed hinge-line, so the flap hinges are replaced with little linkages forming the "four-bar chains" of classical drawing-office mechanics. Doctor Althaus then showed a wind-tunnel model and results obtained in the low-turbulence wind-tunnel at Stuttgart: not much difference at low lift coefficients compared with a normal flap but an 18% reduction in profile drag at lift coefficients around 1.2 and slightly improved maximum lift coefficients. Very satisfactory.

Flutter One of the high spots of the meeting was undoubtedly Herr Treiber's film of the 21m version of the SB-9 suffering from asymetric wing-bending-cum-aileron-flapping flutter. This showed pictures in flight, in both real time and slowed-down by a factor of 3.5, with the wing fluttering continuously. Not content with demonstrating the first mode—alarming enough—he then went rather faster and displayed the second mode. In the latter case, with a node well outboard on each wing, one could only marvel at the flexibility of glass-fibre, the fortunate degree of structural damping and the courage of Herr Treiber. Meanwhile, what appeared to be the suburbs of Braunschweig were passing below, doubtless full of citizens blissfully unaware of what was going on above their heads.

There were also very clear papers on aspects of flutter by Försching and Stender.

Wing Section Design David Pirie of Glasgow University presented Nonweiler's method of deriving sections with desired low-drag ranges and transition positions (within reason). This work was originally applied to the design of a section for a man-powered aircraft. Unfortunately the form of the velocity distribution downstream of the minimum pressure point is not variable, as on the Eppler or Wortmann sections, so as to keep the turbulent boundary layer happy and to eliminate laminar separation near the minimum pressure point. Despite this disadvantage, it would be interesting to see reliable tunnel data for a section suitable for gliders.

We got the impression that Eppler relied heavily on detailed calculation (his latest drag-computing programme includes a criterion to fix the transition point), while Wortmann, who was not present, takes the attitude that there is no substitute for good wind tunnel tests after designing a section.

History Hans Zacher presented a splendid film of the Wasserkuppe in 1922, preceded by the remark: "You can tell which are the professors for in those days the professors were very old and the pilots were very young." He then looked around the room and continued: "Now the pilots are getting rather old and some of the professors are quite young." His final remark, before starting the projector, was: "Please watch for the crashes and the short landings!"

Sigma There was immense interest in Sigma and no lack of folks eager to point out its potential snags, none of which came as surprises. Akaflieg München is about to build a two-seater, using the same Wortmann section as Sigma but with a lower aspect ratio and constructed in glass-fibre. The flap linkage is entirely aft of the main shear web, unlike Sigma's. They have our respect, sympathy and best wishes.

Conclusion There is no doubt that, Sigma apart, the "conventional" glider has reached something of a plateau of excellence. Performance curves of most of the current Standard Class gliders, plotted non-dimensionally, are very close together and variations between different types are largely a consequence of different wing loadings. One can, of course, indulge in changes of aspect ratio and ballast, as mentioned above, but this does not really involve fundamental improvements. It is quite clear that anyone wishing to produce a new design which is a real advance has to be very clever indeed in the realms of high technology.

The whole meeting was very well organised by Professor Eppler and Herr Zacher, backed up by the unobtrusive but smooth administration of the Institute. It is planned to make these symposia regular events, in the years between OSTIV Congresses. One potentially forbidding aspect of the programme was the "Hike in the Black Forest" on Wednesday afternoon. We were assured by Professor Eppler that the height gain would be no more than 200m: what he didn't say was that the 200m would occur several times. By the end of the afternoon the delegates looked distinctly unlike their normal technological selves as they consumed litres of beer and kilos of blueberry pie.

CAMBER-CHANGING FLAPS

By GEORGE BURTON

CAMBER-CHANGING flaps are as old as gliding itself. The earliest hang gliders used wing warping for lateral control and to slow down on landing. Down flap gives more camber and so more lift. The flaps on aircraft are usually designed to generate much more drag at the same time so that a slow but steep approach can be made.

Recent well-known gliders using such flaps are the ASW-12, Diamant and HP series.

A paper by Dr Wortmann ("On the optimisation of aerofoils with flaps," *Soaring*, May 1970) described a new series of aerofoils with some remarkable properties.

These aerofoils, which are used on the Nimbus and the Kestrel, have a very high maximum lift coefficient (C_L) which is maintained at angles of attack of 20° or more giving a very docile stall, while at the high speed end of the range the drag coefficient (C_D) is maintained at a very low value with the lift coefficient below 0.2. The low drag region has a much wider range of lift coefficients than any previously published aerofoil.

To calculate the appropriate speed range for a given flap setting one has to refer to the published curves of C_L

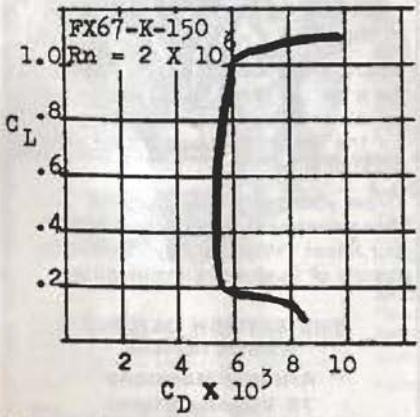
versus C_D at the various flap angles. At any particular angle these will be seen to have a region in which C_D is at a minimum over a range of C_L: this is called the "drag bucket" and outside it the drag coefficient rises rapidly. The corners of this region define the maximum and minimum C_L at which the aerofoil should be flown and preferably it should be restricted to a C_L range of perhaps 10% smaller than the test results show. In the case of FX67-K-150 and 170 aerofoils the curves are shown at Reynolds numbers appropriate to gliding speeds.

For example: the FX67-K-150 with −4° of flap is shown as having a low drag region extending over a C_L range of from 0.2 to 1.0. To avoid the extremities when calculating the corresponding speeds this is amended to 0.22 to 0.9. The speeds are then calculated from the formula

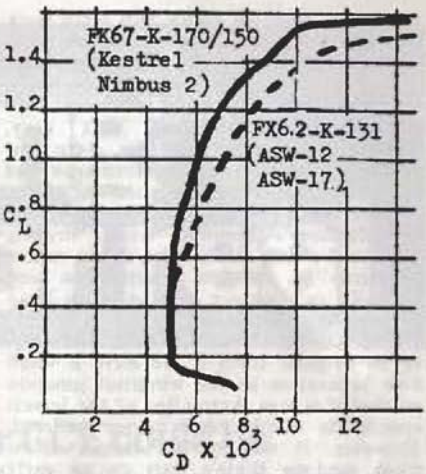
$$V = \sqrt{\frac{2W}{psC_L}}$$

where V = in ft/sec
W = glider weight in pounds
p = air density (in slugs = 0.00238)
s = wing area.

For the glider in this example, weighing 980lb with a wing area of 138ft², $V_{MINIMUM}$ = 81.5ft/sec (48kts) and $V_{MAXIMUM}$ = 164ft/sec (97kts). Positive flap of course gives two lower speeds as used for thermalling.



Cl versus Cd of FX67-K-150 at a flap angle of -4 degrees



Envelopes of the Cl versus Cd curves of the aerofoils used on the Kestrel and Nimbus 2 compared with those used on the ASW-12 and ASW-17

The first and most obvious conclusion from these values is that flaps with a multitude of settings are unnecessary. On leaving the thermal, having used the positive flap, one should immediately go to full negative flap for interthermal cruise. This conclusion could be modified slightly if fuselage drag were very dependant on alignment with the airflow but since the angle of attack will only alter by 4°over this speed range I do not feel it is worth bothering about.

A second conclusion is that the speed should not be allowed to go outside the range for the flap settings. This is specially true at high speeds where profile drag is most important. On those final glides, for example, your super hot ship can easily lose a third of its glide ratio going 5kts too fast.

Finally, a practical aspect of flaps on take-off. The generally accepted method is to set them to the high lift configuration at the start of the roll. The usual result is that a wing drops in the first few yards and is not picked up until 20kts or so are on the clock. The reason is that the wing has a very high C_L, is very susceptible to prop wash and at the same time the ailerons are at their least efficient. A better way is to set the flap at neutral or even slightly up. Then,

when you have 40 knots, slip them back to the positive setting. You will roll without problems. Lift-off will be clean.

DEVELOPING THE KESTREL

GLIDER development isn't easy, especially when the aim is to improve on the highest performance yet reached while retaining good handling, comfort and docility. Imagine then the manufacturer's feelings when, having produced a new super ship, it has minor problems in its first competition and virtually gets thrown on the scrap heap by rumour and gossip.

The Kestrel 17 has had such a history. In its original form it did have a small flow separation at the wingroot junction so that if it was thermalled at the lowest speeds its climb performance suffered. However, it was by no means disastrous, and as Bikle's tests on an early 17 show, it is better at high speed than the ASW-12.

The 17 is now by virtue of its contest performances proving to be a very good glider indeed. The flow separation has been cured by large fillets and it takes a very good ASW-12 pilot to keep up with it. What does one then do to improve its performance still further? The trend is towards the 20+ metre ships but to keep span within reasonable bounds the CIVV has introduced the 19m World Cup Class. If the rudder will cope, then adding to the span of an existing design will definitely improve the low speed performance because it reduces the induced drag which is the main drag force at low speed. Thus it is relatively easy to go from 40 to 44 glide ratio or even more.

But what happens at high speeds? Modern competition gliding is virtually conducted at the two extreme ends of the performance curve. At high speeds the profile drag of the wing becomes the major drag force and the induced drag fades almost to insignificance. The profile drag is directly dependent on wing area so that the extra span and hence extra area you added for the low speed improvement is now an embarrassment. The question of whether an improvement is made now depends on how the area is added. Putting it at the tip, for example, keeps the extra area to a minimum but the Reynolds number is then smaller and this results in another drag penalty.

We decided to put half the extra span on at the root and half at the tip. Calculations indicated that the performance should be better than the 17 right through the speed range but while flying at Angers I found that in fact the 17 flown by Zegels could equal or even beat me in final glides. I began to doubt whether we had made the right decision but decided to give the glider a careful examination when back at the factory. There we found that in fact the flaps had been set incorrectly and that the $-8°$ flap was only about $-2°$. We all have red faces at Kirkbymoorside about this and the history of how it came about is a story that you will have to visit us to hear. However, it did explain the performance problem as a glance at the C_L versus C_D curves for the FX67-K150 aerofoil will show. The error is being corrected and competitive trials will be made shortly. Customers can be assured that we shall not sell the glider to them unless it is the right amount better than the 17 and, as I said before, that is a very good glider indeed.

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Royal Air Force

ON BEING A TASKMASTER

By MICHAEL BIRD

WHEN I wrote "How the sore people saved the world" for the last S&G I had no idea I was going to be gently but systematically bullied into becoming a Strorn, or I would have been more careful with the scathing satire, brilliant wit, etc, etc, directed at taskmasters. As it turned out, all the horrors of that profession fell around my head without the compensation of being able to *put-put* around the leaden skies in a powered glider while the great white birds lay inert upon the ground.

Since I played no part in the preparatory work leading up to the Dunstable Regionals I am free to say that competitions at Dunstable are probably better organised and prepared than anywhere else in the country—without being over organised or lacking in atmosphere. If anyone disagrees with this statement they may choose their weapons; I will nobly act as Angela Smith's second in the duel. One advantage Dunstable has is compactness; usually it was possible to contact pretty well anyone very quickly, with the aid of Mike York's excellent PA systems, whether in the workshop, bar, restaurant, caravans or on the launch point. This was a big advantage when it came to deciding whether to make people sit miserably on the line for hours. When in doubt, one could put the aircraft on the grid and then send everyone off for tea or a game of cards and summon them back on-grid at ten minutes' notice. On airbases or flat sites generally, everything is of necessity more dispersed, communications more difficult and flexibility impaired. Of course, this advantage of Dunstable only applies to relatively small contests, but the 90-glider jamboree is a thing of the past, anyway.

I can hear the editor saying "Alright, that commercial break has gone on too long; what about *your* dubious part in the whole affair?"

Yes, indeed. Enough of the flag waving. I am trying to delay getting to my bit as long as possible. Well, for a start, I had things too easy, because the background work had been done by Geoffrey Stephenson. He provided me with

(1) A Fablon-covered half-million map mounted on stiff board with 22 turning points and several goals. This was the taskmaster's planning map.

(2) Two quarter-million maps with the same points drawn in, one for the other organisers and one for the competitors at briefing.

(3) A book of turning points, numbered to correspond with the big maps, on a one-inch-to-the-mile scale. (Competitors each received photostat copies of this.)

(4) A set of photographs of each turning point.

(5) A list of possible triangles, indicating distances and suitability for records.

(6) The same for out-and-returns.

(7) For each race listed by Steve, the bearings for the start and finish lines for the benefit of the chief marshal.

(8) A taskmaster's folding announcement-board for the dramatic unveiling of the day's task.

With all these aids, plus the BGA's guide to task-setting and a ready-reckoner chart I had drawn up myself years before showing optimum tasks for given wind directions and speeds, I felt confident that I had nothing more to do. I was already programmed, and after being suitably wound up would be able mechanically to pop out the right answer within minutes of hearing the forecast. I even suggested that I could do it from the comfort of my bed in London, which would also have the advantage that I would be out of reach of the competitors. The suggestion was turned down; and just as well. Since no one has managed to programme the English weather, there was nothing automatic about the process at all.

The first Saturday (with a race round one of three turning points to the north or north-west) was not a contest day. The wind, forecast at around 5kts, averaged nearer 15kts during soaring hours and the into wind component was too much for even the hottest ships. This sounds like a churlish attempt to foist the problem onto the forecaster,

but there are two points to be made here.

Firstly, forecasters can only work with the raw statistical materials they get from the official Met organisation; secondly the tasksetter has to allow for Murphy's Law and ask himself what sort of task he is going to have if things turn out worse than expected.

At Bicester, John Williamson set tasks for each class which took advantage of the westerly winds to get a contest day by sending people cross-downwind first.

I should mention that there was a sort of friendly rivalry between the two contests as to which would log the most and best tasks. Bicester laboured under the burden of three times as many gliders divided into two classes, one of which was for pilots at the very early cross-country , stage. So I immediately felt one down.

The chief reason for our avoiding East Anglia was fear of landings in crops. It was therefore even more saddening to have a glider break in half landing in an ideal landing field on this first no-contest day. So I now felt two or three down *vis-a-vis* the RAF.

The next day looked fine and even the tasksetter decided to attempt the triangle he set, partly to show everyone else how to do it and partly to see what the fields were like.

The interesting thing about this day was that the weather indications were for a launch-time of 12:00. Because of the easy communications at Dunstable, I decided at breakfast-time to make "on-grid" 11:00 instead, believing that one could send people back for elevenses until the thermals started. In practice it became clear at 10:55 that we had good thermals starting already *and* a shelf of clamp coming in in about 40 minutes. Even before the snifter (me) was off-tow he called everybody into the air and was relieved to see them just manage to beat the cloud. Since we had a good contest that day, I felt I had learned another lesson—that it is easier to put the on-grid time back than to bring it forward when you see you have made a mistake. It is also too much of a fetish to wait for a snifter when anyone can see that the weather is popping and will not pop for much longer.

Monday was *the* day. Not especially from a flying point of view but for the taskmasters and Met men. We sat under wretched skies with cloud base at 1,400ft agl for hours; "scrub" was on nearly everybody's lips but not on Mike Garrod's. He stuck out manfully for sunshine and thermals and rising cloud-base after 15:00. We got them and we got our task—a dogleg race via Henlow (to miss Luton, our pet problem in the prevailing westerlies) to Ipswich. Four arrived and three landed within three or four kilometres of the goal. Bicester had had enough of East Anglia and

scrubbed. Our tarnished reputation began to lose some of its mildew, but it was Mike Garrod who deserved the honours.

When I was at school, undergoing interminable examinations, it was the general rule that people preferred a set of very specific questions to an open-ended one such as "write 1,000 words on *Liberty*". Similarly, pilots hated the old pilot-selected goal and would greet it with groans (then desperately try to find out what the others were doing by all sorts of devious tricks). Today, Cat's Cradle is not much more popular. Our choice of this task on Wednesday, August 11, was due to wild over-convection—every sunny gap would soon be plugged by sprouting cumulus leaving a dead area that could take an hour to revive.

The task also gave each type of aircraft a chance to score by taking the most advantageous route for its capabilities. In the event, the pilots seemed to have enjoyed the task when it was all over. The need to switch the choice of turning point as conditions varied became apparent very early in the task.

By Day 4, we felt less sheepish about sending people to East Anglia; besides, there was little choice. I was only sorry that the rain and black cloud forced two pilots within normal gliding range of Swanton Morley down just short of the goal.

Saturday, August 14, was a real Platypus-day. Vicious squalls, sharp changes of wind direction and towering cumulus forecast and nowhere to go (because of wind direction and the need to use clouds to cross gaps) but East Anglia. At the contest opening I had declared that the object of the competition would be to maximise fun (within the requirements of safety) and fairness would not come into it. In fact, I found myself continually saying, "how can we give the glass ships and the Bocian/Skylark/Oly 463 group an equal chance to score?" It was impossible on any one day, of course, but over the contest one could make the attempt. The idea on Day 5 was to give everyone a chance to score by sending them downwind out of the airway, favouring the slow but well-handicapped gliders, then the hot ships would fight their way upwind at a rate which the older gliders could not match, gathering points.

And a good thing too. I did warn the pilots that they might not get back and therefore they might be advised to take the *further* of the two alternative TPs and score more distance points. Very little distance was made on the upwind return legs, even by the glass ships.

Day 6 did not materialise. What do you do at 15:00 hours on the last day with cloud base at 1,500ft and no sign of sunshine? Someone would stay up undoubtedly, as some of those with aerotow tickets to burn proved. Anyway, we scrubbed.

The whole business was more fun than I could have imagined; creating a task that other people enjoy is as satisfying as flying it yourself. Even standing barefoot, trousers rolled to the knees, in ankle-deep water in the control tent waiting for pilots to ring in has its own peculiar fascination. So now I've sold you on the joys of being a task-master, will somebody please volunteer to do it again next year?

Regionals Roundup

DUNSTABLE—the doom of the Downs

By GEORGE LOCKE

IF IT does nothing else, a gliding competition drags you into the air on those days you don't normally bother to fly.

During the week of horror I sub-title "The doom of the Downs", however, the 18 competitors were dragged screaming into the sky by a sadistic organisation. Many of the ingredients of the Victorian Gothic horror novel were present. The evil monk was represented by tasksetter Mike Bird (see p378). He had sold his soul to the demons of the air and their emissaries, Met men Mike Garrod (weekdays) and Tony Graeme (weekends). Angela Smith, contest director, played the part of the nun who wielded the knout over the backs of the hapless participants. The upright, clean-living young man denied a brilliant inheritance in the Nationals by a cruel fate (he was unable to get the two Sundays off so had to fly *hors concours*) was Mike Till. The innocent maid was schoolmistress Barbara Deans, flying a tremulous first contest in an aged Skylark 3.

The venue matched the cast. There is no gaunter scene south of Wuthering Heights to be found in England in August; a blasted heath where even the resident larks need checks every few months.

My pen even now, weeks after the mayhem, quivers with horror as I recall the vision of the full score of cultured, delicately nurtured pilots lured by the promise of gentle, British Standard thermals and zephyr breezes to fly for glory and daily prizes of six-packs of beer.

I was present as a bystander, performing a small service as a startline observer. Saturday provided an inkling of what was to come. A casual glance at the sky indicated that the task—an out-and-return race of about 110km to three alternate TPs to the north—looked on. Closer inspection of the cu showed them to be bloated, lifeless and liftless monsters resembling cod drained of life by a vampire and packed in a trawler's hold. The north-westerly wind turned out to be stronger than expected, distances achieved were short, and only Edward Smith (K-6E) scored—0.6km.

On Sunday, however, the forces of good appeared to have prevailed, with a ridge of high pressure cleaning the air and holding out a promise of a reasonably straightforward but not exceptional day with about 4/8cu and a westerly 10-15kts. The forces of evil were waiting to descend, however, in the shape of a black area of clamp racing in from the west as the competitors were launched. Just ahead of the clamp, as it passed over Dunstable shortly after the last competitors were launched onto their 157km triangle (via Caxton Gibbet and Pitsford reservoir), a series of clean, bright wave clouds appeared, mixed up with the cumulus. One cause was a 90kt high level jet stream along the leading edge of the encroaching warm front. As far as the contest was concerned, the wave proved more of a hindrance than a help, breaking up thermal activity. The fastest round the course was the first pilot launched, John Jeffries (ASW-12). He said that he would have dearly loved to explore the wave around the second TP, but didn't want to hang about as Frank Pozerskis (Cirrus) was hot on his heels. In the event, Frank did not complete the task, and the only other

finishers were Edward Smith (K-6E), Chris Wills (Std Libelle) and Ben Rood (Cirrus).

On Monday, August 9, there was a firm-looking lid on everything, and Mike Garrod explained it away as the result of a damp, unstable westerly, 25kts, base about 1,500ft. Clouds would break in the afternoon, however, to give a soarable day, and at 15:00 the competitors were launched onto a relatively elegant 127km dog-leg race to Ipswich via Henlow. I had to leave before take-off, to attend a literary discussion group in London and also to fetch my sunglasses from home, as I found being without them a severe disadvantage on the startline when the sun was shining. So I can say nothing further about the day's flying, except that four pilots got to Ipswich, the winner being Bernard Barry (K-6E) and the others John Jeffries, Chris Wills and Edward Smith. A bit of a gap opened up between these four aircraft (Frank Woods was sharing the flying with Barry and had only just failed to complete Sunday's task) and the other competitors. Barbara Deans failed to score, and Mike Till made an unexceptional *hors concours* flight to score 263 points. Joe Przewlocki, who had damaged his Std Cirrus on Saturday, was flying a Pirat *hors concours*.

Incidentally, one disadvantage of having two gliding competitions based within 30 miles of each other is that a startline observer has some difficulties.

"Oh, go and have your comps somewhere else!"

I think I spent many hours searching the skies for gliders announcing "Gate" over the radio which were actually at Bicester—until I got to know our numbers off by heart.

Tuesday was unrelievedly wet (if that is not a contradiction in terms), but Wednesday wasn't too bad a day. There was a strong west wind and plenty of convection which, however, overdeveloped briskly. Two TPs of the Cat's Cradle set were downwind (Caxton Gibbet and Duxford), one upwind (Calvert brickworks) and one cross-wind to the north (Husbands Bosworth). The demons toyed playfully with the competitors, like cats have a bit of fun before getting down to business. Several pilots who bored cross-wind to HB, where conditions looked best, found that lift deserted them two-thirds of the way there. Some pressed on manfully, to be forced down near HB, Mike Fairman (SHK) landing there, while others cut their losses and headed for better conditions towards Caxton Gibbet. Others took the easy way out and went to the downwind points first, which was as far as they got. The most successful flights, however, were made by Chris Wills and Edward Smith, who bashed their way upwind to Calvert for their first leg, which gave them a good choice of second legs provided they could hang on. In fact, both pilots were able subsequently to round both Caxton Gibbet and Duxford, as were *hors concours* Mike Till, and Steve White, who rolled up for a couple of days' jollying. Mike finished above first on that day.

The gaps between the leaders after three days was wider, Chris Wills with 2,342; Edward Smith with 2,165 and John Jeffries with 1,822 points. Mike Till, after missing one contest day and only performing moderately on the second, had 1,233, lying above 5th. Poor Barbara was again unfortunate; she scored a few points from a glide straight from tow on a relight.

After a kittenish Wednesday, the demons decided to have a day in bed on Thursday—it rained. But even if the Hades Nationals had been scheduled to start on Friday, some demons would have had to come to Earth. It was *their* day—the 13th! What miseries could they provide for the competitors on this day

of days? Not, surely, something as unoriginal as thunder and lightning? Perhaps a fissure leaking lava down the power-wire slope might fit the bill, except that nothing would suit the competitors better than a good, lift-producing eruption. So they decided to be subtle. They led pilots into believing that all they had to do was to be airborne when the soarable patch between the belt of rain receding east into the North Sea and the belt encroaching from the west reached them, then drift down the brisk westerly to Swanton Morley (142km).

And so it transpired—at first. But the demons were truly savage on that day. They conspired with another glider to shove Edward Smith out of an early thermal so that he scored nought, then confronted other front runners, Jeffries, Fairman, Wills and Till, with a curtain of torrential rain perhaps 20 miles from the goal. Mike Fairman wisely took the safest course and landed at Feltwell. Chris Wills was forced down at Methwold. But Jeffries and Till gritted their teeth and bored on towards the now invisible ground as best they could. Mike said he couldn't see his hand in front of his face, whereas John reported: "I started my final glide with 1,300ft to spare. I glid it out in the rain. At times I could only just see the ground in the solid rain. I was frightened. So when I saw trees passing to one side, I went into a field . . . The landing was okay except for the strong wind, bales of cut crop, steamed-up canopy, reflection off the canopy and a wet tail parachute which took its time opening—very gay." He landed just short of Swanton Morley.

Mike Till also landed close to the goal, and chalked up another "Above I" for the day. Chris Wills was now firmly in the lead, with 2,814 points, John Jeffries second (2,327) and Edward Smith in spite of his zero third (2,165). Mike lay above 4th with 1,953 points. The demons took pity on (or forgot about) Barbara Deans, and allowed her to waft gently to Cambridge for a respectable 6th place.

With the dreaded 13th over without mishap (except perhaps to nerves) I thought that the horrors were over. But that was not to be. A deeply unstable south-westerly airstream of massive proportions threatened to bring Ragnarok down about the world's ears as soon as the first thermal exploded into the air. Thunderstorms would be hurled at the contestants, and an out-and-return with alternative TPs at Ramsey (144km) and Earith bridge (135km) to the north-east gave them a task with a return leg as easy as rolling *up* Niagara in a barrel.

Conditions looked marvellous for the few minutes it took for a blue patch to blossom into an inviting and often useful cloudstreet, then mutate into a horrendous line squall.

I was witness to the first of these as it lined itself up with the escarpment of the Chilterns to the south. I was walking Mike Fairman's SHK (second off) to the grid, and we arrived just as the storm struck, at 12:00. Torrential rain fell for an hour, during which, over the radio, we could hear Bicester gliders being launched. Storms have a tendency to linger over the Chilterns while the day remains dry a few miles away. But the messages were few, and soon ceased.

At 13:00, the rain stopped, the storm sped north-east towards the TPs, and the remaining gliders waded to the launch point. The control tent was under several inches of water. At 13:45, there was a black curtain of cloud to the north-west — the line squall which, we subsequently learned, had aborted Bicester's launching mid-grid. It looked clean and soarable at Dunstable, and the competitors were shot into a wild, briefly blue yonder. As the dropping zone was more cross-wind of track than upwind, most gliders did not attempt to cross the line but hurtled off downwind. Edward Smith spent his time skirting thunderstorms, which reduced the wind strength locally. As a result, thinking the return leg possible, he went to the nearer TP. But the wind was really 40kts at operating height and he was forced to land near the TP.

Howard Torode (Bocian) was away early, and drifted downwind "gently". There was a line squall to the north and he went there to soar the leading edge of it successfully. Another line squall at St Neots providing prodigious lift along one side, and he flashed along it to photograph Ramsey, the further TP. Although he used it to fly a further 40km, he was drifted off track so quickly that he landed at Cambridge and only

broke even, to achieve a handicapped distance of 80km to win the day. Barbara Deans landed at Upwood airfield, near Ramsey, for second place. Although John Jeffries managed, among others, to make a short distance along the second leg, his handicap pulled him back to 9th place for the day. Mike Till beat the field for the third day in succession. He had "a fantastic start; a 10kt climb followed by a high speed run down a cloud street. I broke off to cross to another, and found 10kt sink in between. I dived into very strong lift east of the streets, climbed to more than 11,000ft, photographed the TP at 8,000ft, but was carrying so much ice that I only made 14 miles into wind".

Chris Wills was unfortunately blown out to East Anglia before he was able to take a TP photograph, and could only get back as far as Lakenheath. He managed to cling to the lead, however, and as Sunday proved to be a greyed-out no-contest day, won his first competition. Barbara Deans fought back strongly from a poor start to finish 9th. Mike Till showed immense potential as a future contest pilot, and so for some there was a happy ending to the Dunstable Regionals. (Results, p393.)

LASHAM—wet bottoms and blue noses

By ANN WELCH

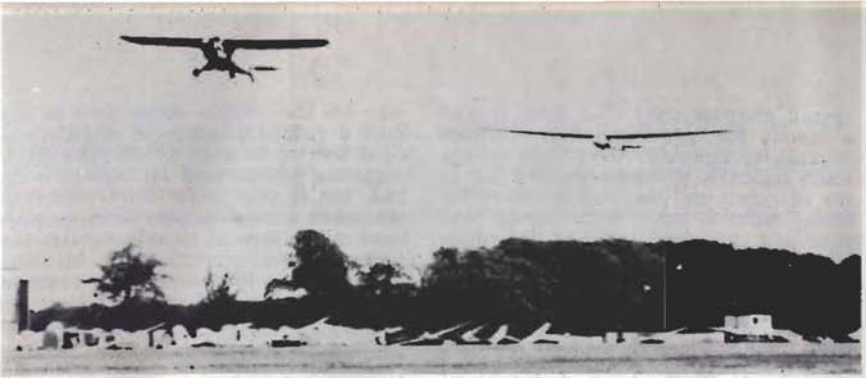
WITH 22 gliders and one tent, the Lasham Regionals was a far cry from the grandiose—and much more colourful—Nationals line-ups of the past. But the weather treated it just as impartially! Dates: June 26 to July 4.

In order to keep the entry fees down, Dr Tony Watson, Director, decided that it could run safely alongside routine flying. This meant that revenue, which would otherwise be lost through not running courses during the competition period, would not have to be balanced by stiff entry fees. Another economy was to rent the minimum number of tugs. Five aeroplanes to 22 gliders is a fair ratio provided they all climb quickly and stay serviceable, and the towing situation remained effective, although there was not much in reserve. Helpers being unpaid do not, of course, affect the cost, but there was a need to keep them to the minimum also because, generally, they would prefer to take their week off to fly. But it is remarkable what can be done with a mixture of enthusiasm and organisation—if no one minds how hard they work. Tom Bradbury, for example, having fixed the weather, changed into start and finish line observer. Fortunately he did not have to man both at the same time, but a near risk of this on one day proved the wisdom of having the observation points and base radio all as close together as possible.

There was no height check system for the start line, and in the event none was necessary because about 3,000ft was either the natural crossing height or was unobtainable. Certainly for regionals in Britain there seems little point on insisting on the 3,000ft since the determining factor is a cloud base generally not exceeding this value during the normal start period. For the cu-nim or late relight cases the need to hurry on with the task overweighs the desire to climb to some vast—and unobservable—height. On balance the likelihood of any pilots gaining substantially from a high start is less than the risk of unfairness caused by a checking system which cannot guarantee to measure all the gliders with equal accuracy.

The task on the first day, June 27, was Hungerford, Blenheim Palace, Lasham, 166km, but due to the poverty of the weather only Derek Piggott (Phoebus C) passed Z to score. With the Placing System being used this gave him the grand total of 1 point. The cause of the trouble was a mass of squally rain which effectively cut the day in half—those going away in the morning were washed out of the sky, and those having another go in the afternoon discovered too little lift too late. Derek scored only through making three cloud climbs.

June 28 brought further deeply unstable westerly air, with wind up to 45kts for anyone thinking about high



A competition launch under way at Lasham *Photo: Ann Welch*

cloud climbs. The task was out-and-return to alternate turning points between 165 and 176km distant, and the first leg nearly into wind. It took a long time to crawl past Z, with most people, including Derek, deciding against cloud flying. But he managed to get back and again achieved first place. Bobby Cole (Std Libelle) also made home, with Ted Jerzycki (Std Cirrus) the only other pilot to reach a turn point.

With June 29 scrubbed because of a total grey-out in the weather, the early morning sun of June 30 was welcome. The task followed what was becoming quite a pattern with a windward flog to warm up on—Banbury out-and-return, 201km, surface breeze northerly 20kts. The developing High was keeping the warm front over the west of England at bay, but patches of alto-cu and over-development created some really difficult areas, and made progress slow. Not until 15:00 did anyone manage to reach the turn point, and from then until 17:45, when the last glider landed, the four leaders struggled slowly back towards Lasham. These were Kronfeld (Dart 17R), Aldous (Std Cirrus), Harding (Ka-6E), and Piggott, and their radio calls grew steadily gloomier as they crept towards the Basingstoke area. The only cheerful person was Met man Bradbury, who said of Aldous's last fading radio cry, "He's going to arrive in the same field as I did last week, and have the same trouble with the padlock".

No one got back, nearest and first place going to Rob Harding.

July 2 provided the next chance to fly, with a repeat of the Hungerford-Blenheim triangle, but this time in practically no wind at all. Showers of a particularly murky variety developed over the task area, and in the calm conditions simply stayed put. Tactical decisions were difficult as there was insufficient information from the lowering sky, in which the cu cells were embedded, to know whether to go on fast or to hang back. Richard Stoddart (Dart 15) won the day, with Colin Street in the Skylark 3 second. To encourage the others Tom Bradbury, line marshal Lynne Watson, and steward Wally Kahn set out on the task, but fared no better than anyone else.

July 3 gave the 5th and last contest day with the 108km Stockbridge-Hungerford triangle. The weather had changed completely to anticyclonic easterly winds but with weak thermals, big blue holes, and an inversion which finally hoisted itself to 3,500ft. But it was warm and sunny at last and the finish line observers were able to sit on the grass without getting wet bottoms and blue noses. There was even a sea breeze, and as it came in so did the finishers. Seven got back, plus a scattering of weekenders joining in for the challenge. Derek won the day—and the regionals—with a time of 2:17, and non-competitor Chris Lovell did it in 2:03.

One of the good things about this competition was the close cooperation between organisers and competitors; the primary object was to get flying, and even the Director one day went on his task to test its accuracy—but did not get back!

Regionals are fun; with their informality and simple rules they provide some really enjoyable flying. They are much more like the early Nationals than the earnest championships of recent years. It is hoped that there will continue to be a ready market for six or seven such events each year, particularly if the cost can be kept down and they are well

spread geographically. But there is also a need for communication between organisers, especially over turn points. Each regionals produces its own list or file of points and some of them are the same. Since it costs both money and time to locate, work on, and present in photograph or map form the necessary turn point information, it would be useful to have a standard format and a national collector or coordinator. Once some valuable enthusiast has got the system working new points could be fed into, presumably, the BGA, and copies bought by whoever wanted them.

Scoring in regionals can obviously be done entirely satisfactorily by a placing system, since the essential is to find out who are the winners rather than to produce a refined schedule of small shades of difference between losers. The BGA-suggested system used at Lasham is not bad, but it does have the disadvantage that when a small number score, or when most pilots turn in a very similar performance, the winner's share in actual numbers of points may not be commensurate with his performance; he could lose the whole contest on this account alone.

Overall the weather at Lasham was interesting but not good. As one pilot called to his crew who were waiting for him at the *same* landing field for the third time that day—"Sorry. I don't think I can make it this time." (Results, p394.)

BICESTER—bar sales were huge

By JOHN WILLIAMSON

AFTER the sog and gloom of the Senior Inter-Service Championships (some knew them as the Nationals) we were sure it couldn't happen again in the same year. But it did. The Junior Inter-Service Championships, held at Bicester from August 7 to 14, had exactly the same, damp air of Newton and Husbands Bosworth.

The culprit, as always, was a low pressure system lurking somewhere off our shores, aided and abetted on this occasion by Ron Cashmore, who managed to stay cheerful withal. Task setting in such conditions is not easy and, hampered as we were by various air traffic restrictions (Item—a few dozen F-111's based only five miles away, flying singly or in pairs every 15 minutes or so a bare mile north of the airfield, usually in cloud at 2,000ft) we didn't get all that many racing finishes. Sales of JSW calculators slumped to an all-time low. In fact our dedicated finish line watchers never saw a single one, even when we put them at the down-wind end of a 100km drifting match.

However, we squeezed what we could out of it, except that we let one good one get away by scrubbing prematurely. With weak ragged thermals (tops 2,000ft) and a strong westerly wind forecast, the thought of all that East Anglian corn waiting to gobble up our gliders frightened us off. Then the wind dropped, the thermals strengthened and cumulus popped at 4,000ft. Our crews had some good flying, and the Dunstable lot raced to Ipswich.

Divided into Sport (88-102%) and Club (102-128%) classes, this was numerically Britain's largest contest in 1971, with 50 entries. Gliders ranged from Kite 2 to Std Cirrus, and pilots from RAF Apprentice to Brigadier. The place scoring system was used. The Sport class (32 pilots) got five contest days, and the Club class (18 pilots) four. Some 10,000kms were flown, the longest flight being 175kms. A total of 232 pilots travelled hopefully, but 132 never arrived at the minimum scoring distance.

The youngest pilot forgot that Woburn Abbey is infested with foreign beasties and derigged his K-8 with an audience of giraffes and elephants. Bar sales were huge.

SUMMARY—SPORT CLASS

August 7 Distance-along-a-line, either through Sudbury or Bury St Edmunds, projected back through Bicester. Winners just got round TPs in heavy rain.

August 8 Race to Debden and back, 194km. Doug Bridson (Std Cirrus) got to within 15km of Bicester, but conceded first place on handicap.

August 11 Out-and-return race via alternates Newbury, Hungerford or Marlborough, 125km. Three turned Newbury and got part way back.

August 13 Dog-leg race to Debden via Caxton Gibbet and Buntingford, 132km. Three landed near Caxton Gibbet and were the only scorers.

August 14 Race to Doncaster, 180km. Grid start interrupted by storms. Those launched subsequently could not get away. Best distance Leigh Hood, 117km.

(Results, p393.)

CLUB CLASS

August 7 Race to Debden, 97km. Three finishers, headed by Sgt Dixon at 75km/h.

August 8 Distance-along-a-line to Henlow, then round 100km triangle Caxton Gibbet, Debden, Henlow. Several reached Debden but were beaten by head winds on next leg.

August 11 Free distance. Last ditch task in feeble conditions. Four scored.

August 13 Race to Debden, 97km. Only one scored, landing well off course at Cambridge. Launch was to 3,000ft to attempt to clear local clamp at Bicester.

Final leading results	*Club Class*	*Pts*
1 R. T. Dixon	K-8	43
2 A. G. Breen	K-8	41
3 R. J. Crouch	K-8	38

WYCOMBE—all the way with BEA

By RON COUSINS

OVER the past few years the Booker Regionals have had a regular place in the calendar for many pilots and, in particular, for those of us from Kent who enjoy the friendly and relaxed atmosphere of regional competitions. We see many of the same faces each year and, of course, Arthur Doughty was once again at maximum efficiency with a remarkably small team of helpers, including Tony Deacon, who had the unenviable task of scoring.

For almost the whole week (July 24 to August 1) the low pressure area to the north produced W to SW winds of varying intensity giving, between clearances, seven competition days, although some of these were devalued.

For those of us who invariably arrive at half-past midnight on the first day of a competition, it is sometimes a small bonus when this day is non-flying. On this occasion the task, an out-and-return with alternate TPs, did not materialise.

There was only a slim chance of a task on Sunday, July 25, with winds of 220° varying between 15 and 25kts. A short race of 93km to Bickmarsh, the home of the Worcester Club, was set. Launching began towards 15:00 hours and many pilots only flew for perhaps an hour or so in the struggle along the route. Speeds were very slow with the K-6E flown by Fred Sheppard reaching the goal at a speed of 49km/h. John Ellis, one of the BEA team flying the ASW-15, and Mike Pope in the Dart 17R also arrived, but the rest of the field was spread over the first two-thirds of the course and nine of the 17 pilots did not score at all, with maximum points for the day at 342.

Depressed looks on Monday morning, with low cloud drifting across the airfield and a clearance promised for around 11:00. Longer faces at the announcement of a cat's cradle with TPs at Castle Ashby, Hellidon Tower, Burford roundabout, Towcester Racecourse and the Chipping Norton factory. The first launches, shortly after 11:30, produced local soaring of only a half-hour for some and conditions were, to say the least, very scrappy. Many did not really get going until a second launch sometime after 16:00 and, in fact, the 137km flown by John Ellis was a very much better flight than the distance would indicate, although for winning this day he only achieved 539 points with Adriaan Wagenaar (Dart 17R) and John Rouse (Dart 15) landing after 119km and 89km

"Bungy" Baker, who opened the contest

respectively in second and third positions.

Even at this stage in the competition, the BEA team had established a position which they were able to maintain in grand style throughout the rest of the week. The lead which they built up was very soon unassailable, although many of us quietly hoped that they would make a mistake sometime. This did not happen and their consistent flying cannot pass without favourable comment.

The recollection of this day was a cancelled out-and-return to Bridgnorth roundabout, 302km. This task was set when the sun was shining. Suddenly the sun went in and the task was scrubbed. This must have been one of the fastest vanishing 300km days on record and was possibly one of the few occasions during the week when our otherwise efficient Met man (Mike Batstone) retired ignominously to his caravan. It is sometimes better to have the rain pouring on the briefing tent all day rather than have a day scrubbed after the adrenalin has been stirred and all the gliders rigged and polished, as on this occasion. However, from now on every day was to be a contest day.

The first briefing on Wednesday, July 28, was cancelled and towards midday the second briefing was more encouraging. The Met board showed a splendid picture; very light winds at around 300°, freezing level at 7,000ft and a possibility of showers in the middle of the afternoon. By now, of course, it was getting close to the middle of the afternoon and the out-and-return to Stratford-upon-Avon racecourse was too ambitious at 177km. At 14:00 hours we were briefed again and a new task was set; an out-and-return race to Edgehill airfield, 140km. Launching commenced at 14:30 with several relights taking place over the next hour or so. It was a long struggle in very average conditions and towards 15:00 the only four people to round the TP had done so and were struggling back towards Booker. Two succeeded. Steve White won on handicap with a speed of 49.9km/h for 659 points, with John Ellis second.

In many ways Thursday was the most satisfactory contest day of the whole competition. The weather looked right for a good triangle and this was confirmed at briefing. The winds were 10-15 kts, about 300°, and the triangle via Edgehill and Castle Ashby (191km) was set with take-offs soon after 12:30. By earlier standards, the weather was good with 10 pilots finishing, plus Sydney Davies in an SHK flying *hors concours*. It was a well judged task with a winning speed of 62.4km/h for John Ellis. This was a particularly unfortunate day for Steve White (K-6E) who completed the course in virtually a winning time, but failed to cross the finishing line after a very exciting final glide and thus lost the benefit of all speed points, leaving him in 10th place for the day. The fastest times were completed by pilots who stayed at a comfortable height since the thermals low down were extremely difficult to work. I was one of the pilots who discovered this to my cost, since having flown too fast for the day I landed at Castle Ashby and was one of the few who did not finish the course.

Friday was one of the most frustrating days. The forecast at briefing gave 10-15kt S winds and theoretically a good possibility of achieving the Membury radio mast—Burford roundabout, 143km

triangle. Over convection and top cover coming in to the north during the afternoon was forecast, and in the event this was worse than expected and only two pilots completed the race. Visibility was particularly poor flying along the second leg and conditions became steadily worse as the afternoon passed. Take-offs were around midday and the time to Membury was very slow, taking many pilots as long as two hours. The ASW-15, now being flown by Sydney Davies, and the K-6E, flown by Steve White, completed the triangle with Davies winning at 54.6km/h. The remainder of the field were stuck at the second turning point or just beyond. Those of us who were a little ahead in the race did manage a few kilometres beyond Burford, although with the southerly winds and the very scratchy conditions there was a noticeable drift to the north of the final leg and, with poor visibility, many had a really tough time in an effort to get closer to Booker.

In every competition there seems to be one day which makes a particular impression, and Saturday, July 31, was such a day. Good soaring conditions were promised, but there was one snag. The winds were forecast to be W, 30kts, and the almost inevitable decision of the task setters was for a downwind race, which in many ways is a difficult proposition from Booker with the Luton/Dunstable airspace problems. A diversion was built in by way of Bregborough brickworks and then on to Swanton Morley, a distance of 179km. Virtually all the pilots found their way around the brickworks, but this initial stage of the flight was somewhat slow due to battling against the strong westerlies. I at last found a day when things seemed to go right for a change and after just over an hour I had rounded the TP and was well on the way to Swanton Morley.

The other pilot going well at this stage was Ken Wilkinson, another of the team members flying the ASW-15. Progress on this second leg was relatively fast. Between Bregborough and Swanton Morley the leading pilots did very little circling, finding that the cloud streets and large areas of lift were sufficient for excellent progress. Visibility was almost unlimited and the landmarks went by in orderly procession. The vast grass airfield at Swanton could be seen from 20 or even 30 miles away and it almost felt as though the last 100km was one long final glide, even though most were flying below 4,000ft. The first pilot to arrive was Ken Wilkinson, followed within 12 minutes by me in the Dart 17R. We took first and second places for the day, Ken's time being 95.5km/h. There is little doubt that, without the Bregborough diversion, times well in excess of 100km/h would have been achieved.

Everyone was determined to get a final task for the contest and, in order to be back for prize-giving, we were sent off on a 104km triangle via Dunstable and the Culvert railway junction. The final leg was into wind with 230°, 18kts forecast. The general thermal conditions were extremely patchy and there was an even distribution of landings along the course. Nevertheless, the day had its limited excitements and, after a tremendous struggle on the final leg, with heavy overcast skies from Culvert to Chinnor, I recall seeing Ken Wilkinson down to 500ft over Princes Risborough with still several miles to go to the

finish. My own situation was not very much better but, having taken sufficient height for the final glide, as always happens, the remainder of the journey was under 4kt cloud streets. Many pilots were stuck in the Culvert area, the main problem being the head winds and very weak thermal conditions at this stage. Ken Wilkinson was the first pilot to finish, followed by me. After a considerable gap in time Edward Belbin (K-6E) and Graham Saw, partnering Steve White, arrived. Belbin won the day at 37km/h, with the rest of the finishers in similar times. It turned out to be a most unfortunate day for Saw, since the photographic evidence showed that he had never been near the Culvert railway junction, but had photographed almost every other railway junction within a radius of 20 miles! This presumably is the luck of the game and it almost certainly lost them a comfortable second place overall.

The prize-giving was held at 17:00 with the majority of the awards going to John Ellis, Ken Wilkinson and Sydney Davies. Second was Edward Belbin, and third, Ron Cousins. The contest was opened and prizes presented by Bungy Baker.

This report gives me an opportunity of thanking once again everyone at Booker for a most enjoyable and friendly contest, and we all look forward to next year. (Results, p392.)

DORSET—one of the bedroom windows

By JOHN FIELDEN

WHAT a week's flying for fun it was, too! Everything was just right. It seemed impossible to have such a wide range of gliders (from Diamants to Capstans and K-2B's) all on one task each day and yet achieve that impossible goal of lots of fun flying for everyone and at the same time a very meaningful competition. The Compton Abbas organisation did it, though, and the weather was fantastic; not perfect gliding weather but building up through blue, no-wind days through blue windy days to windy cloudy days and culminating on the last day with a light wind, cloud base of 7,000ft asl and up to 10kt thermals.

July 10 featured a warm-up 100km triangle via Salisbury Cathedral and Frome. Nearly everyone spent about three hours in the air in terrible visibility. Only Vic Tull got home in his Diamant 18 and the special rules for the Compton Abbas two-seater trophy came into play. Although on the standard competition scoring system (place marks) none of the three two-seaters scored, the rules for the special trophy were to score as though no X, Y or Z existed.

Pete Treadaway (K-13), with 41km in three hours, thus led the two-seater class with Ray Stafford Allen (17.5km) running second. What a needle match the two-seater class became as the week went on—everyone following the fortunes of the participants with nearly the same enthusiasm as that for the inevitable battle that developed for first and second places in the main competition.

Alf Warminger broke his beautiful Phoebus 17 by catching a wing on a post as he came over a fence. He was replying to a request to relay a message from another pilot to his crew at the time. Moral: Ignore other people's messages when field landing. The stewards allowed Alf to continue to compete in the competition (in the club's K-6CR) as he was held to be not wholly culpable, but that he would not be eligible for the cash prizes. Alf's comments on the performance of a club "hack" after being used to machines like the Phoebus made the whole exercise worthwhile from everyone else's point of view if not Alf's.

On July 11, Ralph Jones whistled round the 142.5km triangle Wells, Chard Pond, Compton Abbas in his Std Cirrus at 48km/h, with Ted Lysakowski (Std Cirrus) second. Ray Foot (Skylark 3B) came floating in third as the only other pilot to make it back. It was a terribly hot, blue thermal day with a light easterly wind.

In the two-seater class, Pete Treadaway, after landing in a large field, asked by radio for an aerotow retrieve. It was refused, but the message was overheard by a parachute club who promptly dropped in on Pete, derigged

him and loaded him in his trailer in double quick time (the field was one of their official dropping zones). Ray Stafford Allen (Capstan) crept into the two-seater class lead.

On July 12, Tony Graeme and Mike Booth—two rare birds in the meteorological service who really know how to answer the sort of questions gliding people insist on asking—once again gave us a forecast which was accurate: Wind NE, 10-15kts, cu with a base of 3,500ft, and patches of strato-cu. The latter thwarted pilots on the task, out-and-return Tormarton roundabout (NE of Bristol), 122km, and only Ted Lysakowski managed to find enough gaps to reach the turning point and thus virtually glide back home. Ray Stafford Allen won the two-seater day with 14.5km.

A sea breeze task was set on the 13th: South to Wareham near the coast, then along the sea breeze front to Windwhistle golf club, and follow it back to Compton Abbas, 142.5km. Competitors were so quick off the mark in good conditions that the sea breeze hadn't had time to develop before they were all at Windwhistle. Ralph Jones got home in 3:29, Ted Lysakowski in 3:31 and a real battle was developing for first place. Pete Treadaway landed two miles short to take the lead in the two-seater class.

Wednesday, July 14, featured the promise of good thermals, patches of cirrus and a late start. A double out-and-return was set: CA-Fordingbridge-CA-Longleat-CA, 104km. The idea was a short, simple task which everyone could complete. Most pilots had spent over 15 hours in the air during the last four days.

It never pays to ignore the possibility of cirrus patches, does it? Everyone shot out and back on the first legs, and there to the north was a thick bank of cirrus, which floored its namesakes and nearly everyone else more or less at the same time. Five landed in the same field just off the end of the long avenue at Longleat—the lions had deterred them from landing nearer the turning point. It turned out that Ted Lysakowski had nipped up and down the avenue far enough to photograph one of the bedroom windows at the back of

Longleat House to win the day.

The forecast for July 15 was for a blue day with very weak thermals, so we did not fly, a seaside task being declared. Friday, July 16, dawned with a northerly 15kt wind with tiny cu at 4-5,000ft. A 128km race to Lasham via Westbury and Newbury was won by Ralph Jones at a handicapped speed of 57km/h, with Ray Foot in his Skylark 3B close behind at 56.5km/h. Ray had flown in thermal streets most of the first and second legs and had glided it out on the third. Ray Stafford Allen completed the task, but Pete Treadaway fell down at Westbury, thus transferring the two-seater class lead to the Capstan.

The seventh and last contest day was July 17. With an unbelievably good forecast we set a 300km triangle via Staverton and Odiham airfields. All but one got round, including all three two-seaters, Ralph Jones at record speed (see p363). Seven new Diamonds were claimed from the task, and it was a wonderful day with everyone back in the bar determined to empty the barrels.

Sunday had been declared a no contest day, so after prize-giving a further series of fun tasks were set, but Saturday's weather didn't continue and strato-cu stopped the 500km attempts.

So ended the most wonderful competition of the 35 I have either entered or set tasks for.

DORSET REGIONALS

Final Results *Pilot(s)*	*H'cap* %	*Sailplane*	10.7 18	11.7 24	12.7 6	13.7 25	14.7 16	16.7 19	17.7 24	*Total Score*
1 Jones, R.	88	Std Cirrus	12	24	4	25	10	19	24	118
2 Lysakowsky, E.	88	Std Cirrus	10	22	6	25	16	16	22	117
3 Foot, R. A.	100	Skylark 3F	12	20	2	22	11	19	17	103
4 Tull, V. F. G.	80	Diamant 18	18	8	0	19	11	14	14	84
5 Wright, R. H.	90	Dart 17R	7	14	0	18	11	10	20	80
6 Watson, B. B. C.	98	Skylark 4	10	4	0	8	12	12	16	62
7 Adams, A. B.	96	K-6E	2	13	0	17	13	7	2	54
8 Warminger, A. H.	*84/100	*Phoebus 17/K-6CR	*14	11	0	6	3	DNF	DNF	34
9 Stafford Allen, R. C.	114	Capstan	0	2	0	12	0	7	10	31
10 Thorne, J. S.	84	SHK-1	5	6	0	4	0	DNF	13	28
11 Duffin, E. R., Bryan, D.	96	K-6E	0 —	— 14	0 —	— 2	0 —	— 4	4 —	24
12 Treadaway, P. M. H.	110	K-13	0	0	0	14	0	2	7	23
13 Lawrence, G. D.	114	K-2	0	0	0	10	3	0	7	20
14 Wilkins, N. H.	100	Skylark 3F	0	18	DNF	DNF	DNF	DNF	DNF	18

WYCOMBE REGIONALS

Final Results *Pilot(s)*	*H'cap* %	*Sailplane*	25.7 342	26.7 539	28.7 659	29.7 1000	30.7 1000	31.7 1000	1.8 964	*Total Points*
1 Ellis, J. J., Davies, S. G., Wilkinson, K. G.	88	ASW-15	307 — —	539 — —	656 — —	1000 — —	— 1000 —	— — 1000	— — 948	5450
2 Belbin, E. R.	96	K-6E	0	304	297	626	514	653	964	3358
3 Cousins, R.	90	Dart 17R	116	168	311	231	505	952	939	3222
4 Sheppard, F. J.	96	K-6E	342	0	0	985	585	406	665	2983
5 Saw, G. P., White, S. A.	96	K-6E	0 —	70 —	— 659	— 418	— 987	637 —	76 —	2847
6 Smith, G. K.	98	Skylark 4	31	0	29	903	759	644	479	2845
7 Keogh, B.	96	K-6E	23	124	145	869	514	422	597	2694
8 Wagenaar, A. J. M.	90	Dart 17R	154	465	127	614	458	468	197	2483
9 Rouse, J. E.	98	Dart 15	0	361	32	413	526	514	533	2379
10 Smith, R. J.	88	Std Cirrus	0	0	134	703	465	834	98	2234
11 Riddell, D. M. R. Stenhouse, A. E.	96	Foka 4	68 —	— 301	— 94	— 598	— 408	305 —	352 —	2126
12 Bowden, R. F.	98	Pirat	0	49	186	401	520	461	202	1819
13 Wood, M. J., Beer, L. E.	100	Skylark 3	0 —	— 34	52 —	— 547	— 368	461 —	139 —	1601
14 Green, G. D. A.	108	Skylark 2	0	179	229	417	20	546	0	1391
15 Pope, M. H. B.	90	Dart 17R	306	DNF	82	DNF	DNF	529	472	1389
16 Harris, R. J.	98	Skylark 4	)	0	0	399	240	0	533	1172
17 Strugnell, J. C.		Foka 5	0	4	0	230	311	393	98	1036

DUNSTABLE REGIONALS

Final Results *Pilot(s)*	*H'cap* %	*Sailplane*	8.8 1000	9.8 582	11.8 888	13.8 505	14.8 888	*Total Points*
1 Wills, C.	88	Std Libelle	949	505	888	472	121	2935
2 Smith, R. E.	96	K-6E	870	473	822	0	666	2831
3 Jeffries, J. R.	74	ASW-12	1000	536	286	505	485	2812
4 Woods, F.,	96	K-6E	724	—	282	—	588	
Barry, B. A.			—	582	—	121	—	2297
5 Fairman, M. C.	84	SHK	488	334	339	424	610	2195
6 Pozerskis, P.	84	Cirrus	576	358	348	103	645	2030
7 Rood, B. W.T.	84	Cirrus	776	17	185	0	572	1550
8 Graham, T.	102	Olympia 463	585	0	340	398	52	1375
9 Deans, Barbara	100	Skylark 3	372	0	30	236	730	1368
10 Torode, H. A.,	110	Bocian	405	—	36	—	888	
McQue, D. W.			—	0	—	0	—	1329
11 Monteith, J. R.	90	Dart 17R	0	376	300	0	607	1283
12 Marlow, T. W.	96	K-6E	597	0	375	17	228	1217
13 Hurd, V. J.	88	ASW-15	233	322	274	7	256	1092
14 King, P. G.	88	ASW-15	233	0	70	227	458	988
15 Davie, P.	96	K-6E	198	64	0	391	321	974
16 Toulson, D. M.	96	K-6E	397	113	0	42	312	864
17 McDonald, A.	90	Dart 17R	241	0	467	0	0	708
Hors Concours								
Till, J. M. D.	96	K-6E	DNF	263	970	720	915	2868
Przewlocki, J. K.	98	Pirat	DNF	320	258	DNF	DNF	578

BICESTER REGIONALS — Sport Class

Final Results *Sport Class Pilot(s)*	*H'cap* %	*Sailplane*	7.8 37	8.8 60	11.8 14	13.8 6	14.8 16	*Total Score*
1 Hood, L. S.	96	K-6E	26	59	5	0	16	106
2 Cockburn, D.	100	K-6CR	24	60	5	0	0	89
3 Livesay, M. H.	100	Skylark 3B	32	47	0	6	0	85
4=Bridson, D. S.	88	Std Cirrus	13	59	0	3	0	75
4=Evans, J. A.	96	Olympia 419	32	38	0	0	5	75
4=Boyle, C. A.	100	K-6CR	37	38	0	0	0	75
7=Cooper, R. H.	96	Olympia 419	32	38	0	0	4	74
7=Brown, N. P.	100	Skylark 3B	8	50	14	0	0	74
9 Dickson, W. W.	96	K-6E	13	58	0	0	0	72
10 Collisson, S. R. M.	90	Dart 17R	0	38	14	3	11	66
11 Welsh, J. H.	100	Skylark 3B	3	50	0	0	11	64
12=Hardon, R. A.	96	K-6E	19	25	5	0	14	63
12=Feakes, R.	88	Std Libelle	19	38	0	0	6	63
14 Foot, C. C.	96	Olympia 419	13	32	14	0	0	59
15 Miller, A. S.	90	Dart 17R	23	32	0	0	0	55
16 McLuckie, R.	96	K-6E	0	44	10	0	—	54
17 Lombard, W. C.	96	K-6E	3	50	0	0	0	53
18 Wood, M. J.	100	K-6CR	37	13	0	0	0	50
19=Wynch, J. W.	96	K-6E	13	25	0	0	0	38
19=Gough, A. F.	90	Dart 17R	0	38	0	0	0	38
21=Cook, P. G.	102	Olympia 463	0	25	5	0	0	30
21=Whittaker, R. F.	102	Olympia 463	0	25	0	0	5	30
23 Holdcroft, D. P.	100	K-6CR	27	0	0	0	0	27
24 Maltby, H. W.	96	K-6E	0	25	0	0	0	25
25 Butler, D. J.	96	K-6E	0	23	0	0	0	23
26 Wray, A. J.	98	Skylark 4	6	—	0	0	—	
Gale, M. A.			—	12	—	—	U	18
27 Marriott, S. H. C.	84	SHK	0	14	0	0	0	14
28 Fox, J. A.	100	K-6CR	0	11	0	0	U	11
29 Jarvis, H. R.,	102	Olympia 463	0	—	—	—	—	
Goozee, P. K.,			—	9	—	—	U	9
Borden, A. C.			—	—	0	0	—	
30 Elsom, M. L.	100	K-6CR	0	6	0	0	0	6
31 Taylor, J. C.	96	K-6E	0	5	0	0	0	5
32 Bosten, A. E. T.,	100	K-6CR	0	—	0	—	0	
North, E. A.			—	2	—	0	—	2

Final Results Pilot(s)	H'cap %	Sailplane	27.6 1	28.6 18	30.6 38	2.7 18	3.7 40	Total Score
1 Piggott, A. D.	84	Phoebus 17	1	18	32	11	40	102
2 Aldous, R. F.	88	Std Cirrus	0	0	36	11	36	83
3 Jerzycki, E.	88	Std Cirrus	0	14	30	0	31	75
4=Harding, R. W.	96	K-6E	0	0	38	7	24	69
4=Cousins, R.	90	Dart 17R	0	10	5	16	38	69
6=Kronfeld, J. R. W.	90	Dart 17R	0	0	34	0	34	68
6=Day, C. G.	90	Dart 17R	0	10	17	10	31	68
8 Neal, M. S., Wilson, K.	98	Skylark 4	0 —	— 0	25 —	— 10	24 —	59
9 Bellew, J. B.	96	K-6E	0	0	19	0	28	47
10 Stoddart, R. C.	98	Dart 15	0	0	23	1	18	42
11=Street, C. D.	100	Skylark 3	0	0	18	18	5	41
11=Hull, E. A., Barrett, R. Q.	90	Dart 17R	0 —	0 —	— 28	0 —	— 13	41
13 Burgess, P. G.	98	Dart 15	0	10	0	4	22	36
14 Cranfield, N. W.	112	Sky	0	0	12	0	18	31
15 Watson, Patricia	98	Skylark 4	0	4	12	0	13	28
16=Collins, G. T.	84	SHK	0	4	24	0	DNF	28
16=Horne, P. R., Cole, R. T.	88	Std Libelle	0 —	— 16	5 —	— 0	7 —	28
18 Gee, M. I.	82	Kestrel 17	0	0	12	0	14	26
19 New, J. E. Swift, W. C.	98	Skylark 4	0 —	— 0	6 —	— 0	13 —	19
20 Harwood, Rika, Thompson, P. B. E.	100	Skylark 3	0 —	— 0	4 —	— 0	6 —	10
21 James, D. B.	80	Diamant 18	0	4	0	0	DNF	4
22 Johnson, D.	88	Std Libelle	0	0	0	0	2	2

COCHON AUX VACHES—A Kestrel at Angers

By DAVID CARROW

BARBARA and others say I have a one-track mind. Certainly my gliding effort this year, reborn after the miserable 1969 Nationals by visiting Angers in 1970 with Chris Riddell and his Phoebus, has demanded stern application, endless checklists and unremitting patience by many persons formerly believed to be friends.

The objective? Simply to get myself into reasonable flying practice and then to deploy a fully fettled *équipe* at this year's *Coupe d'Europe*.

All have helped: My travel agent, booking July channel crossings in March for a non-existent glider in a non-dimensional trailer, towed by an as yet unregistered car and carrying some unidentifiable passengers, probably three out and four home; a Sherborne housemaster facing an anguished application to release Richard three days before term-end; the Volvo distributor, cajoled into producing a much sought-after model on June 12 precisely (a week after Newton and with just time to run it in before France).

To achieve my objective, "cannibals and missionaries" solutions were needed in several problem areas. For example, while preparing for the Newton Nationals (for which Surrey & Hants club kindly loaned me a Phoebus in much need of instrument fettling) I also had to cope with the logistics of selling and handing over the Dart to its new Scots owners while taking delivery of its replacement Kestrel in a borrowed trailer to be moved first from Lasham to Yorkshire—three separate checklists! Indeed, I was actually radioed in the middle of a Nationals task (via the good offices of Ian Strachan and Wally Kahn) to authorise the new owners (who had arrived unheralded at Lasham) to leave the cheque there and tow our old "Guinea Pig" away that afternoon.

Then our new 17m "Pretty Pigs" arrived a week late. (Only a week! Heavens, I recall that I got so steamed up in 1956 about our original Skylark 3B "Pigs Rampant" being two months late that Barbara had to take over the telephone negotiations with Fred Slingsby—with success, too.) However, Ken Fripp—as always—turned up trumps with a splendid new trailer in double-quick time and Roy Procter volunteered to join the fun for the first few days until the girls could arrive. This final link was forged by Frank Horridge who, with Derek Johnson, flew Barbara and Julia out within the hour of my daughter's return from school, saw a day's flying and the glorious Angers fireworks display and returned Roy next morning to the bosom of his family just in time for *his* daughter's sports day.

Of course, my three splendid partners all played their parts, not only financially but in so very generously encouraging me to remove this new beast to try it out "in furrin parts". Mike Gee in particular broke the back (during the Lasham Regionals) of the never ending fettling that seems inevitable with any new *équipe*. I only wish he'd had as much luck with the weather as I did. And I mustn't forget Tony Dorricott's radio, for which many thanks.

The moral of all this, for you young aspiring competition pilots (from this *"Ancien aviateur"*, as *le Patron* called me when presenting me with a consolation prize for losing myself on the first contest day) is that a comps doesn't just start with the opening ceremony. It's a way of life stretching back over months, if not years, before the first briefing.

Others more competent will extol the virtues of this year's superlative *"Huit Jours d'Angers"*. For me, quite simply, it was the gliding experience of a lifetime. Eight consecutive contest days, working up with Gallic precision from weak *thermique pur* to the three final barnstormers; 40 hours of gliding; over 2,000km flown, including a 517km triangle at 80km/h and, on the last day, my own personal best—a 304km triangle at over 92km/h. I brag not, since I ended up an undistinguished 12th out of 22 *libres*, only a whisker ahead of Simon Redman, brilliantly extracting every sliver of speed from his SHK.

I have tabulated some results (see p397), including the winners' speeds and the number of *vaches* (out-landings; in

French gliding parlance, "landing among cows") each day. The Standard Class took off first and, except for July 20, tasks were shorter than those of the Open Class, though always in the same general direction.

The Standard Class also flew on July 11 when, due to an unexpectedly low inversion, no one got half-way round and, under the contest rules, the task was declared void. (The next morning at briefing the Patron presented four large, cuddly and very beautiful toy *vaches* to the four top pilots, who had all landed in the same field.)

The Open Class totalled four Kestrels, two ASW-12's, one BS-1, two Diamants, one Cirrus, one SHK, two Libelle 301's, nine Phoebus 17's. The Standard Class comprised 11 Std Libelles, six LS-1's, three Std Cirrus, two ASW-15's, two Phoebus 15's and assorted K-6's, Edelweiss and WA-26's.

In the Open "our George" came third while Bill Malpas's performance in the highly competitive Standard Class was also particularly noteworthy. Bill knows France well and he and his crew were a tremendous asset to the informal *équipe Brittanique*, both at the start line and on social occasions. His large paper hot-air balloon, ascending repeatedly from the final barbeque, was especially appreciated by the many children present.

IMPRESSIONS OF KESTREL

I was delighted with the performance and handling of the Kestrel; our syndicate has owned three Slingsby gliders since 1956; the second Skylark 3B to be made; then the second Dart 17R and now the second production Kestrel to be made this year under licence from Glasflügel. This glider is surely as big an advance on the Dart as the Dart was on the Skylark. It rigs easily and is very comfortable. To be sure it has some minor snags but George knows these and is ironing them out.

The 17m Kestrel's rate of climb, criticised by George Moffat from flying an early USA import, now seems equal to that of the Phoebus 17 and SHK and marginally better than the "cooking" open Cirrus. This, despite the undoubtedly higher wing loading, demonstrates the remarkable properties of the Wortmann FX67K-170/150 flapped aerofoil. Not only has this section very low drag throughout the speed range but the change of trim with flap angle is remarkably small, making for very easy flying. Finally the stall is so innocuous it has to be experienced to be believed. This section must be tried on Standard Class aircraft; Torva please note! The Kestrel's rate of roll, also criticised by Moffat, is now excellent, with very light stick forces. It all goes to demonstrate how the customer is always right and how the manufacturer must listen, rectify and develop as production progresses.

Incidentally, for me, the Kestrel's superior performance, particularly against the splendidly flown gaggles of Standard Class aircraft, only really showed up in weak conditions (such as the 177km into-wind final leg of the big triangle, achieved in blue thermals after 16:00). In good strong lift, a turn wasted circling off-centre and the gaggle (even that blessed Belgian K-6 with the woolmark) would be back surrounding again! The ASW-12 does remain appreciably superior in the glide, but one can at least keep it in sight for noticeably

longer and my own very limited experience is that the Kestrel's manoeuvrability in difficult conditions makes it a much closer match to the ASW-12 than anything I've yet flown.

I carried water ballast on the first two legs of the 517km day but seemed, no doubt through inexperience, to lose as much in the climbs as I gained in the glides. No ballast was carried for the final 304km dash, but I am in any case a heavy chap.

The French have a fine disregard for crosswinds and on the first day I was due on take-off to pass, with some 15kts to combat, within half a wingspan of the timekeeper's tables and cars, parked some 100yds ahead. Nobody cared (they did later when an LS-1 nearly impaled them). Fortunately, Bert Zegels passed on to me at this point the Glasflügel factory advice to start the take-off run with flap at −2 and stick hard back. This technique, which I now use all the time, gives immediate aileron control plus a dead straight run, since the tailwheel is hard on the ground (naturally the thing must be pointed true). The tail is brought up at, say, 20kts and the flap lever then eased back to +1 for unstick. It all works admirably (I didn't use +2 flap during tow) and there was no problem in maintaining station on the nosehook behind the very enterprising Rallye tugs.

At the other end of the spectrum, landing flap (with flying flap at zero—this is important for adequate aileron control) gives an approach speed of 50kts (or even 45kts for a real precautionary, since the stall is 32kts!) and, providing the wheel brake is made to work properly, the ground run is as short as Skylark or Dart. Using parachute as well, however, there is negligible float and the round out from a Horsa-like steepness needs practice. The glider should not, in my experience to date, touch down with little or no landing flap; ground effect may then cause it to balloon and a ground-loop can result. Finally, it should be the pilot's task (nobody else's) to repack the tail parachute personally on DI before any potential cross-country flight, and to check after packing that the fairing drops away cleanly and instantaneously by having the "deploy" handle pulled and catching the fairing as it falls. It is also equally important that the fairing is secure—an inadvertent parachute deployment on take-off could bring interest for the onlookers.

In all eight days, I only *vached* once when, through utter navigational fumble, I overshot Angers on the homeward leg and fetched up at Ancenis, some 40km lower down the Loire. The local flying club who saw me land a few fields away (I missed seeing their strip too!) soon had me organised, even to the extent of letting me fly a little two-seater job to circle my approaching trailer and direct it to the club site. Any feeling that something in the rules might prohibit such an evolution was dispelled by the discovery that the father of my pilot was a local wine shipper. . . . As the *équipe* pulled uncertainly away some time later, with even Roy talking voluble French, we all vowed to return; in France even the retrieves are better!

Leading Results 22 Open Class

			Points
1	Zegels (Belgium)	Kestrel 17	7680
2	Mercier (France)	ASW-12	7609
3	Burton (GB)	Kestrel 19	6984
4	Geskis (France)	Phoebus 17	6791
5	Maier Gerberg (Germ)	Kestrel 17	6594
12	Carrow (GB)	Kestrel 17	5562
13	Redman (GB)	SHK	5417

Leading Results 44 Standard Class

			Points
1	Ragot (France)	LS-1	7318
2	Cartry (France)	Std Libelle	7299
3	Penaud (France)	Std Libelle	7220
4	Memmert (Germ)	LS-1	7176
5	Stouffs (Belgium)	Std Libelle	7003
6	Lartique (France)	Std Libelle	6993
10	Malpas (GB)	Std Cirrus	6218

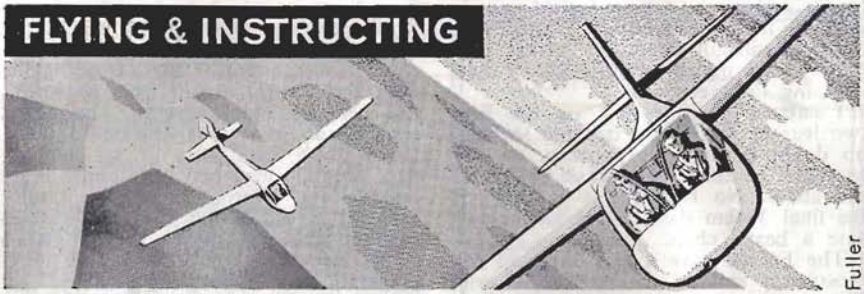
Task, winners and speed Open Class

July	km		km/h	*
14	175	Bucher (Germ)	68.1	14
15	197	Mercier	86.1	2
16	237	Mercier	94.3	—
17	180	Burton	67.2	5
18	202	Zegels	93.4	—
19	265	Zegels	105.4	1
20	517	Mercier	94.4	4
21	304	Mercier	102.0	—

Standard Class

km		km/h	*
145	Memmert	75.0	7
174	Cartry	85.2	2
183	Stouffs	91.0	2
149	Ragot	73.2	8
180	Cartry	82.4	1
240	Stouffs	94.8	—
517	Memmert	88.0	22
257	Penaud	97.3	—

* Denotes number of pilots who did not complete task



Fuller

GLIDER TYPE CONVERSIONS

SEVERAL recent accident reports have shown that pilots converting to higher performance gliders seem to be at risk during their first few hours. Because of the glass revolution, gliders that only yesterday were the hot ships (Darts, K-6E's, etc) are coming into the hands of relatively inexperienced pilots. This is because of the increase in syndication and a more enlightened approach by many clubs to re-equipment. Another factor is the cost of a plastic phallic symbol which may necessitate taking on a less experienced pilot than desirable to alleviate the financial burden.

All this would be less of a problem if type conversions were carried out in a logical, orderly manner. One of the chief difficulties of conversion is that current "high performance" two-seaters bear as much resemblance to a glass hot ship as a T-31 did to a Skylark. This means that pretty well all the experience must be gained direct on the said hot ship. Accepting, then, that the converting pilots can actually fly, they should be encouraged to learn about their new mounts in a controlled fashion, exploring the various parameters gradually.

The characteristics of a sailplane fall conveniently under two headings, handling and performance. The following is a suggested, but by no means exhaustive, series of exercises to show up these characteristics.

NOTE: Notwithstanding the remarks about aero-towing, the pilot must, of course, become familiar with the method of launch used most at his club.

HANDLING—FIRST FLIGHT

LAUNCH Wherever possible the first launch should be by aero-tow. If this is not possible at the home site, consideration should be given to visiting another. The risks attendant to a wire launch would appear from accident reports to be fairly great. An aero-tow gives the pilot longer to settle down and complete freedom with regard to height.

MANOEUVRING (a) Trim glider to best thermalling speed and roll into normal thermalling turn. Note any back stick force required in the turn. Try slipping and skidding and recovering. Is rudder positive? Roll out of the turn. Is there any residual yaw? (b) Reverse a medium turn using full aileron. Is rudder sufficient to eliminate yaw? (c) Time the rate of roll. Reverse a 45° banked turn counting "One thousand one, one thousand two, etc" to get the approximate time in seconds. If you have been flying a 15m glider and are in something bigger you may be surprised at the extra time. Remember that this will be important when trying to recover from a steep turn near the ground.

STALLING While there is enough height do a straight stall, reducing speed gradually by holding nose just above the horizon. Note the symptoms and any tendency for wing-drop. Note the speed at stall and loss of height in recovery. Repeat in a gentle turn. By how much is the stalling speed increased?

HIGHER SPEEDS Trim to about twice stalling speed. Try rolling from side-to-side achieving a moderate bank. Note

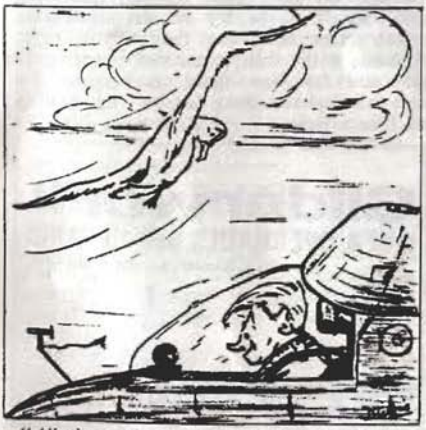
change of stick forces. Operate brakes, gently. Note any suck-out tendency or other difficulties in operation. Is there marked buffet, trim change, etc? How much must the nose be lowered to maintain speed?

APPROACH AND LANDING Leave plenty of height for approach. Remember undercarriage. Trim to approach speed. Land well into the field especially if a tail parachute is being used for the first time. Try to land (and take-off) into wind for the first few flights.

HANDLING—SECOND FLIGHT

LAUNCH Remember any difficulties with the first launch. By arrangement with the tug pilot, open the airbrakes when at a safe height. The best procedure is to unlock them and check for sucking open. If glider is new, linkages may be stiff and mask any opening tendency. This will disappear with use and lubrication. Note the feel with brakes fully open and *remember* it. Note the force necessary to close brakes. This launch should be as high as possible because you are going to look at spinning and stalling in some detail.

SPINNING If the glider is so cleared, enter a spin from a straight stall, using full elevator and rudder. Note self-recovery or spiral dive tendencies. Recover after a couple of turns. Note any odd tendencies during recovery. Some gliders, like the SHK, will increase rate of rotation as the stick is moved forward, before recovery. Note the dive attitude on recovery and the speed attained. It is wise to have a hand on the brakes in case never exceed speed looms up. Note height loss from entry to straight and level again. Repeat in opposite direction. On subsequent flights try entering with less than full control application and also try in-spin and out-spin aileron. You may find that your new mount has some odd habits.



"All the same—glued to the blasted vario!"

If the machine is reluctant to spin, keep trying and in any case note the height loss in your various swoopings. It will be immaterial to the undertaker if you are spinning or spiral diving when you hit the ground.

FURTHER STALLING If you have enough height left make a start on this, but it will need to be repeated on a later flight. This section is absolutely vital because it will give you a thorough knowledge of the low speed characteristics of your glider. Remember that most of your gliding is done at angles of attack that would make a power pilot's hair stand on end. The time to find out any peculiarities is not during your first competition scrape at 500ft.

(1) Enter a thermal-type turn and gradually raise the nose. Note wing drop, feel, etc. Repeat in an unco-ordinated turn, with either too much or too little rudder, such as might happen in turbulence near the ground. Note height loss in recovery. Does relaxation of back stick pressure give instant recovery?

(2) Try applying and holding full opposite rudder when wing drops in a slow turn? Is there any tendency to flick in the direction of rudder?

(3) Steeper turns: Try pulling too hard in a steeper turn. Note judder. Again, is recovery complete on relaxing pressure? These exercises should be carried out many times in order to illuminate "nasties" which might be embarrassing at the wrong time.

APPROACH AND LANDING You should now be ready to start looking at landings in confined spaces. An airfield with plenty of undershoot is the place to practice these, not on the first cross country.

FURTHER HANDLING

HIGHER SPEEDS On completion of the low speed exercises, take the glider

gradually up to VNE to get used to the feel. With modern gliders, this is where the pilot induced oscillation rears its head. Be careful not to exceed rough air speed if conditions are turbulent. To recover from a PIO, pull back gently and steadily on the stick until sanity is restored. Note the feel of the controls at high speed, especially the stiffness of the aileron and rudder. See if there is enough trim available for higher speeds. Note the harmonisation of the controls in gentle turns.

AIRBRAKES It is probably undesirable to open the brakes at VNE even if the glider is so cleared. It is, however, worth trying them at fairly high speeds. Suck-open force is the main thing to be ready for. On some types it may not be possible to close brakes until speed is reduced.

PERFORMANCE

If you have changed to a higher performance ship (the normal progression) you will want to know just how much better it is than your old mount. As well as an improved glide you will probably have a changed (not always better) thermal performance.

THERMAL PERFORMANCE Gone are the days when you cored round on the judder with bags of rudder. If you thermal too slowly in a laminar flow glider, separation will ruin your rate of climb. You will just have to resign yourself to faster thermalling. Note the increased radius of turn and the extra time to complete a 360. In a gaggle you will find yourself on the outside of the less sophisticated types. Another noteworthy feature is the larger speed increment over straight minimum sink you will need in a turn. If you do turn too slowly a definite acceleration must be made to restore a smooth airflow again. When thermalling low down in turbulence you will be glad you have done the handling exercises above.

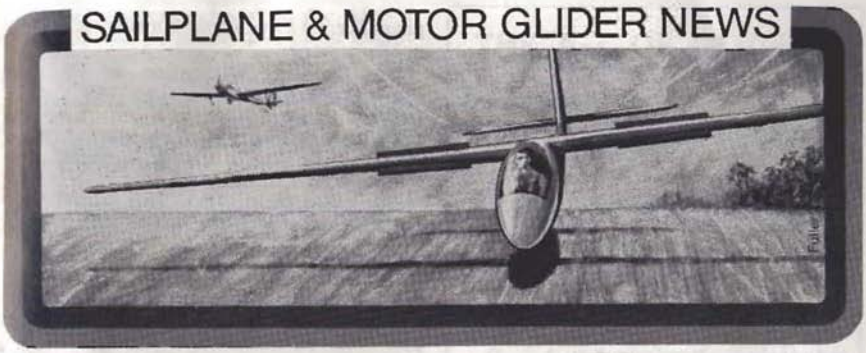
GLIDE PERFORMANCE If your new toy is fitted with ADCs, MacCready rings, etc, it should go without saying that you must know how they work. Use them in your local soaring flights and get to know their peculiarities.

(1) Straight glides: Arm yourself with a local area map with 5nm circles concentric with base. Fly towards base with various relationships to the wind and note accurately height loss against distance covered. Notice how much further from home you can be and still get in. Incidentally, don't believe the manufacturer's glide angle until you've tried it out with an adequate margin of height.

(2) Final glides: A final glide computer is a must for competition flying in a modern glider. It is also of great use in local soaring, because with flatter glide angles it is less easy to judge a final glide by eye. If you are the proud owner of a 1:40 glider and are flying it home in a 10kt tailwind, you will cover 8½nm for every 1,000ft loss of height. Starting a final glide under these conditions from 2,000ft and allowing 500ft for the approach, you will be over 12nm away and will in all probability not be able to see the goal. This makes a computer a very necessary device.

Get to know how yours works, by performing final glides with ever reducing safety factors. It will help the peace of mind, at first, to start with a couple of thousand feet in hand. This will enable the goal to be kept in sight all the way. The circles on the map will make easy the checking of height against distance.

If you work through all the aforementioned exercises you cannot fail to have a better working knowledge of your glider than if you had performed a series of aimless local thermal wanderings. By all means use lift whenever you can, but do try to do something constructive with the height you gain. Armed with this organised experience you are far less likely to become the sort of statistic that led to the writing of this article. ROGER A. NEAVES



A MOTOR GLIDER THE PRACTICAL WAY

By JUKKA TERVAMÄKI

SOARING recently took a step forward it should have taken long ago. The last CIVV meeting in Paris voted the motor glider as a third participating class for world gliding championships beginning 1974. Undoubtedly this decision will immediately push the motor glider into the fast rate of development its unpowered sister has enjoyed for decades (especially the last decade).

Soon powered "Superorchides" will emerge from glass-fibre workshops; the D-37 from Akaflieg Darmstadt is the first sign of this.

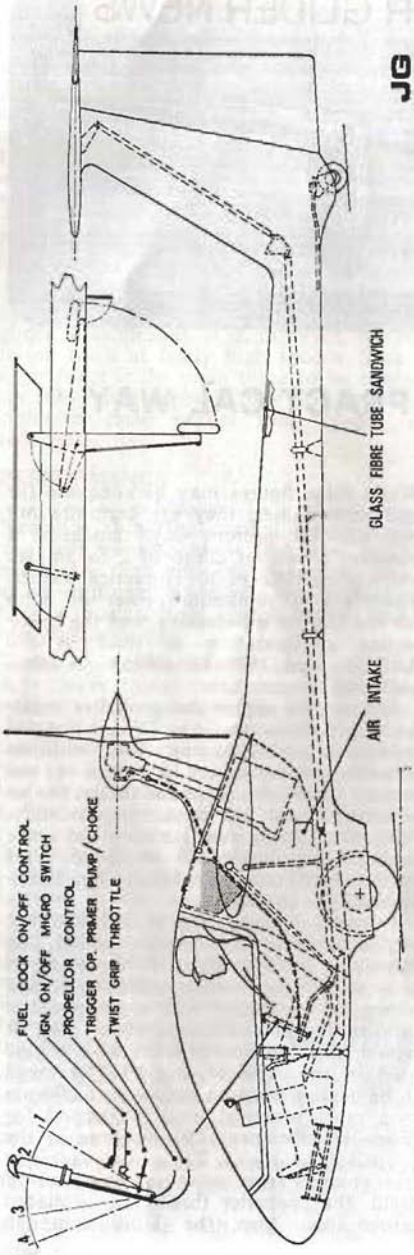
The purpose of this article is to present ideas and generate discussion among pilots and builders of motor gliders. I have flown some existing types and, in addition, have read everything available about the subject for several years. This led me to make a detailed study of what could be the most desirable characteristics in a motor glider.

The results of this study I have amalgamated into a glass-fibre motor glider concept which I have called Utopia. It presents a new approach for builders and manufacturers of motor gliders, stressing cockpit and overall simplicity, ease of operation, maintenance and practical performance.

The performance values agreed by the CIVV meeting include a minimum rate of climb "power-on" of 1.25m/sec and minimum L/D "power off" of 20:1. While these figures may be adequate for minimum values, they are certainly not practical by present day standards. I consider a rate of climb of 2 to 3m/sec and a glide ratio of 30:1 practical values. Therefore, a minimum power of 30hp for the Utopia is necessary, and the front-engine configuration as used in the ASK-14 and SFS-31 Milan is thus excluded.

Instead, the engine and propeller installation in Utopia would be like an inverted outboard marine engine. Since millions of outboard motors are in continuous use around the world, a similar design for an aircraft should not be an impossibility. Also, the Utopia configuration has some similarity to the Hi-20 Mose of Wolf Hirth (1942) and Professor H. Landmanns's La-16 (1961).

I would propose the JLO LR 399/2 engine made by JLO Werke GmbH, 208 Pinneberg bei Hamburg, W. Germany. It is a two-stroke, two-cylinder air-cooled 30bhp, 398cc engine with a compression ratio of 11.8:1 and weighs about 28kg. It would, like the Solo-Hirth F 10A engine used in the ASK-14 and SF-27M, need to be geared down to reduce its 6,000rpm to a more practical level (3,000rpm) for propeller efficiency. This is done in the propeller gearbox. To avoid excessive trim changes from power-on to power-off flight, the propeller thrust line is placed rather low. Also, the T-tail being in



propeller air flow would contribute to this goal.

The Utopia configuration would offer a lower drag in glide than the classic front mounted engine, but a slightly higher drag than in the retractable engine types (SF-27M, D-37). In powered flight, the Utopia would have lower drag than either of the other main types. This would give a good cruise performance at low power.

SIMPLICITY

In motor gliders equipped with front mounted engines we need a long landing gear leg to achieve enough propeller clearance to the ground. The long leg and big wheel must in turn be retractable for good performance. But then, what happens? Almost every one of the 13 RF-4D's in Finland have lost their props in belly landings, some of them many times (not to mention other damage), thus ensuring the manufacturer a briskly selling consumer item. Retractable gear means also complicated, weight-increasing and expensive mechanisms, as well as further levers in the cockpit.

Although top rank glider pilots may well be happy with retractable landing gears in order to add one unit to the L/D, I would trade this small performance increase for simplicity and fixed gear and move the engine behind the pilot and the propeller on top of the fuselage. It is safer, too, for the pilot and people around the machine, with no prop to hit your head unless you are walking on the wing.

COCKPIT ENVIRONMENT

Pilot comfort not only depends on a good seat and good visibility (which should, by the way, be as good in Utopia as in the best gliders today), the number of various levers and knobs is also of great importance. The simpler the cockpit, the better the machine. One can enumerate the following items in the cockpit of the RF-4D:

Landing gear (three levers); wheel/parking brake; airbrake; trim; engine starting lever; throttle; choke; fuel cock shut-off valve and ignition switch. These total 11 items, excluding control column and rudder pedals which are essential in any flying machine.

Adding further complications like the

propeller-feathering lever of the SFS-31 Milan or the propeller brake and engine retracting mechanism of the SF-27M, one finds knobs and levers scattered round the cockpit like decorations on a Christmas tree.

In the Utopia I would throw away the three landing gear retracting levers of the RF-4D and replace most of the others with a "combined engine control lever", the functions of which can be seen from the accompanying sketches. This lever is simply a propeller feathering device with a twist-grip handle for throttle and a trigger for choke. In the prop-feathered position it will, in addition, cut off the ignition and fuel.

Let us now figure out what the Utopia pilot would do in the air to restart the engine after soaring. Instead of swearing and tearing his hair like pilots in other motor gliders (read the test flight reports in various magazines or try yourself), the Utopia pilot simply pushes the combined lever from position 1 (propeller feathered, fuel and ignition off) to position 2 (prop at high pitch for starting torque, fuel and ignition on). The propeller feathering mechanism could be similar in design to helicopter tail rotor heads—a push-pull rod through the propeller shaft which turns the blades. Position 2 of the combined lever is selected so that the propeller gives the maximum restart torque to the engine shaft, making violent dives and snatching of the starting handle unnecessary. If the engine is cold, the pilot also pulls the choke trigger on top of the combined lever with his left hand forefinger. The engine fires and the pilot pushes the lever to position 3 for cruise or up to position 4 for climb, adjusting rpm by twisting the throttle. Note that the pilot need not move his right hand from the control column or his left hand from the combined lever.

For starting the engine on the ground, three methods could be used: An electric starter (which adds weight); a pull cable or swinging the propeller by hand. Having no experience of the ILO 399/2 engine, I cannot say whether the last method would be practical enough. It would be the simplest, anyway.

The remaining levers in the cockpit would then be trim, airbrake and wheel brake. The two latter are often combined

in modern sailplanes, but I would not do that in the Utopia. This is because I would combine the airbrakes with the retracting mechanism for the mid-wing balancing wheels. For good taxiing ability, these outrigger wheels are a necessity. Since we also need the airbrakes, why not use the brake mechanism to retract the drag producing wheels? They would have some airbrake action on the under surface of the wing and would not add any complications to those we already have. For taxiing on the ground, the airbrake lever could be locked in the out position. On take-off, the brakes and wheels are kept out for the first few yards of initial acceleration. As soon as the ailerons become effective, brakes and wheels can be pulled in. Finally, I would fit the undercarriage brake to the control column after the fashion of a motorcycle brake, but designed so that it could also work as a parking brake.

ENGINE MAINTENANCE

Usually, an engine fitted mid-fuselage is very difficult to maintain, as the accessibility is very poor. To avoid this drawback in Utopia, the whole engine/propeller combination should be made to tilt forward about a pivot point giving free accessibilty to sparking plugs, magneto and other vital components. To make things easier, this tilting should be possible by releasing only one or two snap locks. If properly designed, the engine could be test run in the tilted position. No other configuration could then beat this design for easy maintenance.

Other details of the Utopia engine installation should include an efficient muffler for low noise level in the cockpit as well as on the ground. Note, too, that the remaining exhaust noise is directed upwards away from the pilot in the cockpit and people on the ground.

Air cooling intake vents should be fitted along the fuselage and their openings should close flush when the propeller is feathered. This could be arranged easily on the combined engine control lever. Anyway, in the Utopia design the engine would not receive excessive "ram air" cooling because the cooling fan stops when the engine is switched off. It is fortunate that the Volkswagen engine used in many present-day motor gliders is so strong that it resists the stopping-starting punishment and fast cooling that, for example, training in motor gliders means. A normal aircraft engine would soon develop cylinder head cracks and valve damage.

TECHNICAL DATA

Span (m)	15
Wing area (m²)	13.2
Aspect ratio	17
Wing loading (kg/m²)	29
Empty weight (kg)	260
Gross weight (kg)	380
Glide ratio	34:1
Min sink (m/sec)	0.7
Power unit, JLO LR 399/2	
Power loading (kg/bhp)	12.7
Max rate of climb power on (m/sec)	2.5
Cruise speed, 75% power (km/h)	150

HP-16

AMONG the latest designs available in kit form for home construction is Dick Schreder's HP-16, an all-metal 15m addition to his well-known HP series. Details from R. E. Schreder, Bryan Aircraft Inc, Williams County Airport, Bryan, Ohio 43506, USA.

TECHNICAL DATA

Span (m)	15
Wing section, Wortmann FX67-150	
Wing area (m²)	10.49
Aspect ratio	21.5
Wing loading (kg/m²)	28.07
" " (ballasted)	45.35
Empty weight (kg)	158.76
Water ballast (kg)	181.44
Max all up weight (kg)	476.27
Max L/D	38:1

LP-15 NUGGET

THE LP-15 Nugget metal Standard Class sailplane has been designed and built by Laister Sailplane Products, 2712 Chico Avenue, South El Monte, California, USA. It was completed in 74 days (and many nights) and then trailered 1,200 miles to be launched on the opening day of the US Standard Class championships.

It was flown by Ross Briegleb and its first test flight was also a contest flight. On the fifth day it was badly damaged on landing in a wheat field and was consequently out of the contest. After achieving a total of 900 cross-country miles in the Nugget, Briegleb was full of praise and felt that, after having a few minor snags ironed out, it could be

the best of Standard Class sailplanes. Delivery is scheduled for 1972 (*Soaring*, June and September).

TECHNICAL DATA

Span (m)	15
Wing section, Wortmann	
Wing area (m^2)	10.59
Aspect ratio	21.3
Wing loading (kg/m^2)	25.63
" " (ballasted)	34.17
Empty weight (kg)	181.44
Water ballast (kg)	90.72
Max all up weight (kg)	362.87
Max speed (km/h)	200

Performance data not available

LS-ORNITH

AT A recently held Air Fair at Egelsbach, an experimental prototype high performance tandem two-seater, based on the well-known LS-1 of the Rolladen Schneider works, was on show for the first time. It is at present undergoing its test flying programme.

TECHNICAL DATA (two-up)

Span (m)	18
Wing section, Wortmann	
Wing area (m^2)	12.4
Aspect ratio	26.1
Wing loading (kg/m^2)	37
Empty weight (kg)	271
Pilot weight (kg)	188
All up weight (kg)	459
Glide ratio at 95km/h	40:1
Min sink at 70km/h (m/sec)	0.52
Max speed (km/h)	200

LEMKE-SCHNEIDER LS-1

AFTER its success at Marfa orders for the LS-1 have increased considerably. However, owing to initial difficulties, building it under licence (as announced at Marfa) has been somewhat delayed, but everything possible is being done to get under way and increase production.

Improvements to the undercarriage as well as the operating lever are being incorporated. The lever has been moved to the left of the cockpit which will give direct control and the effort required to operate it will be almost cut in half. Also the range of movement of the control column will be enlarged by about 30 to 50%.

SF-TANDEM-FALKE

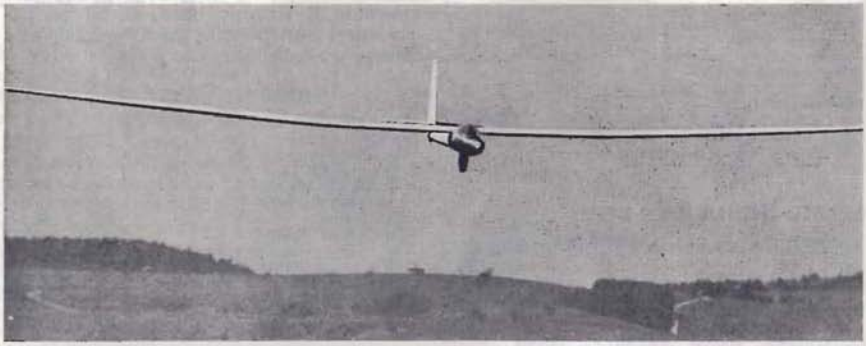
AS already mentioned in the last issue (p 319), Scheibe has brought out a new motor glider, the SF-Tandem-Falke, developed from the Bergfalke two-seater glider.

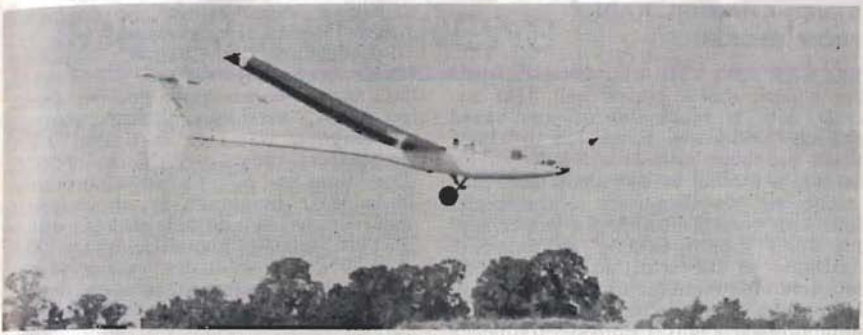
According to the manufacturer, the Stamo MS 1500 45hp engine used is very economical and only requires checking after 800 hours of running time. An electric starter is also fitted, and the machine is sturdily built, based on experience gained with the Bergfalke and Motor Falke.

TECHNICAL DATA (two-up)

Span (m)	16.5
Wing area (m^2)	18.5
Aspect ratio	14
Wing loading (kg/m^2)	33
Empty weight (kg)	370
Pilot weight (kg)	166
Max take-off weight (kg)	560
Glide ratio	27:1
Min sink at 70km/h	0.9
Power unit: Stamo MS 1500	
Power (hp)	45
Power loading (kg/hp)	12.4
Rate of climb (m/sec)	2.2

SF-Tandem-Falke. Dipl.Ing. Egon Scheibe, designer, in foreground





Sigma on aerotow during its maiden flight on Sunday, September 12, at Cranfield. The machine made a single flight before returning to the Pionair Centre at London Airport for further work to be carried out before the test flying programme is started. *Photo: Ann Welch*

Opposite page: Top, the Pilatus B-4 sailplane (see S&G, June, p203); Centre and lower, the AN-66C, the Swiss variable-geometry, 23m sailplane which first flew on April 10 (see S&G, June, p205) (photos courtesy *Aero Revue*)

EQUIPMENT NEWS

TRAILER LIGHTING SET

A TRAILER lighting set whose components comply with the new lighting regulations has been introduced by Joseph Lucas Ltd, Great King Street, Birmingham 19. Specifically designed for use on boat trailers, camping and utility trailers, it consists of a tubular metal frame which acts as a base for the stop/tail/indicator lamps, twin triangular rear reflex reflectors and the number plate and illumination lamp. It can be fitted to the trailer using shockcord, clamps or bolts, and its overall length is 4ft 9in. The set is supplied with 20ft of 5 core cable, and the average retail price is £10.50. Seven-pin plugs and sockets are extra—88p and £1.10 respectively.

A trailer reflector pack complying with the new lighting regulations is also available. It comprises two RER36 triangular rear reflectors and four RER38 side reflectors, and the recommended retail price is £1.93.

OXYGEN KIT FOR GLIDER PILOTS

A SET of oxygen apparatus with a "safety pressure" facility and designed specifically for use in gliders has been developed by Stewart Baxter of Kingussie. Prototypes are now being manufactured and production models will be available in about three months, he says.

The equipment will comprise a soft-sided mask (with microphone if required); a constant flow regulator capable of delivering either two or four litres of oxygen per minute and a capacity tube which incorporates a "safety pressure" device to make sure that oxygen is still available in case there is a leak at the mask.

Oxygen is piped from the bottle (which can be situated in any convenient position) to a small console secured to the side of the cockpit. The console houses the regulator valve assembly, sockets for oxygen and microphone, and is fitted with a contents gauge. "The aim has been to evolve a design which above all is safe and which will fit into any glider without undue fuss," Mr Stewart says.

Details from Stewart Baxter, Rotary Precision Ltd, Kingussie, Inverness-shire, telephone Kingussie 435.

SEVEN-CHANNEL RADIO FROM BECKER

BECKER AR7 VHF transceiver designed for gliders, motor gliders and light aircraft with a maximum of any seven channels within the range 118 to 135.95 MHz has been introduced. Both an air set and a ground set are available.

The air set comprises a transceiver unit with control head and a power supply unit, thus providing an extensive flexibility in the selection of mounting locations, the manufacturer states. Installation accessories include a template for mounting each unit. Controls—frequency selector, on-off switch, volume control and squelch—are combined in the control head, which has the dimensions of a small standard aircraft instrument, and can be removed from the transceiver unit and mounted on the instrument panel.

The ground set is also in two components, the transceiver and the power supply, and together weigh 2.9kg. Rechargeable batteries of the sealed lead acid type with jellied electrolyte are used, with a capacity of 2.6 ampere hours. The transceiver can, however, be connected directly to a 12 volt car battery.

Specifications: Channel spacing, 50kHz; operating voltage, 12-14 volts DC; current consumption receive, standby 45mA, maximum 200mA; current consumption transmit, maximum 1.2A; temperature range, −40°C to +50°C, short time to +71°C; vibration range, 10 to 55Hz, maximum 3g; shock resistance, up to 6g; altitude range, up to 20.000ft; relative humidity, up to 90% at +40°C for 48 hours; carrier power, minimum 1.5 watts; modulation depths, up to 85%; undesired radiation, less than 2×10^{-5} watts; frequency stability, better than 5×10^{-5}; receiver sensitivity, 0.5μV for 6dB S/N, 30% modulation; bandwidth, minimum ±17kHz at −6dB; selectivity, maximum ±40kHz at −6dB.

Dimensions and weights: Transceiver Vunit 180×68×110mm, weight 1.2kg; control head 61×61×30mm; power supply unit 130×68×88mm, weight 1.7kg with batteries; carry case 260×260×75mm.

Details from Becker Flugfunkwerk GmbH, 757 Baden-Baden-Oos Flugplatz, West Germany.

GENERAL & BGA NEWS

PELICAN FLYWAY

EATING and soaring very rarely go together where glider pilots are concerned—after all, there are difficulties associated with imbibing a plate of spaghetti bolognaise while banked at 45° in your Diamant.

For many birds, however, soaring is a necessary part of the process of obtaining nourishment, as witness the activities of vultures, hawks and even swallows swept up to cloudbase by an insect-rich thermal.

A television film "Pelican Flyway", made by Anglia Television and shown by the commercial channels on August 9, provided an unusual example of how a particular group of birds make use of soaring to feed themselves and their youngsters. Peter Scott, narrator, describes the activities of a colony of pelicans which inhabit a remote lake in Ethiopia. The water of this lake, which is surrounded by 3,000ft mountain ridges, has very few fish in it of any size—insufficient to feed the birds. However, a few miles away, beyond the mountains, lies another lake with ample fish. Every morning, squadrons of pelicans fly off to the middle of the lake, and wait until dust devils form on shore. Once thermal activity has started, they take off, soar over the mountains, glide down to the other lake, fill their beaks with fish, and return home the same way with a considerably increased wing loading. Although much of the film is devoted to the often sordid domestic activities of the pelicans, the flying sequences and gliding commentary were quite interesting.

KRONFELD CLUB NEWS

DURING the summer great efforts have been made to make the Kronfeld Club premises more attractive and at the time of writing work is proceeding with as much speed as possible. The club is grateful to Frank Kinder for preparing the scheme.

There have been two Extraordinary General Meetings of The Kronfeld Club Limited during the year and as a result agreement was reached with members of the club's art society who wished to go elsewhere and form another aviation art body. The meetings also resulted in changes as far as the Board of Directors of the Company are concerned. The new Board comprises the following members: Arthur Speechley, Chairman; Ralph Hooper, Lewis Benjamin, Ron Willbie, Michael Jones, Pat Anderson, and Cliff Tippett as Secretary.

The General committee and the new Board of Directors would like to record their appreciation of the long service rendered to the club by John Furlong, Mrs Alex Orde and Hugo Trotter who have retired from the Board of Directors.

KRONFELD AVIATION ART SOCIETY

The annual Exhibition and Competition will open this year on November 1 and continue for two weeks.

The BGA Goblet will be presented for the best painting dealing with the art of silent flight. The Harry Cooper Memorial Trophy will be awarded to the top artist while the Kronfeld Palette will go to the best overall entry.

Please note that the competition is

"Let's go and circle in that big patch of sink"

open to all Kronfeld Club members without restriction. Entry forms available from the club, 74 Eccleston Square, London SW1. Further information also from the Exhibition Organisers: Margaret Kahn, Arthur Speechley and Pat Anderson.

DIARY OF LECTURES AND FILM SHOWS

Wednesdays at 8 p.m.

Sept. 29 'Sir George Caley flies again' by John Sproule.
Oct 6 'Hot Cross Balloons' by Roger Barrett.
„ 13 'The Charge of the Light Brigade'—film.
„ 20 Lorne Welch talks about Sigma.
„ 27 Harold Best Devereux—Film and talk on light aircraft, aerobatics, etc.
Nov 1-12 Annual Art Exhibition.
„ 17 'Battle of Britain'—film.
„ 24 'US Naval Aviation'. Talk and film by US Naval pilot.
Dec 1 AGM and Wine and Cheese Party.
„ 8 'Gliding as I have known it' by Derek Piggott.
„ 13 'Von Ryan's Express'—film.

NATIONAL LADDER

THE National Ladder for 1970/71 ends on September 30, and all pilots who wish to claim flights for inclusion should hand them to their local ladder stewards as soon as possible. Final lists must reach the National Ladder Steward, Mike Garrod, 71 Corwell Lane, Hillingdon, Middlesex, by October 28. Flights made during October must not be included.

The 1971/72 Ladder begins on October 1.

A total of 151 pilots had registered entries by August 15.

Leading pilots	*Club*	*Pts*	*No of flts*
1 C. Lovell	Surrey & Hants	6025	4
2 S. A. White	Airways	5769	4
3 A. D. Purnell	Surrey & Hants	4886	4
4 M. P. Garrod	London	4040	4
5 J. J. Ellis	Airways	3926	4
6=P. Pozerskis	London	3238	4
6=M. D. Till	London	3238	4
8 J. R. Jeffries	London	2941	4
9 S. G. Davies	Airways	2880	4
10 P. Loewenstein	Cambridge U	2868	4

EXECUTIVE COMMITTEE MEETINGS

THE team members for the World Championships were confirmed at the Executive meeting on July 21. Gerry Burgess was co-opted to the committee *ex officio* as team manager.

NATIONALS DATES; PLACES

There was no meeting in August but on Sept 8 the committee fixed dates for the National and approved Regional competitions. The Open/Standard championships will be held from May 27 to June 5 (including Spring Bank Holiday Monday) at Shobdon airfield. Responsibility for organisation is to rest with the Midland club. The Sport/Club classes will be held from August 5 to 13 at Dunstable.

Bids have been invited from clubs wishing to hold regionals on the following dates: May 13 to 21; June 10 to 18; June 24 to July 2; July 8 to 16; July 22 to 30; August 19 to 27; and September 2 to 10.

It was agreed to reduce the Competition Levy for Regionals for 1972 to £1 per pilot, and to increase the Levy for Nationals pilots to £3.

There was discussion on the difficulties sometimes met with by British pilots wanting to fly gliders belonging to clubs overseas. Information as to the requirements in some European countries will be published later.

AIRSPACE

John Ellis, chairman of the sub-committee concerned with this important sphere of politics, gave a very thorough account of the many problems facing us in resisting the imposition of still more restrictive SRZ's and SRA's. Details will be published as soon as a solution has been reached, and the subject will come up for discussion at the Autumn general meeting (see EGM).

MOTOR GLIDER LEGISLATION

Unexpected difficulties have arisen since our last report (Feb-March 1971, p633). They are due to an interpretation of the Air Navigation Order which appears to prohibit all flying training except from a licensed airfield and by a rated power instructor, etc, etc. This is one of the anomalies briefly referred to in the last issue, p315, and it is interesting that the Department of Trade and Industry has agreed with BLAC that in certain cases PFA groups may be given a dispensation from the restrictions. An approach has been made to the Department at a very high level in an endeavour to obtain similar dispensations for gliding clubs wishing to use motor gliders for instruction, and the approach has been listened to sympathetically.

Lack of time prevented consideration of several other agenda items, which had to be deferred to the October meeting. One of these is a suggestion from the German Aero Club that a European championship for Club Class gliders might be instituted, to stimulate the development of club sailplanes as flown by the majority of pilots.

BGA EXTRAORDINARY GENERAL MEETING

THE extraordinary general meeting of the BGA will be held on Friday, October 15, at 7 pm, at the Kronfeld Club, 74 Eccleston Square, London, SW1.

It is to be known by the less formal title of the Autumn Meeting of Members and will commence with an oral report by the Chairman on the current state of British Gliding. In addition to airspace, there will be discussion of motor gliders (training and legislation), the Aviation Council, Grant-aid to clubs, and other matters. Certain members of the Executive Committee will give a brief survey of gliding progress in their particular regions. The meeting is open to all members of affiliated clubs.

MOTOR GLIDER TRAINING FOR ATC?

THE Falke motor glider, built under licence by Slingsby Sailplanes and termed the T61A, is undergoing trials with a view to assessing its suitability for the Air Training Corps as a successor to the traditional winch-launched training operation.

1972 AGM AND BALL

THE BGA annual general meeting and the ball will take place on March 25, 1972, at the Palace Hotel, Buxton, Derbyshire.

SCOTT FARNIE AWARD FOR AIR COMMODORE PAUL

AIR Commodore Christopher Paul, until recently Secretary General of the Air League, has been awarded the League's premier Scott Farnie award for 1970.

He has put in a great deal of dedicated work on air education and has been closely connected with the gliding movement for many years.

Apart from being much concerned with the growth of the RAFGSA in its early stages he was also the BGA's Accident Analysis Officer from 1957 to 1962. The Robert Perfect Trophy, instituted in 1959, was given to the BGA for annual presentation as a result of his initiative.

Without doubt the Air League as well as the gliding movement owes a great deal to Christopher Paul.

GOLDSBROUGH WINS NORTHERNS

BARRIE GOLDSBROUGH (Diamant 18) won the Northern Regionals, held at Sutton Bank from August 21 to 30. There were only three contest days. Ron Sandford (Std Cirrus) was second, with 65 points to Goldsbrough's 68.

GLIDING CERTIFICATES

ALL THREE DIAMONDS

No.	*Name*	*Club*	*1971*
19	H. Hilditch	Surrey/Hants	17.7
20	C. D. Lovell	Surrey/Hants	17.7

DIAMOND DISTANCE

No.	*Name*	*Club..*	*1971*
1/31	H. Hilditch	Surrey/Hants	17.7
1/32	C. D. Lovell	Surrey/Hants	17.7
1/33	F. B. Reilly	S.G.U.	17.7
1/34	D. C. Austin	Four Counties	17.7
1/35	D. G. Lee	Four Counties	18.7
1/36	B. Dobson	Four Counties	17.7
1/37	W. Malpas	A.A.V.E. (France)	20.7
1/38	D. D. Carrow	Surrey/Hants (France)	20.7

DIAMOND GAIN OF HEIGHT

No.	*Name*	*Club*	*1971*
3/133	C. E. Andren	Southern Command	9.3

DIAMOND GOAL

No	*Name*	*Club*	*1971*
2/381	J. R. Dransfield	Heron	30.12.70
2/382	P. N. Loewenstein	Cambridge	1.5
2/383	D. Lidbury	Oxford	17.7
2/384	C. J. N. Waller	Four Counties	13.7
2/385	P. M. H. Treadaway	Dorset F.C.	17.7
2/386	A. F. Abbs	Surrey & Hants	18.7
2/387	J. M. Hoye	Kent	17.7
2/388	C. G. Rollings	Thames Valley	17.7
2/389	F. G. Bradney	Surrey & Hants	17.7
2/390	C. W. G. Shard	Bicester	18.7
2/391	D. Greig	Dorset	17.7
2/392	M. D. Till	London	17.7
2/393	J. M. C. Manson	Chilterns	17.7
2/394	R. C. Sharman	Chilterns	18.7
2/395	J. A. Stenton	Airways	18.7
2/396	E. R. Duffin	South Wales	17.7
2/397	A. D. Palmer	Dorset	17.7
2/398	D. A. Vennard	Bristol & Glos	17.7
2/399	H. F. Brown	Four Counties	29.7

GOLD C COMPLETE

No	*Name*	*Club*	*1971*
298	T. R. F. Gaunt	Bannerdown	26.3
299	P. N. Loewenstein	Cambridge	1.5
300	P. Trenchard	Swindon	4.7
301	C. W. S. Goodman	Wrekin	17.7
302	C. J. N. Waller	Four Counties	13.7
303	P. M. H. Treadaway	Dorset F.C.	17.7
304	P. G. King	London	11.7
305	F. G. Bradney	Surrey & Hants	17.7
306	C. W. G. Shard	Bicester	18.7
307	R. C. Sharman	Chilterns	18.7
308	J. A. Stenton	Airways	18.7
309	H. F. Brown	Four Counties	29.7
310	M. C. Costin	Coventry	30.7

GOLD C HEIGHT

Name	*Club*	*1971*
D. Brown	Midland	20.6
T. R. F. Gaunt	Bannerdown	26.3
W. C. Swift	Surrey & Hants	5.7
P. Trenchard	Swindon	4.7
A. J. Middleton	Deeside	17.4

GOLD C DISTANCE

Name	*Club*	*1971*
J. R. Dransfield	Heron	30.12.70
P. N. Loewenstein	Cambridge	1.5
D. Lidbury	Oxford	17.7
C. W. S. Goodman	Wrekin	17.7
C. J. N. Waller	Four Counties	13.7
P. M. H. Treadaway	Dorset F.C.	17.7
A. F. Abbs	Surrey & Hants	18.7
P. G. King	London	11.7
J. M. Hoye	Kent	17.7
C. G. Rollings	Thames Valley	17.7
F. G. Bradney	Surrey & Hants	17.7
A. D. Palmer	Dorset	17.7
C. W. G. Shard	Bicester	18.7
D. Greig	Dorset	17.7
M. D. Till	London	17.7
J. M. C. Manson	Chilterns	17.7
R. C. Sharman	Chilterns	18.7
J. A. Stenton	Airways	18.7
E. R. Duffin	South Wales	17.7
D. A. Vennard	Bristol & Glos	17.7
H. F. Brown	Four Counties	29.7
M. C. Costin	Coventry	30.7

SILVER C

No	*Name*	*Club*	*1971*
2889	Jacqueline Abrahams	Kent	13.6
2890	H. L. Johnson	Coventry	1.6
2891	R. A. Ladds	London	1.6
2892	R. D. Applin	Cranfield	31.5
2893	F. G. Newberry	Southdown	21.5
2894	G. D. Ashworth	Norfolk	20.5
2895	A. E. Gibbs	London	17.4
2896	P. R. White	Dorset	28.5
2897	K. H. Jennings	Devon & Somerset	17.6
2898	B. R. R. MacDonald	London	20.6
2899	J. K. Dickens	Cranfield	13.6
2900	P. R. Stafford Allen	Kent	13.6
2901	P. D. Whiteman	Thames Valley	19.5
2902	W. E. Haines	Enstone	13.6
2903	J. F. Mills	In USA	2.5
2904	D. E. Findon	Coventry	2.5
2905	T. Collier	Thames Valley	20.5

No	Name	Club	1971
2906	B. A. Selmes	Bath & Wilts	13.6
2907	R. E. Pettifer	Thames Valley	13.6
2908	D. Webber	Bicester	2.5
2909	R. G. Alexander	London	13.6
2910	G. M. Polkinghorne	SGU	16.5
2911	G. Wilson	Surrey & Hants	11.5
2912	F. Howards	Polish	17.5
2913	J. Deakin	Cambridge	25.6
2914	T. Gadzinski	SGU	27.6
2915	A. R. Davidson	Surrey & Hants	13.6
2916	J. M. Williamson	Northumbria	25.6
2917	S. Mulholland	Four Counties	24.7
2918	J. R. Dransfield	Heron	22.12.70
2919	P. J. Ogilvie	Heron	3.7
2920	G. Lubin	Essex	17.4
2921	N. Meiklejohn	SGU	29.6
2922	A. Cliffe	Staffordshire	22.6
2923	A. M. Blackburn	Derby & Lancs	27.6
2934	I. C. Snell	In USA	10.6
2935	F. Wright	Surrey & Hants	18.7
2936	I. D. Parker	Imperial College	17.7
2937	K. T. Gardiner	South Wales	8.7
2938	Pauline A. Millward	Chilterns	11.7
2939	A. Vine	Surrey & Hants	13.7
2940	J. D. Wass	Hambletons	11.7
2941	H. Hargreaves	Blackpool	26.3
2942	M. A. Wilcox	Worcester	13.7
2943	G. P. Hassett	Two Rivers	30.5
2944	B. Sykes	Yorkshire	30.6
2945	L. Mountford	Yorkshire	13.7
2946	W. G. Lang	SGU	14.7
2947	J. Day	Oxford	17.7
2948	W. T. Blanchard	Anglia	31.5
2949	P. S. Collins	Cranfield	28.5
2950	K. L. Daley	Kestrel	17.7
2951	J. C. E. Taylor	Surrey & Hants	17.7
2952	P. G. Sheard	Airways	17.7
2953	I. Sutherland	Airways	16.7
2954	P. R. Tiley	Dorset	17.7
2955	M. D. Wells	Enstone	18.7
2956	A. W. Swales	Hambletons	17.7
2957	P. J. E. Osborne	Dorset F.C.	18.7
2958	J. J. Earnshaw	Hambletons	17.7
2959	A. J. Wray	Heron	18.7
2960	R. H. Bennett	Yorkshire	17.7
2961	D. M. McNicol	SGU	17.7
2962	R. Day	Thames Valley	16.7
2963	G. Wadsworth	Wrekin	18.7
2964	J. M. Bishop	Fenland	17.7
2965	M. J. Cowburn	Surrey & Hants	17.7
2966	P. A. Cottrell	Dorset F.C.	18.7
2967	G. H. Herringshaw	Midland	27.6
2968	L. A. Jones	London	19.6
2969	J. M. West	Surrey & Hants	13.6
2970	J. Charlton	Midland	18.7
2971	C. Gadsden	Surrey & Hants	18.7
2972	C. G. Corbett	Essex	17.7
2973	A. J. Dibdin	Cambridge	13.7
2974	J. E. Graves	Bath & Wilts	17.7
2975	K. M. Routledge	Wrekin	18.7
2976	Ann Adams	Thames Valley	18.7
2978	Sylvia Cross	Essex	17.7
2979	E. Specht	Burton & Derby	17.7
2980	F. Cairns	Fenlands	18.7
2981	Diana Armistead	Oxford	18.7
2982	J. D. Peck	Fenland	18.7
2983	D. E. Fletcher	South Wales	17.7
2984	A. E. T. Boston	Southern Command	25.7
2985	K. G. Lawrence	Burton & Derby	18.7
2986	D. R. Harris	Coventry	17.7
2987	Jean Godfrey	Aquila	18.7
2988	R. A. Phelps Jones	Southern Command	17.7
2989	M. J. Fielding	Avro	18.7
2990	J. R. Greenwell	Northumbria	17.7
2991	Janis McGill	Oxford	17.7
2992	W. E. Thomas	Bannerdown	17.7
2993	B. Bryce	Chilterns	18.7
2994	D. P. Greenland	Cotswold	17.7
2995	L. J. McKelvie	Ulster	18.7
2996	P. A. Moorehead	Heron	16.5
2997	P. B. Conyers	Bannerdown	17.7
2998	B. P. Parsons	Bicester	18.7
2999	A. M. Bishop	Kestrel	7.8
3000	**Sarah Lane**	**Two Rivers**	**1.8**
3001	A. Hobkirk	Bristol	17.7
3002	J. R. Smalley	Lincoln	1.8
3003	V. Mallon	Two Rivers	15.7
3004	S. N. Longland	Cambridge	2.8
3005	M. Bryan	Dorset	18.7
3006	C. J. H. Bryant	Surrey & Hants	18.7
3007	D. R. Mason	Midland	17.7
3008	J. T. Hogben	Blackpool	2.8
3009	K. J. Quick	Four Counties	18.7
3010	B. A. Noble	Trent Valley	17.7

Note: Numbers 2924 to 2933 pending.

IT IS a far cry since April 22, 1934, when G. E. Collins completed the first British Silver C (No 26 on the international list) when he flew his privately-owned Rhönadler from Dunstable to Rayleigh in Essex, a distance of 84km.

The flight was carried out without the use of a variometer and the altimeter was hand-held.

It was 1961 before Silver C 1,000 was completed, by E. F. Edwards in an Olympia 2B.

Silver C 2,000 is the coveted possession of Rhoda Partridge, who completed hers on May 31, 1967, in a K-6E.

And now, just over four years later, Silver C 3,000 was issued on August 1 to Sarah Lane, wife of Pete Lane, a well-known RAF glider pilot.

Sarah started gliding in 1965 but stopped when, in 1968, Pete was involved in a very serious gliding accident in Germany. She nursed him back to health over a long period. This could easily have put them off gliding completely, but they fought back together against all odds and as soon as he could, Pete was back in gliding. The arrival of a baby daughter put a temporary stop to Sarah's own gliding activities, but by then Pete was the proud owner of one of the earliest Std Libelles. They built the trailer in the dining room of their married quarters.

As the Silver C list shows, Sarah is also back in gliding, and her badge number 3,000 is in this case not only a statistical milestone but provides further proof that in the gliding fraternity there are also many personal milestones reached through courage and determination.

A. J. SMITH WINS USA OPEN

From ERICA SCURR

FORMER World Standard Class Champion A. J. Smith, of Detroit, won the 38th United States Open Class National Championships, flying an ASW-12. The flat farmlands of Ohio, Michigan and Indiana and the unpredictable Great Lakes weather provided challenging conditions for the 65 pilots at the contest, held at Bryan, Ohio, from July 6 to 16. A. J. Smith gained 1,000 points on five out of the eight days and finished 447 points ahead of Dick Johnson (HP-13M). Current World Open Class Champion, George Moffat, finished 17th, flying a Std Cirrus.

The first day, Tuesday July 6, featured a 248km triangle in good mid-western conditions, and 62 pilots finished, with Smith first at 104.5km/h. Smith also won the next day's race, a 357km triangle, at 98.8km/h. Although slow-moving bands of cumulus made things difficult at first, the day later shaped up to forecast and 58 pilots completed the course.

On July 8, a sluggish cold front moved through the area, but on Friday, July 9, the promise of better and improving conditions to the north caused a 325km triangle to be set. Conditions, as an overcast broke up about the time of the first launch, were weak to start with, but improved for the first two legs. The third leg was overcast because of a series of small storms which had moved through to the south, and many pilots landed at this stage. Unbelievably, however, 12 pilots finished, with a little less flamboyance and a little more teeth-clenching than on the preceding days. The winner was Dick Johnson at 57.2km/h, and he had had to wait for patches of sunlight to break through and use 0.5-0.75kt lift on the last leg.

The reluctance of the front to clear to the southeast brought a Cat's Cradle task for July 10. Anticipating better conditions to the north, little gaggles tiptoed out, hand in hand, into southern Michigan where there was real blue sky and cumulus. Best distances were achieved by those who worked north early enough to use a band of cumulus which crossed the area. Smith made the best distance (344km) for his third 1,000 point day and Dick Johnson came second (300km). Back at Bryan it rained, and one desperate gaggle formed at little more than 1,000ft over the town centre during the afternoon's "Soaring 70's Jubilee Parade". The townspeople refused to believe that this was not a planned gesture. Some competitors did not get away.

On July 11, A. J. Smith won a 200km triangle (with 36 finishers) at 79km/h, while on July 12 Ben Greene (ASW-12) won a 250km triangle at 80.5km/h.

Tuesday July 13 was a rest day, while a fast-moving cold front swept through,

leaving behind cool unstable air and 30kt NW winds. This enabled a 467km triangle to be set on the 14th, with a 168km into-wind leg. Although Smith trailed the field along the first leg, he subsequently overtook everyone to arrive home first, winning the task at 95km/h. George Moffat (Std Cirrus) was second at 89.5km/h; 44 pilots completed the task.

The last contest day, July 15, featured possible thunderstorm activity over the entire Cat's Cradle task, which was won by Dick Johnson (420km). Johann Kuhn (Std Libelle) was second (408km) and Ben Greene third (400km). A. J. Smith finished sixth with 373km to win the championships.

Bryan, the home town of Dick and Angie Schreder, provided hospitable surroundings for the contest, and was rewarded with a display of spectacular flying. The combination of reasonably good weather, imaginative and demanding tasks and over 60 pilots flying fairly equally matched sailplanes resulted in six speed finishes with enough spectator appeal to draw the local population out to the finish gate each day to cheer their chosen pilot home.

Final leading results		*Pts*
1 A. J. Smith	ASW-12	7485
2 Dick Johnson	HP-13 M	7138
3 Ben Greene	ASW-12	7000
4 Bob Chase	Cirrus	6302
5 Art Hurst	Std Cirrus	6240
6 Ross Briegleb	Diamant 18	6182

MIXED WEATHER AT CANADIAN NATIONALS

From BOB GAIRNS

DAVE WEBB of Montreal won the 1971 Canadian National Soaring Championships, held at Pendleton airfield (home of the Gatineau gliding club of Ottawa) from July 6 to 15. He was flying a modified Kestrel. Second was John Firth, one-time member of the Cambridge University gliding club in England, who flew an HP-11A. They finished more than 1,000 points clear of the field.

Only 17 pilots participated (flying 15 machines), continuing a decline in numbers since the 1966 contest at Regina, Saskatchewan, when 32 competed.

The first four days were marred by poor weather; although tasks were set on July 7 and 9, strong winds prevented most pilots from achieving a scoring distance. The weather cleared late on the 9th, with a high moving in slowly from the west, and on the 10th the wind was north-westerly, 25kts. A downwind dash of 86.7km was set. Conditions proved to be much better than expected, with strong convection, and although a blue day was forecast, good cu appeared, with bases at 6,000ft. John Firth won the day with a speed of 119.6km/h.

Similar weather was forecast for June 11, but with lighter winds. The task, a 173.4km out-and-return race, was won by Dave Webb at 92.7km/h.

July 12 was still under the influence of the high, and a 300km out-and-return race resulted. Several pilots, including Webb and Firth, filled up with water ballast before setting off, and Webb showed what his ship could do by achieving 99.5km/h to win the day, with Firth in close pursuit (96km/h). Twelve pilots completed the task, and three obtained their Diamond goal legs.

After July 13 had been rained off, a moist air mass covered the area on July 14, with many showers expected, and NW winds from 20 to 35kts. Therefore: Cat's Cradle. Many competitors found difficulty in dodging the showers. Webb and Firth were again the most successful, with distances of 197.5km and 179.0km respectively.

A 100km triangle via Alexandria and Hawkesbury was set, with direction optional, on July 15. The wind was down to 10kts, NW, and initially there were blue thermals only with wisps of cloud forming, and a layer of cirrus threatening to cut off heating. Both Webb and Firth chose the Hawkesbury-Alexandria route and completed the course with some difficulty. Bob Smith (Std Libelle) waited until 3 pm when he guessed (correctly) that the cirrus would have dissipated, then flew round the triangle

without difficulty, finishing second (Webb first and Firth third).

In winning the contest, Dave Webb used shrewd judgement to assess varying conditions on the different days. With his modified Kestrel (aileron and differential flap interconnection and gap seals installed) he was able to fly efficiently in thermals and to scratch well when necessary. John Firth deserves full marks for his performance in a not so modern sailplane—an HP-11A built by Webb and partner Ben Price.

Final leading results		*Pts*
1 Dave Webb	Kestrel	4860
2 John Firth	HP-11A	4530
3 Bob Smith	Std Libelle	3460
4 Kurt Kovacs/Henri Chabot	SHK	3164
5 Glen Lockhard	HP-14	3119

COUPE D'EUROPE PILOTS DEPLORE CIVV STD CLASS CHANGES

ON the last day at Angers, pilots from all nine countries held an informal discussion on the subject of the recent changes to the CIVV regulations relating to Standard Class design—ie, fixed-hinge flaps.

Memmert, who said he spoke for German pilots and manufacturers but not for the Aero Club, deplored measures which encouraged Standard Class gliders to become mere 15m versions of complicated Open Class aircraft—adapting to flaps would add at least DM4,000 to the price of a glider—yet he agreed that manufacturers were unhappy at restrictions on development.

Ragot thought that the changes had been forced through CIVV to outmanoeuvre successful German manufacturers and considered that the only effective protest would be for many European countries to refuse to enter the Standard Class contest.

Burton said that, as a pilot, he defended the old definition of the Standard Class which, in competition, threw up the best pilot regardless of whether he flew an LS-1 or a Std Libelle. He pointed out that even the old regulations did not preclude the production of a carbon-fibre glider, costing three times the price of a glass glider, which would be much lighter in weight with increased aspect ratio and wing-loading at high speeds. As a manufacturer he objected to restrictive flap design criteria imposed by CIVV which would hinder performance improvement. While accepting flaps as being safer than airbrakes, the logical development, as he saw it, appeared to be a flap extending to the tip with perhaps a clever device which protruded from the upper surface of the wing to provide the landing aid. He suggested that all pilots should press their own CIVV representative to get the whole question reconsidered.

R Hersen commented that his understanding of the situation was that while CIVV had voted overwhelmingly for changes in the Standard Class regulations, no vote had been taken on the flap issue.

The meeting agreed to send a letter to CIVV, emphasising pilots' disquiet at the changes and recommending that (1) the Standard Class category should be retained as a concept *moins cher et plus sportif*, (2) the regulations regarding flap design should be reconsidered, and (3) if, after consideration, flaps were to be permitted, any criteria likely to restrict performance improvement should be omitted; 95% of the pilots at Angers subsequently put their signatures to this document (from a report by Ann Ince in *Flight International*, August 5, 1971).

NOTE. Although *Aerokurier*, Sept 71, reports that George Burton voted against these resolutions he says that he would have signed the protest had he been available at the time signatures were gathered. The next meeting of CIVV will be held on November 12.—ED.

JAPAN-AMERICAN CONTEST

A TWO-DAY flying display and soaring contest at the US Navy Air Station at Atsugi, Japan, drew 200,000 spectators, according to a US Navy Press release. The contestants were an American gliding club operating on the airfield and the Nippon Soaring Club. Trophies were presented, but the Press release did not identify the winners. The competitions were for spot landings, "bomb" dropping, balloon busting, altitude and duration flights. The Editor of *Soaring* adds that cross-country soaring in Japan is reputedly ruled out by high population density and lack of landing fields (*Soaring*).

BELGIAN WINS COUPE d'EUROPE

BERT ZEGELS, the well-known Belgian pilot, won this year's Coupe d'Europe Open Class in a Kestrel 17, while Ragot of France, flying an LS-1, won the Standard Class. The contest was held at Angers from July 10 to 23.

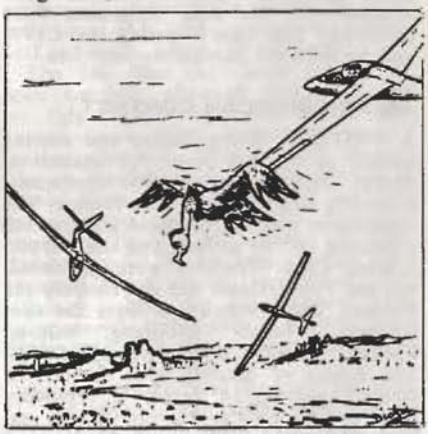
Sixty-six pilots (22 Open and 44 Standard Class entries) from nine countries took part in this extremely popular European event.

The contest, previously known as *Huit Jours d'Angers*, has been operating for 15 years under the control of Rene Hersen, "le Patron", who has also been involved with the French team since 1967.

Only closed-circuit tasks are set in this competition and this time they were all triangles. On July 20 a record number of 39 completed the 517km task and a further eight pilots exceeded 500km distance.

As no relights after landing out are permitted, retrieving is relaxing and safe, and gives ample time for sightseeing on the way back.

Very efficient tugging by eight Rallye Commodores and a Jodel 140 Abeille ensured the launching of the 66 sailplanes within 40 minutes of starting. As no tasks are set in marginal conditions speeds obtained are usually high and good competition results (for a personal account, see p395). *(Flight International*, August 5.)



"OK, OK, so where's the meat?"

Jaques Matern, one of the French pilots, thought himself very lucky when, on arrival at Angers, a young man came up to him and offered to crew. Thinking that he was a local club member, he gratefully accepted.

Imagine his chagrin when after a few days this helpful lad disappeared . . . and so had his car! Enquiries showed that in fact neither the locals or the visitors had seen this clever trickster and car thief before.

WAVE, THEN THERMALS FOR CANADIAN'S DISTANCE RECORD

A FLIGHT of 450.2 miles (724.5km) by Richard Cook from Minden, Nevada, to Malad, Idaho, constitutes a "Canadian Citizen's Record". On April 9, in a Cirrus, he was towed into the rotor of a wave downwind of Freel Peak, released at 9:27am PST, then lost 1,000ft to make a notch on the barogram to show the point of release, and spent another 20 minutes trying to locate lift. When found, he climbed gradually to 9,000ft. He flew along the rotor for 10 minutes, gaining another 1,000ft, then entered the wave. It took him at rates varying between less than 500 and 1,300ft/min to 30,000ft, from which he set off across country at 10:45am towards his declared goal at Alta, Utah.

Then came a glide of 190 miles in 90 minutes with "no significant lift" and a loss of height to 16,000ft, giving him a gliding angle of 63:1 at 128mph relative to the ground. Weak wave north of Battle Mountain was followed by weak-looking cumulus, and for 50 minutes "climbs were made alongside the faces of cumulus clouds under poorly-defined lenticular clouds".

By the time he was passing 15 miles north of Elko at 1:45pm, there was a general overcast with a few cumuliform clouds under it and a few patches of sunlight. He sank to "a low point of 10,000ft", then, from 2:40 to 3:10, he recovered to 15,000ft and caught sight of sunlit ground on the Great Salt Desert: but the sky there looked generally dead, so he abandoned his goal and made for better conditions to the NE. But when he could see no suitable landing ground to the N, he made for Mon-

tello town and got lift from 7,500 to 12,000ft. Here he contacted his crew by radio.

He was down to 500ft above ground at 5:30pm south of Rosetto but then caught a "beautiful thermal" to 10,000ft. At 6:10 he increased his speed so as to get down before dark, then caught sight of the beacon at Malad Airport and made radio contact with Flight Service station there, who kindly turned on the runway lights. He reached the airport with 2,000ft to spare, and landed there at 6:40 PST (*Free Flight*).

CANADA—MEDICAL RECOMMENDATIONS AND AIRSPACE COMMITTEE SET UP

A LETTER circulated to clubs by Dave Marsden, president of the Soaring Association of Canada, states that the Ministry of Transport is waiting for the SAC to come up with suggestions for licence requirements. At present medical examinations for glider pilots are required every five years. The circular recommends that some kind of medical should relieve instructors of the responsibility of having to decide if a pilot is medically fit to fly, and says: "We should have medicals for people carrying passengers or instructing". Dr R. F. Taylor, a gliding club member and an MoT Medical Examiner, is on the relevant committee.

An Airspace Committee has been set up under Dave Tustin, and the circular states: "We are being crowded out of the sky by increasing control zones and diverging airways . . . commercial traffic flies on fairly well defined routes using electronic navigation systems and it should be possible to have areas even within present control zones where uncontrolled VFR flight would be safe" (*Free Flight*).

MODELS SOAR OVER WASSERKUPPE

THIRTEEN scale models of well-known glider and sailplane types took part in a soaring contest—presumably radio-controlled—at the Wasserkuppe on May 2 for an "Oskar Ursinus Trophy" (named after the founder of the German gliding movement). This year's competitors included two Englishmen from Enfield. The winning machine was a model of an Open Primary SG-38, complete with scale model pilot, who could be seen to move his hands and feet in response to control messages. It was made by Helmuth Bolz of Fulda, the nearest town. Next in order were models of a Lo-100, SHK, Phoebus C, Windspiel (a 1932 light soarer of 12m span) and Zögling, all German entrants.

As well as the usual Wasserkuppe contest for ordinary radio-controlled model gliders, limited this year to 43 entries, there was a "slope-flying" model contest on the Tannenberg at which the entries had to fly round two turning-points 100m apart and then make a landing with points awarded for accuracy and "Eleganz" (*Aerokurier*).

FIRST GERMAN CLUB CLASS CHAMPIONSHIP

OF the 31 entries in Germany's first Club Class Championship, held at Dinslaken Schwarze Heide, 27 were of K-6 type and its modifications; the others were a K-10, an SF-27, and two SB-5. The eventual Champion, Ottmar Schmidt of Bavaria, won only two days of the six, but reached the overall lead on the fourth day, displacing Rolf Nagel who had held it till then. Ottmar, aged 31, with 800 hours' flying experience during the past 16 years, flew a K-6 (*Luftsport* and *Aerokurier*).

GLIDING FEDERATION OF AUSTRALIA COMES OF AGE

AUSTRALIA is now receiving recognition by the gliding fraternity of the world as a country with a large, effective and sophisticated gliding movement, writes Mervyn Waghorn, president of the Gliding Federation of Australia, in the 1970-71 *Australian Year Book*. "We are getting into the big league by international standards. All of this has taken place in the last 12 months—a very fitting way to celebrate the coming of age of the GFA", which is now 21 years old (organised club gliding in Australia

was in action in 1929, a year earlier than in Britain—Ed).

More than 350 gliders have been registered by the GFA. A list of gliding clubs shows 20 in New South Wales, 19 in Queensland, 17 in South Australia, 12 in Victoria and 5 in West Australia. During the year under review, 2,494 pilots put up 40,074 hours from 108,481 launches, and cross-country flights totalled 238,856 miles. Gliders in use numbered 173 single-seaters, 111 two-seaters and two motor gliders. The most numerous types were Blanik (39), Kookaburra (34), Boomerang (21) and K-6 (18).

FRENCH MOUNTAIN SOARING CONTEST

THE annual International Mountain Soaring Contest at Vinon in the Southern French Alps brought three visitors from Germany and one from the United States (Major Robert Litle) among 21 entries in the Standard Class, and Humphry Dimock, as usual, from Britain. Flying his new Kestrel 17, he won every task in the Open Class, in which there were two competitors, the other being François Delon of the French Air Force with a Phoebus C. The German Ernst Peter, who won the Standard Class with 7,498 points, had also competed before. Nearly half the French pilots came from the surrounding Alpine regions, and most of the rest from around Paris.

This account is condensed from that written in *Aviasport* by Michel Battarel, its editor, who himself competed with a K6-CR. He makes a suggestion that in future two competitors should fly the same sailplane alternately; also that the four tugs (two Commodores, a Minerva from St Auban and a military Abeille) were insufficient, taking 40 minutes to launch the 23 sailplanes to 750m (2,460ft) agl, though he admits that limited resources are available in the region. Also, the fact that radio was allowed but not compulsory, put some pilots at a disadvantage in mountainous country. The same applied to the use of oxygen, the permitted maximum altitude being 6,500m (21,300ft).

Tasks were: Sunday, June 27, 300km triangle via La Baume and Guillestre, cancelled as nobody reached the halfway point; June 28, 217km triangle via Moustiers-Ste-Marie and Savines; June 29, 152km flat triangle via Merindol and a point near St Auban; June 30, 209km triangle via Orpierre and Dolmilloux Fort; July 1, 307km triangle via Beaurieres and Guillestre; July 2, 229km triangle via Rosans and Seynes-les-Alpes; July 3, 304km out-and-return to a village on the route from Briançon to the Col of Mont Genèvre; July 5, 237km triangle via Gap and Renuzat; July 6, 166km triangle via Mezel and Monetier-Allemont; July 7, 104km triangle via Moustiers and Peyruis.

We hope to publish Humphry Dimock's personal account of the competition in the next issue.

Leading Final Results

Open Class		*Pts*
H. Dimock (GB)	Kestrel 17	5033
F. Delon	Phoebus C	3735
Standard Class		
E. Peter (Ger)	LS-1	7498
J. Tavernier	Edelweiss	7010
F. Schneider (Ger)	Std Cirrus	6882
J. Cianti	ASW-15	5722
C. Dalbarre	LS-1	5564

NEW SWISS CENTRE

AN airfield for the exclusive use of gliders has been established at Montricher, 2km SW of the village, to serve gliding people in the region around Geneva and Lausanne. It was officially opened on July 8, when two large hangars were already built. Two more hangars and a clubhouse are envisaged. The site is about 2,000ft asl, and has a grass runway nearly 2,000ft long (*Aviasport*).

700km GERMAN TRIANGLES AND OUT-AND-RETURNS

KLAUS Holighaus in the Nimbus 2 flew a 734km out-and-return from Hahnweide to St Claude near Genf and back on July 2 to claim a new German record. However, this record was short-lived. On July 10, Jochen von Kalckreuth flew a Kestrel 17 from Aigen (Austria) to Vals (Switzerland) and return—a total distance of 780km.

The current world record is held by Wally Scott (USA) with a flight of 860km.

Also Günter Cichon made two out-

standing triangular flights in July—one of 732 and the other of 780km. Both flights were carried out in a Phoebus 17 and started from Salzburg.

Until the FAI recognises flights larger than a 500km triangle these two flights cannot, of course, be officially recognised as records. [Perhaps the time has come for CIVV to recommend to the FAI to accept records over, say, 700, 800, 900 and 1,000km triangles!—Ed.]

NEWS FROM SOUTH WEST AFRICA

THREE Diamond distances were flown by members of South West Africa Gliding Club in six months. There are four gliding clubs in the Territory, one being at Swakopmund (the site of a pre-war club). The SW Africa GC is the largest, with 20 active members, one of whom had the Gold C and a Diamond at the age of 16. The club owns a K-6 and two two-seaters, and one member has an Olympia. It is based at Windhoek, but task-flying is done at Bitterwasser, 240km to the south; the other clubs usually join them there. This place is often dry long after the rainy season has set in.

The normal gliding season is from October to Easter. Thermals are so good that all launches are by winch or autotow, aero-tows being unnecessary—in fact, all the clubs have their own grounds and are not bothered by aeroplanes at all (*Wings Over Africa*).

GLIDING IN GERMAN SCHOOLS CURRICULUM

THE science of gliding has been accepted as an ordinary subject in German high schools, an event unique in the history of German aviation.

Helmut Reichmann, the current Standard Class World Champion, has been elected by the Institute for Sporting Science in Saarbrücken to advise all high schools in the Saar region on research and teaching of the subject.

The technology of gliding already plays a prominent part in German technical colleges as the many academic flying groups have proved. Many, often sensational, contributions to aviation have come from them—for example, the development of glass-fibre for the aviation industry.

With this official recognition gliding in Germany will no doubt keep and advance its well-earned place in the art of silent flight.

SWISS DOMINATE YUGOSLAV NATIONALS

THE first five places at the Yugoslavian National Championships, held from July 4 to 18 at Belgrade, were taken by Switzerland, who had entered no less than five members of its national team.

Hans Nietlispach, 12-times Swiss National Champion, flying his Std Libelle, won handsomely with a 248 point lead. In fact, the Swiss team won seven of the eight contest days, and they have no doubt gathered a lot of experience for the world championships to be held in Yugoslavia next year (*Aero Revue*).

Leading Results		*Pts*
1 Nietlispach (Switzl)	Std Libelle	7223
2 Ruch (Switzl)	Std Libelle	6975
3 Wetli (Switzl)	SHK	6600
4 Lüthi (Switzl)	LS-1	6295
5 Hauenstein (Switzl)	AN-66	6151
6 Pintar (Yugoslavia)	Meteor	5942
7 Petroczy (Hungary)	Foka	5832
8 Rizzi (Austria)	Diamant 15	5749
9 Puch (Austria)	Diamant 15	5390

EAST GERMAN UTILISATION

RECKONED according to the number of flying hours per machine during the past year, Cottbus and Magdeburg regions lead with 120 flying hours per machine, followed by Dresden with 110, all with the Foka type. The East German Libelle scored 81 hours at Frankfurt-on-the-Oder, 74 at Dresden and 72 at Leipzig.

East Germany now has 1,542 Silver C pilots; in the last batch of 18, Dresden and Halle scored best with four each (*Flieger Revue*).

CANADA'S WESTERN REGIONALS

THE annual Canadian Western Regionals, held this year from May 22 to 24 at Red Deer, used to be called "The May Meet". The weather was perfect—

"almost too hot"—and 17 gliders (13 competing) put up 200 hours and 4,500 miles across country.

Dave Marsden set a new Canadian record for the 100km triangle in his HP-14 on the first day, averaging over 60mph, and eventually won the whole contest. André Dumestre also beat the previous 100km record on the first day; he then put up a French National out-and-return record of 140 miles at 70mph on the second day and finished the contest second with his Libelle. Dick Mamini (HP-14) finished third and George Blunden (Cirrus) fourth (*Free Flight*).

SWISS RECORD BROKEN TWICE IN AN HOUR

ON July 5, Herbert Frehner set up a new Swiss National out-and-return record by flying from Schänis (near Zurich) to Zell am See in Austria and back, 570km, in a Std Cirrus. One hour after his return, another Std Cirrus landed at Schänis; in it was Werner Straub, who had flown from Schänis to Lend (also in Austria) and back, 608km.

On July 11, Frehner also broke the Swiss 500km triangle record (speed not stated).

POOR WEATHER HITS AUSTRIAN NATIONALS

EX-WORLD champion Harro Wödl, 44, won the Standard Class Austrian Championships, held at Zeltweg in Steiermark from May 29 to June 12. He was flying an LS-1, and finished 700 points ahead of Josef Walsberger, 39 (Std Libelle). Siegfried Puch, 33, won the Open Class with a Diamant, with Andreas Hammerle, 26, Cirrus, second.

Like most European nationals this year, the event was beset by extremely poor weather, and the first contest day was achieved on June 4 after the first six days were washed out. Of the seven days tasks were flown only five resulted in contest days.

The championships started on a very sad note when, on June 4, Adolf Gerschick had a fatal accident after spinning in his Std Cirrus while circling tightly at a low height (*Aerokurier*).

HONOURS FOR GROSSE AND REICHMANN

HANS-WERNER GROSSE (who was recently awarded the Lilienthal Medal by the FAI for his 1,000km flight in Germany last year) and Helmut Reichmann (Standard Class World Champion) have been presented with the Silver Laurel Leaf by the German President (*Aerokurier*).

EAST GERMAN TRAINING SIMPLIFIED

NOW THAT training machines like the Granau Baby 3B, Meise and Lehrmeister (of home design) are ending their useful lives, the East German gliding organisation has decided to carry out all training on only two types, the Bocian 1E two-seater and the Pirat single-seater, both of Polish design from the SZD institute (*Flieger Revue*).

MALAWI GETS STARTED

IN response to a demand in Malawi for gliding facilities, and the raising of £1,000 by enthusiasts in the form of £25 debentures, the Luchenza Flying Club has spent over £3,000 on obtaining a Motor Falke two-seater, which has arrived from South Africa after a 1,100-mile road journey, and been put through tests at Chileka to the satisfaction of the department of civil aviation. The club would especially like to hear from anyone in Malawi who has gliding experience—*Wings over Africa.*

BACK TO CHANUTE

PROFESSOR JACK LAMBIE of California, USA, has, with the help of his pupils, produced a hang-glider (one in which the pilot takes off on his legs and then controls it by swinging them) of the Chanute biplane type at a cost of $25 (£10.42) and some 20 hours' work, with which many glides have been made over local hills and dunes. The span is 8.5m (28ft) and the weight about 20kg (44lb), just double that of Chanute's original

biplane, and the materials are wood, bamboo (steamed to take up the wing curvature), transparent plastic, and steel for the struts. Wing loading is about 10kg per m^2 (2.05lb per ft^2) (*Aviasport*).

NOTE: A news item with the same title as that given above (which was originally "Le retour du planeur Chanute") was published in *The Sailplane & Glider* for May 12, 1933, p103. It described how a meeting of hang-gliders was held at Gossau, near Zurich, with 16 competitors sharing seven Chanute-type machines, and points were awarded for quality of the flights as well as their duration.

Octave Chanute, an American railway engineer of French descent, led a group of men who tried out his hang-gliders on the shore of Lake Michigan during 1895. He finally settled on the biplane as the most efficient model.

POLISH GLIDER PRODUCTION

MORE than 2,500 gliders and sailplanes have been produced by the Polish industry between 1950 and 1970 (*Flight International*, June 3).

SOUTH AFRICAN NATIONALS, 1972

THE South African National Gliding Championships will be held from January 3 to 14, 1972, with the practice week from December 27, 1971, to January 2, 1972, at Bloemfontein. Overseas entrants are invited to apply to the Aero-Club of South Africa, 109 Winchester House, Loveday Street, PO Box 2312, Johannesburg, South Africa. "Championship" days will alternate with "competition" days as in previous years. Entry fee, R40; aerotows, R4 each.

ANOTHER WORLD RECORD FOR LINCOLN/CROWL

JOE Lincoln and Chris Crowl are claiming the multi-seater 100km triangle world record with a flight in a modified 2-32 on May 24. Speed approximately 118km/h subject to homologation.

The flight took place from Alamosa, Colorado, and the speed run started at 16:25. They rounded the course in 54 minutes 42 seconds, and lift of up to 8kts was used.

BOOK REVIEWS

On top of the world. By MOSS POTTER. Waikerie Gliding Club Publications, R. G. Potter, 9 Leopold Street, Vista Heights, South Australia 5091. Price, $0.80 (Aust) plus postage.

THIS pleasantly readable 56-page novel, which sketches the careers of two teenage glider pilots, was commissioned by the Waikerie Gliding Club to attract young people to gliding. Bound in soft covers, it is illustrated with numerous photographs, and should certainly achieve its desired effect.

One of its two heroes, Al, solos at the age of 11, and progresses rapidly at first. Unfortunately, later in his teens he runs a bit wild, and is jolted when he finds himself overtaken by another lad, Andy, who has far less experience but becomes National Champion in successive years. Al eventually realises he is not as good as he thinks he is, and sets about rectifying his position. Unfortunately, how he fares is left to the last five lines, and one is generally left with the impression that some more meat would have been desirable on the skeleton of the story.

The same observation could be made about the gliding aspects of the book. Although intended for a non-soaring audience, the author makes little attempt to depict the Australian gliding scene of a decade ago, the bits about Waikerie itself read rather like extracts from club newsletters. In view, particularly, of the forthcoming (1974) World Championships, I would have liked to have seen more details of the growth of the club and the whole Australian movement incorporated in the story.

G.L.

The Dangerous Sort. By ANTHONY SMITH. Published by George Allen & Unwin, London. 158 pages, well-illustrated with many colour plates. Price 50s. (£2.50).

THIS is a biography; but a biography with a difference because the central character is a balloon—the famous Jambo. It is more than a biography though; it is a description of a way of life, the way of a balloonist.

To anyone who has flown in a balloon the book is full of the most fascinating material, and indeed this will appeal to everyone who flies at all. The illustrations are the very "stuff of flight" and, as can be seen by reference to the acknowledgements page, have been gathered from far and wide.

If one may voice a small criticism it would be that a few of these pictures have rather sparse captions, and leave the reader hungry for more details of places, times and names.

Although the book deals with ballooning in many lands and over a number of years, the thread running through the story is that of the balloon Jambo. The book describes the building, the first flight, and the many trials and tribulations that the balloon experienced, but it also chronicles some of the finest, and funniest flights that any one could dream up. It would be a very unfeeling reader who did not feel a pang of sadness at the description, and the photographs, of Jambo's end. Such is the magic of this book that the reader is drawn to feel that balloons really do have a personality.

Ballooning as a sport, the oldest aerial sport that there is, seems to be having a bit of resurgence of late, and there must be many thousands who will enjoy, even though vicariously, the joys of silent flight described in this book. It helps to explain why people do these things, and perhaps it may encourage a few who have been thinking of taking up ballooning.

R.C.S.A.

CORRESPONDENCE

RADIATION SOARING

Dear Sir,

The Smithsonian Institution of Washington estimates that the sun's radiation at the top of the earth's atmosphere is 1.95 gram calories per square centimetre per minute. This is equivalent to 0.17hp/ft². Can gliders use any of this power directly? I think they could by being painted an absorbent black under their wings and a highly reflecting white on top.

Quite frankly I have been able to stir up some mild amusement but no enthusiasm in my own club.

The manner in which the principle is supposed to work is that the air molecules impinging on the black surface become slightly warmed because the black surface picks up radiation radiated and reflected by the earth. The molecules of air thus speed up on impact and cause a slightly increased reaction on the wing and so increase lift. The white top to the wing is to diminish the amount of radiation picked up directly from sunlight and so causing the principle to operate downwards as little as possible.

Some calculations may be of interest. A fully laden K-13 theoretically requires about five horsepower of lift to keep its altitude constant. With a wing area of 188 square feet this works out at 0.027hp/ft². This is about a third of the amount of power which reaches the earth's surface from the sun on a clear day. It would be too ambitious to expect as much as 0.01hp/ft² from the effect, but that would increase the glide ratio of the fully laden K-13 from 27:1 to 43:1. Even half this power would increase its glide ratio to 33:1 as a two-seater or 37:1 one-up.

One clubmate says he would agree with the theory if the birds used it, but although flamingoes conforming to this principle exactly are common here, he

remains unconvinced. Quite a number of birds have adopted a black-and-white under-wing which might be significant. That is, the under-wing coverts are white and the primaries and secondaries are black or vice versa.

My calculations to show that the radiation transmitted from the earth to the glider would be sufficient are not very promising if worked out on a fourth power ratio of the absolute temperatures of the earth and the glider. However, it is probable that much of the radiation would be due to reflection directly from the earth rather than re-radiation. The effect of this would vary much with circumstances. The general efficiency of the effect, if it exists, would increase with increase in temperature difference. That is, the efficiency would increase with altitude.

What do other theorists think? Is radiation soaring a possibility?

Welkom, S. Africa. C. LEEDS HARRISON.

PRIMITIVE CULTURES OF THE PAST

Dear Sir,

This is a brief archaeological note on recent diggings by the 2071 Jupiter expedition to Earth on the Whizzbang Mansions site. Ancient parchments have recently been discovered headed "S&G" which throw light on the heretical thought of their era.

Sheets 291 to 293 contain a most libellous writing referring to our own superior culture on Jupiter. Sheet 331, however, will be of greatest interest to our scientists and sociologists. Two primitive scribes, in an attempt to set back the dawn of civilisation, argue that the ground-launched sailplane (GLS) is a superior vehicle for aerial sport than the self-launched sailplane (SLS). As our more advanced culture has proved, it is the proper utilisation of one's assets that counts, not necessarily the initial capital outlay. Such outlay may be spread over a larger syndicate ownership, especially as utilisation of the machine is increased and more predictable flying ensues. Cost per productive hour soaring can actually be reduced for syndicate members who have no expenses for retrieving, and minimal expenses for launching once the initial outlay is made.

Further study of curious hieroglyphics at the cult sites Splasham and Dunstabowl has revealed the incredible under-utilisation of those times, where relatively developed (even by our own standards) aeronautical devices were regularly stranded in fields or kept waiting frustrated for transport to the heavens. Students of religion will note that these cults practised primitive ceremonies that occur regularly in the literature (but have not yet been fully explained) such as *Incessantriggingandderigging Fieldlandingdamage, Winchandwire* and *Waitingforalaunch.*

Further digging at another cult site, Auntie's Bogworth, has been confused by evidence of an ancient battle, possibly between the SLS and GLS factions. A skull wearing a golden crown found under a bush at this site has not yet been identified but may belong to one of the leaders. More evidence will be given in my next report.

The Red Spot Soaring Centre, Jupiter. Your obedient servant, FREKON.

ACCIDENT CONFESSIONS

Dear Sir,

I hope that the publication of the articles by Roy Cross (Anatomy of an accident, S&G, August, p. 303) and Platypus (Washout, S&G, April, p. 103) evidences a change to plain speaking about accidents.

For the 10 years that I have belonged to a well-known club in the SE, I have felt the existence of an "Establishment" attitude to accident reporting analogous to that until recently attached to cancer—a subject that properly qualified experts might discuss unemotionally in private, but on no account in front of ordinary members of the public (who might get morbid fears) or the Press (who would sensationalise it).

At various times, both as a club newsletter editor and as a club secretary, I made attempts to challenge this attitude. But on every occasion I was persuaded

either that it did not exist, or else that it was for the Public Good, or, sometimes, both at once!

Last year, however, I preceded Mr Cross in being involved in a major accident (in my case, luckily, no one was hurt) and this first-hand experience both confirmed and enormously reinforced my conviction that any form of "don't let's talk about it" policy is wrong.

I believe that the reading of a first-person "how I crashed it" article like Mr Cross's is a factor that must promote the realisation that accidents are waiting to happen to experienced pilots at one's own club (i.e., to one's self) and not just to anonymous clots at the other end of the country. And also, once an accident is in the process of happening, knowledge gained from such an article may help a pilot to minimise the damage that it is too late to prevent. I wonder if this is a minority point of view?

Hailsham, Sussex. G. TILLEY.

KESTREL 17 AND OPEN CLASS COMPETITIONS

Dear Sir,

In the last few years several unfavourable comments have been printed concerning the Kestrel. I have just returned from flying in the "Huit Jours d'Angers" and as a reasonably unbiased observer I feel it is only fair to say that the Kestrel 17 now appears to be a really formidable glider. When flown with a wing loading of over 7lb/ft² it climbed almost as well as my SHK, which meant that it was better in this respect than any of the other Open Class ships competing. In the glide it seemed to be every bit as good as the ASW-12. These facts, very surprising to me, are fully supported by the results of the competition (see p395).

On another subject, may I ask why, oh why, we don't have an International 17m class instead of the idiotic proposal "19m World Cup". In my opinion gliding administrators at both national and international level must try and stop the present mad "span scramble". If something is not done, the Open Class in this

country will be dead within two years. I understand that in Germany this year, the Open Class was handicapped on wingspan only. This seems to me an excellent idea since glider development is not inhibited yet people flying smaller gliders have some chance. I believe that one competitor went so far as to cut off the wingtips of his [modified] ASW-12 in order to improve his handicap. This indicates a most desirable trend. I suggest the same system should be adopted in this country and I will be pleased to lend my sharp saw to anyone buying an ASW-17 or Nimbus.

Hitchin, Herts. S. J. REDMAN.

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PLACES OF INTEREST

THE last Flying Day of the year will be held at the Shuttleworth Collection, Old Warden Aerodrome, off the A1, near Biggleswade, Beds, on Sunday, 31st October. Demonstrations by veteran aircraft 2.30. Gates open 11 a.m. Entrance: adult 50p, children 15p, with free parking.

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CLUB NEWS

YVONNE BONHAM has for many years been a household name especially to British glider pilots. She joined the BGA in 1949 and five years later became its Secretary. It wasn't long after she retired in 1959 that she was roped in to become the Club News Editor in April 1960, a job she has carried out ever since.

Obviously anyone who has been so closely connected with gliding without being a pilot has above all to have oodles of enthusiasm and boundless energy. Yvonne has both in large quantities. Yvonne has now retired as Club News Editor and no doubt our readers and club correspondents would like to join us in saying "Thank You" for the help she has so unstintingly given.

Copy and photographs for the December/January issue should reach the Editor, S&G, British Gliding Association, Artillery Mansions, 75 Victoria Street, London, SW1, telephone 01-799 7548, not later than October 20.

Copy and photographs for the February/March issue should be sent to the Editor not later than December 1.

August 23

ASTON UNIVERSITY

THE University of Aston in Birmingham has now had a gliding club for four months, and in our report we must pay a tribute to the BGA. Over the past two years everyone at HQ has been more than helpful, and we wish to record in these columns our gratitude.

We operate from RAF Gaydon on alternate Wednesdays, and from Shotteswell at weekends. Our fleet consists of an Eagle, an Olympia 2 and an Auster Tugmaster. Our numbers are small at present, but we hope for an increase when the new academic year starts in October. Our CFI is Bob Baker, and we have four other instructors among our members. One, Peter Linfield, without whose enthusiasm we would never have survived initial difficulties, has just got his full rating, and in addition during our short existence we have got two Bronze C's, one Silver height, and one first solo. We have run our first course, adding the delights of auto-tow launches to those of aero-tows, and have two more courses fully booked for September.

We have had a number of visitors who "didn't know there was flying from Shotteswell"—and would welcome more. So do drop in on us. The field is three miles out of Banbury on the right hand side of the Banbury to Warwick road.

R.A.C.

BLACKPOOL & FYLDE

OUR flying has progressed to a higher plane in all aspects. In the year ending July 31 we achieved a 65% increase in launches and 35% increase in hours over each of the previous two years. Our training record card system is working well, resulting in higher training efficiency and more rapid progress to first solo. Several members went solo

during our holiday fortnight, some of them after only six months of weekend flying, which is encouraging to the treadmill team and the other pupils.

Local thermal soaring has been good recently, giving many badge flights and useful altitude for advanced exercises in our Blanik. Dick Seed (our cartoonist) went into cloud one lunchtime and was surprised at the rate of climb he found there (24kts). When he reached 10,000ft his main thought was to escape, since it was obviously going to develop into a thunderstorm. He emerged through strong turbulence, from halfway up an isolated tower, and happily his barograph trace showed a golden climb of 3,200m. He was back on the ground only half-an-hour after going on instruments, just as the first lightning flash came.

Derek Sandford and Terry Hogben took the Fauvette to Church Broughton, Derek's former site, where Terry completed his Silver with a 90km flight. Derek made two attempts on Gold distance, but was stopped by thunderstorms after about 130kms on each day.

Our treasurer is calmly preparing to write a five-figure cheque to complete the purchase of our farm, and confidently expects to have enough cash left over to start the spadework and building development. Thus we may be able to start flying there next summer; we don't intend to move before the land is properly cleared of walls and fences, and essential levelling and drainage is completed. The prospect is generating terrific enthusiasm, with benefits to every side of our operations.

K.E.

BRISTOL & GLOUCESTERSHIRE

THE weather has not been too good to us recently. There have been only two days of note since the end of our regionals. To those who have held wet competitions this summer, we extend our sympathy—we very nearly chose the wettest week of the year, but fortunately somebody else had already had that booked.

However, two really cracking weekend days have compensated for the wet weekends. The first was Sunday, June 20, when a strong north-westerly brought us some of the finest wave soaring the club has seen. Ron Sandford eventually reached 17,200ft out over the Severn, after pushing forward in zero sink from the ridge, and then moving two waves upwind as he gained height. Unfortunately, not quite enough for a Diamond climb, but still a new site record for wave. On the same day, Laurie Smith reached 14,000ft in his K-6, and Mike Whiteman took the club Skylark 2 to 8,000ft (see also p366).

On July 17, Derek Vennard took advantage of a superb soaring day (with 8kt thermals to 6,000ft) to declare, and complete, the 326km triangle Nympsfield, Silverstone, Long Mynd. It is believed that this is the longest flight ever made from Nympsfield, being only the fifth 300km triangle from the site (three others were done during this year's Western Regionals). Well done, Derek.

One of the most important developments for the club in the near future will be the supply of mains water. Plans have been set afoot by Tony Pentelow and Mike Harper, and volunteers are being sought to dig nearly three-quarters of a mile of trench to carry the pipe. This will open up possibilities for a new accommodation and shower block at an unspecified future date. When this materializes, Camphill, beware!

M.J.C.

CAMBRIDGE UNIVERSITY

AS usual, June brought the first of our 1971 camps at the Mynd. The weather was variable but over the fortnight Cambridge members flew 297 hours from 410 launches. These included one C, two Bronze C legs, two Bronze C's, three 5-hour flights and, last but not least, a gain of height of 11,000ft by Ray Haddon for his Gold height, and one of 12,750ft by Paul Loewenstein.

Meanwhile, back at Marshalls Paul Loewenstein has had two attempts at a 500km triangle with Ledbury railway station and the M1-M18 interchange as turning points, but so far has only managed a best of 285km. We have had several 100km triangles and some unsuccessful attempts at 300 km, with notably Siegfried Neumann and Anthony Edwards not many kilometres short. Steve Longland has completed his Silver

C with a flight to Tibbenham, and Alan Dibdin his when he flew to Dunstable.

At Duxford enthusiasm still runs high and there have been nine A&B's, two C's and two Bronze C legs. V.N.

COVENTRY

CONGRATULATIONS to Bernard Fitchett, our "new" member from Rearsby, on becoming the Open Class Champion at Newton and on selection for the 1972 World Championships.

The month of July saw a spate of Diamond goal triangles, Silver C completions and the usual solo flights. On one day, two 300km triangles were flown. Having landed just short on Saturday, CFI Claude Woodhouse had another attempt on the Sunday and completed the Booker-Nympsfield triangle.

The courses have been filling up very quickly and one very keen couple flew 3,000 miles from Beirut for their second course at HB. Membership had also had a terrific boost of late and is fast approaching the 300 mark. Anyone got an elastic-sided airfield?

Lou Frank organised a trip to Switzerland through Swissair and the Alpine Gliding School at Schänis, near Zurich. Fourteen members flew by Swissair and altogether about 200 hours of gliding were done in the two weeks. Mike Smith achieved 11 hours soaring in two flights during his first two days. The club ridge, incidentally, is about 5,000ft high.

There will be some swapping around of syndicates in the New Year as two new Std Libelles and a Kestrel are on order at present. It is also hoped that there will be a great improvement in the club fleet, ready for 1972. V.G.

DEESIDE

THERE are only a few Bronze C legs and two new solos to show for June and July's activities.

The passage of a weak occluded front on August 8, however, provided strong wave for most of the day, and all our aircraft soared, including the T-21 (currently on loan from the Angus Gliding Club while our Capstan is under repair). It reached 5,500ft before the occupants decided that discretion was the better part of valour! Hard luck story of the day was that of Jim Jaffray, who fell just short of his Silver duration in the Swallow when the wave system collapsed.

We have now completed the conversion of a residential caravan to a mobile clubhouse, which promises to be a great boon in the rigorous winter conditions at the site. G.J.D.

DEVON & SOMERSET

CONTINUING soaring conditions in June and July enabled the badge hunters to pursue their quests with success in addition to giving old hands, like Eric Shore, the opportunity to declare (on a large board) "Lasham and return" and then fly to Compton Abbas! On June 17, Ken Jenkins completed his Silver by getting both height and duration, while Ian Beckett also got Silver height and Reg Welch and Dave Bailey their C certificates.

July 17 to 19 saw Peter Davey and Les Ford go solo and Silver heights for Colin Weeks, Barbara Fairclough, Rod Hobbis, Chris Slade and Ken Collins.

The Beagle Husky on which we so proudly reported last issue unfortunately became *hors de combat* due to a cracked cylinder head and vibrating crank shaft and is likely to cost the club a fair old whack. The saddest part is the loss of the facility at the height of the season.

Mains electricity has at last been connected so that the many projects awaiting this event can now proceed. Both east and west approaches to the site are now navigable and it looks as though the hardcore (plus hard work) on Wheelbarrow Lane has now cracked this long standing problem. This means we can invite you to visit us in a civilised manner, by road or air.

A.E.R.H.

DORSET

WE passed the 100 launches per day barrier for the first time on August 8 when 110 were clocked up. This figure includes about 30 aerotows. We like to think this is a result of persistant efforts to improve the organisation on the

ground combined with some skilled tow-car driving, but no doubt good weather conditions, good luck and a knot-free cable helped to offer the kind of reward all of us can appreciate in the shape of more flying.

The club was represented at the Lasham regionals by Colin Street flying the Skylark 3 which in his capable hands put up a good performance and won the 4th day of the competitions. CFI Allen Palmer dusted the cobwebs from his Dart and indulged in some flying for his own pleasure for once during the Compton Abbas regionals. He spent 42 hours up and finished the week by getting his Gold distance and Diamond goal with a 305km triangle via Staverton and Odiham. This was on the marvellous July 17, when we at Tarrant Rushton were also chalking up some useful flights if not quite in that category.

Phil Tiley, our safety officer, reckons that he must have set some kind of record that weekend by completing his C after six years and 250 hours solo! Mike Bryan also completed his and Roger Morris kept the Swallow up for five hours. At least three other pilots gained their Silver heights in thermals on that day.

There have been some changes in private ownership. The Oly boys, a syndicate of six instructors, have forsaken their 2B for a Skylark 2 and the Oly has now become the property of another newly-famed syndicate of six budding Bronze pilots headed by Julia Cave. Julia is currently our youngest solo girl pilot and her dedication to the art of flying puts nearly all of us to shame. A new syndicate of six has also been formed to take over the other Oly 2B and there is talk of the previous owners of this machine acquiring a K-6. If so, this will be the first of the type seen here so far.

The club magazine, called "Twenty Green", has made a welcome re-appearance after nearly a year's non publication thanks to the efforts of its new editor (also publisher, printer and distributor) Dave Wardell who, if the latest issue is anything to go by seems well qualified to take on this not inconsiderable task.

The clubhouse main door, for years an ill-fitting, unsatisfactory affair, has now been replaced in truly professional style by Ken Bessent and all who enter it will surely remember him with gratitude—at least while it is new and neat and well-fitting. M.L.B.

ESSEX

ALTHOUGH the weather has been most unsavoury during the weekends and subsequent flying activities at our site have been, to say the least, poor, many of our members have ventured to other sites, notably to the Long Mynd. Needless to say, all were made most welcome and thank the clubs for their hospitality. While at these sites assorted achievements were made; Sylvia Cross received the Alex Orde award for completing her Silver, the first female Silver C in our club. Guy Corbett was awarded the Whitbread Bursary for achieving his Bronze C before his 17th birthday—he has now also completed his Silver C. Another meritable performance is the Gold height by Clive Timothy on his visit to Portmoak.

Meanwhile, at home, we have another syndicate who eagerly await their Skylark 4 and our chairman's syndicate has just taken delivery of a Std Libelle, the first glass-fibre ship on the site.

P.F.McE.

KENT

THE high spot of the last few weeks has been the competition flying of club chairman, Ron Cousins. Having achieved 4th place in the Lasham Regionals, he followed this with a 3rd place in the Wycombe Regionals at Booker. These results were obtained in a Dart 17R and with the recent arrival of a Std Libelle, we are hoping for even greater things.

Another club member has made the Challock, Chilbolton, Challock trip to be rewarded with a Diamond goal. John Hoye covering the 321km in the same syndicate Skylark 4 that was used for the last trip. The journey was completed with a nailbiting final glide of 12 miles from 3,700 ft into a 15kt wind.

Work has at last started on clearing the trees on the recently acquired land which adjoins the site. This will give us good into-wind launches from nearly every direction, particularly to the ridge

into a SW wind. With this additional land and the imminent arrival of mains electricity, the club seems most securely established for the future.

We are eagerly looking forward to the next social occasion, the annual barbecue. This is always a success as the open air seems to add something to the flavour of sausages, baked potatoes and chicken.

R.J.H.

LAKES

THE usual progressions to more advanced aircraft, and one solo, have occurred during a fairly quiet few weeks. The exception was a day on which Pete Gillette knocked up a fine five-hour duration on Black Coombe. We moved the T-53 to Haverigg airfield, on the north side of the Duddon, thereafter rationing members to one hour each on the hill.

All worked well until late afternoon, when a squall of large proportions threatened from the sea. This was considered to be a good time to return to base, fairly quickly, but Auster "Hotel Uniform" was reluctant to start.

The first tow attempt ended early when the rope broke. Finally, when the launch was committed, a sheep decided to rejoin its companions across the way —the runway! The tug pilot glimpsed the animal, through rain which was now spattering his screen, at a very late stage, and sat waiting for the bump. It is a well known fact that sheep, when excited, jump! The glider pilot confirmed this by observing four legs, clear of the ground, very close to the business end of the tug.

However, the tug must have jumped faster than the sheep, since the combination returned safely to Walney. However, if that sheep happens to read this, may I assure him/her/it, that he/she/it is a very lucky sheep; and kindly do not cross in front of aeroplanes in future!

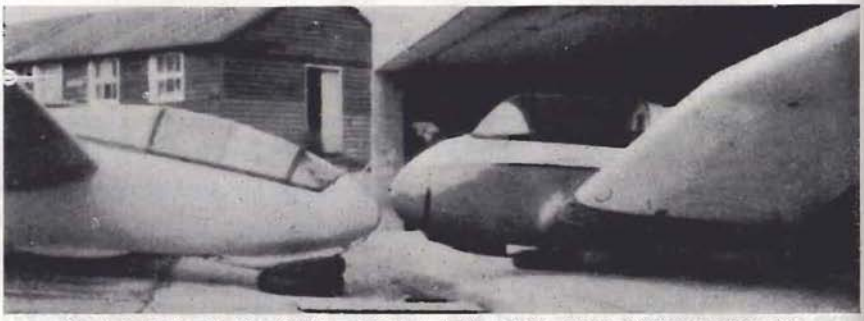
R.R.H.

LONDON

JUNE must have been the worst mid-summer month for many a year, and there was a notable absence of cross-country flying. The early part of July wasn't much better, but the weekend of July 17-18 proved to be exceptional and over 4,000km of cross-country flying was achieved. But for some "stratification" of cumulus the elusive 500km triangle from Dunstable might have been done. Attempts on the 300km triangle proved more fruitful, Gold C's being completed by Vic Hurd, Frank Woods, Rob Harding and Mike Till. Frank Pozerskis and Mike Garrod got to Shobdon and back, raising the Boomerang trophy target to 334km. The Weihe, flown by Sedgwick Ruff, almost did a 300km out-and-return, while a Tutor, flown by Mike Hodgson, did a Silver C.

The remainder of July was very mediocre, and the Regional contest in August, reported elsewhere, had a very mixed bag of weather indeed. The Monday after the final day was perfect for soaring, and there must have been some very frustrated pilots at their office desks that morning!

A number of pilots have been to Zell am See this summer. Tom Zealley hit a bad spell, but Roger Barrett achieved 450km on his first flight from there! Zell fever is catching on, and there's now talk of keeping an aircraft out there permanently during next summer.



The Love-birds—the Cranfield-based Bocian (left) and the Shorts Nimbus at Dunstable

One other notable flight away from Dunstable was a 300km triangle by Ray Stafford Allen in his Capstan from Compton Abbas. Mike Garrod achieved over 16,000ft during a short stay at Sutton Bank.

Dunstable was well represented in this year's Nationals, and we are very proud to have one of our club members, John Cardiff, in the team for next year's Internationals. The last time this happened was in the 'fifties, when both Geoffrey Stephenson and the late Frank Foster represented the country.

M.P.G.

MIDLAND

THE weather during the earlier part of this year has been anything but good for soaring. Although in May, there were a few good days, June and July have been very unpredictable. We have had very few west-wind days, and one hopes that the year will end with some good wave flights. We have experienced east wind wave, but this is difficult to contact, and only Dave Carson has managed a good climb, to 8,200ft.

Gold heights were gained by Mel Hinks, Ken Payne and John Jolley in April on a west-wind day, and Don Brown reached 14,800ft in his Oly 2B in June. Janet Walford and Gordon Herringshaw, have done their cross-country flights to complete their Silvers, but generally cross-country flying has been less than last year.

In July, Bob Scarborough did a very creditable 230kms in the Oly 2B. Thus, that aircraft has gone further and flown higher this year, than any of the hot ships at the club.

Committee members have done some good work to the car park, which is now much smoother than it used to be. We at last have flush toilets, and an extra fresh-water tank to act as a buffer for the dry seasons, whenever they occur. All in all a good job has been done, and the club house, with its central heating, will be a very pleasant change.

P.M.S.

NEWCASTLE & TEESSIDE

IT has been some considerable time since we contributed to these columns although things have not been standing still. At the beginning of the year we decided to negotiate for a Government grant. All the paper work and visits were dealt with in double quick time, but unhappily we seem to have fallen foul of the reorganisation of the Sports Council. At the time of writing we have been informed that a meeting is to take place later on in the year.

Although the foregoing has held up the development of our site and amenities we have gone ahead in other aspects. We were lucky to track to earth (literally) another Daimler bus similar to the one which we converted some six years ago into a winch. Work is under way to build another winch on similar lines.

Several visitors from other clubs have queried if we have facilities for reciprocal membership. We have an arrangement that a suitably qualified pilot from another club can fly at Carlton for £2 per month. If he brings his own craft he need only pay day membership fees.

We have had our usual members' courses and at the time of writing our last course is about to take place. Although the weather has held the upper hand those who attended the courses thoroughly enjoyed themselves. Our CFI obtained his Gold height with a climb in wave and our treasurer, Ted Burnett, threw off the weight of financial matters to obtain his Silver height.

The social activities side of the club have been taken over by Colin Richardson; club members who have attended functions so far have in turn been taken over by his home brew. The annual dinner-dance has been organised for December.

Finally, ending on a very sad note, our oldest member Harold Franklin succumbed to an illness which none of us knew about. Harold took up gliding when he retired. Although he could not enter into the activities on the field as much as he would have liked, his passing has left us having to do many of the things we took for granted.

N.M.J.

NORTHUMBRIA

OUR three course weeks for members were very successful, resulting in 13 A and B's during the month. John Purdy disproved the popular belief that the T-31 is a flying brick with a series of soaring flights which culminated in a completed Bronze C. Dave Mason also soared the T-31 for a C. Private owners have also been active; in one weekend Bill Fuller gained Silver height, David Pattison duration and John Greenwell distance by landing at Sutton. Both were retrieved by aerotow, which has started a rumour at Sutton that there are millionaires at Northumbria.

The club has bought a Capstan from Lasham and the Jaskolka has been sold to Jimmy McBeth, so our club fleet is now a T-21B, T-31, Capstan and Auster.

With the coming of another club year we have several changes on the committee. Our secretary for four years, Harold Wharfe, is "retiring" to the Yorkshire Dales. John Clark has taken over as CFI from Dave Wilson, who has held the post from the inception of the Club. The new treasurer, Norman Crawford, takes over from Donald Barr-Wells who has held the office for about seven years, a time during which he has selflessly directed the club's financial expansion. We thank them all for the many hours they have devoted to the club; they have set a standard their replacements will find difficult to equal.

J.R.G.

OUSE

OUR second air display was held on Saturday, August 7. Chris Riddell and Peter Ramsden gave us fine displays of aerobatics and we are very pleased that the PFA members from Sunderland were able to join us once more, complete with flour bags and limbo poles.

The RAF were of great assistance and much excitement was seen among the spectators when a Vulcan from RAF Waddington came in, very low, noisy and fast. The programme also included a Spitfire, the Blackburn B2, a local parachute team who did three jumps and four Jet Provosts from RAF Linton-on-Ouse, who gave display of formation aerobatics. The whole day ran very well.

We now have our own tug, thanks to Chris Riddell. After long consultation, we were told that our Condor would not be available before Spring, 1972, and Chris kindly stepped in and offered his Terrier, which I might add is very over-worked at the moment.

Six club pilots have entered the Northern Regionals this year; we shall be officially opening our bar on September 4 and trust that our six representatives will be able to give us an excuse to hold another party to celebrate all those trophies and things they will be bringing back.

R.W.B.

OXFORD

WE have embarked, under the supervision of Joe Grace, on the construction of a diesel-powered Tost twin-drum winch. Most members agreed that the present winch, while giving excellent launches in the right hands, was temperamental where inexperienced drivers are concerned, resulting in considerable frustration. Modifications would have been possible but costly and time-con-

suming. The project is financed by members loans of £5 units, a most successful scheme as the target figure has now been reached.

May Queen this year was Janis McGill, who took the Olympia 460 to Nympsfield on a glorious first of the month to gain her Silver distance. On the same day Peter Curtis flew via Nympsfield to Bath racecourse in the club Skylark 3F to achieve Silver distance and duration. A few days later Peter Brooks flew 180km of a 300km dog leg in his K-6E.

John Smoker with his Skylark 4 is to be congratulated on finishing in seventh position at the Nympsfield Regionals, having enjoyed once again a week of excellent weather. Dave Roberts and John Gibbons also attended, sharing the flying.

Peter Pratelli acquired a Phoebus C earlier this year and on a good day in July lent it to David Lidbury who declared and achieved Lincoln Cathedral and return. He is the first member to gain a Diamond from the site. Trevor Moss set off in his Skylark 4 at the same time on the same task only to turn back at Grantham due to poor weather. Undaunted he tried again the next day, turned Lincoln but unfortunately landed at Barkstone Heath. While these lengthy trips were in progress John Day completed his Silver C with 5½ hours in the Skylark 3F.

The next day proved to be an all ladies "Silver" day. Janis McGill completed hers by spending 5½ hours flying gently round a 100km triangle in the Olympia 460 and Clare Armitstead hers by flying the Skylark 2B to Lasham.

Ann Adams spent the best part of three days in the air, it seems, to fly a separate Silver leg on each day and in different aircraft! All flights started at Booker. "Distance" took her to Enstone only to find on arrival that the barograph was switched off. So she immediately switched it on and flew home!

On behalf of the club I must give a very belated vote of sincere thanks to Malcolm Laurie on his retirement as Chairman, for all his unflagging encouragement and generosity throughout the last seven years. We all hope you, Malcolm, and your ever enthusiastic wife, Kitty, will continue to enjoy many years with us. Peter Pratelli has taken the helm and, knowing Peter, he expects full co-operation in the furtherance of the club. C.J.T.

PETERBOROUGH & SPALDING

WE NOW own and operate a club aircraft. On August 1 we were able to sign a cheque to transfer the previously syndicate-owned but club-operated Bocian over to the club. (Four members of that syndicate were able to sign a further cheque to buy a superb and fully equipped Skylark 4.) Despite the postal strike and the fact that our grant application was actually lost when official postal activity resumed, we managed to negotiate and receive a 50% grant towards the purchase price of the Bocian from the Department of Environment within the short space of seven months. Genuine thanks are in order to the BGA, CCPR, the local authorities in Lincolnshire and the Department for their help and untiring co-operation in our case.

Having got the aircraft situation more or less sorted out, a clubhouse became the priority and we scanned many brochures and inspected buildings afar. By the time this is read, we hope to have bought, erected and be installed in a suitable building.

Saturday July 3 saw Bill Scull tether his machine on-site, in order to give final checks to Malcolm Martin and John Peacock. Congratulations to them as they each qualified for their Assistant Instructor rating and earned their places on the Duty Roster.

On the social scene, we have several efforts afoot. The first is the Club's buffet-dance at Crawland on October 1, followed by a film show and social get together on October 27, when we make the draw for the club's first money-making raffle.

The club sends best wishes for a speedy recovery to Keith Tinker, who was injured in an unfortunate accident to the Perkins Olympia 2B on August 15 on our airfield at Crawland.

J.V.L.

SCOTTISH GLIDING UNION

REGRETTABLY it has been some while since the SGU has had an entry in this section. However, we still exist and soaring continues from Portmoak.

As in other parts of the country, we have had an exceptionally good first half of the year, with many days with good thermals. At least 14 members have gained their Silver distance legs, completing their Silvers.

On Saturday, July 17, Frank Reilly in a syndicate-owned SHK flew the first 500km Diamond distance ever to be done from Scotland. Taking off from Portmoak just before mid-day he landed near Haddenham in Buckinghamshire, a distance of 527km—a truly epic flight (see p363).

The wave-soaring that many of our visitors come to sample in October and March, although elusive, still appears and those with the know-how and/or hot ships have discovered that wave exists even on some summer days. Recently several flights to 7,000ft and over in wave have been made and on several evenings very pleasant flying has been possible in the lee wave from Bishop Hill.

During the recent Instructors' Course held here, Bill Scull was able to demonstrate the advantage of the Falke in being able to get readily to a height to contact wave, thereby enabling at least four of the course members to experience wave-soaring. However, it must be said that on one of these flights, having motored up to 4,000ft and then gained another 4,000ft engine off, it was slightly galling to find the T-21 above, having contacted wave off Benarty. The imminent arrival of a syndicate-owned Falke at Portmoak is eagerly awaited.

The development of the enlarged airfield continues with much pipe laying and filling in of ditches. It is hoped that in the near future much more of the airfield will be usable. We have already benefited from the development, in that it has been possible to bring a north-south runway into use which has reduced the number of non-flyable days due to crosswinds. The north end of the field is now quite near to Bishop Hill, and can be reached from the ridge from a much lower height; however, the outlandings at the bottom of Bishop still happen.

K.E.B.

SOUTHDOWN

THE club and syndicate Oly 460's spent three weeks at Sutton Bank in July/August, weeks not very notable for soaring weather. Jim Cornish, however, gained his Silver height. The Pirat made its third unsuccessful trip to the Long Mynd, once again spending the week in its box. The syndicate members find it a very comfortable country club, with good food and excellent company, even if the flying is imaginary. On its return to the south Alan Curry flew his Silver distance from Lasham to Compton Abbas.

The T-21 returned from its C of A at Lasham by aerotow, paying a brief visit to Ford open prison while the sea-breeze front was troublesome. Our thanks to the people there for their help. Sadly, it was followed to Ken Fripp's the same day by our K-13, very badly damaged by an accident on launch, fortunately with no injury to instructor or pupil. It will take some time to repair.

The members' course in July had to be cancelled, because of a lack of instructors and a large part of the August one was rained off. We hope for better things in September. Peter and Mary Bowles very kindly lent their house, garden and beach for a beach party on July 31. About 80 members attended, and had a wonderful evening, with abundant food and drink. A few intrepid types even bathed! The sea was too cold-looking for the majority however.

K.I.P.M.

SOUTH WALES

GOOD progress at Viet Taff Soaring Command (Usk) can be reported. Our new hangar is now in use, although not quite complete (one more door for a full set!) and a second winch, the Yellow Peril, is increasing our launch rate (and weak link consumption).

Earl Duffin wandered around a 300km triangle from Compton Abbas via Staverton and Odiham for his Diamond goal. Silvers have been completed by our secretary David Fletcher, who did it all in one flight, Andrew David and Ken Gardiner. Ken completed his on the Zell-am-See to Krimml "milk run".

Lyn Ballard was unlucky not to complete a high-level out-and-return to the Long Mynd in wave, instrument failure precipitating him into a field near Cusop hill (see p366).

Our list of new solo pilots is ever-growing and space does not permit name-checks all round; suffice it to say that our instructors are doing an excellent job!

We hope to report good wave flights in the next issue of S&G as a result of our "Wave week" in September.

S.P.T.

STAFFORDSHIRE

A TASK week was held from June 21 to 25, with eight sailplanes and crews participating. Three of the five days were soarable and although conditions were only average some good flights were recorded. On Tuesday, Alan Cliff (Dart 15) reached the set goal Husbands Bosworth, a first cross-country which completed his Silver. He was only five minutes slower than Laurie Birch in a Std Libelle who made the fastest time. Wednesday was very weak, the best performance being Frank Townsend's 35km. in the Std Libelle, which required over two hours flying with cloud base below 2,000ft.

Thursday looked good and everyone departed early on a 300km triangle. However, conditions deteriorated rapidly and only Neil McKay rounded the first turning point at Strensham, 105 km out from Meir. A total of 57 hours soaring was recorded in the three days.

Extraordinary General Meetings were held in August with the object of raising the remaining funds necessary for the purchase of our proposed new site at Morridge. In the meantime, our present site is being slowly eroded by building contractors. Failure to raise funds could mean the end of the Staffordshire gliding club.

Cross-country flying is more popular this year and one or more of the syndicated aircraft disappear into the distance on every available occasion. Sooner or later the first Gold claim should be coming from Meir.

During July and August some mid-week flying has been available due to the efforts of CFI "Doc" Bradwell and Arthur Lowens. Youngsters from local schools and youth clubs are flown round in the club Capstan by "Doc" and Arthur, assisted on the ground by any member who can escape from the chores of earning a living.

C.J.R.

SURREY & HANTS

IT has been a very variable season but the club fleet was out in force on *the* weekend, July 17 and 18 (see p363).

Many private owners and other club pilots have done some excellent flights but it is not always easy to get out of them where they have been. Countless Silver legs have been obtained—K-8's have visited all parts of the theatre.

We have completed 52 300km flights so far this year with seven over 400km and six 500km triangles. Forty thousand kilometres have been flown, 15,000 of which were in club gliders.

One sobering note—club Phoebus 265 collided in cloud with a private Oly 463. The tailplane of the Phoebus was badly damaged and the Oly sustained bad scrapes and splits in the ply on one wing. Both machines landed safely and our Phoebus is flying with a spare tailplane (As a precaution?—ED). C.L.

TRENT VALLEY

OUR club has, in five years, grown to a membership of over 90 and our glider force from one T-31 to a T-21, Bergfalke 2, Swallow, Olympia 2B, K-6E and a Grunau. Plans are afoot for augmenting our small fleet with a K-13 and maybe a Skylark.

During the past year we converted our Jaguar from petrol to diesel power with a consequent increase in launching efficiency and a startling reduction in cost. Our president, John Rice, burnt the midnight oil and (much to his chagrin) used up a beautiful Saturday to effect the necessary conversion.

We have restarted our summer Wednesday afternoon flying, thanks mainly to Vince Fillingham. We who cannot fly on Saturdays are extremely grateful for this added amenity.

Pete Gascoigne distinguished himself in April by being the first pilot to complete his 5-hours from the airfield. He flew a recently purchased syndicate K-6E.

No report would be complete without a word about our CFI, Jack Tarr. Despite increasing business commitments he still finds the time to come whenever required and his competent handling of our flying affairs and able advice give confidence to all our members, from *ab initio* upwards. I must also mention the sterling work put into the club by our unassuming deputy CFI, Ray 'Check flight' Parkin.

In the autumn we intend to hold a buffet dance in Kexby village hall and shortly after that a gliding film show.

Although some publications show us to be a restricted club, this is not the case. We welcome anybody who is interested in gliding, either as a day member or as a full member. B.J.G.

WYCOMBE AIR PARK

NO SOONER had we announced our record number of launches in the last issue than the heavens opened, and it stayed that way for most of June.

July was an improvement, and fortunately the Wycombe air display was well attended—27,000 visitors witnessed some impressive flying. One or two small boys were disappointed that the Hurricane and Lancaster were withdrawn at the last minute owing to mechanical problems, and to maintain good public relations with some of the locals the visit of the VC10 was cancelled.

On that day a handful of us took three machines and a tug to Upward Bound at Haddenham.

Mention cannot be given to all the

new Silvers, but a few notables include Ann Adams (who joined us recently from Weston-on-the-Green together with her husband), Martin Hassell and Richard Day. Richard tried to fly to Lasham, missed it and found Portsmouth, located a sea-breeze and finished up at Arundel. He eventually made Lasham because Len Redding, who retrieved, only had sufficient petrol to get them there—or so the story goes.

Chris Rollings got Gold distance and Diamond goal, while chairman Ian Hobday made another attempt at a 500km flight and almost succeeded. We understand that there's a mod being done on the plumbing installation. Fred Sheppard also tried his hand at a 500km flight. He landed at a girl's school in the West Midlands and then got RAF Cosford to retrieve him, wine and dine him. On the following day, with the aid of a winch launch, he completed the task.

The Regionals was well attended by most of our pundits plus Graham Saw, who did quite well in the K-6E (but had problems with his turning points). Ray Bowden, in his first comps, won a lot of money, I hear!

Our first dinner-dance will be held at the Bellhouse hotel, Beaconsfield, on Thursday, October 28—if we can recognise each other without our flying suits on! K.W.W.

YORKSHIRE

JUNE and July have been marred by rain and low cloud. Nevertheless, the better days have afforded several flights of 250km and above. Dick Bourne, Roger Bennett and Len Mountford flew their Silver distances in July, Ralph Mitchell did his duration on the night of the barbecue, landing at sunset just in time for the eats, and Suzanne Howe and Chris George have solo'd. The best height so far this year is Mike Garrod's climb in wave to 17,000ft while on a visit from Dunstable.

Henry (currently known as Hoppy because of a broken ankle) and John are kept busy on public courses and the Falke is proving useful for speeding up training and simulating field-landings, averaging 100 hours a month. Our voluntary tug-pilots/instructors are doing sterling work at weekends manning the Falke, Piper and the two-seaters.

As more and more visitors come from other clubs and the private owner fleet increases, our most urgent need now is for a second tug; we hope to have something available next season.

The Saturday night bar-snacks put on by members' wives are proving popular. We all thoroughly enjoyed the bonus of the "Marfa" film on one of these occasions. S.V.G.

The original clockwork mouse— a somewhat modified Falke at Booker Photo: J. R. Hatfield-Powell

SERVICE NEWS

BANNERDOWN (RAF Colerne)

THESE notes are being written shortly before the Junior Interservices Competition at Bicester. With four pilots from Bannerdown competing, together with their crews, the home site will be almost deserted for at least two weekends.

Ken Hartley and Brian Sowerby successfully completed an instructors' course during the hottest two weeks in July. They thoroughly enjoyed the course and entertaining evenings, but found flying through thermals when teaching circuits required definite concentration and was probably the hardest part.

This year's early progress with certificate legs has been continued into the summer. Saturday, August 17, saw three Silver C's completed, each with different legs. Paul Conyers flew to Compton Abbas for his distance in the Oly 2B, Ken Hartley arrived at 18:30 and climbed into the Bocian to gain his height while during all this Eric Thomas kept the K-4 up for five hours. Paul started gliding in October last year and has completed his Silver C inside 35 hours!

B.S.

CHILTERNS (RAF Abingdon)

AT last our fleet is complete. We have a K-4, Bocian, K-8, K-6CR, K-6E, and Jack and Stella Harrison's M100S is also on site. The E, CR, and K-8 have been newly re-sprayed in club colours of orange and white. We plan to have the other two aircraft done by next season. As we all know, aircraft do not re-spray themselves and the club is indebted to member John Appleby, who spent so much of his own time working on the gliders.

The middle part of the season has been disappointing, all the good weather seems to fall mid-week and as we glide only at weekends the poor weather is frustrating to say the least.

The club's jewellery hunters continue to progress. Peter Wood gained his second Silver leg and Pauline Millward and Sandy Bryce finished their Silvers with cross-country flights to Aston Down and Odiham respectively. The club has also flown its first Gold and Diamond flights from Abingdon. Jock Manson flew 300kms via Shaftsbury and Worcester for his long-awaited distance, and Bob Sharman flew round the same triangle the next day to complete his Gold badge. It's good to see two club stalwarts achieving something worthwhile.

August brought the Interservices comps, and all our single-seaters disappeared in the direction of Bicester. Three club pilots entered, Doug Bridson in the Cirrus, Bill Maltby in a K-6E, and Stella Harrison in the M100s (see p386).

We lose our CFI Doug Bridson in the near future. We shall miss his dry humour, his unbelievable aerobatic displays, and all his "behind the scenes" hard work. The next club to have his membership will be a very lucky one.

G.M.

CRUSADERS (Cyprus)

OUR assets have been enhanced by the generous donation by the Gulf Services club of most of its equipment following the withdrawal of British Forces from Sharjah in the Persian Gulf (see p445). Our fleet now comprises K-13, K-8, T-21, Olympia 2 and Olympia 401, with a second T-21 held in reserve. After nearly a decade of magnificent service, the Swallow faces likely disposal. Pride of our ground equipment is the faithful Pfeiffer winch, which now boasts a 6.5 litre diesel engine and 6-speed gearbox guaranteed to launch any glider in any conditions at the right speed—or not at all, depending on the competence of the winch driver.

Brian Murgatroyd has joined the small band of instructors and training continues regularly at Kingsfield. But the more exciting achievements have been made at Prastio, our inland satellite site. Although Cyprus is geographically large enough to include a 300km triangle, cross-country flying is meteorologically limited to the inland area bounded by a complex pattern of sea-breeze fronts. In the summer months the soarable zone is quite small, but some remarkable con-

ditions often exist. One day in August, chairman/treasurer Gordon Camp flew a 95km closed circuit at an average speed of 87km/h in the obsolescent Olympia 401, while on another occasion CFI Len Barnes, accompanied by Phil Allen, completed a similar course with remarkable alacrity in the K-13.

From Prastio, Vernon Bradbrook completed his Silver C with a 51km flight along the 'panhandle' in the K-13, and Don Carey qualified for Silver duration. Silver heights have been gained by Malcolm Austin, Colin Brock, Dick Bealer and Kevin Allen. Kevin's father, Phil, recently appointed aircraft technical member, has completed his Bronze C, while Christine Bealer, Ron Sutton and Viv Carter are recent first soloists.

G.W.G.C.

FENLAND (RAF Marham)

THE club's prolonged absence from these columns in no way betokens a lack of activity. Indeed, the last year has been quite fruitful and rewarding for the Fenlanders. The fleet has been enriched with the arrival of an SF-26 and a Prefect (to replace the Grunau which suffered an unfortunate accident), and we are hoping soon to receive a K-13 in exchange for our faithful K-7.

We also have a number of keen new members (including several young ladies) who have helped to increase bar profits! Two, Jenny Cooper and Kathy Vickers, have recently gone solo—our first solo lady members in living memory (that is, as long as the CFI can remember).

Bob Lyndon ended his stint as CFI when he was posted from Coltishall. Our thanks to him for all his hard work; we welcome as CFI Colin Elliott, who is no stranger to the club, having been CFI once before. Before his departure, Bob organised a Strike Command expedition to explore the wave at Portmoak, during which he gained his Gold height. Our chairman, Wing Commander Matcham, gained his Silver height and duration. Three other 5-hour legs were also achieved.

In May, Norman Quirke came back from Bicester with a shiny new Assistant Instructor's Rating, which he has since had ample opportunity to use, despite the recent absence of the T-21 for repairs. "Willy" Wilton-Jones performed very well at Newton in the Nationals, and has since been enjoying some Mediterranean soaring in Cyprus. We bathed briefly in reflected glory after the Club Class Nationals, when our K-6 was flown to victory by Wg Cdr Hanson!

In recent months we have been enjoying the luxury of a Chipmunk for aerotowing. This has enabled marginally soarable days to be exploited more efficiently, and has broadened the experience of the solo pilots.

Margaret Drake continues to provide nourishing grub four times every weekend for hordes of ravenous pilots, in addition to catering for five kids, twelve dogs, two goldfish and a budgie! Meanwhile, Ray Drake has been slaving away night and day to keep our MT serviceable; we have just started using our new re-conditioned winch engine.

With a good deal of the soaring season still to run, we are keeping well up to our target flying figures and confidently hope to do extremely well out of the RAFGSA Points/Subsidy scheme. With an increasing *ab-initio* membership, we can look forward to an undiminished tempo of activity during the winter months.

J.M.B.

FOUR COUNTIES (RAF Spitalgate)

THIS year, like in no previous year, our members have been marking their maps with prospective and hopeful cross-country flights from Silver to Diamond distance. Many of these hopes have been fulfilled, with full utilisation of our single-seater fleet, from K-8 to Std Libelle.

Our cross-country list started well in April with three Silver distances followed in May by a Gold C flight to Exeter and two Gold C distances from closed circuit flights in which both pilots landed within sight of the airfield.

We all know about June's weather, so on to July, and in particular the weekend of July 17 and 18. On these two days, three pilots flew 1,500km between them and set up an out-and-return record and the first RAFGSA 500km triangle (see p363).

Since then, the Std Libelle has gained a Diamond goal for Chris Waller

(recently returned from Cyprus and who is now flying at Cosford) and a Gold height for Mike Edwards.

Meanwhile, back at the club, training has been continuing with Maren, George Lee's lovely wife, showing that gliding runs in the family by gaining her A&B. Congratulations also to Tony Northgraves and Jim Whittaker, both of whom soloed recently, and to the many members who between them have accrued 20 Silver legs and as many Bronze legs.

Finally, looking to the winter, expeditions have been arranged to Sutton Bank and Portmoak by pilots eager to experience the joys of ridge and perhaps wave flying. M.E.

GULF JOINT SERVICES (RAF Sharjah)

THE Gulf Joint Services gliding club closed on September 17, 1971, as the British Forces withdrawal from the Persian Gulf gained momentum. Many people will have memories of happy days in our hot, sweaty, saltpan-type desert with its flies, smells, dust and frustration (the latter of many sorts, as we are all without families for this tour).

The soaring pilots will remember the weekend expeditions into the mountains operating from an army forward airstrip at Manama with the K-8 and Oly. They will remember the superb thermals up there. Vicious, narrow, strong and very often marked by spiralling columns of dust tracking across the desert. Each one different, but often with lift of 10-12kts and wanting to take you up to 8,000 or 9,000ft. Occasionally, in the weaker thermals, you would be closely formated on by hawks, with spans of between four and six feet. Always giving the appearance of absolute laziness, they would rather join you than find a thermal for themselves (or were they just eyeing up their lunch?).

Other people's memories will be different. Some will remember their first launch, others their first solo in our old T-21 (we had 17 solos in our last 12 months), while yet others will remember their first soaring—their C's (nine) and Bronze C's (seven) obtained on the sea-breeze fronts occasionally experienced in the 'cooler' season.

Now the winch has stopped, the bar has closed, the parties ended and hangovers suffered. Aircraft, instructors, equipment and members are all scattered and the GJSGC is no more.

J.M.S.

HERON (RNAS Yeovilton)

AT the time of writing one normally expects fairly reliable weather for gliding and by no coincidence most of the competitions take place about now. However, we at Yeovilton have not come up to par for this time of the year weatherwise and our most encouraging start to the season in terms of Silver legs has become a mere trickle.

John Fisher surprised us all by scratching up to a Silver height quite late one evening after a pretty ordinary day. Tony Wray stretched his sea legs from car to cockpit and flew a tactical five hours to complete his Silver. Those, alas, who set off before him failed the duration by as little as five minutes. Poor old Peter Locock has had a month of near misses. Having almost flown his five hours he went on to miss his Gold height by 1,500ft a week later.

We have recently experienced some good cloud climbs in baby Cu-nims, and have tasted the real lift one has only read about in the past. David Bath and Ian Read made a high-speed climb in the Blanik from 900 to 8,000ft in approximately five minutes, the variometer reading the maximum 10kts without a suggestion of easing off. The lift was smooth and wide necessitating only a rate one turn and therefore making life pretty easy. At about 7,000ft it was decided to vacate the cloud for fear of

getting stuck in what appeared to be an increasing strength of lift. The exit was rough, to say the least and incurred a loss of 3,000ft.

David Bath is now CFI, Mike Gale having donned his sea boots and oilskins to join the Ark Royal. We thank Mike for all the good work he put into the job and wish him a painless time on board ship. We look forward to his homecoming.

Our AGM was held during July when we welcomed our new chairman Cmdr Simon Idiens. He is very well known in the flying business as leader of the Fleet Air Arm aerobatic team "Simons Sircus" and although is currently too busy to spend much time flying with us, we intend to seduce him into our way of travelling aloft in the near future.

D.R.B.

KESTREL (Odiham)

A GREAT deal of good flying has been done by club members since our last report.

A three-week expedition was made to Issoire, France, with the K-13 and Oly 463 in January. The first five days produced wave which none of us will ever forget; Howard Jarvis and Roger Clemo achieving their Diamond heights on the second day, and Bob Sharman, who joined us from the Chilterns club, obtaining his Gold. Everyone there during the first week spent some of their time over 20,000ft, but unfortunately two members arriving for the second two weeks were just in time to welcome the snow.

Portmoak was also visited by CFI Eddy North and Tim Warner, who between them kept the Oly busy for 50 hours.

Our training programme has certainly not been forgotten, with 14 solo's already this year, including three ladies. We are now proud to boast six lady members.

Our launches and hours promise to exceed last year's excellent totals, and a lot of ground has already been covered by our cross-country pilots. Keith Daley, Mike Smith and David Dripps have all proved that the Oly will fly further than 50 kilometres, and Peter Charnell recently obtained his five hours.

Airfields tend to be quite large places. Therefore, theories would be welcome to explain why the club's tractor and a Jaguar chose to rendezvous right in the middle. However, the tractor is now back at work, thanks to the efforts of David Dripps and his hammer, at an expenditure of only 40p. The same cannot unfortunately be said about the Jaguar.

R.W.C.

PHOENIX (RAF Brüggen)

THERE have been several happenings since I wrote our last report, among them "Wetmold" Comps (Detmold to those who don't know the place).

The RAFGGA Comps held at Detmold in June were won somewhat convincingly by the weather which came out on top on nearly every day. July produced some of the best soaring weather we have seen for some time—especially mid-week when most of us had to work. Two of our members, Frank Wilson and Mick Parkin, took some leave and joined the Two Rivers Club from Laarbruch at Kamp Lintfort, where a soaring fortnight was held. As well as clocking up a few hours between them, Mick managed to gain his Silver height and duration. Frank has since gained his Silver distance on a cross-country from Wildenrath to Laarbruch. Other qualifications gained in the last few months include Silver height and duration for George Laughton and Silver distance for Sean Simpson.

Mike Baillie missed most of the soaring in July but not the sun. He has come back from detachment in the South of France with sunburn in places which make themselves only too obvious when he drives up and down our roughish strip.

Nigel King, our MT member, assisted by Sandy Duncan have been removing an engine from a Ford Köln vehicle and fitting it to our Pfeiffer winch. They inform us that it should be a going concern in the not too distant future.

Finally we must say many thanks to Don Scarfe and his wife who have left us to return to the UK. Not only have we lost a full category instructor but a very good friend who has done a lot for the club during the last year.

P.H.

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