

THE
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COLLEGE



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CRANWELL

JANUARY, 1969

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THE ROYAL AIR FORCE COLLEGE JOURNAL

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CONTENTS

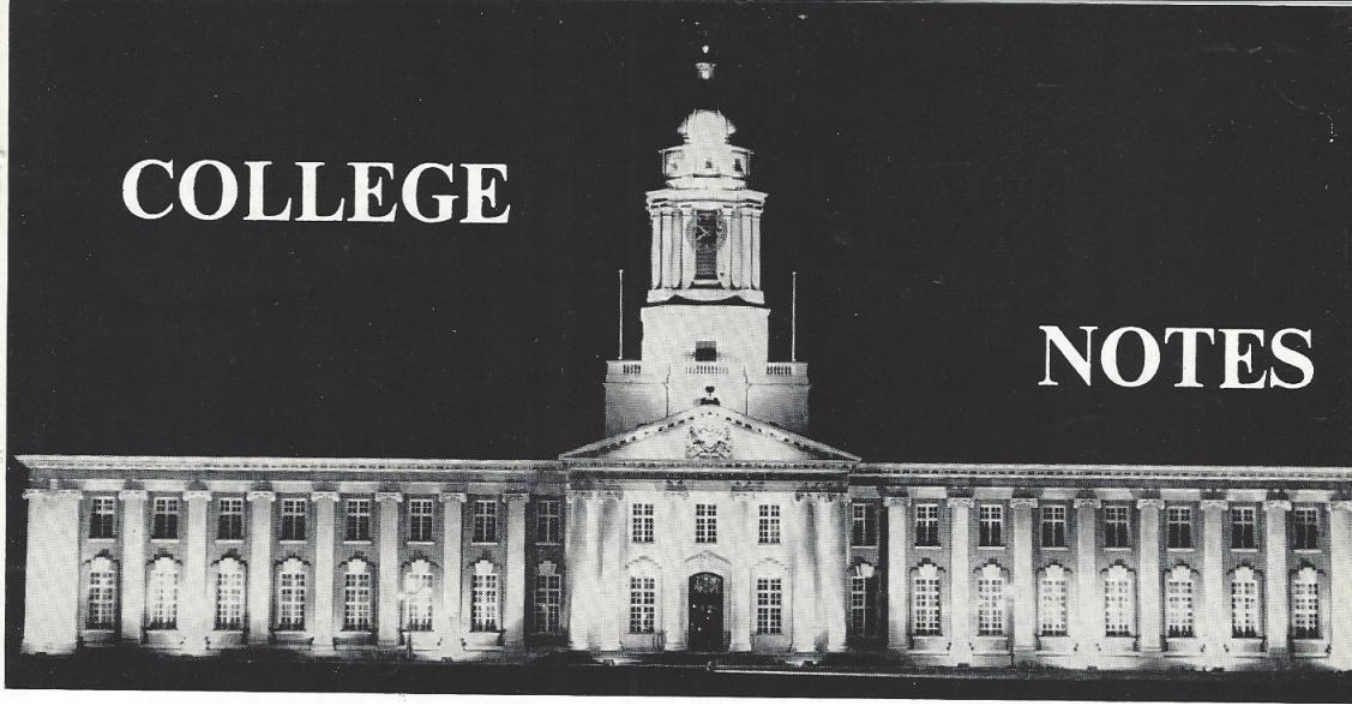
College Notes	113
The Wings and Prizes Ceremony	117
The Graduation of No 94 Entry	120
Commissioning List	125
Articles	127
Sport and Activities	153
Leave Activities	173
Old Cranwellian Notes	193
Minerva Society Notes	199
Book Reviews	201



The Graduation of No 94 Entry

COLLEGE

NOTES



The dominant theme of 1968 has been the 50th anniversary of the formation of the Royal Air Force. A party of flight cadets, officers and a flight sergeant represented the Royal Air Force College at a Parade and Wreath Laying Ceremony on 31st March at Lord Trenchard's statue, Victoria Embankment Gardens in London, held to inaugurate the year's commemorative events. On the following morning, 1st April, a ceremonial parade was held on the College parade ground, when the Queen's Colour was paraded.

Since then a number of ceremonies and social events have been held at Cranwell to mark the event, and members of the College have been present at many other important celebrations. On 6th June a Gala Sports evening was held in the College Stadium. The Royal Air Force soccer team played a team of former international and league stars ; at half-time there was a demonstration by the Falcons free-fall parachute team, and an invitation mile race in which some of the country's best runners took part.

The importance of Lincolnshire in the history of the Royal Air Force was ack-

nnowledged by the invitation of local military and civic dignitaries to two guest nights at the College on 24th May and 27th June. Such events serve as a reminder that the Royal Air Force College will be celebrating its own 50th anniversary in less than two years' time.

Special importance was attached to the Battle of Britain commemoration services this year. The BBC television programme, 'Songs of Praise,' shown on 15th September, Battle of Britain Sunday, was a specially recorded programme from the College's St Michael and All Angels Church. Besides flight cadets, the congregation which packed the church included representatives of all sections of Cranwell's community. The blessing was given by the Reverend P. S. Grimwood, in one of his last services at the College before his retirement from the Royal Air Force. On the same day, the morning service and parade were broadcast from Westminster Abbey on the Independent Television Network. Two Cranwell cadets took important parts in the service : Senior Under Officer M. B. Stoner read a passage from 'Pilgrim's Progress' and Under Officer B. Wakely carried the Roll of Honour.



After two years at the College in the post of Assistant Director of Studies (Sciences and Humanities), Group Captain E. B. Haslam left us at the end of the summer term. In the post he showed that his scholarly outlook was not restricted to English Literature, his first academic love, for he had a comprehensive interest in a variety of subjects.

It is probably true to say, however, that his main ambition at Cranwell was to give as much stability as possible to the academic courses in Basic Studies Wing, despite the changes in policy which had originally been heralded by the Howard-English proposals. An ex-member of the Directing Staff of the Royal Air Force Staff College, Bracknell, he brought to the task administrative talents admirably suitable for the purpose, while fairness and courtesy marked his contacts with staff and students alike.

He has gone to the post of DD Ed S2 (RAF) at the Ministry of Defence. Our best wishes go with him, his wife and family.



Group Captain W. S. C. Watkins, BSc, C Eng, ARFAeS took up appointment as Assistant Director of Studies (Sciences and Humanities) on 3rd August, 1968.

Group Captain Watkins studied Physics at the University of Bristol and graduated with 1st Class Honours in 1936. He was awarded a research scholarship and remained at Bristol to investigate the electrical properties of thin films, his intention being to complete a thesis for a PhD. Before many months had passed, however, he was offered and accepted the opportunity of carrying out a geophysical survey for oil in South West Persia. On returning to Bristol he took the one year Diploma Course in Education on completion of which in July 1938, he was appointed as a permanent member of the Royal Air Force Education Service — the forerunner of the Education Branch.

He has served in a wide range of appointments, including those of Chief Examiner, Central Examination Board, Chief Ground Instructor, No 3 Flying Training School and

Group Education Officer Headquarters No 22 Group. He has served overseas in Rhodesia and New Zealand. More recently he was a member of the directing staff of the Royal Air Force Technical College, Henlow — after taking the Advanced Weapons Course — and was Senior Education Officer, No 9 School of Technical Training, Royal Air Force Newton and Principal Education Officer, No 4 School of Technical Training, Royal Air Force St Athan.

We welcome Group Captain Watkins and his family to Cranwell.



The Royal Air Force College retained its status as a Group when Flying Training Command amalgamated with Technical Training Command on 1st June, to form the new Training Command.



The following promotions were made in No 95 Entry in August, 1968 :

'A' Squadron : Senior Under Officer K. A. Bull ; Under Officers B. Wakely, A. D. Heath, N. C. Whitlock, R. H. Lawrence.

'B' Squadron : Senior Under Officer R. J. C. Dawson ; Under Officers P. W. Roser, D. F. A. Henderson, R. M. Moody, G. D. Simpson.

'C' Squadron : Senior Under Officer M. B. Stoner ; Under Officers D. K. Goff, D. M. Guest, T. E. Duggan, L. G. G. Cartwright-Terry.

'D' Squadron : Senior Under Officer E. Pettigrew ; Under Officers K. D. Filbey, R. J. Tydeman, N. V. Vaughan-Smith, I. Sloss.



The Summer Term competition for the Prince of Wales Trophy and for the title of Sovereign's Squadron was won by 'A' Squadron, who won the Chimay and Knocker Cups, and came fourth in the Ferris Cup competition.

The *Journal* offers its congratulations to the following College personnel, who have received awards and commendations :

Squadron Leader R. V. Wardley (ex-Engineering Wing), Squadron Leader R. C. Travis, BSc, CEng, MIEE, MIERE, AFRAeS (Senior Electronics Lecturer), and Warrant Officer H. F. Breen (Fire Section) were made Members of the Order of the British Empire ;

Flight Sergeant R. Beaton was awarded the British Empire Medal ;

Flight Lieutenant D. J. Foster BSc (Eng), CEng, AFRAeS was awarded the Queen's Commendation for Valuable Service in the Air ;

The Air Officer Commanding-in-Chief has commended Warrant Officer L. G. Ball and Corporal R. L. V. Marcantonio for meritorious service ;

The Air Officer Commanding has commended the following for meritorious service : Flight Sergeant A. G. Jones, Sergeants W. D. James and E. Yeardeley, Corporals E. S. R. Crich and C. C. Risebrow and Mr G. T. Coupland ;

Mr W. Woods, who retired recently after 28 years' service was awarded the Imperial Service Medal.



The winner of the Director of Studies Essay Prize, in the 1968 competition, is Flight Cadet S. G. Appleton, whose subject was 'Wilfred Owen, War Poet.'



From time to time important cultural events are organised at the College under the sponsorship of the Lincolnshire Association. During March, an exhibition of the works of the artist Sir William Russell Flint, KT, RA, was held in College Hall.

On 22nd May a packed Whittle Hall was delighted by the performance of the Royal Ballet's touring company, Ballet for All. The theme was 'The World of Giselle.'



In the realm of sport, the Summer Term will be remembered for a number of outstanding individual achievements, rather than consistent successes for the station's teams.

Pride of place must go to Squadron Leader J. Delafield, who in August won the British National Open Class Gliding Championships in a German 17 Metre SHK glider.

In May, Flight Lieutenant K. E. J. Rayner won the Royal Air Force Modern Pentathlon Individual Championships and on the strength of this performance was selected for the Great Britain 'B' Team. In the same month, at the Royal Air Force Equitation Championships, Sergeant Rodgerson won the Individual Championship and the Cranwell team of Flight Lieutenant Rayner, Flying Officer Watterson (WRAF) and Sergeant Rodgerson won the Team Championship.

Flying Officer R. W. Clark captained the Royal Air Force Athletics Team throughout the season and Flight Lieutenant B. Reynard, Sergeant Cameron and Senior Aircraftman Hurd also represented the Royal Air Force. All the Cranwell representatives had a highly successful season, particularly Flying Officer Clark who established a new Royal Air Force record of 13 minutes 40.4 seconds for the Three Miles. In September the Cranwell team won the Royal Air Force Decathlon Championships and Flying Officer Parkinson was runner-up in the Individual Championship.

Cranwell's Swimming Team had a fine season and won the Training Command Championships in both swimming and water-polo. Pilot Officer R. Norris was selected for the Royal Air Force team on a number of occasions and Sergeant T. Duckworth represented the Royal Air Force and the Combined Services at water-polo.

Notable individual successes were also scored by Cranwell sportsmen in tennis, sailing and motor sports. Flight Lieutenant

P. L. Graves won the Royal Air Force Individual Tennis Championships at Wimbledon. In the world of sailing, Flight Lieutenant M. P. Osborn represented the Royal Air Force throughout the season in the Finn Class.

Sergeant Pallister and Senior Aircraftman Lynch both had highly successful seasons in the high-powered sport of motor-cycle racing. Sergeant Pallister competed in all but two of the major International Motor-cycle meetings held in this country during the season including the Manx TT. Senior Aircraftman Lynch crowned his most successful season to date by winning the British Grass Track Championship for motor-cycle and side-cars.



Visitors to Cranwell during the Summer Term included :

On 25th April, The Spanish Air Attache, Colonel G. Martin Olmedo.

On 2nd May, the Director, Directing Staff and students of the Royal Naval Staff College Greenwich who visited the Royal Air Force College to give students of the RNSC an insight into Flight Cadet and Engineer Officer Training undertaken at the Royal Air Force College.

On 3rd May, Colonel Mahmood B. Sulaiman, RMAF Services Adviser to the Malaysian High Commissioner who met Malaysian Student Officers and attended a Guest Night.

On 13th May, Colonel Oswaldo Guevara-Miyica, Director of the Venezuelan School of Military Aviation, Captain Touar, Assistant Venezuelan Air Attache and Mr R. D. R. Osborne of the Central Office of Information.

On 14th May, General and Mrs van den Wall Blake, Colonel Hansen, Colonel Spek, Lieutenant Colonel Creemers, Major Mulder and Captain Grootendorst of the Netherlands Royal Military Academy.

On 16th May, Air Commandant Dame Pauline Giles, Matron-in-Chief, PMRAFNS.

On 22nd May, Lieutenant Colonel Campbell, USAF of the United States Air Force Academy.

On 25th May, Air Vice-Marshal M. D. Lyne and seven senior Commonwealth and United States Officers and their families from the Imperial Defence College.

On 31st May, Their Royal Highnesses the Duke and Duchess of Kent, who made a private visit to the Air Officer Commanding and Commandant and a general interest tour of the College.

On 8th June, approximately 120 members of Kesteven County Council and other local councils who attended the Annual 'Civic Day' at the College.

On 19th June, Rear Admiral D. A. Hansen, Defence Adviser's Office, Office of the Commissioner for Ghana, who met Ghanaian student officers currently under training.

On 25th June, Commodore R. D. Bortot, Argentine Military and Air Attache and three officers of the Argentine Air Force, who visited the Royal Air Force College for the Presentation of Argentine Air Force Prizes to Pilot Officer Chilvers and Acting Pilot Officer Morton.

On 26th June, Lieutenant General Thomas S. Moorman, USAF, Superintendent of the United States Air Force Academy and Major Means, USAF, Aide to Lieutenant General Moorman.

On 2nd July, Colonel Mercorious Haile, Chief of Staff of the Imperial Ethiopian Air Force, Mr Radesse, Assistant Minister and three officers of the Imperial Ethiopian Air Force.

On 18th July, Mr L. F. Nicholson, Chief Scientist, Royal Air Force, who lectured to the Advanced Maintenance and Aerosystems Engineering Courses.

On 26th July, Air Marshal Sir Richard Atcherley, KBE, CB, AFC, RAF (Retd), who was a guest of the Mess at the final Guest Night in College Hall for the Summer Term.

On 2nd August, Lieutenant General A. B. Wolff, Chief of Air Staff, Royal Netherlands Air Force, who was the Reviewing Officer for the Graduation Parade of No 94 Entry.

THE WINGS AND PRIZES CEREMONY

Presentations of Wings and Prizes to No 94 Entry were made by the Commandant, Air Vice-Marshal T. N. Stack, CVO, CBE, AFC, in the Whittle Hall on 1st August, 1968.

After making the presentations Air Vice-Marshal Stack gave the following address :

Ladies and gentlemen : first of all may I say how glad we all are that so many parents, relatives and friends have come to Cranwell to join in No 94 Entry's end-of-course celebrations. We realise the large and important part you have played in the accomplishment of these young men's ambitions and we are now able to thank you for your efforts whilst at the same time showing you the improvement which we think — and you may agree — has taken place after their 2½ years' intensive training. This is by way of being a family affair and therefore we have no official guests here this evening ; I can thus speak with more candour than would perhaps otherwise be the case.

Tomorrow morning our three major prizes will be presented on Parade by the Reviewing Officer, Lieutenant General Wolff, who is the Chief of Air Staff of the Royal Netherlands Air Force. I am sure you will all join me in congratulating the winners of these prizes :

The Sword of Honour winner, Senior Under Officer Clark,

The Queen's Medal winner, Senior Under Officer Hooper,

The Groves Memorial Prize winner, Senior Flight Cadet Dow, who will in fact receive on the parade tomorrow the Kinkead Trophy, a conjoint award with the Groves Prize.

I must say here that selection of the winners was not easy this time as several others were very much in the running for these trophies, so well done all three of you on your achievement.

Some of you may have noticed at this particular ceremony that we have broken with precedent and given a special Award to Under Officer Mugrin. It has been widely felt at the College that this flight cadet has particularly distinguished himself by his bearing and hard work during his time here. Although he did not do well enough to win a prize in any one aspect of training he has provided such an outstanding example to

others that we considered his performance deserved to be recognised in some tangible form. I would not think that such an award could often be made in the future ; indeed to do so would be to diminish greatly its value, but I would hope that should a similar exceptional opportunity recur, our precedent on this occasion might be used.

Our Reviewing Officer, General Wolff, has visited Cranwell before and we are very glad indeed that he is able to come once again, this time to take the key part in our Ceremony tomorrow. As you are all aware, there are great similarities between the Netherlands and Great Britain, both within Europe and overseas. We are trading nations, both maritime and latterly in the air ; since the war each of us has handed over a large number of former colonies to self-government ; furthermore our two air forces fought side by side during the second world war and are now closely allied in NATO. In fact there seems a special bond of friendship between us which is likely to strengthen when Britain joins the European Common Market — and of course we are well aware that the Netherlands is one of the staunchest champions of our entry into Europe.

I visited our sister academy in the Netherlands earlier this year — which you may know is a joint army/air force one — and was most impressed with their training facilities and their high esprit de corps. We now have regular exchange visits of cadets between the two Colleges and look forward to increased liaison with students from such an efficient and well-run air force. I hope the Chief of Air Staff, who is himself a graduate of Breda, is able to meet as many of our flight cadets and parents as possible.

Among our official guests coming to the Parade are Mr Merlyn Rees, the Under-Secretary of State for the Royal Air Force and a selection of distinguished persons both from within and outside the Service. These include members of the Air Board and a

Commander-in-Chief whose son is graduating with No 94 Entry. Among our civilian visitors there will be Sir Arnold Hall, the Managing Director of Hawker Siddeley Aviation, who is also chairman of the Cranwell Advisory Board.

Now, before regaling you with the achievements of No 94 Entry I want to say just a few words on possible future developments on the Cranwell scene.

You may all have heard of the government's proposals to centralise the academic training for all three Service cadet colleges at a Royal Defence College. Owing to the present financial curb on public expenditure, this project has now been shelved, but it would be short sighted indeed if we did not recognise the underlying reasons for the proposals.

It has been felt for some time past that a higher proportion of the armed forces of the future will need to be trained to degree level ; indeed we in the Royal Air Force realised this requirement in the early 1960s and for a period an attempt was made to award a general degree at the Royal Air Force College before the current engineering course was established here. This general degree was not very successful as the competing demands on a flight cadet's time together with the intensive academic regimen he had to follow resulted in a high failure rate in the examinations.

Whilst the Royal Defence College concept would have enabled a degree to be awarded by separating academic training from other aspects of the course which we follow here, it would have also brought several marked disadvantages and to that extent its demise is not altogether unwelcome to us. For the future, however, the need for tertiary academic training (which is the modern phrase for degree level training) still remains and the Royal Air Force can be expected to take full advantage of all possible opportunities to give future General List officers this academic background.

Whilst nothing has yet been finally settled, and I am to a certain extent on the periphery of our current discussions and decisions, I would like to think that we might see a

proportion of future Cranwell intakes sent to university before undertaking their specialist training here. Additionally a further group might well do some time at Cranwell to bring their academics up to the necessary standard and then also go for university training before returning to continue their training here. In other words we will gradually substitute the present academic year at Cranwell by more rounded academics at a university for those willing and able to benefit.

I might just say at this juncture that we have for some time been concerned that no meaningful result is apparent from the present year's academic training and, amongst other possibilities, we are considering whether it could form the first year of a diploma course which could be finished at a later date. This scheme could, of course, eventually be overtaken by the university concept but would have application for a good few entries yet.

As I say, all this forecasting is largely conjecture but I think it would be wise if we were prepared for yet another change to our training pattern here. I know I speak for all my staff when I say how much one hopes for a period of stability at a training establishment, but, nevertheless, the demands made on us by the modern world cannot be gainsaid. The Royal Air Force is perhaps the service most allied to modern technology and the ever-increasing rate of progress in this field must mean that we are bound to change our organisation and structure from time to time in sympathy with advances in the technical sphere if we are to remain a modern and efficient force. This is no new thing and most of us who have been in the Royal Air Force for any length of time will have experienced at least one major alteration in equipment or organisation during our service. In many ways the flexible basic organisation and lack of an over-long tradition in the Royal Air Force have enabled us to absorb quite radical changes in task without serious dislocation. Had we been less adaptable the changes in the past would have been less easily accomplished.

It now looks, therefore, as though we at Cranwell may be called upon to accept one more alteration in our training pattern to

make our Service more effective in the future. While associating myself with the necessity for these possible alterations to the training undertaken at the Royal Air Force College, I would like to let you all know that I will ensure as best I can that innovations will only be made where necessary and that changes will not be adopted purely for their own sake.

And now to No 94 Entry — our departing Entry. They arrived in the spring of 1966, 79 strong and after the usual transfers between entries and branches and the odd failure, 71 flight cadets will graduate tomorrow. The wastage rates of this Entry incidentally are only half those of their recent predecessors ; I'm not quite sure who deserves the most praise for this — the departing flight cadets, their instructors who taught them whilst here, or the selection board who thought they were the right material in the first place ! Although the specialist engineer wastage continues at a high level, I am pleased to note that those flight cadets who have remained in the course had no serious problem with their recent Stage II examinations held earlier this month. This augurs well for the successful completion of their full 4½ year BSc and HND courses and I congratulate the engineer flight cadets on their achievement.

As a whole the flight cadets of No 94 Entry have made no startling contributions here academically, but thanks to sound instruction and — in many instances — determined hard work, they have reached an acceptable overall standard. I would like to make particular mention of the five members of the Entry who have gained French Linguist qualifications — Under Officers Jones and Luke and Senior Flight Cadets Campbell, Long and McTeer. The Entry is one of those which suffered the misfortune of their course being shortened from 3 to 2½ years ; I say suffered, because, although the shorter training time was most welcome to the flight cadets, it resulted in 18 months continuous ground training without any flying. Starting with their successor entry, we now include Chipmunk flying for the pilots in their first term so as to whet appetites for what comes later.

The specialist training results for No 94 Entry are most creditable and the Central Flying School Examining Wing have for the

second year running given our pilot flight cadets a good report. Here again the staff take much credit and I can say with great pride that our flying instructors are first class ; one of them (Flight Lieutenant Bell, an ex-flight cadet) is the champion aerobatic pilot in Training Command and I hope, if the weather allows, that you may see him and other instructors showing their prowess tomorrow.

The Entry have contributed much to the running of the College and I might perhaps just make the point here that the senior entry largely control the day to day affairs of our Cadet Wing ; the staff only take a hand where policy matters dictate. We feel that this system provides very real training in leadership and it also gives an entry great freedom in setting the general tone of conduct of the cadet body. In this respect the concensus of opinion among the staff is that while 94 Entry may not have been outstanding, they have achieved sound and solid results.

In sport the Entry has contributed more than most. Six members represented the Royal Air Force : Senior Flight Cadet Dow in both swimming and water polo, and seven represented Training Command. An even more creditable performance to my mind, however, is that some two-thirds played at least one sport for the College. This is a very praiseworthy effort and reflects well on the overall fitness and keenness of the Entry. I congratulate them all for it.

One final word of advice for No 94. Don't think that because you have at last finished your training here and will be starting a new phase elsewhere that the race is won. This stage you have now achieved is but one hurdle of many ; each will be more demanding of your abilities. No matter what the future holds, and I am sure it will be exciting, you will only gain success if you apply yourselves and put your stoutest effort into your work. Don't let second best be good enough.

Well done on your showing here and I look forward to an excellent parade tomorrow, performed to the standard pattern ; and with you, the Senior Entry, marching on to the parade ground as purposefully as you are stepping into the future.

Good luck to you all !



Senior Under Officer J. T. Clark, Senior Flight Cadet I. H. Dow and Under Officer R. W. Hooper

THE GRADUATION OF No 94 ENTRY

The Graduation Parade of No 94 Entry was held on the morning of 2nd August 1968. It was cold for the time of year and several heavy showers of rain fell during the ceremony. The Reviewing Officer was Lieutenant General A. B. Wolff, Chief of the Air Staff, Royal Netherlands Air Force. The parade was commanded by Senior Under Officer J. R. T. Clark and the Parade Adjutant was Senior Flight Cadet I. H. Dow. The Sovereign's Squadron was commanded by Under Officer J. S. Wilson and 'A', 'C' and 'D' Squadrons were commanded respectively by Senior Under Officers R. H. Sargent, A. J. Gritten and R. W. Hooper.

As the Reviewing Officer approached the dais, accompanied by the Air Officer Commanding-in-Chief, Training Command, Air Chief Marshal Sir John Davis, GCB, OBE, MA, and the Commandant, Air Vice-Marshal T. N. Stack, CVO, CBE, AFC, a fly-past of twenty Jet Provosts took place forming the figure 94. After the Advance in Review Order, the Reviewing Officer presented the Sword of Honour to Senior Under Officer J. R. T. Clark, the Queen's Medal to Senior Under Officer R. W. Hooper and the R. M. Groves Memorial Prize and Kinkead Trophy to Senior Flight Cadet I. H. Dow. He then gave the following address :

Cadets of the Royal Air Force College, Ladies and Gentlemen, permit me to begin by expressing my sincere appreciation, for inviting me to participate as your Reviewing Officer in this 1968 Passing Out Parade, to Air Chief Marshal Sir John Grandy and to your Commandant. I feel indeed, very privileged and honoured ; in particular when I think of the long list of distinguished predecessors in this function, among which as the only other compatriot of me, who fulfilled this honourable task earlier, His Royal Highness Prince Bernhard of the Netherlands.

But aside from being proud, I also feel very happy to be here today since the many close relations between our two Air Forces make me feel to be among old friends. Some of you may know that the post-war Netherlands Air Force has been formed from a nucleus which was established in this country during World War II as No 322 (Dutch) Spitfire Squadron Royal Air Force. Also the former Netherlands East Indies Air Force, which in 1951 was amalgamated with

the Netherlands Air Force, had close ties with the Royal Air Force, fighting among other places side by side in the defence of Singapore, Sumatra and Java. And in the post-war period the close co-operation between our Air Forces in the Second Allied Tactical Air Force is well known to all of you.

In a few weeks it will be commemorated again that your stout and proud Royal Air Force saved Britain from a pending invasion, which in effect proved to be more than a national performance, as this victory in the air changed the entire course of history and saved the free western world from suppression. It was particularly in those dark years that the Dutch people learned about the existence of the Royal Air Force, as night after night hundreds of aircraft flying over our country brought a message of hope, in fact the only visible sign of a still existing free world and a not-to-be-mistaken promise of forthcoming liberation.

Now I am aware that among you there are some who do not belong to the Royal Air

Force, but are looking forward to use what they have learned here at Cranwell as an officer in their own national Air Forces. I am, however, convinced that these, 'foreigners' to the Royal Air Force, are feeling the same admiration and friendship for this magnificent organisation as I cherish. And I feel that, on an occasion like this, it is proper to pay tribute to those that in the past made the Royal Air Force what it stands for today in the esteem of the entire world: 'Lest we forget.'

Times have changed considerably, even in the short history of air warfare. Today's fighter pilot is no longer the sort of aerial cowboy of earlier days; today's technicians are no longer handy mechanics with a good ear, tender fingers and a special feeling for machinery. Pilots and technicians as well as the other different supporting trades required in a modern air force, are all highly qualified and skilled professionals; part of an intricate, close-knit team, which has to perform a job, far less romantic, but also far more complex and demanding than in the past. It is no longer keen eyesight and a tiger spirit alone which make an outstanding military pilot, or as for that a good air force officer. As you will have been taught and, most probably, already have experienced in the past years, other values have become at least as important.

It is obviously impossible for me to discuss all the qualities required from you to become a successful officer. Moreover, having visited this college a few years ago and at that occasion having acquired a profound admiration for the standard of instruction as well as the extensive curriculum, I feel this would be superfluous and I will therefore restrict myself to one or two aspects only.

More than ever before the saying is true for any modern, self-respecting Air Force: 'Nothing beats quality.' There is a direct relationship between quality and safety. I do not want to imply that safety should be a goal in itself. What I mean to say is that quality in performance irrevocably produces safety. Personally, I do not like to look at accidents as something that ruins our safety record or reduces our operational potential, but more as a direct indication

that somewhere an individual, a condition or a procedure did not meet the highest possible standards and thus needs improvement. I want to impress on you for your future as an officer, that quality is a synonym for flying safety. Nothing, and I repeat, nothing beats quality, especially where it concerns flying.

There is no easy way to achieve this quality in whatever job you are called upon to do, in particular with modern intricate weapons systems. It requires extensive, up-to-date knowledge and vast experience. The first, knowledge, requires continuous hard work. Here, in Cranwell, you have been given a good foundation on which you yourselves have to build the rest by further study and constant reflection.

The second, experience, requires 'doing'; doing time and again, the many aspects of your job, repeating every single detail again and again under all possible circumstances; but never doing it automatically without thinking what to do. In the end, knowledge and experience will produce for you the most important requirement for any officer: confidence. Confidence cannot be passed on to you by your instructors; confidence cannot be gained from books only; confidence cannot be bought. It can only be acquired by your own continuous effort. To achieve confidence requires time, a long time.

Now I would like to add a special word for the pilots among you. Prince Bernhard, an experienced pilot himself, once remarked that no man can be a good pilot, unless he has been at least once 'scared stiff' and has experienced a major emergency. He did not mention a third requisite, which is: having overcome and survived this experience. And this brings me to the most dangerous attitude in any young man's career, but especially for a pilot: over-confidence. It may take a lot of sad experience and even lots of luck to realise what I mean by this. Now that you have your wings, you are on your own and that is the time when so many promising young pilots have made blunders by over-confidence and thus never gave themselves the opportunity to become good pilots. They relax because they see in their wings on their uniforms the ultimate achievement of their goal. Do not make that mistake!



Lieutenant General A. P. Wolff with Senior Under Officer R. W. Hooper and Senior Under Officer R. T. Clark

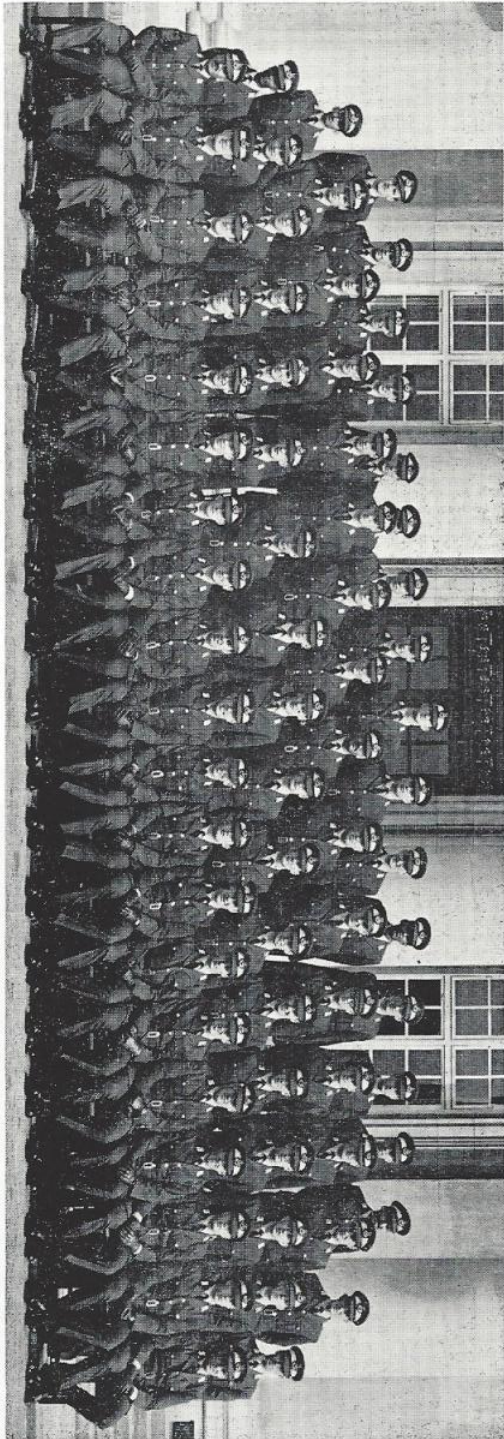
And, gentlemen, this does not apply only to flying but is valid for all trades !

Now that you have received your commission today, you should look at this day as the beginning of a continued, be it a more independent training period ; however, by virtue of this independence, requiring a maximum of self-discipline. And, no question about it, it remains a training period that will last as long as your life as an officer. In this respect flying and marriage have a lot in common ; you pledge yourself to a lifelong mutual understanding and support. As in marriages, no two air force careers are the same. Every day brings you another new experience ; you'll never know or understand the problems of marriage or flying completely. Your wife as well as your plane may surprise you time and again. Be aware of even small errors on your side ; they might well result in the end in unforeseen and irreparable damage, be it to your marriage or to your career as an Air Force officer.

If, however, the standard of today's parade — which I was so privileged to re-

view and on which I compliment all of you, as well as the staff of this college — is an indication of the way you ex-Cranwell cadets will perform your job as officers, I cannot but feel that you will be an asset to your Air Forces, to your country and to the free world. And, above all, I feel confident that if — what God may prevent — you will be called upon to fight again to save the assets of our free world, for which so many have fought and died in the past, you will maintain the proud standard of your predecessors in close co-operation and friendship with your allies, who have pledged themselves to the same goal.

To conclude, I would like to congratulate' also on behalf of the Royal Netherlands Air Force, you as well as the staff and instructors of Cranwell on your successful completion of this course. I would like to extend these congratulations to your respective services for the contribution which your entry as officers promises them and finally I wish you and your relatives good luck in your future career : 'Happy landings !'



NO 94 ENTRY

Back Row : Senior Flight Cadets C. J. Long, K. A. Spawton, D. M. Jones, W. M. Campbell, A. C. Holman, C. E. C. Pitcher, I. W. Cowie, D. R. G. Forsyth, M. W. Potter, I. H. Dow, I. D. L. Shore, H. C. Fernando, R. J. Watts, S. E. Griffin, J. A. Dillon, A. K. Suddaby.

Third Row : Senior Flight Cadets M. Y. Walpita, C. C. Chandler, J. M. B. Davies, P. A. M. Spofforth, M. Mitchell, H. Northey, B. R. R. Jones, J. D. Lloyd, I. A. Shogran, R. F. Fuller, D. A. Wrigley, G. N. Green, P. Ingoe, M. Dixon, J. A. Canning, D. A. Martin.

Second Row : Senior Flight Cadets D. Jayakody, P. M. Warner, A. C. E. Stacey, M. W. Johnson, K. Dillon, P. J. Bennett, G. N. Fenton, P. R. Bruce, L. C. Bate, M. D. Wylie, B. V. Wheeler, J. C. Jarron, G. S. Whitear, G. J. Goodman, M. T. Holdsworth, J. R. Kearey, D. Cockburn, A. G. Galbraith.

Front Row : Under Officers M. B. Abdul Aziz, B. R. Neal, W. J. L. Birrell, R. A. Peele, P. R. D. Deffee, C. R. Bolt, C. R. Spink, G. McLeod, Senior Under Officers A. J. Gritten, J. R. I. Clark, R. H. Sargent, Under Officers J. E. Steenson, J. S. Wilson, M. E. Woodley, C. D. Stevens, D. McTeer, M. S. Jones, J. N. Luke, M. W. Ball.

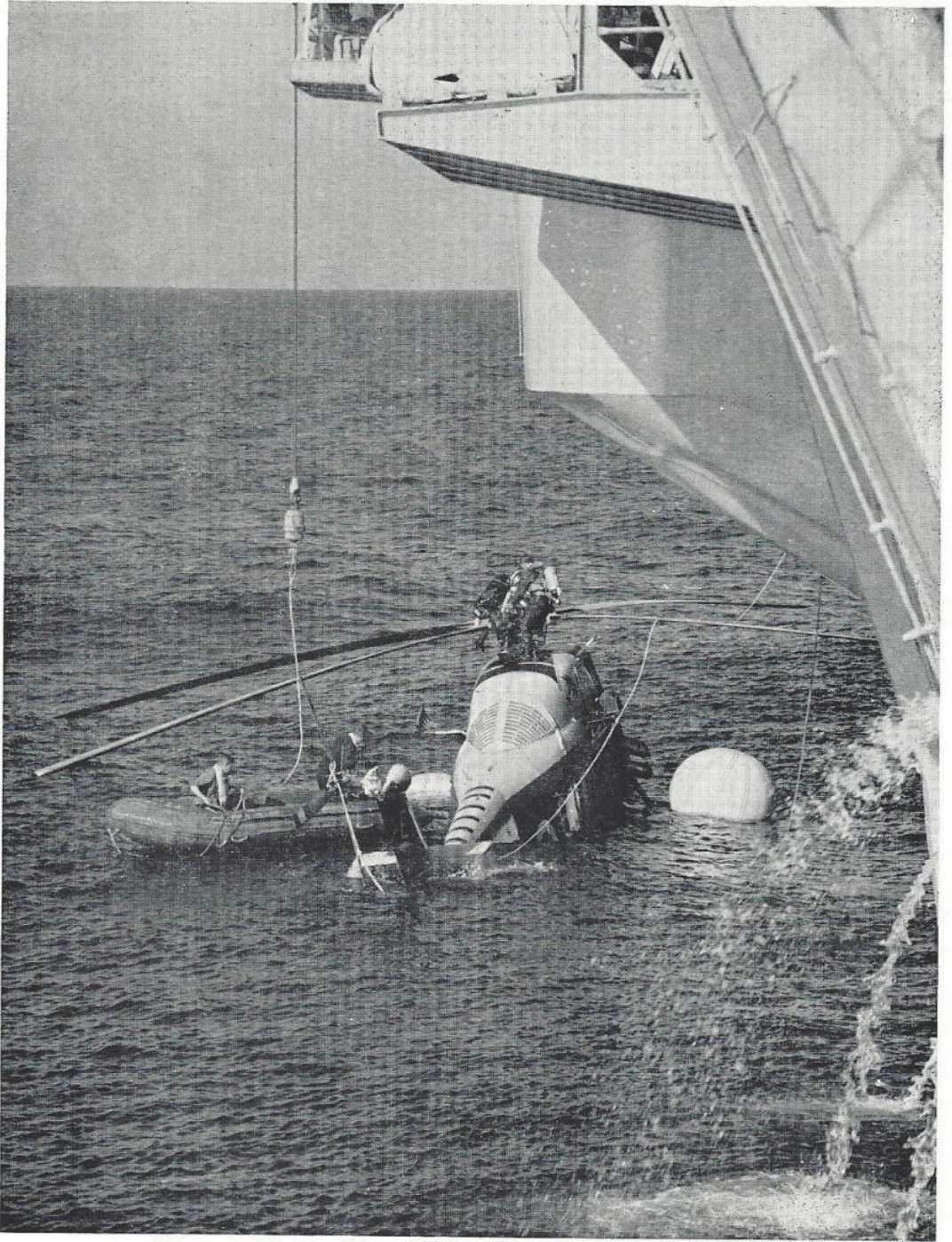
COMMISSIONING LIST No 94 ENTRY

- J. R. T. CLARK, *Senior Under Officer (Navigator)*: *The Sword of Honour*; *The Institute of Navigation Trophy and the Ministry of Defence Prize for Navigators*; *Cricket (Colours)*; *Soccer*; *Choral*.
- A. J. GRITTEN, *Senior Under Officer (Regiment)*: *The Philip Sassoon Memorial Prize*; *Rugby (Colours)*; *Athletics (Captain, Colours)*; *Hockey*; *Fishing*.
- R. W. HOOPER, *Senior Under Officer (Engineer)*: *The Queen's Medal*; *The Alastair Black Memorial Trophy and Prize*; *Rugby (Colours)*; *Cricket*; *Athletics*; *Walking*.
- R. H. SARGENT, *Senior Under Officer (Pilot)*: *Rugby (Captain, Colours)*; *Rowing (Colours, Command, Royal Air Force)*; *Water-Skiing*.
- M. W. BALL, *Under Officer (Pilot)*: *Cricket (Captain, Colours)*; *Hockey*; *Squash*.
- W. J. L. BIRRELL, *Under Officer (Pilot)*: *The Dickson Trophy and Michael Hill Memorial Prize*; *Rugby*; *Rowing*; *Squash*; *Athletics*; *Riding*.
- C. R. BOLT, *Under Officer (Equipment)*: *Badminton*; *Hockey*; *Sailing (Colours)*; *Ocean Sailing (Captain)*.
- P. R. D. DEFFEE, *Under Officer (Pilot)*: *Basketball (Colours)*; *Sailing*; *Radio*.
- M. S. JONES, *Under Officer (Pilot)*: *Rugby*; *Cricket*; *Beagling (Captain, Colours)*; *Cross Country*; *Canoeing*; *Drama*; *Choral*.
- J. N. LUKE, *Under Officer (Pilot)*: *L'Ecole de l'Air Trophy for French Studies*; *Rugby*; *Swimming*; *Water Polo*; *Hockey*; *Golf*.
- MUGRIN BIN ABDUL AZIZ, *Under Officer (Pilot)*: *94 Entry Special Award*; *Squash*.
- G. McLEOD, *Under Officer (Pilot)*: *Basketball*; *Squash*; *Rugby*; *Cluding*.
- D. McTEER, *Under Officer, (Secretarial)*: *Badminton (Colours, Command, Royal Air Force)*; *Tennis (Captain, Colours)*; *Squash*.
- B. R. NEAL, *Under Officer (Pilot)*: *Rugby*; *Rowing*; *Squash*; *Drama*; *Motor Club*.
- R. A. PEELE, *Under Officer (Pilot)*: *Rugby*; *Swimming*; *Rowing*; *Beagling*; *Chess*.
- C. R. SPINK, *Under Officer (Pilot)*: *Soccer*; *Cricket*; *Walking*; *Field Shooting*.
- J. E. STEENSON, *Under Officer (Pilot)*: *Rugby (Colours)*; *Athletics*; *Skiing*; *Caving*; *Choral*.
- C. D. STEVENS, *Under Officer (Pilot)*: *The Battle of Britain Trophy*; *Rowing (Captain, Colours)*; *Rugby*; *Squash*; *Water-Skiing*.
- J. S. WILSON, *Under Officer (Pilot)*: *Swimming (Captain, Colours, Command, Royal Air Force)*; *Water Polo (Captain, Colours, Command)*; *Soccer (Colours)*; *Cricket*; *Drama*; *Photography*.
- M. E. WOODLEY, *Under Officer (Pilot)*: *Pot-holing*; *Motoring*.
- L. C. BATE, *Senior Flight Cadet (Engineer)*: *Shooting*; *Sub-Aqua*; *Gliding*; *Bridge*.
- P. J. BENNETT, *Senior Flight Cadet (Pilot)*: *The Hicks Memorial Trophy*; *Rowing*; *Walking*; *Christian Union*.
- P. R. BRUCE, *Senior Flight Cadet (Pilot)*: *The Abdy Gerrard Fellowes Memorial Prize*; *Hockey*.
- M. W. CAMPBELL, *Senior Flight Cadet (Pilot)*: *Rugby*; *Cricket*; *Badminton*.
- J. A. CANNING, *Senior Flight Cadet (Navigator)*: *Cricket*; *Squash*; *Angling*; *Table Tennis*.
- C. C. CHANDLER, *Senior Flight Cadet (Pilot)*: *Rugby (Colours)*; *Athletics*; *Drama*; *Sub Aqua*.
- D. COCKBURN, *Senior Flight Cadet (Pilot)*: *Rugby*.
- I. W. COWIE, *Senior Flight Cadet (Pilot)*: *Rugby (Colours)*; *Athletics*; *Squash*; *Jazz*.
- J. M. B. DAVIES, *Senior Flight Cadet (Equipment)*: *The Ministry of Defence Prize for Equipment Studies*; *Hockey*; *Rowing*; *Water-Skiing*; *Aeromodelling*.
- J. A. DILLON, *Senior Flight Cadet (Navigator)*: *The Ministry of Defence Prize for War Studies and Humanities and the Royal New Zealand Air Force Trophy*; *Hockey*; *Sailing*; *Walking*.
- K. DILLON, *Senior Flight Cadet (Navigator)*: *Hockey*; *Walking*.
- M. DIXON, *Senior Flight Cadet (Pilot)*: *Gliding (Captain)*; *Cross Country*; *Photography*; *Flying Club*.
- I. H. DOW, *Senior Flight Cadet (Pilot)*: *The R. M. Groves Memorial Prize and Kinkead Trophy*; *Swimming (Captain, Colours)*; *Water Polo (Colours)*; *Choral*; *Drama*.
- G. N. FENTON, *Senior Flight Cadet (Pilot)*: *Rugby*; *Shooting*; *Walking*; *Karting*; *Drama*.

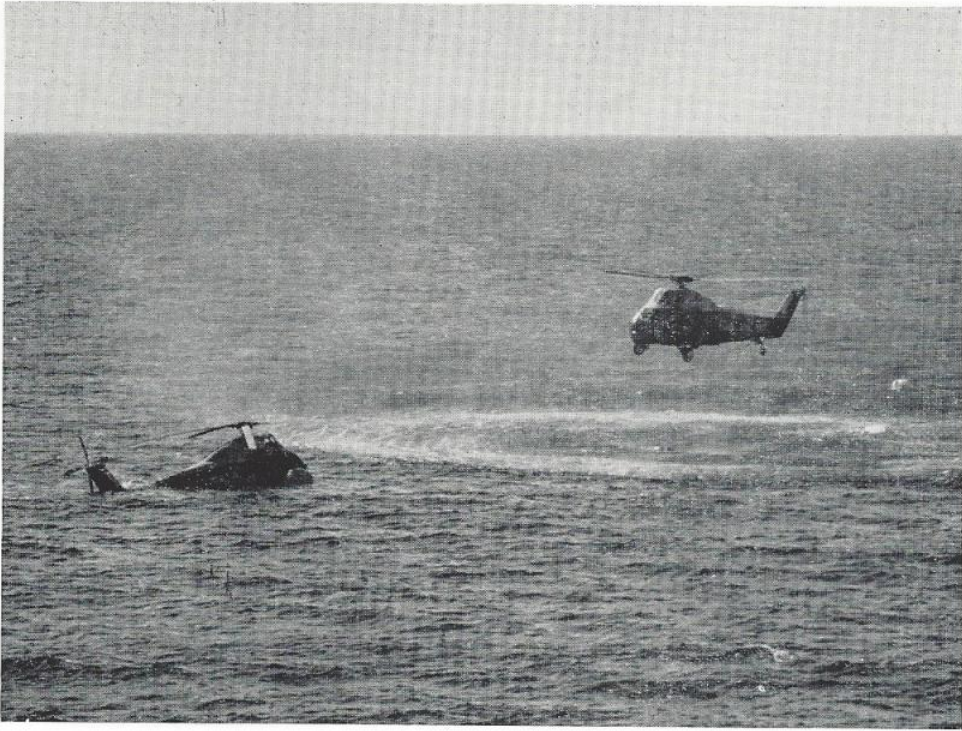
- H. C. FERNANDO, *Senior Flight Cadet (Pilot)* : Badminton ; Squash ; Gliding ; Aeromodelling.
- D. R. G. FORSYTH, *Senior Flight Cadet (Equipment)* : Athletics ; Cross Country ; Badminton ; Drama ; Shooting (Captain).
- R. F. FULLER, *Senior Flight Cadet (Engineer)* : Hockey ; Sailing ; Squash.
- A. G. GALBRAITH, *Senior Flight Cadet (Regiment)* : Athletics ; Rugby ; Water Skiing (Captain) ; Paragliding.
- G. J. GOODMAN, *Senior Flight Cadet (Navigator)* : Tennis ; Squash ; Bridge ; Christian Union.
- G. N. GREEN, *Senior Flight Cadet (Engineer)* : The Ministry of Defence Prize for Cadets following The Higher National Diploma Course ; Cross Country ; Athletics ; Ocean Sailing.
- S. E. GRIFFIN, *Senior Flight Cadet (Navigator)* : Rugby ; Sailing ; Drama ; Bridge.
- A. J. HARRIS, *Senior Flight Cadet (Pilot)* : Soccer ; Cricket ; Rugby ; Athletics.
- M. T. HOLDSWORTH, *Senior Flight Cadet (Secretarial)* : Christian Union ; Aeromodelling.
- A. C. HOLMAN, *Senior Flight Cadet (Pilot)* : Athletics ; Soccer ; Photography ; Field Shooting.
- P. INGOE, *Senior Flight Cadet (Pilot)* : Rowing ; Squash ; Drama ; Literary and Debating.
- J. C. JARRON, *Senior Flight Cadet (Pilot)* : Sailing (Captain, Colours) ; Squash ; Gliding ; Aeromodelling ; Motor Club.
- D. JAYAKODY, *Senior Flight Cadet (Engineer)* : Cross Country ; Badminton ; Tennis ; Rowing.
- M. W. JOHNSON, *Senior Flight Cadet (Pilot)* : Judo ; Hockey ; Journal.
- B. R. R. JONES, *Senior Flight Cadet (Pilot)* : Soccer.
- D. M. JONES, *Senior Flight Cadet (Pilot)* : Cricket ; Golf ; Shooting ; Jazz.
- J. R. KEAREY, *Senior Flight Cadet (Engineer)* : The Chicksands Cup ; Badminton.
- J. D. LLOYD, *Senior Flight Cadet (Pilot)* : Equestrian (Captain) ; Table Tennis ; Badminton ; Chess.
- C. J. LONG, *Senior Flight Cadet (Pilot)* : Athletics (Colours, Command) ; Basketball (Colours) ; Riding ; Sub Aqua.
- D. A. MARTIN, *Senior Flight Cadet (Pilot)* : Rowing (Captain, Colours, Command, Royal Air Force).
- M. MITCHELL, *Senior Flight Cadet (Pilot)* : Basketball (Colours) ; Shooting ; Drama.
- H. NORTHEY, *Senior Flight Cadet (Pilot)* : Shooting (Captain, Colours).
- C. E. C. PILCHER, *Senior Flight Cadet (Engineer)* : Canoeing ; Gliding ; Photographic.
- M. W. POTTER, *Senior Flight Cadet (Engineer)* : Basketball (Colours, Command, Royal Air Force) ; Squash ; Chess.
- I. A. SHOGRAN, *Senior Flight Cadet (Engineer)* : Basketball ; Squash ; Walking.
- I. D. L. SHORE, *Senior Flight Cadet (Secretarial)* : Rowing ; Athletics ; Christian Union ; Aeromodelling.
- K. A. SPAWTON, *Senior Flight Cadet (Pilot)* : Badminton ; Squash ; Gliding.
- P. A. M. SPOFFORTH, *Senior Flight Cadet (Pilot)* : Rowing ; Sailing ; Potholing.
- A. C. E. STACEY, *Senior Flight Cadet (Secretarial)* : The Ministry of Defence Prize for Secretarial Studies ; Cross Country ; Shooting ; Hockey.
- A. K. SUDAIRY, *Senior Flight Cadet (Pilot)* : Soccer ; Basketball.
- M. Y. WALPITA, *Senior Flight Cadet (Secretarial)* : Cricket (Colours) ; Hockey ; Athletics ; Badminton ; Karting.
- P. M. WARNER, *Senior Flight Cadet (Engineer)* : Hockey ; Sailing ; Squash ; Photographic ; Music.
- R. J. WATTS, *Senior Flight Cadet (Pilot)* : Rugby ; Sailing ; Badminton ; Gliding.
- B. V. WHEELER, *Senior Flight Cadet (Pilot)* : Soccer ; Rugby ; Cricket ; Tennis ; Gliding ; Bridge.
- G. S. WHITEAR, *Senior Flight Cadet (Navigator)* : Athletics ; Rugby.
- R. K. WOOLDRIDGE, *Senior Flight Cadet (Engineer)* : Squash ; Judo ; Choral.
- D. A. WRIGLEY, *Senior Flight Cadet (Engineer)* : Basketball ; Tennis (Colours) ; Sub Aqua.
- M. D. WYLIE, *Senior Flight Cadet (Pilot)* : Fencing (Captain, Colours, Command, Royal Air Force) ; Drama.



ARTICLES



HMS Eagle comes alongside



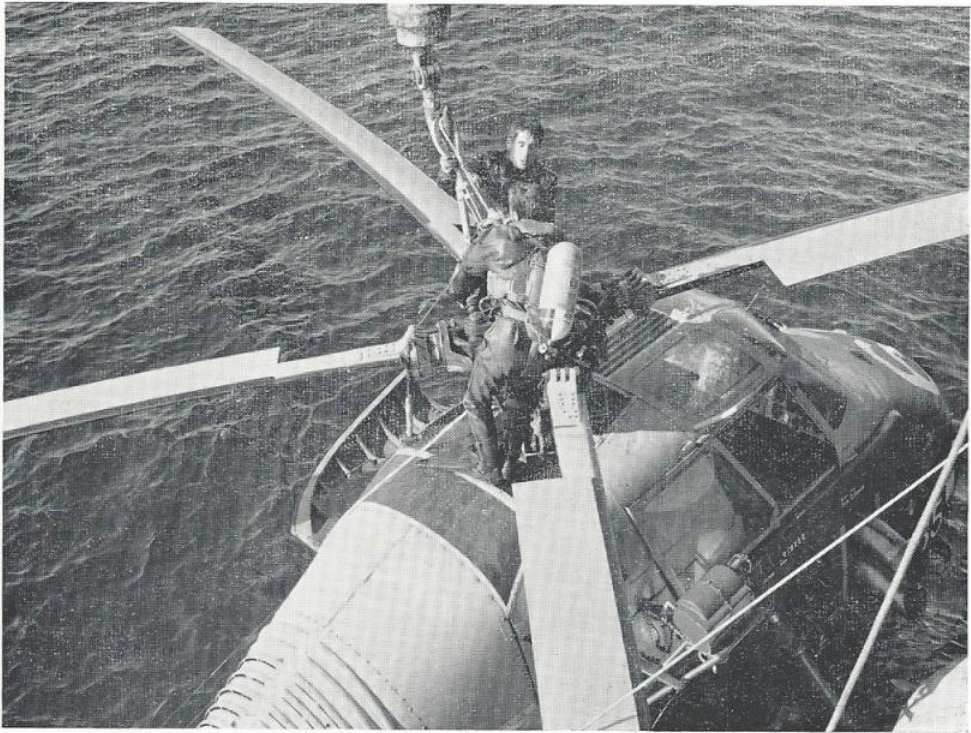
JOINING THE GOLDFISH CLUB

If you read Tuesday 1st October's Daily Express you would have seen on the second page a picture of a helicopter that had ditched in the North Sea. I was in that helicopter.

The machine had come from HMS Eagle, to which five flight cadets and myself were on a week's detachment, and was taking part in a combined anti-submarine exercise with two other helicopters and a destroyer. HMS Odin, an 'O' class submarine, was to

attempt to get in a position to torpedo Eagle. The helicopters, controlled and aided by HMS Cavalier, were to ensure a safe passage for the carrier.

Before embarking on the exercise Lieutenant Peter West, the pilot, gave me an extensive briefing on the ditching drill — not that we were likely to go in! In fact the other two crew members, a Master Rating and the observer, Lieutenant Jan Greener, were dis-



The crew is winched off

cussing the number of flights they had made without incident. After take off each helicopter was given an area to search by Cavalier, ours being on the right flank. Ten minutes after take off two pieces of equipment failed—My throat mike and the automatic pitch stabilizers. This meant I could not ask stupid questions and that Lieutenant West had a very difficult task in keeping the helicopter steady in the hover.

About an hour later another helicopter reported a suspected contact and Cavalier ordered us to a new position. There was a smell of fuel in our aircraft so once the required area was reached the Master Rating was lowered out to see if there were any leaks. His report was negative so, much to his relief, he was winched back in again. The sonar set was then lowered into the water and almost instantaneously two things happened. Firstly the lead helicopter made a positive contact with the submarine and the air became jammed with messages, secondly our engine decided it had done enough for one day.

Events started happening fast. Lieutenant West pulled on the collective hitch control and sent out a mayday call. But it does not take long to fall twenty-five feet. The result was nobody heard the mayday and due to the pilot's quick action we made a gentle 'plop' into the sea.

When I heard the mayday call I wondered what was going on. This doubt was soon cleared up on hearing, and feeling, the revs drop and seeing the sea approaching.

On impact with the water the inflation bags on each wheel inflated so that from the cockpit four feet above the water all seemed relatively safe. However the floor of the cabin was five feet below the cockpit and at the time of ditching the cabin door was open. Thus when the helicopter hit the water a cloud of spray shot into the cabin and two members of the Royal Navy shot out.

Once the rotors had stopped and Lieutenant West had told me it was safe to leave I thought the best thing to do was to jump away from

the helicopter and then inflate my dinghy. But as Lieutenant Greener rightly pointed out, there was plenty of time to inflate the dinghy first and then step into it without getting wet. This I proceeded to do. The observer who after shooting out of the escape hatch had stayed on the side of the helicopter to avoid the rotors, now inflated his dinghy and stepped into it. Unfortunately for him he did not appreciate the difference between the stability of a rubber dinghy and an aircraft carrier and was soon in the water. He pulled himself back onto the dinghy only to have it sink from underneath him. Having nowhere better to go he returned to the helicopter. By this time my dinghy was inflated so I sat down gently and then paddled away.

After approximately ten minutes the rescue helo appeared and very nobly decided to get the 'crab' out first. When the strop came down I had no idea what to do with it so I sat in it causing the pilot acute problems in keeping the helicopter steady. The Master Rating put the strop under his armpits and was raised with relative ease.

A large crowd of goofers had gathered for our return to ship, all wanting to know the fate of the helicopter and crew. After answer-

ing a few questions the Master Rating and I went below to change into dry clothing before reporting to sick quarters for a few medicinal tots of whisky. Whilst with the medical staff we learned of the fate of the sea boat sent out to rescue us.

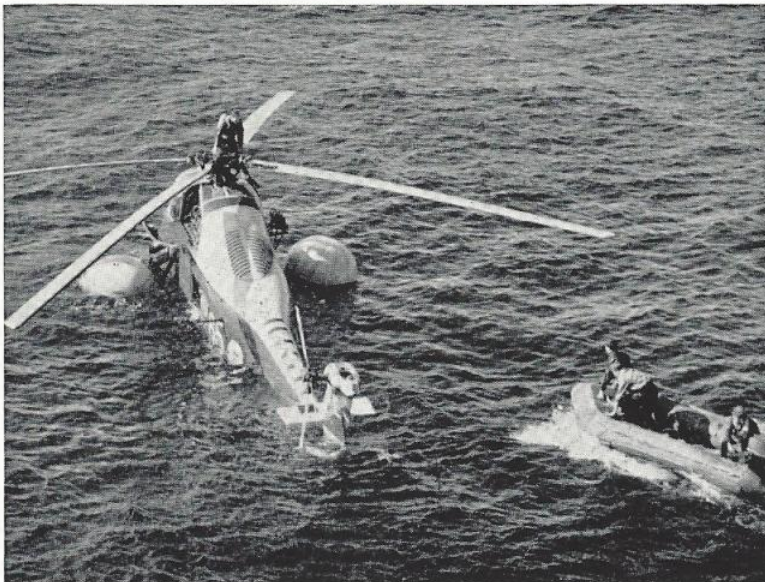
On reception of the SARBE pulses the tannoy announcements went something like this: 'Emergency, emergency, emergency, helicopter ditched, launch sea boat and send out standby helicopter sea boat launched sea boat taking on water sea boat sinking crew taking to water' Throughout the sinking the midshipman had kept his position in the boat and his hat on.

Thus the rescuers had to be rescued. The crew later stressed the fact that they had remembered to put the bung in and that the keel had cracked on launching.

The helicopter and sea boat were later recovered by the aircraft carrier and throughout the whole episode nobody was injured although the new members of the Goldfish Club did get badly 'smashed' in the Wardroom that night.

J. M. Womphrey

A second boat arrives



WILFRED OWEN—‘BLOOD, DIRT AND SUCKED SUGAR STICK’?

by FLIGHT CADET S. G. APPLETON

(*The prize-winning essay in the 1968 Director of Studies Essay Competition*)

The course of history has depended since time began on man's essential desire to survive and the fates of war. War, according to Clausewitz, is a 'continuation of policy by other means,' but the intensity and variety of emotions caused in time of war cannot be depersonalised by clinical definitions. War causes pain; suffering; madness: it makes men perform feats of courage and bravery that in any other medium would be acts of suicide; it makes men feel the worth of true comradeship; finally, it extends the universal experience of man, and new experience is conveyed in art in new ways. Wilfred Owen was one of those poets whose intellect was impressed indelibly with the extraordinary horror of a war of a type man had never before experienced. And the existing structure of poetry could not contain the violence of his new experience. In Owen we see clearly how old values and long-held beliefs can be shattered by new experience, and in a study of the development of his verse from the pseudo-Keatsian, to poems like 'Strange Meeting,' we can see also the development of man's universal consciousness during this traumatic period.

Wilfred Owen's pre-war poetic development was typically 'Georgian.' Born at Plas Wilmot, Oswestry in 1893, he matriculated at London University in 1910. Keats was the poet who inspired him most and this extract from a sonnet called, 'Written in a Wood, September 1910,' shows how heavily he draws on Keats's style.

'Full ninety autumns hath this ancient beech
Helped with its myriad leafy tongues to swell
The dirges of the deep-toned western gale,
And ninety times hath all its power of speech
Been stricken dumb, at sound of winters'
yell'

Owen never entirely rid himself of his mock-Keatsian diction, and it was this, that provoked Yeats to scorn him as being 'all

dirt, blood and sucked sugar-stick,' and a poet who 'calls poets "bards," a girl a "maid," and talks about Titanic wars.'

Some of Owen's early poetry was bright and colourful —

'This is more like the aureoles of Aurora,
The leaves of flames, the flame of her
corona,'

but as yet he did not have a true perception of life's values, and his poetry lacked accordingly an individual passion.

The outbreak of war saw Owen in France, with a teaching job near Bordeaux. There the realism of war failed to reach him and his verse still lacks the body and strength that will come only with his active participation in the holocaust.

In 1915 he returned to England and joined the Artists' Rifles, and in January 1917 he was assigned to the Manchester Regiment, then on the Somme Front. On his landing in France he wrote home, 'There is a fine heroic feeling about being in France, and I am in perfect spirits.' In less than three weeks his attitude underwent a dramatic change. 'They want to call No Man's Land "England" because we keep supremacy there. It is like the eternal place of gnashing of teeth It is pockmarked like a body of foulest disease, and its odour is the breath of cancer The people of England needn't hope. They must agitate.' Already we see an attitude being born out of real experience. And the harsh winter of 1916-17, coupled with the subjection of those on the front to intense shelling and intense mental and physical suffering, matured Owen. He began now to discern real values and was confronted with the human being in its basic state as 'a bare forked animal.'

On June 6, 1917, however, his nerves shattered, he was sent back to England and for four months he was at Craiglockhart War Hospital, where he met Siegfried

Sassoon. Sassoon stimulated him 'towards writing with a compassionate and challenging realism' (Sassoon, 1920). On December 31, Owen wrote to his mother — 'I go out of this year a poet, my dear mother, as which I did not enter it.' Owen now saw the Georgian movement in its true perspective. He saw that verse isolated from human concerns was incapable of dealing with the truth of war, and Poetry now became for him the expression of experience rather than the thoughtless pursuit of 'Beauty.'

In August, 1918, he was back in the trenches and on 4th November, one week before the Armistice, he was killed helping his men build a bridge across the Sambre near Ors. The manner of his death recalls Sassoon's 'To Any Dead Officer' the last line of which is, 'I wish they'd killed you in a decent show'; for Owen's section eventually crossed the Sambre over an existing bridge just a few miles up the river.

Owen's great creative period was from August 1917 to September 1918 and his first significant war poem was 'Exposure' in which he employed significantly for the first time the pararhyme. This device creates what Blunden calls effects of 'remoteness, darkness, emptiness, shock, the last word.' The words are without poetic associations and the half-rhymed combinations jangle harshly on the ear, conveying the essentially negative experience of war. In this poem Owen also reveals his ability to express often in one word, an intense feeling or a complete human condition.

'Watching, we hear the mad gusts tugging
on the wire,
like the twitching agonies of men among
its brambles.
Northward, incessantly, the flickering
gunnery rumbles,
Far off, like a dull rumour of some other
war.
What are we doing here?'

The verse is stripped to stark elements. All the senses are sharpened in the first line when sight and hearing are brought into play. 'Mad' is a small word physically, but is full of powerful associations. This, after all, is a second hell — there seems to be no explanation for these 'gusts.' 'Tugging,' 'twitching,' and 'flickering' all echo each other and express a similar kind of spas-

modic movement. At the same time the atmosphere is given a dream-like, unreal quality — using men suffering agony 'among the brambles of the wire' as a simile for the wind seems unforced and natural. It is part of the success of the poet that such a simile does not appear incongruent. The 'flickering gunnery' from 'far off' takes the physical action of the war away from the narrator and his men. It all seems so unreal, that the question, 'What are we doing here?' is inevitable, yet pathetic because of its inevitability.

'Exposure' marks an abrupt transformation of Owen's technique — no longer is he just the observer. As a participant in the full horror of the war, he seeks some meaning for his own and others' suffering, and it is not in Christianity that he finds a refuge. The position of Christ and the Church in the war, was one of the main themes of Owen's poetry. In 'Anthem for Doomed Youth' he compares the traditional Christian burial with the burial of 'those who die as cattle.' The Christian ritual of burial is represented by 'passing-bells,' 'orisons,' 'prayers,' 'bells,' 'choirs,' 'candles,' 'poll,' 'flowers.' These are the traditional commemoratives of death. Yet death in war is nothing like that and Owen balances these images with the harshness and cruelty, the 'ungodliness' of war where the only choirs of mourning are 'The shrill, demented choirs of wailing shells' and the 'passing-bells' are heard in the 'monstrous anger of the guns.' Owen felt that the Church had lost contact with the very reality it was called upon to interpret. A letter of Owen's from hospital on the Somme in 1917 is very revealing. 'One of Christ's essential commands was: Passivity at any price! Suffer dishonour and disgrace, but never resort to arms. Be bullied, be outraged, be killed: but do not kill. It may be a chimerical and an ignominious principle but there it is. It can only be ignored, and I think pulpit professionals are ignoring it very skilfully indeed And am I not myself a conscientious objector with a very seared conscience? Christ is literally in 'no man's land.' There men often hear his voice: 'Greater love hath no man than this, that a man lay down his life for a friend. Is it spoken in English only and French? I do not believe so. Thus you see how pure Christianity will not fit in with pure patriotism.'

The ineffectuality of the Church is expressed clearly in 'Le Christianisme':

'So the Church Christ was hit and buried
Under its rubbish and its rubble.
In cellars, packed-up saints lie serried,
Well out of hearing of our trouble.'

Owen identified the sufferings of his men with the passion of Christ and the key to his philosophy is contained in these two lines from, 'At a Calvary near the Ancre':

'But they who love the greater love
Lay down their life: they do not hate.'

He found in the trenches and on the battlefield a 'love' that transcended far the sexual love between man and woman. The battlefield was the cause of unexpected revelations, and in 'Apologia Pro Poemate meo' he explores this further:

'I, too, saw God through mud, —

The mud that cracked on cheeks when wretches smiled,' — and the great change in his aesthetic sensibilities can be seen in:

'I have perceived much beauty
In the hoarse oaths that kept our courage
straight;
Heard music in the silentness of duty;
Found peace where shell-storms sprouted
reddest spate.'
Love was, 'not the binding of fair lips
With the soft silk of eyes that look and long
But bound with war's hard wire whose
stakes are strong:
Bound with the bandages of the arm that
drips:
Knit in the webbing of the rifle-throng.'

In 'Strange Meeting' Owen uses as the basis of the plot, Sassoon's poem, 'The Rear-Guard,' but he develops themes that are much more profound than Sassoon's. The pursuit of beauty is no longer possible in this world. The poet must speak of 'the truth untold' — the pity, the violence the suffering. When men 'boil bloody,' the poet must cease hankering after an intangible 'beauty.' His function must become more broadly social, less personal or aesthetic. At the end of the poem the common bond of humanity is stressed,

'I am the enemy you killed, my friend.
I knew you in this dark; for so you
frowned
Yesterday through me as you jabbed and
killed.

I parried; but my hands were loath and
cold.

Let us sleep now'

Owen was relying in his later poems more on the universality of the soldiers' experience than the strictly personal experience.

This we also see in 'Winners,' where the aspect of voluntary sacrifice for attainable ends has totally vanished; now the sacrifice is of an entirely negative nature, as the benefits that their sources pass unnoticed by those who enjoy them. More and more Owen puts across the image of the soldier as a victim, not a hero, and the deep disillusionment of poems like 'Futility' follows logically from the intensely experiential poems like 'The Sentry,' with its accent on the physical horror of gassing.

'And watch the white eyes writhing in this
face,
His hanging face, like a devil's sick of sin;
If you could hear, at every jolt, the blood
Come gargling from the froth-corrupted
lungs.
Bitter as the cud.'

Owen sought to find an explanation for the horror of the struggle and 'Futility' expresses just this search. The evil of the war cannot be reconciled with the creative activity of the sun or with Christian providence; the war seems to be not merely a military struggle but a struggle between the fundamental forces that shape or destroy human life. The poem, 'Futility,' ends with the desperate.

'O what made fatuous sunbeams toil
To break earth's sleep at all?'

What, Owen is asking, is the point of developing man to a supposed higher understanding when all he does is to destroy himself, using methods of barbarity and horror that are primitive? 'The Show' (ibid, p.59) extends this further. Here Owen describes the incredible horror of the battlefield:

'And saw a sad land, weak with sweats of
death,
Gray, cratered like the moon with hollow
woe,
And pitted with great pocks and scabs of
plagues.'

The soldiers on both sides are depicted as voracious caterpillar-like creatures 'intent on mire':

‘ Those that were gray, of more abundant
 spawns,
 Ramped on the rest and ate and were eaten.
 I saw their bitten backs curve, loop, and
 straighten,
 I watched those agonies curl, lift, and
 flatten.’

The climax of the poem comes when the poet discovers that he himself has suffered in this hell, and the ‘ fresh-severed head ’ is his own.

‘ The Show ’ is almost Miltonic — the description of Chaos and the building of the bridge over Chaos by Sin and Death in ‘ Paradise Lost ’ bears a marked similarity to this poem. ‘ The Show ’ also seems to be a prelude to Eliot’s description of the people in his ‘ Waste Land ’ —

‘ the hooded hordes swarming
 Over endless plains, stumbling in cracked
 earth ’ (‘ The Waste Land,’ v. 368-69)
 — recalls the thin caterpillars crawling over the ‘ sad land, weak with sweats of death.’

‘ The Show ’ brings out the evil horror of war in a general aspect. Owen was, however, vitally concerned in showing how this evil affected the individual man. ‘ Mental Cases ’ is written in Dante’s rhetorical form :

‘ Who are these ? Why sit they here in
 twilight ?
 Wherefore rock they, purgatorial shad-
 ows,
 Drooping tongues from jaws that slob
 their relish,
 Baring teeth that leer like skulls’ teeth
 wicked ? ’

Owen condemns those who still approved the aims and methods of the war. It was, he says, ‘ us who smote them, brother.’

‘ Disabled ’ describes the suffering of a young artist who had joined up because ‘ Someone had said he’d look a god in kilts ’ and also he had wanted to ‘ please his Meg.’ Now this young man was ‘ legless, sewn short at elbow,’ and the girls who once were attracted by him ‘ touch him like some queer disease.’ His attitude had typified that of British youth at the beginning of the war.

‘ He thought of jewelled hilts
 For daggers in plaid socks ; of smart
 salutes ;
 And care of arms ; and leave, and pay
 arrears,’

and he was ‘ drafted out ’ like so many other ‘ with drums and cheers.’ On his return, however, the only person to welcome him was a priest, who ‘ thanked him : and then inquired about his soul.’ The last stanza brings the tone of the poem right down to the level of an individual’s personal suffering — the young man is helpless (he must ‘ take whatever pity they may dole ’) and then comes the pathetic,

‘ To-night he noticed how the women’s eyes
 Passed from him to the strong men that
 were whole.’

Thus Owen described the war with its suffering and tragedy in both personal and universal sense. He saw the war as the cause of the breakdown of society’s long-held values and ethical judgements. The horror and suffering transcended that of any other war in human history. Christianity and the Church could not provide the answer to this upheaval. Yet Owen did not reject Christ, for the suffering of Christ on the Cross, he recognised as being a parallel to the suffering of the contemporary soldier. The fellowship of the front line was for Owen a bond of deeper spiritual significance than any other form of love.

Owen died at the height of his powers. Whether or not he would have become a great peacetime poet had he lived is a matter for conjecture, but he was certainly trying to give poetry and the position of the poet in Society a new and different significance. He was not ‘ concerned with Poetry,’ as the preface to his projected volume of poems stated. His subject was ‘ War, and the pity of War ’ and ‘ The Poetry is in the pity.’ He felt that the poet had to be truthful and he saw the role of the poet to be one of warning to future generations. ‘ Passive suffering,’ says Yeats, ‘ is not a theme for poetry,’ but then poetry is a reflection of man’s experience and in time of war high aesthetic standards count for naught. Owen’s poetry was built on a foundation of suffering and horror — it is small surprise that his range was narrow. When Yeats criticises Owen as being ‘ all blood, dirt and sucked sugar-stick ’ he is forgetting that it took less than two years for Owen to turn from a mock-Keatsian, typical Georgian verse manufacturer to the creator of ‘ Strange Meeting.’ Technique and maturity take a long time to develop, and Owen was not granted that time.



Dual Spitfire 8 being flown by the author

THE MAKING OF THE FILM

BATTLE OF BRITAIN

by

SQUADRON LEADER D. H. MILLS

The film of the Battle of Britain, including the events which led up to it, is due for release in London in September 1969. It was originally intended that it would be released in September 1968, in time for the 50th Anniversary of the Royal Air Force. Unfortunately, however, the proposed backers of the project lost interest, and it took a year for new backers to be found.

The producer is Harry Saltzman, well known for his series of James Bond films, the co-producer is Benjamin Fisz, who flew with the Royal Air Force in the war as a member of a Polish Squadron, and the film is backed and distributed by United Artists, an American film company. The director is Guy Hamilton, who directed at least one of the James Bond pictures, as well as a number of other well-known films and he was assisted as aerial director for most of the flying sequences by David Bracknell.

The film is based broadly on the book 'Narrow Margin,' and the official histories of the battle. It purports to be completely unbiased, and to show each side of the story without frills or embellishment.

The line-up of stars taking part in the film is most impressive, and most of them take fairly small parts as mythical Station Commanders and Squadron Commanders. For instance, Kenneth More, plays the part of a Station Commander, and Michael Caine, Robert Shaw and Christopher Plummer are Squadron Commanders. Among the main characters in the story are Sir Lawrence Olivier as Lord Dowding and Trevor Howard as Sir Keith Park. There are also well known continental actors playing the parts of the various German Staff Officers and Squadron Commanders, from Goering downwards. Apart from the obvious characters mentioned the film deals with factual history, built around fictional characters, and all squadrons and people manning them are fictional.

The film will last for two and a half hours, and there will be forty minutes of flying sequences.

Apart from the studio work done at Pinewood Studios, airfield locations and sets were built in Spain, where the German airfield scenes were shot, Duxford, which had

four different sets built on it, North Weald, Hawkinge and Bovingdon. Flying also took place from Debden, Panshanger, Sywell, Lydd and Montpellier in Southern France.

Model shots were made on the South Coast, and when I left, a model unit was scheduled to spend a fortnight or so in Malta, in search of good weather. We operated for the most part from Duxford, with some time spent at Debden and Bovingdon.

The primary camera aircraft was a converted B25 Mitchell, with camera positions in nose and tail, and also two waist positions. It is very well equipped, including closed circuit television, with a play-back facility for use by the director. Also used extensively for camera work was an Allouette helicopter, which had a camera mounted in the port passenger position. These two aircraft were used for most of the air to air shots: the B25 for large formation work, and the helicopter for smaller formations and for filming particular manoeuvres.

The Heinkel III bombers, 2-seat Spitfires, 2-seat ME 109, and one Mk 9 Spitfire were also used to carry cameras at various times.

A total of twelve Spitfires took part in the film; this number included two dual Spitfires and three belonging to the Royal Air Force Memorial Flight at Coltishall.

One Spitfire (Mark 2) had in fact taken part in the Battle of Britain, and until the last fortnight or so still had the original engine. This engine gave up eventually, luckily with no more than a slightly apprehensive pilot to show for it, and the aircraft has now been re-engined with a Merlin 35, and will be added to the Royal Air Force Memorial Flight fleet in the near future.

There were three Hurricanes comprising one belonging to Hawker Siddeley, one belonging to the Royal Air Force Memorial Flight, and one which had been rebuilt privately in Canada, and which now belongs to a Mr Samuelson.

Sixteen Messerschmitt 109s were used, including one dual aircraft. They are all Spanish built, and have Merlin engines. Thus, their nose shape is not quite the same as the

aircraft used during the actual battle. They were the newest aircraft in the film, the Spanish Air Force having used them operationally until about five years ago.

Two Heinkel IIIs were brought to this country, but up to twenty were used for the shots taken in Spain. The Spanish Air Force still use them operationally.

It had been hoped that the Stuka in the Henlow museum would be made airworthy, and in fact the engine was started. But in spite of only fairly minor work being required on it, the money was not forthcoming, and the project was dropped. However, there is a Stuka shaped ex Proctor, which looks the part from most angles, and this will no doubt appear in the film.

It is worth noting that all the ME 109's, the two HE III's, one Spitfire 9 and the Stuka/Proctor were bought by the film company for the film. The other aircraft were either hired to the company by private owners, and the Royal Air Force, or, as in the case of the Hawker Siddeley Hurricane, and Rolls Royce Spitfire 14, loaned to the company.

Other aircraft involved were two static Hurricanes, several static, and several taxi-able Spitfires, and a large number of full size static fibre glass models of Hurricanes, Spitfires, ME 109's and Stuka's for shots of dispersal scenes.

They also used half scale free fall models for shots of crashes, and quarter scale radio controlled models of various types for other flying sequences. In addition to these aircraft models were a large number of models of Chain Radar masts, a French chateau, the London skyline and other topical items.

Originally there were ten pilots seconded from the Royal Air Force : the Commanding Officer, Wing Commander George Elliott, four Squadron Leaders, and five Flight Lieutenants, all from Flying Training Command. However, one member left early on in the detachment, so for the most part we were nine pilots strong.

The Royal Air Force Memorial Flight aircraft were always flown by Coltishall

pilots, and in addition there was one civilian pilot employed by the film company, Vivian Bellamy. He was extremely useful to have, having been a test pilot at one time, and knowing the Spitfire very well. He also knew all the 'ins and outs' of civilian flying, and the Board of Trade rules and how to interpret them.

The ME 109's and HE III's were flown, in the main, by Spanish Air Force pilots, with some help in Spain from four members of the Texan organisation known as the 'Confederate Air Force.' One American, Connie Edwards, remained and flew the ME 109 throughout the filming in England. We got on well with the Spaniards, and found them to be generally very able pilots. They were led by the Chief Test Pilot of the Espana Aircraft works at Seville, Commandante Santa Cruz, an excellent man in all respects.

Four of the Spanish pilots, and the American, checked out in Spitfires, and six of us in the ME 109.

The Spitfires and Hurricanes were all initially serviced and refurbished where necessary, by a firm called Simpson Aviation Services, of Elstree. They continued to do second line servicing of the British aircraft throughout the film, and in fact, are still involved with servicing the aircraft before they are returned to their various owners.

First line servicing of the British aircraft was done by Royal Air Force personnel, all of whom had volunteered for the job. This not only included the flying aircraft, but also the static and taxiing ones. As might have been expected, there was a very large percentage of senior NCOs in their number. They all worked very hard, and produced excellent results from old and in some cases, very tired aircraft.

The Spaniards had their own servicing team, led by an engineer officer of the Spanish Air Force. They initially carried out both first and second line servicing, but as time got more and more protracted so they gradually left, and eventually much of the Spanish first and second line servicing was done by the Royal Air Force and Simpson Aviation ground crews.



ME 109

The fact that, once in good flying condition, the aircraft continued to fly with relatively little unserviceability, is a great tribute to all the ground crews involved, especially those loaned by the Royal Air Force.

I reported to Royal Air Force Debden on 28th April, and met five other pilots, who had already been there a week, and the other four who were reporting at the same time as myself. We went to Pinewood Studios the next day, and learned something of the background to the film, what we were expected to do, the aircraft we were to fly, and so on. Flying started on 30th April at Debden.

At this stage we had one dual Mk 8 Spitfire and two Mk 9 Spitfires. Conversion consisted of 40 minutes in front of the dual aircraft with a pilot who had converted the day before in the back, and consisted of general handling and three or four circuits. Then a couple of solo details in Mk 9's, then formation, attacks and tail chasing. We continued to make the odd trip in dual when the Mk 9's were not available or full. The weather was very dull during this period, and I did not seem to fly much above 700 feet for the first half dozen sorties.

Two pilots only were cleared to fly the Hawker Siddeley Hurricane, one of whom I volunteered to be. I collected it from Henlow in early May, having had a briefing at Dunsfold on how it worked. So then we had three Spitfires and one Hurricane.

We left Debden and operated from North Weald for about a week in May, until the Spaniards arrived at Duxford. At North Weald a lot of ground shots were done, with us taxiing past as background action with real actors doing the running to and climbing into the static aircraft in the foreground. A little flying in support of this was involved, but not much.

Finally we got to Duxford at the end of May, and started doing upper air work. However, we had to move back to Debden in early June while they did a large amount of ground shooting on various sites built at Duxford, and some Hurricane flying took place at Duxford, from a grass strip, at this time. However, the main flying, large formation shots, was done from Debden during this period.

Back to Duxford in late June, and six Spitfires went off to Hawkinge for the week. The Hurricanes, and myself stayed at Duxford.

During this build-up period, further refurbished Spitfires appeared from Henlow, most of which initially had overheating troubles. However, once sorted out, they kept remarkably serviceable. Also at this time the Coltishall aircraft came on to the scene, and so did the Canadian Hurricane.

Generally speaking from then on we were at Duxford until the aircraft went to Sywell for filming of grass take offs and landings in late September, and got bogged down for a week. We all moved to Bovingdon at the end of September.

In the meantime, after a fortnight of extremely bad weather at Duxford in early August, the Spitfires, three ME 109's and the camera B25 went for ten days to Montpellier in the South of France, to film formation shots in good weather. They did a large amount of flying there, most pilots getting 25-30 hours during the period, in transit and filming. Those, like the Hurricane pilots, who stayed at home hoping to achieve something with the Hurricanes, ended up doing endless taxiing at Duxford on non-airworthy Spitfires, amid exploding holes in the ground. Exciting in a way, but not exactly like the South of France by Spitfire.

Once at Bovingdon, everything got slower and slower, and more and more half-hearted, and the dread day came on Friday 11th October, when all but one of us were told we were not required back on Monday. Typically it was a wet, miserable day, so we could not even make an excuse to have a last ride in a Spitfire.

The flying was very varied, and in some instances very exacting. It ranged from special take off and landing shots, which had to be positioned in a certain way, formation take offs and landings in similar conditions, individual and formation manoeuvres with the helicopter camera aircraft, to large formation mix-ups to simulate dog fights behind the B25 camera aircraft.

All flying exercises were preceded by a briefing in some detail, of what the airborne director and cameramen wanted, and this did not always match up with what was physically possible. Even when this was pointed out, the filmers who after all, controlled the money, tended initially to ride rough shod over our suggestions, and we would have to go ahead and try what they wanted. After several wasted sorties, with perhaps 28 aircraft airborne for an hour and a half, they did start to see reason, and our suggestions were sought more readily. This, the very bad weather, the language difficulty with the Spanish pilots, and some rather poor communication equipment, all added up to a large number of wasted sorties, and frustrations all round.

The method of trying to stage a dog fight provides an excellent case in point. The idea was to lead the formation in the B25, using

the tail camera position. Follow that maybe, by the two HE III's in loose formation, and on perch positions on either side to have a mixed bag of Spitfires, Hurricanes and ME 109's, say a dozen on each side. Over and above this was usually a Spitfire and a ME 109 on a separate perch, whose job it was to provide foreground action close to the B25 using the various smoke devices with which they were fitted. Several aircraft in the main formation, both the HE III's, and even the B25, were also fitted with smoke. On the command 'Action !' the two large formations would converge behind the HE III's, within camera view of the B25, fan out into individual aircraft, weaving and tailchasing, smoking where they could, and the two individualists would make a close pass on the B25, one on the other's tail. In amongst all this, one Heinkel would normally smoke and fall out of the formation. As can be imagined it now and again got quite exciting in the middle of this lot, and it was very frustrating when one saw the rushes to see how unexciting it often looked on the screen.

Add to all this, a film director in the B25, who was impatient for every one to reform formation as quickly as possible for it all to happen again, the B25 pilot knowing that he was going outside his designated area and wanting to turn round, a camera man interested in which way the sun was, HE III's which could only go at 160 kts or less, having to re-form formation, Spanish pilots who initially were not too happy with speaking English, or with navigating over a foreign country, and who did not like their ME 109's for manoeuvring at much below 170 kts, and pretty poor communications, and it is not surprising that people tended to get a little despondent now and again.

However, one or two shots they did take of such formations were spectacular, and can obviously be used with different cuts, and different emphasis, time and time again in the film.

In addition to the large formation filming, individual formations of Spitfires, Hurricanes and ME's were filmed making attacks on their opposite numbers, from both the B25 and the helicopter and some of these look very good indeed.

The two seat Spitfires were used in large formations in the background where they will not be noticed, as were the Mk 14 and Mk 19 Spitfires with their rather different nose and tail shapes. The two seaters also used to carry camera men who took film of formations from within, and one of them was converted to be flown from the back cockpit, with a camera/mirror combination which provided film taken through the gunsight. Some good film was obtained in this way, and I was lucky enough to do some of this flying, chasing a smoking ME and attacking HE III's ; so can claim to be director and cameraman of two or three sequences ; whether they use them in the film remains to be seen.

Another interesting camera mount was built into the wing of a Mk 9 Spitfire, in which the camera watches the pilot as he flies the aircraft, and searches the sky. ME 109's appear in the background and flash past, the aircraft smokes, and the pilot opens the hood and starts to undo the straps. Not unnaturally, it is not carried to the logical conclusion, the final part being from a mock-up at the studio.

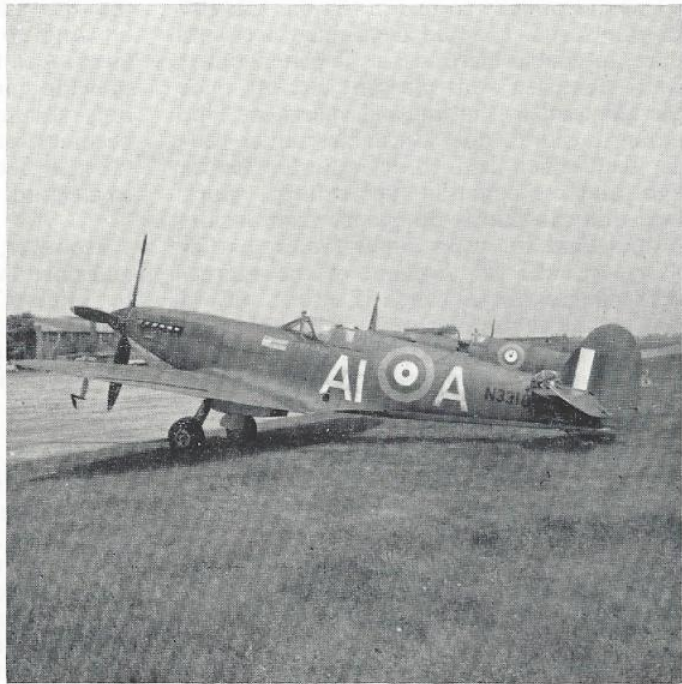
The poor weather was the biggest bugbear of the whole film. We were not permitted to fly in IMC by the Board of Trade, and not many of us particularly wanted to, with some of the older and more unreliable instruments. For historical accuracy all filming had to be done in sunlight, if possible, with white fluffy cumulus cloud about. There was very little of either this summer and we waited endlessly at all the places we operated from, in varying degrees of comfort, for a miracle to happen, and seldom did it. Even on perfectly flyable days by any other standard we often could not fly, because the weather, or light was not just right. This, and the fact that continuation training was practically non-existent because of the cost to the Company, were among the biggest morale drainers of the detachment.

To say that I am delighted and thankful for having been given the opportunity to fly Spitfires and Hurricanes, is a thorough understatement. I cannot remember, in 3,000 hours of flying, enjoying any type of aircraft as much as the Spitfire, very closely followed by the Hurricane.

I was thankful that there was a dual Spitfire available for the familiarisation sortie, because it was rather a surprise to have all that noise, rather rough sounding noise after a Jet Provost or a Chipmunk, not to be able to see well for landing, and to find such sensitive elevators. However, after forty minutes I was very happy to go off, in poorish weather, in the Mk 9, which I enjoyed very much. But the aircraft I liked best of all is a Mk 5 now belonging to the Shuttleworth Trust, which is a delight to fly, being lighter than the Mk 9 and better harmonised on the controls. I cannot imagine a nicer pure flying aeroplane.

The Hurricane I flew from scratch, and found very comfortable, but not as clean-cut on the controls as the Spitfire. However, it has several good points, being very nice for general handling, more easily flown ade-

Spitfire 9 - G-ASSD





A typical 'Battle of Britain' film summer scene at Duxford

quately by inexperienced pilots, and, of course, having a wide under-carriage, is easier to control on the runway after landing. A bit lacking in performance compared with the Mk 9 Spitfire, but nearly as good as a Mk 5. Another delightful aircraft to fly.

I was also lucky enough to fly the ME 109 for one sortie. I would have liked a couple more, to enable me to assess it better, but it again seemed a very pleasant aircraft once one got used to the unusual sports-car type seating position, non-adjustable rudder pedals, seat which had to be adjusted before flight and the coffin-lid type canopy, which once shut can hardly be opened from inside. It does tend to swing about rather, particularly on take off, because of the narrow track undercarriage, which is a long way in front of the centre of gravity. I am told that this led to a large number of accidents during the war, and it certainly led to one at Duxford, in which the aircraft swung on landing and was written off. The pilot, a Spaniard, was unhurt. In the air, it handled very well in the rolling plane, not as well as a Spitfire in the pitching plane, and tended to slip and skid without the pilot noticing it. This largely because there is no adjustable rudder trim on the aircraft. Those with a little more experience in the type liked it very much.

Although the part of the film we were

mainly concerned with was the pure flying of the aircraft, we did have some opportunity of seeing something of the filming on the ground, particularly during shots at the various airfield locations at North Weald and Duxford. Here, as spectators, one got the idea of the tremendous amount of organising which falls on the location manager, who has to organise all the props, extras, actors, directors, cameras, camera men, make-up men, hair-dressers, carpenters and labourers into the right places at the right time, also house and feed them, and attend to complaints from local farmers about people on their land, and local school teachers about aircraft endlessly low-flying over the school. Also,

the mixture of organisation and artistic ability required of the assistant director, who, with his various assistants, sets the whole scene up for the director proper. This really becomes harassing when aircraft are to be taxied as background to actors playing some scene, with mock bombs blowing up not far away, and the one off shot of the Duxford hangar blowing up and burning down, also not far away. Add to this vagaries of wind direction, blowing smoke over the cameras, and the sun only shining fitfully, and life for everyone becomes rather hectic, and at times a certain tartness between directors and others tends to creep in.

However, once we realised their problems, and once they realised we were not prepared to attempt the impossible, or even imprudent, at their whim and fancy, we did get along very well, and found it was a pleasure to work under conditions so different from the normal Service ones, and with people with such a different outlook.

I must finally mention the meticulous attention to detail in camouflage and markings of all the aircraft, and the enormous expense incurred in obtaining or making up authentic period MT and other vehicles, the provision of authentic uniforms, including flying helmets and flying kit generally, and the creation of airfield dispersals with fibre

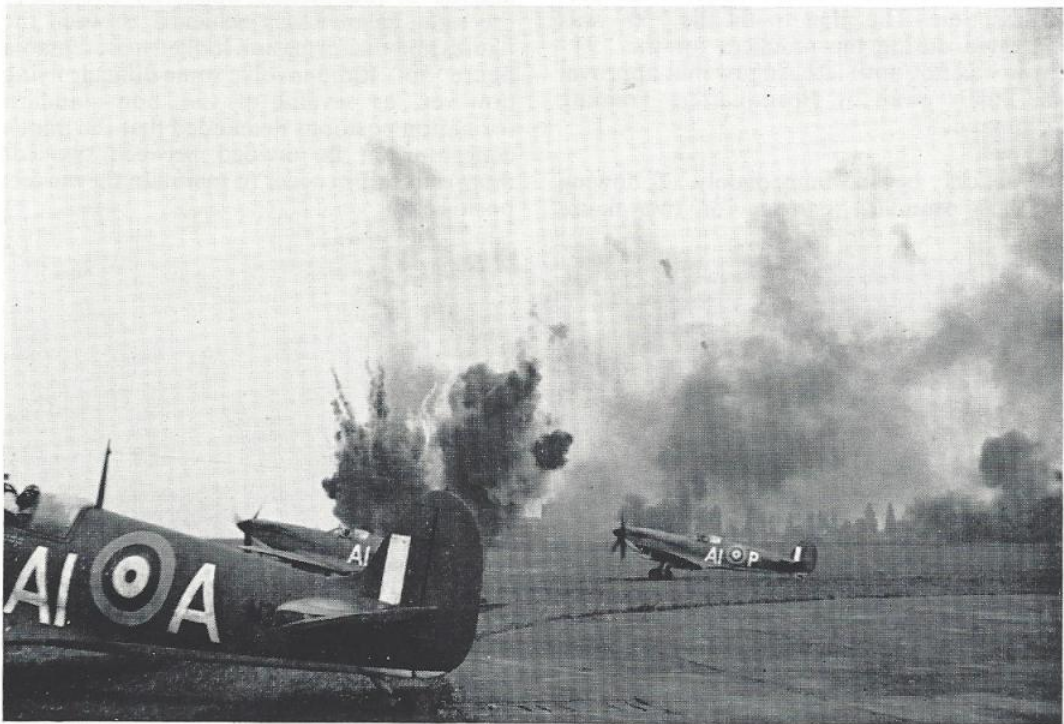
glass buildings, turf covered plywood dispersal pens, and the full sized fibreglass models, and, in one case, facade of a French chateau, I mentioned earlier. All this only on the airfield dispersals. Far more was done in the studios and in Spain before we joined the film, and one can see that all this, with the immense cost of buying and operating the large numbers of aircraft involved, adds up to an extremely expensive film.

I flew 49 hours on Spitfires, 32 on Hurricanes, and half an hour on the ME 109, over a period of nearly six months. Those lucky enough to go to France achieved about 28 hours more than I did. This flying in itself

was great fun, and ample recompense for long hours of sitting around waiting for things to happen. But add to it the chance to see a film of this size being made, to meet the people making it, including the Spanish pilots, with whom we got on very well, and to serve as a member of a 13 UE Spitfire Hurricane Squadron of tremendous spirit, in 1968, and one can appreciate what a marvellous, rewarding and unforgettable experience it was.

I am assured by those few who have seen the first rough cutting of the film put together, that the whole thing is a tremendous success, and I, for one, am very much looking forward to seeing it.

Taxying through bombursts — North Weald



FARNBOROUGH '68

To mark the 50th Anniversary of the Royal Air Force, the 1968 Farnborough Flying Display began with twenty Jet Provosts of the Royal Air Force College Cranwell flying a 'figure 50' formation overhead the Show. The formation was led by the Chief Flying Instructor and the aircraft were flown by flying instructors of Flying Training Wing.

This was not the first venture by Cranwell's QFIs into the big formation league. For the Graduation Parade of 93 Entry, the Commandant authorised an eighteen aircraft formation forming the number '93' over the parade. Regrettably, because of extensive low cloud and poor visibility on the day, the formation was limited in size and number to a 'diamond nine.' However, on the occasion of 94 Entry's graduation the weather was marginally better and the figure '94' overflew the College at the prescribed time. The plan to fly the '50' was suggested during the practices for the '94' but it was not until late August that approval was finally given by Headquarters Training Command.

Practices began immediately, following the now standard pattern for two figure

formations. The '0' led by the Chief Flying Instructor, flew first, with the critical eyes of the '5' pilots watching the flypasts. Then, in turn, the '5' pilots led by OC 'A' Flight, suffered similar indignities. The next practice involved both figures flying together with the whole formation being shaped and aligned by an observer in a 'whip' aircraft flown directly beneath the formation.

Some minor changes proved necessary. The '0' was increased in size, and its symmetry improved by the use of ten aircraft instead of nine; variations in the style of the '5' were also tried as it was found that the number could be interpreted as an 'S' if the top became curved, or as a '6' if the tail moved forward. A continental '5' with a swept tail was also tried but later discarded as it destroyed the balance between the '5' and the '0.' (See picture, opposite) Eventually the right balance was achieved between the figures and the formation looked a presentable figure '50.' It did involve some difficult flying however, as several of the non-standard formation positions demanded that the pilot's concentration be divided between two (or more) aircraft in order to maintain the correct positions.



At Lyneham, before the first flypast



An early practice at Cranwell

The precision timing required for Graduation Parade fly-pasts demands co-ordination between the lead aircraft and the Commandant's ADC on the ground. To assist in this, the formation flies a holding pattern until a few seconds before the overhead time where from the ground a 'tell-tale' keeps the formation leader informed of the progress of the parade via a portable VHF set. After this, arriving overhead Farnborough at a specific time seemed relatively easy.

By now, liaison with Farnborough was going ahead and the route from the detachment base at Lyneham to Farnborough had been evolved. The route produced two unexpected hitches. Firstly, a holding pattern could not be used because the formation had to fly through the London Terminal Area, and without this flexibility timing became more critical. Secondly, the route involved a right hand turn. This may not seem to be a particular problem but all practices had involved left turns. Also a two-figure formation has to separate into its individual figures for any turns and reform on straightening up. The run into Farnborough was such that the final roll out was only ten miles

from the airfield. Thus in two minutes the leader of the '5' had to close up to the '0' and the formation had to settle down before coming within sight of the spectators, at four miles or so. Another practice was scheduled.

In the meantime, the CFI was leading a formation of three aircraft around the route at Farnborough. This was part of the formal rehearsal and served to familiarize him with the run-in and allowed the navigator to work on his timing problems. The detailed Air Traffic clearances involved with flying a formation of twenty aircraft through controlled airspace were also completed.

The fly past was to be performed on the public days of the Show, namely Friday, Saturday and Sunday. The plan was to fly virtually the entire fleet of Mk IV Jet Provosts to Lyneham on the preceding Thursday. This alone provided Engineering Wing with something of a headache, but servicing schedules were re-arranged and overtime put in by the ground crew. They were all there on the day — with three spares ! The ground crew were to follow by Britannia aircraft, save for a few enthusiasts who flew down in



They fly by the seats of their pants !

the formation just for the ride. Unfortunately the weather was a trifle menacing, so the hoped-for bonus practice did not materialize as the aircraft had to be flown in sections of four at five minute intervals.

The twenty-four Jet Provosts provided a rare sight at Lyneham where excellent co-operation was received. The Mess was very full, however, and like Air Support Command's poor relations, everyone trudged off to the Route Hotel where a re-acquaintance was made with the standard Royal Air Force dormitory. Curiously, this brief encounter with communal living was to provide a fruitful source of humour over the next three days and an insight into a variety of different sleeping schedules.

Briefing on the Friday took place in the passenger lounge at Lyneham. A kindly met-man explained that the gusty 45 knot wind might involve a somewhat rough ride. He was not wrong — it was extremely bumpy and the formation had to join up in the middle of a rainstorm. The right hand turn went satisfactorily and in good visibility the white tents at Farnborough stood out well. The formation flew at 2,000 feet and at the back everyone was working very hard.

Judging by the whip's commentary, it sounded as if each and every aircraft was out of position right up to the last moment when he broke away to avoid being seen by the spectators. However, the man from Cranwell on the ground said it looked like a '50' ! The winds on the final run in made the formation a few seconds late, but no complaints were heard. The formation returned as a '50' to Lyneham, and overflew before landing.

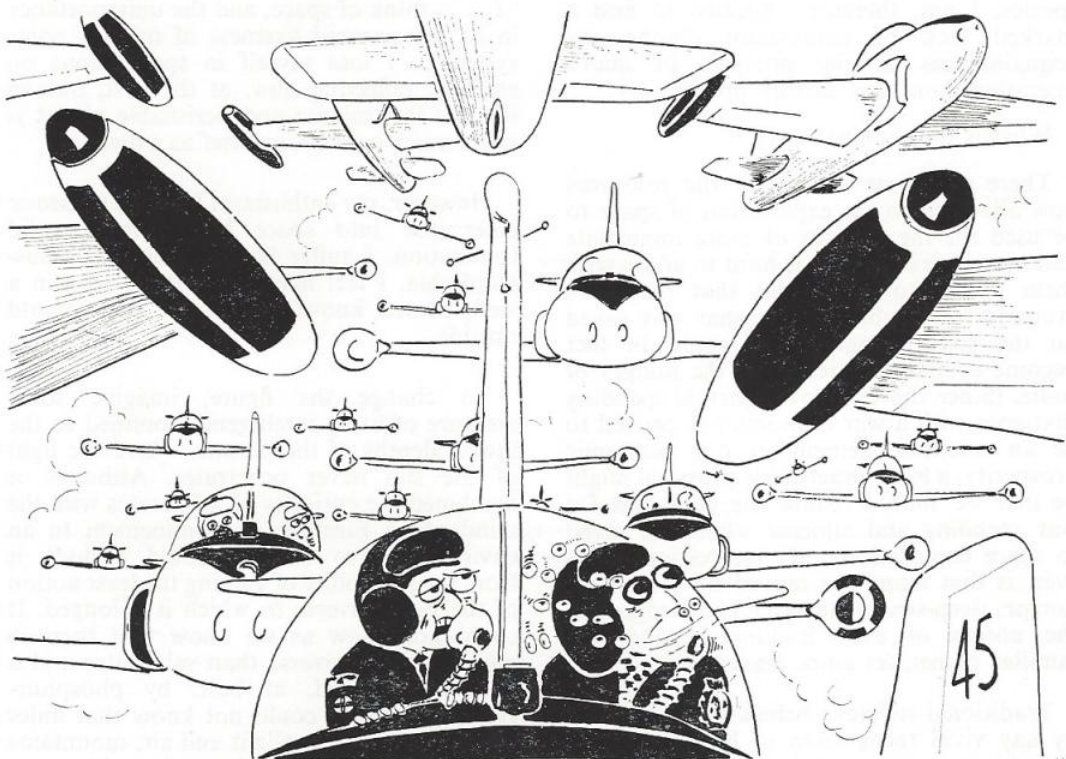
Having thus attracted some attention there were many eager applicants for the spare seats for the fly-past on the Saturday, and in fact there was a passenger in every aircraft when the formation set off for Farnborough that day. Though the wind was almost as strong as the previous day, there seemed to be less turbulence directly over Farnborough, and everyone was quite satisfied with the performance. However, one pilot had a rather traumatic experience at the crucial moment when his passenger asked 'When are we going to close up into the 50 ?'

The plan for Sunday was to return to Cranwell direct from Farnborough as long as the weather permitted the formation to fly under the Green I airway. Since diversions

are sparse on a Sunday afternoon it was decided to leave the decision until after the fly past. This also meant that the ground-crew had to wait until after the fly past before boarding the Hercules for their return trip to Cranwell. As the pilots boarded the coach for their aircraft, the heavens opened, the cloudbase came down and the visibility was reduced to nil. One of the spare aircraft was despatched as weather check. Fortunately a favourable report was passed, and as everybody started up the weather appeared to be improving. The storm passed as the formation lined up for take-off but it was heading straight for Farnborough which meant that the formation would have to

plough through it. It seemed an age getting through but eventually clear sky appeared and the formation flew on to Farnborough in fine weather. The flypast went well and the formation set heading for Cranwell in high spirits.

The '50' flew overhead Cranwell before splitting into separate figures and then running in to the airfield in two echelons for the break and landing. The aircraft landed at 3.15 pm and the pilots were seated in No 1 Mess in good time to see themselves on television at 3.30 pm. In retrospect it was a good experience, much enjoyed by all those who took part.



"WHEN DO WE CLOSE UP INTO THE '50' THING THEN?"

WHY I'M FOR SPACE EXPLORATION

by LOUIS J. HALLE

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There has been life on earth for over 2,000 million years now, and man himself goes back at least a million. Yet it is less than a dozen years since this life, developing and proliferating for so long, has at last emerged from our planet's atmospheric envelope into outer space. A scholar of a million years hence, wherever in the universe he is, may well regard the middle of our century as the turning point in the career of earthly life and, specifically, of our own species. I am, therefore, puzzled to find a marked lack of enthusiasm among my acquaintances at the prospect of man's liberation from this earthly prison.

What is the explanation ?

There are those who want the resources now allocated to the exploration of space to be used for the support of more immediate and mundane causes. It is hard to argue with them except to the extent that there are grounds for doubting that what was saved on the space programmes would in fact become available to feed, say the hungry of India. (Since the vast governmental spending that goes with a war economy has proved to be an essential element in our economic prosperity, a more practicable proposal might be that we should reduce the occasions for war spending and allocate what was saved to space exploration). My impression, however, is that many are moved by a spiritual horror, deep-seated but unacknowledged, at the notion of even looking beyond our familiar planet, let alone leaving it.

Traditional religious beliefs are threatened by any vivid recognition of how small our planet is in a cosmos of thousands of millions of galaxies, each with thousands of millions of suns, many of which must have planets like ours, the whole spread over a distance that a beam of light, travelling at 186,000 miles per second, would take several thousand

million years to traverse. For some there is simply the child's fear of leaving, even in imagination, what is after all home — be it ever so humble. But I myself do not feel as attached as they do to this increasingly cluttered and polluted planet. I regard it as too small, and its prospects as a habitable environment for the long future worry me. Sometimes, when I have horrors of what may be, I find relief as Logal Pearsall Smith did when the world was too much with him : ' I . . . think of space, and the unimportance in its unmeasured vastness of our toy solar system ; I lose myself in speculations on eternity, reflecting how, at the best, human life, on this minute and perishable planet is but a mock episode, as brief as a dream.'

However, my enthusiasm for man's historic emergence into space has a more solid foundation. I suffer from intellectual claustrophobia. I feel like Chuangtzu's frog in a well, denied knowledge of the great world outside.

To change the figure, imagine some creature of lively intelligence confined to the lowest depths of the oceans, where the light of the sun never penetrates. Although it combined the curiosity of a Socrates with the mind of an Einstein, its confinement to an environment so limited would exclude it from the possibility of gaining the least notion of the real universe to which it belonged. It could not know as we know that there is more to that universe than salt water and a darkness relieved, at best, by phosphorescent gleams. It could not know that miles above there were sunlight and air, mountains tipped with snow, days alternating with starry nights. It could not know that the ocean was, together with land, merely the surface of one among countless spheres errant in space. From the remains of organic decay that sank to its level it might hypothecate the existence

of life far above, as we have in the past drawn conclusions from the cosmic rays that penetrate our atmosphere to reach us. Still, the ontological speculations of even the most brilliantly endowed philosophical mind, confined to such an environment, would be fruitless and absurd. Any logical order that it formulated to explain being would be so pitiful in the limitations of its scope that such creatures as ourselves, relatively godlike by virtue of our larger world, might properly be moved to tears or laughter.

Imagine this submarine species, now, beginning to make technological progress that enables it to explore ever higher reaches of its environment in craft that maintain the pressure of its native deeps. Eventually it rises to the surface of the sea and begins the discovery of a world that it could not even have begun to imagine in the confines from which it has at last been released. Surely we men are in that position. Until recently we thought our earth constituted virtually the whole of the cosmos, of which it was the centre. In the last 300 years, however, we have begun the discovery of a universe that earlier hominids had not even imagined. Of course this process has been upsetting of traditional convictions. We can no longer believe that God sits 'up there' in the sky, as the deep-sea philosopher might find he could no longer believe in a God who dwells in eternal darkness, breathing salt water, after he has seen what a universe there was above the surface of the sea. But loss of the certainty that goes with ignorance is the price that must be paid for progress toward whatever the ultimate truth may be. The loss of darkness is the price of light. If we had not been willing to pay this price in the past we might still be offering human sacrifices to this or that Baal.

Now that we know there must be millions of millions of other planets like ours circling other suns in the far realms of space, it has at last become implausible that we men are the only self-consciously intelligent creatures in the cosmos. Think what possibilities this alone implies as we extend our knowledge into these realms!

It is true that Einstein's theory of relativity sets bounds to such converse as we might otherwise have with our kind elsewhere in space. Since a message cannot travel faster

than the speed of light, it would take ten years to get one (by radio) to our nearest neighbour among the stars, and we would have to wait a minimum of twenty for the reply. We could not expect an answer from the nearest galaxy in less than four million years.

Relativity appears to set the same limit to the speed with which any spaceship could travel out from the earth. If it could attain the speed of light, a stay-at-home observer watching it through a telescope would see it disappear at that point — for the greater its speed (relative to him) the less its apparent volume, which would reach zero when it reached the speed of light. (As an object approaches the speed of light its volume approaches zero, its mass approaches infinity, and its constantly retarded time approaches the stopping point). Therefore it, too, limited to the speed of light, would take millions of years to the nearest galaxy.

What is fundamental to relativity, however, is that the speed of light is constant from the point of view of any observer, whatever his state of motion relative to other objects in the universe. To an observer on earth, a spaceship travelling away from it at 93,000 miles per second would be travelling at fifty per cent of the speed of light; but to the occupant of the spaceship it would be motionless relative to the light. It would be travelling at 0 per cent of the speed of the light, which would be streaming past it at 186,000 mps, and what the passenger would see was the earth moving away from himself and his motionless ship at 93,000 mps. As the speed with which earth and spaceship receded from each other approached that of light, the spaceship would approach the point of disappearance in the view of the observer on earth, but it would be the earth that was approaching the point of disappearance in the view of the passenger in the spaceship, who would experience no reduction in his own volume at all.

From his own point of view, the passenger in the spaceship, no matter how fast he appears to be going to the observer on earth, can always fire a propelling rocket and thereby increase his speed — and even when he has done so he will still find himself travelling at 0 per cent of the speed of light,

so that he has come no closer to any limit on how much faster he can go. Long after he has reached the speed of light and disappeared, from the point of view of the observer on earth, he can still go faster.

Here, however, I am leaving out a possible problem, that of accelerating the spaceship, because, if it has attained such a high velocity relative to the entire universe of stars that the stellar masses are moving past it at a speed approaching that of light, any further acceleration might produce gravitational effects that would reduce its volume toward the vanishing point — or such acceleration would prove virtually impossible because, as the ship's volume approached zero, its mass (which resists acceleration) would approach infinity. Concurrently, however, time would be slowing down toward the stopping point for the passenger, who would be aging so slowly as to approach immortality. The millions of years it might take him to reach the galaxy according to the clock of an observer on earth might, then, be only days or weeks according to his own clock.

The disputation of the scientists shows that all these matters are still uncertain, from which it follows that we don't really know that the first space traveller we sent out to a neighbouring galaxy would not be able to make it well within his lifetime — even though it should take him millions of years by our own calendar.

Relativity has abolished absolute distances and absolute intervals of time. Its only remaining absolute is the constant velocity of light, which sets a limit to communication and, supposedly, to the speed of passenger travel. But 186,000 miles per second is, itself not a fixed amount, since the length of a mile and the duration of a second are not fixed. Imagine an observer on earth who sees two spaceships pass each other travelling in opposite directions, each at a speed of 180,000 mps according to his measurements. For him, their speed relative to each other is 360,000 mps, almost twice that of light. But an observer in either ship sees the other passing at less than 186,000 mps, this being the limit of speed at which any object can travel relative to any observer, according to that observer's own measurements. This

relativity of speed limits allows one to believe that, even though we could not send an electromagnetic signal to our nearest neighbour among the galaxies in less than two million years of our earthly time, we might send a messenger in a great deal less of his own time as an individual.

Today, I understand, there would be a problem of finding enough energy on earth to accelerate a spaceship up to the speeds I have been referring to. There are, however, such things as antiparticles, and when a particle collides with a corresponding antiparticle all the mass of both is converted into energy at the rate defined by Einstein's formula, $E = mc^2$, where m is the mass and c^2 is the enormous quantity that one gets when one multiplies the speed of light by itself — in other words, a prodigious amount of energy from a minuscule parcel of matter. Apparently the problem of energy for acceleration will be solved, then, if physicists ever learn how to construct antimatter in quantity.

Life, as we know it within the terms of our earthly prison, makes no ultimate sense that we can discover; but I cannot, myself, escape the conviction that, in terms of a larger knowledge than is accessible to us today, it does make such sense. Our position is simply that of the intelligent creatures confined to the ocean depths. Now, however, that we are at last beginning to escape from our native confines, there is no telling what light we may find in the larger universe to dissipate the darkness of our minds. There is also the possibility that we may begin to populate new planets as, after 1492, we began to populate a new continent. Suddenly man's future seems boundless.

Of course we don't know what space exploration might lead to, or even whether it can come to anything at all. Would such uncertainty, however, provide a sufficient argument to justify the fish in remaining at the bottom of the ocean, once they had acquired the means to rise above it? I can imagine the debate that might go on in a deep-sea society between the traditionalists and the adventurous, but to me it is clear which side would represent progress and the hope of the future.

WEEPING WOMAN ANSWERS

I am no philosopher for wit I have no tongue
But you who stand with your gun in hand
Must say where I was wrong

Was love wrong on open nights beneath the spangled sky
To raise from dust and pander lust
To dreams as years go by

No son have I though years ago a child played at my side
His flag unfurled he shook the world
And battled for your pride

And for his memory a stone is all you give me now
To share his hurt and curse the dirt
Of you who brought him down.

DREAM

Taking a step beyond the world to where there was no sun,
I wandered with the shadows and the myriad ghosts of time,
Watching the feeble-minded, afraid to break the bounds
To explore the hidden depths within the mystery of the mind.
Me and what is mine. I and where I shall be.
Tomorrow is the lie, the vague confusion generalised,
So it never has a meaning and never does exist.
We walk together hand-in-hand, Horatio, the sceptic,
I, the faithless, treading stars in this fruitless search
To make the meaning of the meaning clear.
It is not counting petals consolidates the truth.
That makes distinction of the black from white
Black as pot I made me, white as snow I wash me
And hang me up to die —

While in between these shades of death
The colours of kaleidoscopes fix somewhere far beyond my night.

J. B. S. Hilton

PARADISE 1968 —

S. G. Appleton

To be alone is to feel self
Naked, uninspired, positively stripped
 Bare,
Where Polar winds whine like the wild
 Coyote:
A vast icefield, white, dense,
Where a single object moans
Screaming to an empty God.
 Nothing exists
But the man and the cold icefield.

Now I see the unseeing love
As the white shaft, the prick of light
That mocks the deep sightlessness
Of the long black tunnel.

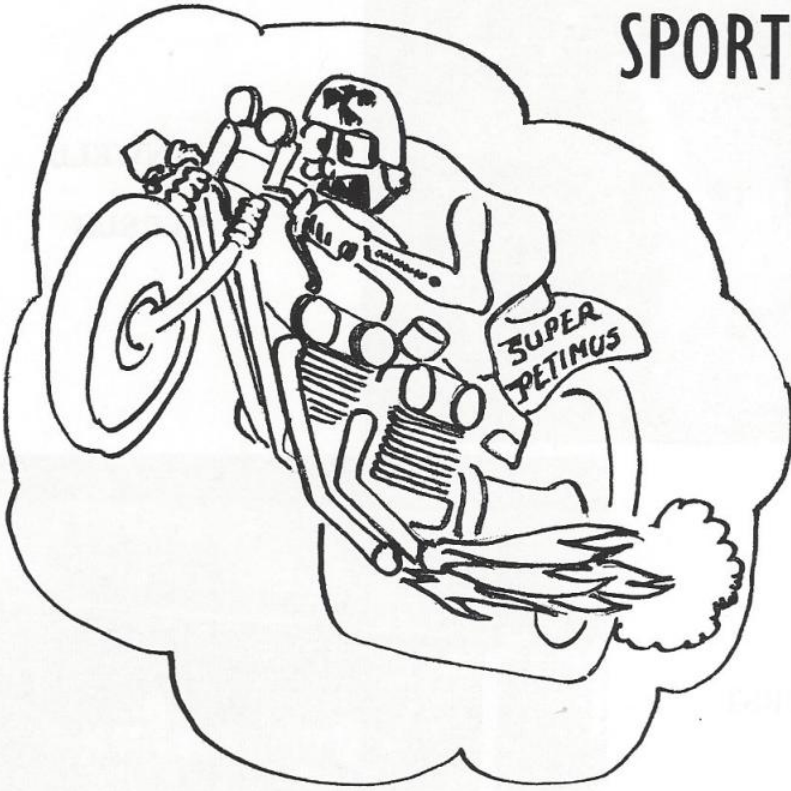
Azure roads and turquoise cars,
Humming wires, neon-screaming bars
Swelling people in the teeming yellow streets;
A stumbling crowd stamping
Half-smoked cigarettes —
 Vivid
 Yet formless,
This crowd
 Makes
An ambiguity of existence,
When only the blind man sees.

Beware the way of Adam's love,
The blind man cries :
(The head rolls on an anguished pier,
Sinking deep into sun-streaked canvas
Of screaming shapes
Of broken ships
And amputated limbs
Dripping gangrene.
 People
Writhing in a churning, lashing sea
Storm-tossed with bold strokes of
 Green and yellow —
I am the mad painter.
I feel and see the world or Erewhon.
My prison your prison.
Love and life and isolation are

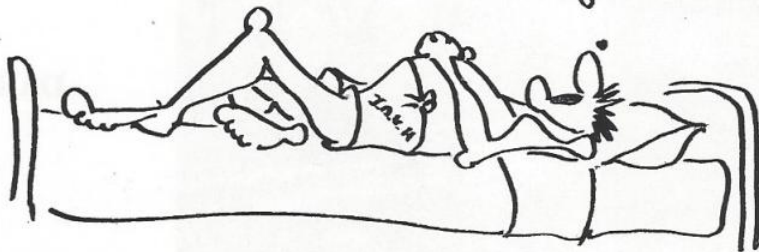
Welded to deceit).

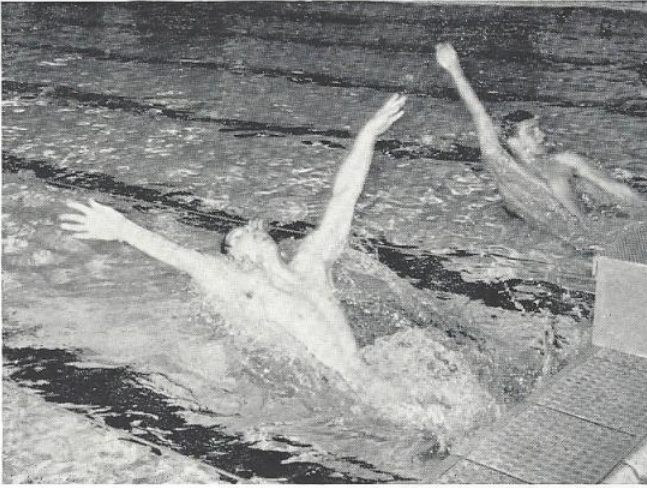
Here is chaos
The paradise of Lear
The history of the world

SPORTS



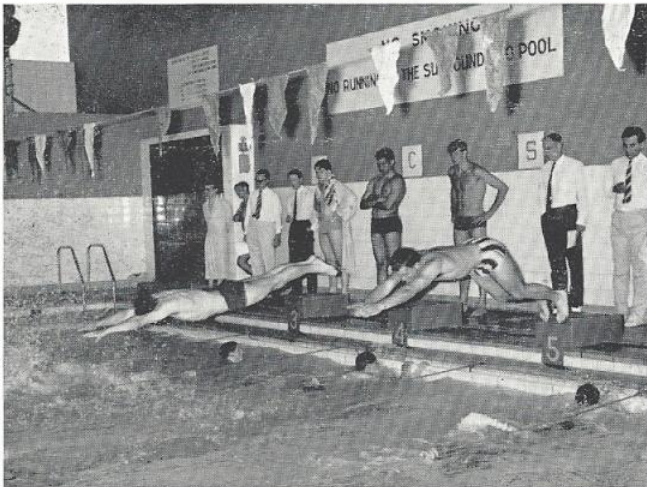
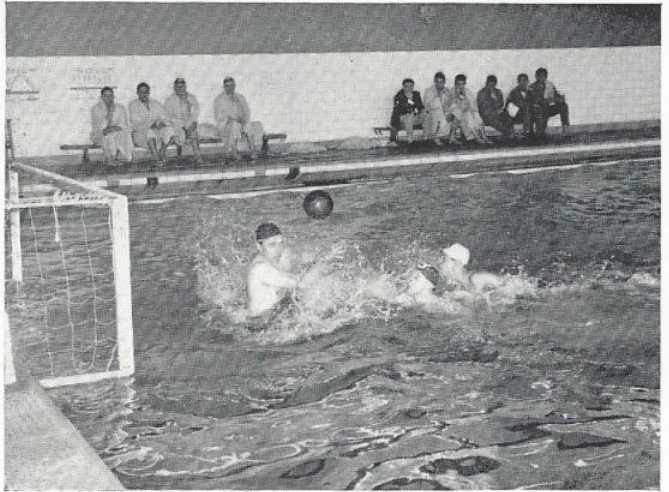
**AND
ACTIVITIES**



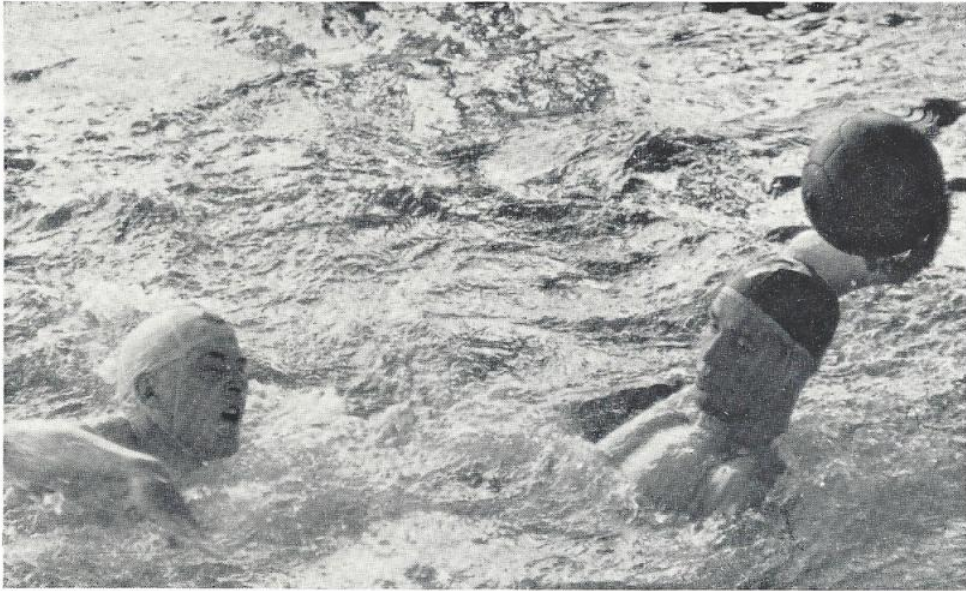


**CRANWELL
VERSUS**

SANDHURST



**AND
DARTMOUTH**



SPORTS AND ACTIVITIES

EDITORIAL

The Summer sporting season was badly affected at the start by a long spell of wintry weather. The cricket team were saved to some extent by the purchase of a set of covers for the 1st XI pitch. These proved invaluable in the saving of a number of important matches. For many sports, however, the season was shortened.

The cricket team was severely weakened by the graduation of No 93 Entry and a number of pre-season injuries. The results, therefore, did not come up to the usual expectations of the College.

Other sports, however, provided the College with a high degree of success in the sporting field. The swimmers, yet again, provided an extremely strong team. The swim-boys produced a winner in every event of the triangular match against Sandhurst and Dartmouth. Unfortunately the support they received did not match their efforts.

It would also be encouraging to hear some support at the stadium for the athletics team.

Although the athletics team did not produce outstanding results overall, a number of individuals turned in excellent performances. In the triangular match held at Sandhurst, the team spirit reached a great level and eighteen personal bests were recorded by the College athletes in the one afternoon.

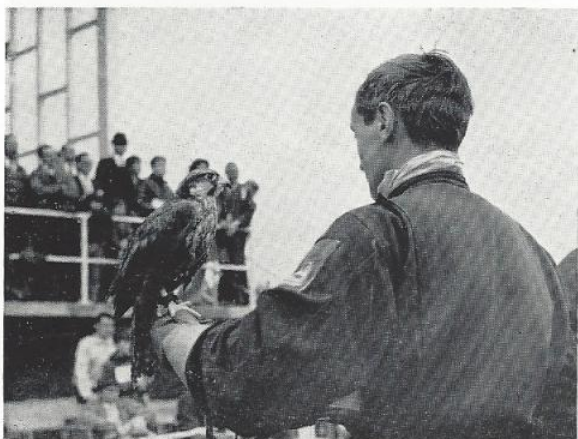
The rowing team gathered a steady harvest of cups into the College. The results of their strenuous training were self-evident. The 112 mile row from Oxford to Westminster Bridge in an attempt to break a long-standing record was an unusual and very creditable performance, although the record still stands.

Congratulations are in order for the 22 Nijmegen marchers, all of whom completed the march in the required time.

The three canoeing crews which took part in the Devizes to Westminster canoe race over 125 miles and 77 locks were equal to, if not better than, many more professional crews and did the College credit.

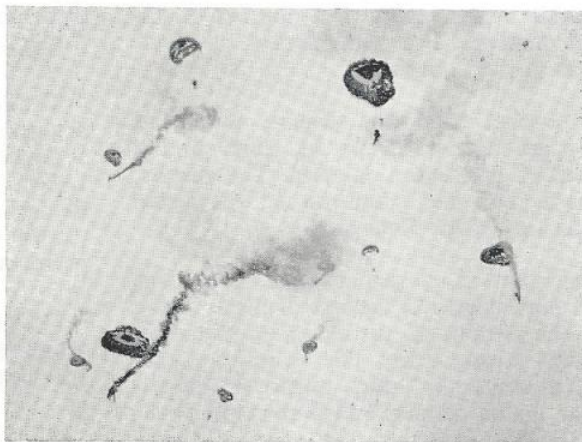
The College was pleased to stage an evening of sport in the stadium on 5th June to mark the 50th anniversary of the RAF. An invitation mile, which included many of Great Britain's fastest runners over the distance, produced a fast time although a sub four minute mile was not achieved. Another

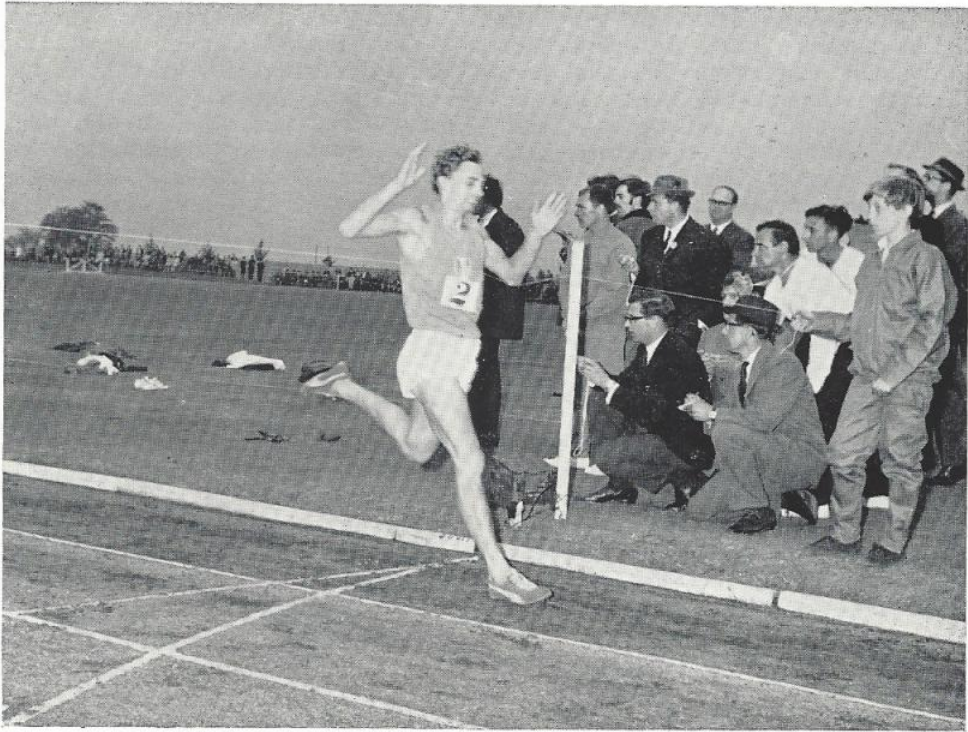
event was a soccer match between an RAF XI and an International XI which produced a high scoring and entertaining match. The RAF Falcons parachute team dropped into the stadium at half-time with immaculate precision to provide a thrilling interlude for the pleasingly large crowd.



*Fred the Falcon,
Mascot of the
Falcons Free Fall Team*

*The Falcons come down to
earth*





Walter Wilkinson storms home to win the invitation mile

ATHLETICS



This has been a season of mixed fortune. The athletics team was not as strong as it has been in the past two seasons, mainly because behind the front-line men there was practically no depth, especially in the field events.

We won our first 'warm-up' match against City of London School, but then suffered a heavy defeat at the hands of a strong Lincolnshire AAA Junior team, but on this occasion eleven of the best College athletes could not compete because of other College calls. A better performance was put up in a triangular match at Leicester when we were second to Leicester University and beat Hull University. From then on the team

developed well and in the inter-college triangular at Sandhurst, it reached such a peak that 18 personal best marks — an astonishing number — were recorded by College athletes on the one afternoon. Unfortunately, Sandhurst still succeeded in winning, though we beat BRNC Dartmouth comfortably.

This season we decided that, as schools have an unfair advantage over us in the throwing events because they use lighter equipment, we would initiate a 5-sided fixture here at Cranwell and meet all our school opposition on one day. This was an outstanding success, the College defeated Welbeck, Wintringham G. S. and Kim-

bolton, but Oakham deservedly won the match. In our other home fixtures we defeated Signals Command, Sheffield and Nottingham Training Colleges, Loughborough University, Milocarians and Lincoln AC losing only to Holbeach AC and Hull University. We lost our away match with the super-power Loughborough Colleges, and won the 23 Group Area Championships at Oakington.

In the new-styled Training Command Championships at Cosford, the College had a good number of successes. Bowden won the 3,000 metres Steeplechase, Wakely was 2nd in the 880 yards, Joyner was 3rd in the Triple Jump, Clark 3rd in the 1 Mile, Draper 3rd in the Hammer, and Leigh 4th in the 880 yards. As a result of this, six athletes went through to the RAF Championships where our outstanding success there was Bowden, who ran magnificently to take the 3,000 metres Steeplechase title.

Four College records were broken this season. Draper now holds the new Hammer record (134ft 10ins), Bowden holds the new 1 and 2 Mile records (4 mins 18.6 secs and 9 mins 24.2 secs) and Taylor, who unfortunately could not be released to go to either the Command or the RAF Championships, now holds the new Javelin record (183 ft 7½ins).

Bowden, Paterson, Taylor and Draper have all represented the RAF this season.

Thus it has been in many ways a very good season and the athletics team as a whole would like to thank Flight Lieutenant D. Shaw, our guiding officer for the past four seasons and Sergeant F. Campbell, who has coached athletes at Cranwell for 8 years, for the help and encouragement they have given, and to wish them luck in their new postings.

MODERN PENTATHLON

The Modern Pentathlon team received a severe blow when four of its members graduated with No 93 Entry. This meant the virtual rebuilding of the team around the two remaining members.

Not surprisingly the early part of the season did not produce good results, but it did serve to give experience to those who were new to the sport. In the RAF Pentathlon Championships, Halton narrowly beat the Cranwell team for 1st place, thus taking the trophy that the College won last year.

The inter-College fixture held at Cranwell this year was marred by the absence of a Dartmouth team. However, Sandhurst produced two teams and were able to defeat the College.

The match against Durham University was, as always, a good one with the University side winning as expected. In two competitions with Army sides, the College did rather better. The team was developing well and against the Army Catering Corps victory was only a few points away. While at a Bovington Tetrathlon Invitation the team got first individual placing and third team position out of eleven.

It is hoped that this good result will signal further success. There is now the basis of a good team but with plenty of room for new comers to the sport. The target will be to win the two RAF Championships next season and enter a team in the British Junior Championships. If graduation losses can be overcome by the addition of a member from every new entry, then Modern Pentathlon has a promising future at the College.

EQUITATION



The term started very well with the first team, consisting of Hamer, Egnaud and Chapman, winning the Services event in the University Championships at Melton Mowbray. Hamer who captained the team, took the individual prize.

This success was followed by a very creditable performance at the RAFEA Championships held at Cranwell in May when the same team were placed third. Hamer was reserve RAF Champion.

In addition to these two events various matches have been held against several universities, the results of which were entirely satisfactory. The team were unfortunate, however, in losing two of their members towards the end of the term.

Towards the end of the term the inter squadron riding competition for the Jorrock's Trophy was held, 'A' Squadron, captained by Flight Cadet Lambert, were placed first, 'B' Squadron finished second, 'C' Squadron third, and 'D' Squadron last.

Last term saw a change of stables and a swap of horses at the Saddle Club. When the RAF Regiment left West Site, the Saddle Club took over certain huts for the storage of hay, and moved into its new premises. During the term one horse, Sunmint, was sold and another horse, more suitable for beginners, was bought. This horse, a dapple grey mare, is appropriately called Astra.

With the graduation of 94 Entry in August, the Saddle Club loses its captain, Lloyd.

Although no fixtures have been arranged for next term, it is hoped to continue with matches against the universities. Next term

is the beginning of the hunting season and it is hoped that many cadets will be given the opportunity to participate in the sport.

TENNIS

The first tennis team had a satisfactory season. The number and variety of opponents was severely limited because of cancellations due to adverse weather. The first team played thirteen matches, won seven and lost six. Unfortunately two of last year's side were on detachment throughout the season, and this prevented a most impressive record being achieved.

Among the most notable successes of the team were victories against BRNC Dartmouth, Old Cranwellians, Westminster School and RAF Cranwell (Station).

In the inter-college matches, mixed success was achieved. Against RMA Sandhurst, in appalling weather conditions, the team lost 3-6; but against BRNC Dartmouth, the tennis and weather improved, and the team

won 7-2. This last match was the only one during the season where a full first team was able to play.

Throughout the season the team was well led by the captain, McTeer, and vice-captain, Wrigley.

The second team played nine matches, of which five were won and four lost. This was a very creditable record considering there were six new players for the majority of the season. The team had good wins over Welbeck College, Stamford School and Oundle School.

With the services of at least six of this season's regular players, the standard of tennis at the College should be high next year.

CANOEING



This year, the club managed to enter three college crews for the 1968 125-mile Devizes to Westminster canoe race. It was the first time any of the cadets had entered this race, and all crews finished.

The fastest college crew (P. V. Harris and A. Davie) completed the course in 30 hours 30 minutes. A wait of two hours at Tedding-

ton was necessary because the crew had arrived too early and found that the tide was still coming in.

The next crew (M. Davies and P. Burnley) took 33 hours 5 minutes. This crew fell asleep in the boat at Henley and decided to stop for two hours of sleep, but found this difficult because of the cold.

The third crew (A. W. Chacksfield and A. H. Mann) took 33 hours 30 minutes. Their boat received damage and was capsized twice, once by an over-zealous yachtsman. Because of this damage, a police escort was provided for the tideway. All three crews could have done faster times but a high wind against the outgoing tide resulted in 5 foot waves on the tideway. This distance of 18 miles is usually very fast, and took the average College crew 1½ hours in the 1967

race. Under the conditions which prevailed in the 1968 race, it took, on average, 3½ hours.

The support crews worked very well in keeping crews on or ahead of schedule. Much credit is due to their efforts, and the club's gratitude is extended to them.

After Easter leave, a couple of weeks were needed to repair the boats, and once back on the Trent again, training for new members was immediately started. Training intensified towards the end of June, and on Saturday 6th July, we met Dartmouth, at Cranwell,

for a long distance and slalom competition. Cranwell beat Dartmouth by 3 points.

On Saturday 14th July, the Chimay inter-squadron competition was convincingly won by 'C' Squadron, for the first time. 'A' Squadron was second, followed by 'B' Squadron and finally 'D' Squadron.

It is hoped to start training for the 1969 Devizes to Westminster race many months in advance, to give maximum training to the crews, enabling us to make a challenge for the team prize, which goes to the highest placed team of four canoes.

GOLF



Although at the beginning of the season the prospects of the Golf team looked very bleak owing to the lack of players, it has, as the results show, been an extremely successful term's golfing.

We began the season with a good win over Loughborough College on our home course which was followed soon after by an exciting match against Hull University, in which all the games finished on the last two holes. Luck was against us this time however, and we had to accept our only defeat of the

season. In our next match it was a considerable encouragement to receive another win, on a strange course, just before the critical Sandhurst game. This match in fact virtually overshadowed our other games, for although it was drawn it proved to be the best result ever recorded by the Cranwell golf team against Sandhurst. Under adverse conditions the team played extremely well, on a strange and, in places, difficult course, to put a fitting end to the season.

Considerable progress has been made on the nine hole course behind the main college building, this with an excellent new practice net has provided ample opportunity for the players to improve their games during the evenings.

We are sorry to lose, at the end of this term, our guiding officer Squadron Leader Price. His experience and playing ability has been invaluable to team players during his stay at Cranwell. We wish him every success both on and off the golf course in his new posting.

CRICKET



1st XI

The 1968 season's results were disappointing. Of the eighteen matches played, four were won, ten were lost and four were drawn.

A number of factors contributed to our lack of success but the main reason was the inconsistency of the batting. All too often players who were technically well equipped to get good scores suffered lapses of concentration and got themselves out from rash and irresponsible shots. Moreover, the batsmen also frequently allowed the opposing bowlers to dictate the pattern of play and some of the strokeplayers became mesmerised by spin when good footwork, allied to a more aggressive attitude, could have alleviated periods of pressure. Our running between the wickets was also poor. However, numerous team changes occasioned by injuries and loss of form prevented a settled batting order and this probably contributed to the lack of understanding in the middle. Basically though, there was no excuse for the poor calling or the failure to take quick singles or make one run into two. In fact the generally indifferent batsmanship is evidenced by the fact that only two players, Bates against the Officers and Page against the MCC scored fifties.

By contrast our bowling was generally effective and Clark's impressive total of 47 wickets was an accurate reflection of his ability. Buckland and Ball, the openers, both bowled well on occasions but the latter incurred a troublesome ligament injury which kept him out of the game for nearly five weeks. Derbyshire was also a casualty but in his case a cartilage operation prevented him from playing at all and his genuinely quick bowling was badly missed. However, he will be available next season as will Thomas, a leg spinner, who promises to develop into an even better player in 1969.

From a match standpoint one of the highlights of the season was a hard earned draw against a near full strength Signals Command team who went on to win the inter-command cup. We also had a good game against the MCC in reply to whose score of 182 we made 176 for 9, going for a win right up to the last ball. The Sandhurst match provided another weather bedevilled anti-climax and for the second consecutive year the game was abandoned: this time after only a handful of overs had been bowled.

The Dartmouth match, however, was completed in near perfect conditions with our opponents securing a closely contested four wicket victory. Other matches, not least the two day match against Stowe Templars, which we won by three wickets, provided some interesting cricket. Our big problem, though, particularly when batting first was our inability to score enough runs to give Ball, the skipper, maximum flexibility in the employment of his bowlers. In fact Waterfall, the second leg spinner in the side, and Walpita, the off spinner, scarcely had a bowl all season. The state of the wickets, allied to the fact that neither of these bowlers push the ball through, also contributed to their lack of employment.

Although 1968 was not a vintage season for the 1st XI, the team, under Ball's sensible captaincy, generally maintained a very high

standard in the field in which department Penney, the wicketkeeper, Bates and Waterfall were often outstanding. Fortunately six regular members of this year's side will be available in 1969 and they should form the nucleus of a good side next season.

In addition to Ball, Clark and Walpita, new Colours were awarded to Bates and Waterfall who have been appointed Captain and Vice-Captain respectively for 1969.

Finally our thanks to Squadron Leader Allerton whose tireless interest and advice were tested to the full in what must have been, for him, a frustrating season.

2nd and 3rd XIs

The second XI, in common with the 3rd XI, enjoyed a season of mixed fortunes. The constant changing of the 1st XI sadly affected any consistency in the other two elevens. However, from the depths of defeat one week the teams frequently fought hard to achieve success the next. Typical of the spirit shown was the last 2nd game of the season when from 125 for 2, Market Rasen were dismissed for 176, to give the College a six run victory.

The teams were competently led by Moody and Hooper, both of whom benefited from Squadron Leader Mason's inspiring and able guidance.

JUDO



Boston and Grantham Judo Clubs. One cadet from the College, Flight Cadet Haigh, competed for the RAF.

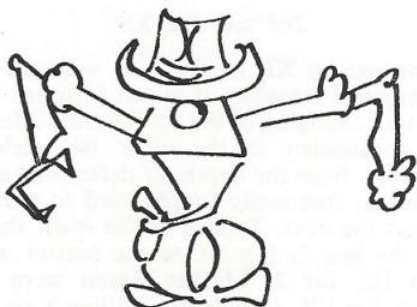
In addition, the combined college and station team has taken on teams from local RAF stations, including the strong RAF Scampton and RAF Stradishall teams.

In the past few months, several more people have been graded, including the guiding officer, Squadron Leader D. V. Delap, from white to orange belt. It is hoped that over the next few months, several more people will be graded.

With the formation of the official RAF Judo Club (RAF Casuals), Cranwell Judo Club has already acted as host for the Casuals in their match against the combined

With the advent of winter sports, the club looks forward to increased membership and the probability of even more matches than the previous term.

FIELD SHOOTING



This term, the Society has again been very active, both with clay-pigeon shooting and, to a lesser extent, rough shooting.

The Competition between Cranwell, Sandhurst and Dartmouth for the Moss Bros Trophy has now been completed, with some unexpected results. We visited Sandhurst and were soundly beaten. Sandhurst then visited Dartmouth and were in turn well beaten. Dartmouth finally visited us and we managed to beat them. Taking the total of the points from the three matches, Cranwell were unofficially placed first with Sandhurst second and Dartmouth third.

It would appear, then, that there is a considerable advantage in being the home team. Moss Bros have suggested that the Competition might be shot off on neutral territory at the London School of Shooting ; this, in future years, would be the fairest method.

A certain amount of rabbit shooting has taken place at Barkston with the help of an amiable ferret named Fred ; Fred's efforts, it must be admitted, have met with a fair amount of success.

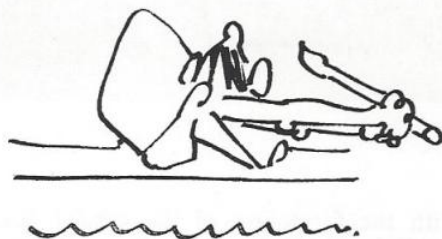
As the close season draws to its end, the prospects for the open season are brighter. Game shooting on our own territory looks as if it will provide us with some interest, and efforts are being made to obtain some permits to shoot for wildfowl on the marshes around the Wash.

The Society would like to extend its thanks to the owner of the esteemed Fred, SAC Morrell. Besides being Fred's owner, he is an experienced shooting guide with a comprehensive knowledge of Barkston Heath's potential as a shooting ground.

ROWING

With the arrival of a number of experienced oarsmen in 97 Entry, the Club began the year with hopes of possessing a very fast junior VIII. At once the oarsmen began a vigorous land training programme and water training was encouraged by the arrival of a new shell VIII.

The first fixture was a match at Dartmouth against BRNC resulting in a win for the home crew. In February, three IV's were formed and entered in the RAF Head of the River Race. The College scored a memorable hat trick by taking the first three places. Shortly after this, three scullers took 3rd, 4th and 5th places at the RAF Scullers Head.



The VIII reformed for the Peterborough Head in which it won the Junior Pennant by coming 8th overall.

For the first time in many years the College entered the Tideway Head of River Race. The crew performed well to gain 185th position out of 370 crews.

The most adventurous undertaking of the Club was a 112 mile row from Oxford to Westminster Bridge. This was an attempt to beat a 144 year old record. This record still stands, although the crew of volunteers, assisted by three support teams of cadets, completed the course. The attempt was sponsored by Harp Lager and it received radio, film and press coverage.

The Club was well represented at the RAF Regatta at which it won the Open VIII,

Senior IV, Novice Scull and Veteran Scull events. The College Junior IV rowed again at Loughborough and lost narrowly in the final. It is hoped that this crew will be able to row at Bewdley, Leicester and Derby before the season closes.

The Chimay Regatta took place once again at Newark. The fours races and the match was won by 'C' Squadron, while 'D' Squadron took the sculling cup.

Colours were awarded to Green, Latten, Pollard, Scoffham and Timms. We would like to thank Wing Commander Ellis and Squadron Leader Clark for their valuable assistance, particularly in the training of new oarsmen.



The College VIII Passing through Reading during The Marathon Row

WATER SKIING



The first tentative steps to open this season's water skiing took place during early April but the waters of the Trent proved a little too cold for even the keenest skiers. It was, however, a good opportunity to give the boat and engine a run after the winter lay-up.

The season, so far, has passed extremely pleasantly with skiing on the River Trent on Wednesday and weekend afternoons,

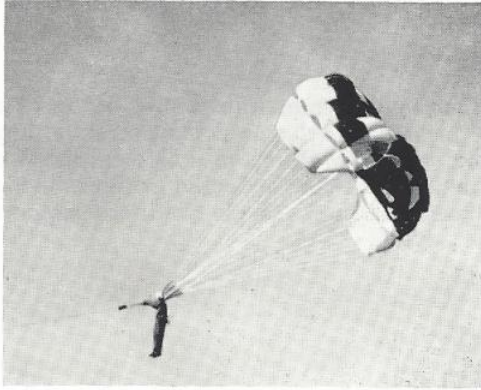
weather permitting and even weather not permitting on one or two occasions. Skills on water have improved all-round giving us three fully competent Slalom-skiers, and ten 'reliables.' Several cadets from outside the society joined us on some occasions.

This summer leave a group hope to travel south to Poole in Dorset to camp and ski for a week. All luxuries will be dispensed with, except that of water skiing !

The society has now nearly completed its replacing of old wet suits and hopes to extend the season into September and October depending on the weather conditions. One or two plan to ski throughout the winter at private clubs nearby. It is only this continuous skiing that can hope to produce skiers of anything like competition standard. The club is very limited in this aim since it possesses none of the equipments such as Slalom courses and jumps that are all part of the Water Skiing Championship. However, plenty of fun and exercise is had by all.



PARAGLIDING



This year, the paragliding section had its busiest summer season since its formation. At the beginning of the summer the College Society bought a new Para Commander and harness which allowed the section to use two parachutes throughout the season. This meant that more ascents were possible for all members and, on the better weekends, complete beginners have reached the stage of

making free descents and performing elementary turning exercises within the two days.

Twelve displays were given during the summer including displays at RAF Wildenwraith's Open Day, The Hucknall Air Display and RAF St Athan's Battle of Britain Day. The section has also appeared on Blue Peter, Pathe News and Movietone News. The money earned from some of these displays is being used to repay some of cost of the equipment which the College Society bore for the section early in the season.

The free-fall course held at Weston-on-the-Green during August was badly timed for cadets and only one cadet was able to attend. He did, however, complete the course successfully and made ten free-fall jumps.

Paragliding is growing in popularity and provides an enjoyable sporting activity for the participants.

AEROMODELLING

The Aeromodelling Section has been quite active especially in control-line flying. Although plans for taking part in outside competitions had to be temporarily abandoned, a few members will be attending the RAF Model Aircraft Association Championships at RAF Hullavington.

Great interest is being shown in slope soaring and in fact several slope soaring gliders are nearing completion. These gliders will be fitted with radio control. Several members plan to camp out in Derbyshire in order to get better slope soaring conditions.

MOTOR CLUB

During the summer term, visits for members of the Motor Club were organised to Jim Russell's School of Racing and to the British Racing Motors factory. The club also managed to run a bus to the British Grand Prix at Brand's Hatch racing circuit on July 20th.

In the winter term cadets will again be able to take advantage of instruction on the Police Skid-Pan. This instruction, given by qualified police driving instructors, should help a great deal in reducing the number of cadets involved in crashes this winter.

PHOTOGRAPHIC SOCIETY

The Society is slowly awakening after several terms of a rather inactive existence. Several plans for the future have been put forward and are being studied.

Now that the College darkroom has been repainted, the Society is now involved in redesigning it. Eventually it is hoped that we will be able to replace much of our old and outdated equipment with modern apparatus

which can be adapted for colour film processing.

Our total membership is now 19 and we are pleased to welcome new members at any time, especially from the junior entries. We would like to thank our guiding officer, Flying Officer Harrison, for his continued support and advice.

DISTANCE WALKING

Since the last period of walking changes have taken place in the organisation, with Flight Cadet Kilminster being appointed Captain and Flight Cadet North Secretary.

In this period there have been three major events. The first was the Ten Tors Expedition on Dartmoor for which training took place from March onwards. Two teams were entered. Unfortunately the 'A' team had to retire within three Tors of the finish, while only four members of the other team completed the course after a last minute dash to make the line with 30 seconds to spare.

Immediately Ten Tors was over the Nijmegen Marches took precedence, and a team of one officer, one NCO and 22 Flight Cadets left the College on the 13th July to take part in the 100 mile march.

An Ermine Street walk was arranged for the 6th July. 29 Flight Cadets started out but only 8 finished. This was due partly to the hot weather, but mainly to the hot pace set up by Clarke of 96 'A'. who completed the 50 mile course in a new record time of 8hrs 14mins.

FINE ARTS

The Fine Arts section in Building 109 has recently undergone a facelift, and its facilities are now better than at any other time during the past two years.

The Society concentrates at present on pottery work, aided by its new Guiding Officer, whose enthusiasm for the subject promises great things. It is hoped that this particular aspect of fine arts will draw new members from the junior entries, and a healthy attendance is expected in the autumn.

Apart from pottery, the section has all the usual facilities for oil and watercolour work, modelling in clay, and sketching. Attendance is on the increase, but a really thriving society is not expected to appear until after the summer break.

In addition to work in the studio, the section supports art week-ends and even longer courses, sponsored by Kesteven County Council. Visits are also hoped to be arranged to museums and galleries in the vicinity in the not too distant future.

CHRISTIAN UNION

Cadets at the College have always joined together to share their enthusiasm for a particular sport, hobby, or way of life, and this includes the Christian Union. Meetings are designed so that faith in Christ may be interestingly, informally, and often humorously, learned and applied.

Among the highlights of the Summer Term was the visit of Mr. Stuart Briscoe, who spoke at a Sunday meeting on 'Christian Victory,' after preaching in the morning in St. Michael's. In July Major-General Sir Robert, and Lady Ewbank visited the college. After preaching in the morning services, they showed slides of their recent world tour at a Union meeting in the afternoon.

Earlier, during June, ten officers and cadets were fortunate enough to meet the General,

and officers from fourteen other nations at the International Conference of Officers' Christian Unions held in Derbyshire. Christian Union members are joining a sailing party organised by the British OCU this summer.

The Union continues actively to support the work of missionaries in South America, much encouraged by the fact that those members who took part in the 40-mile walk on Easter Monday raised £111 for the work of the South American Missionary Society. The Union also sponsors fortnightly visits to Rauceby Hospital. For the future, guest speakers are already organised, and the pattern of regular Bible discussions and film evenings will continue.

MOUNTAINEERING

We tried to make the summer season as busy as possible in order to take full advantage of the longer days and, more important, warmer rocks. This was not always easy because the term was short and there were many other demands on time. Transport and providing for differing standards were other problems. Nevertheless the society succeeded in visiting all of the old haunts and several new ones too.

Climbing at Stanage Edge provided a Wednesday afternoon sport for many members when transport was available. Week-end meets were generally held in North Wales using Humphrey's Barn as a base. The Society combined with other groups for one week-end in the Lake District where the climbing is, of course, excellent.

The new areas visited were Froggart Edge, Whitwick Quarry in Leicestershire and the crags at Arnscliffe near Harrogate. Of these three the crags were the most interesting, possessing routes of high quality and a grading system of a modesty which astounded us. Froggart Edge is near Stanage and useful for providing variety. The nearest climbing to Cranwell is still in Leicestershire, but some of the rock is unacceptably loose. To offset this some very interesting mountaineering lectures are held down there. A survey of quarries close to the College discovered much fauna but few routes.

During the summer break the Guiding Officer and several other members are taking part in the Joint Services Norped Expedition. Another team is going south to the Maritime Alps of southern France for two weeks.

LEAVE ACTIVITIES

LEAVE ACTIVITIES

LEAVE ACTIVITIES

YET YOU
LEAVE ACTIVITIES



NORPED '68

On 7th August 21 variously attired and heavily booted members of the 1968 Norped expedition met under the echoing vaults of Newcastle Central Station, each carrying at least one enormous rucksack. Amongst them were Flight Cadets G. D. Applegate, C. M. Davison and T. J. Flinn, fortunate enough to be chosen as the College representatives on this annual expedition involving cadets from Sandhurst, Dartmouth and the Royal Marine Training Establishment. The leaders were this year provided by the Army, with the exception of Flight Lieutenant Murton — a lecturer in Whittle Hall and the Guiding Officer of the College Mountaineering Society.

Our multi-stage journey to the expedition base camp on the edge of the Jostedal Breen, a large ice cap in the heart of Norway, began



The North-West Face of Skagastoslind

when we boarded the 'Jupiter' and set sail from Newcastle bound for Bergen. The crossing was smooth, allaying the fears of the less nautical amongst us, and it provided an opportunity to meet our fellow mountaineers, with whom we were to share some wonderful experiences during the next four weeks. Time also to relax and sunbathe on deck admiring the scenery as the boat made the coastal passage from Stavanger to Bergen. Here we began a combination train-bus-ferry journey inland which was to take another 1½ days. Our first night in Norway was spent sleeping on the car deck of one of the many small ferries which ply along the Norwegian fjords and often provide the only means of access to isolated hamlets.

Unfortunately the road deteriorated so much that we were only able to take the bus within eight miles of base camp and whilst some were lucky enough to get a lift up on the tractor with the dozens of giant crates containing the expedition stores, others were plunged in off the deep end and plodded their hot and dusty way up 2000 feet to a pleasant riverside campsite near a cluster of small chalets. Several villagers from further down the valley brought their animals to this pasture for the summer months and our tents were alternately invaded by goats, cows and horses during our stay.

For the first two days the entire resources of manpower were devoted to establishing the survey camp and preparing a base line for the theodolite readings. We also had great fun painting large marks high up on the valley walls which, we were reliably informed, would be invaluable to the survey and would remain for posterity and future surveyors. Fame indeed!

On the 13th August we split up into groups of four and went our separate ways to explore the

surrounding valleys and peaks and in particular the vast expanse of glaciers, icefalls and undulating snow ridges that was the Jostedals Breen ice-cap. As the Cranwell members were all in separate groups it is difficult to correlate their activities over this period so a general outline must suffice. Each group carried tents, climbing equipment including crampons and ice-axes, and rations for five days in order to be completely self contained. Many miles were covered and up to four nights spent on the ice ; a cold and rather draughty experience. In such conditions we were glad to submerge into our sleeping bags at about 1900 hours as the temperature crept down towards freezing point. The routine also produced such astonishing rituals as two cadets, cramped into a small, light-weight bivouac tent, trying to blow up their Li-Los at the same time !

The mornings were well worth the effort of struggling out of a warm bag. I shall never forget the experience of camping on a small outcrop of rock in the middle of a vast area of snow at a height of over 5000 feet. At 0700 hours we were basking in the sunshine in shirt-sleeves and stockinged feet whilst cooking breakfast and taking in the breathtaking panorama of peaks and snow-fields.

It is of interest to note what our rations consisted of during the expedition. Breakfast invariably consisted of porridge and having a Scotsman as group leader ensured that it was a good 'brew.' A few raisins provided the necessary flavouring and this was washed down with a mugful of tea. Actually breakfast on the ice cap one really cold morning proved to be something of a disaster because the porridge wouldn't cook and the tea wouldn't boil ! Lunch was always a snack ; biscuits, jam, cheese, the inevitable Kendal Mint Cake and perhaps as a special treat a tin of sardines. For the main evening meal the primuses roared with renewed vigour to heat a stew of concentrated meat bar, rice and dehydrated vegetables ; not a very inspiring meal but one which was both nourishing and highly palatable after a long, hard day. Various flavours of meat bar prevented the diet from becoming too monotonous and the self-appointed cooks took great pride in producing a feast which earned

the unanimous approval of the rest of their group.

The principal achievement of this phase of the trip was the ascent by two groups of Lerdalskåpa, highest peak of the Jostedals Breen at 6900 feet. Two hours of steep scrambling, high-angled snow and the final, impressive granite cone gave the reward of a magnificent view and the feeling of achievement that can only come from standing on the summit of a fine mountain.

The groups reunited at base camp on 20th August where they rested, washed (both themselves and their laundry) and fought off hordes of deadly mosquitos, big, four-engined ones, with which the otherwise very pleasant site was infested. We were then faced with the task of packing our rucksacks with sufficient kit to last us for a ten day trip to the Hurrungane, a mountain range some 30 miles SE of base camp with many exciting peaks and an opportunity for the rock gymnasts to be in their element. It was on this occasion that record loads were notched up as the hungrier members stowed away something like 25lbs of food each for the trip !

A pleasant bus ride to the Hurrungane was followed by a fierce 2½ mile grind up 1200 feet to our new camp-site by a glacial lake when the hungry members began to regret their rash decision ! The weather had remained magnificent, with every day one of dazzling blue skies and hot sun, and so it continued as we split up yet again to climb and explore the magnificent ridges and peaks that surrounded us.

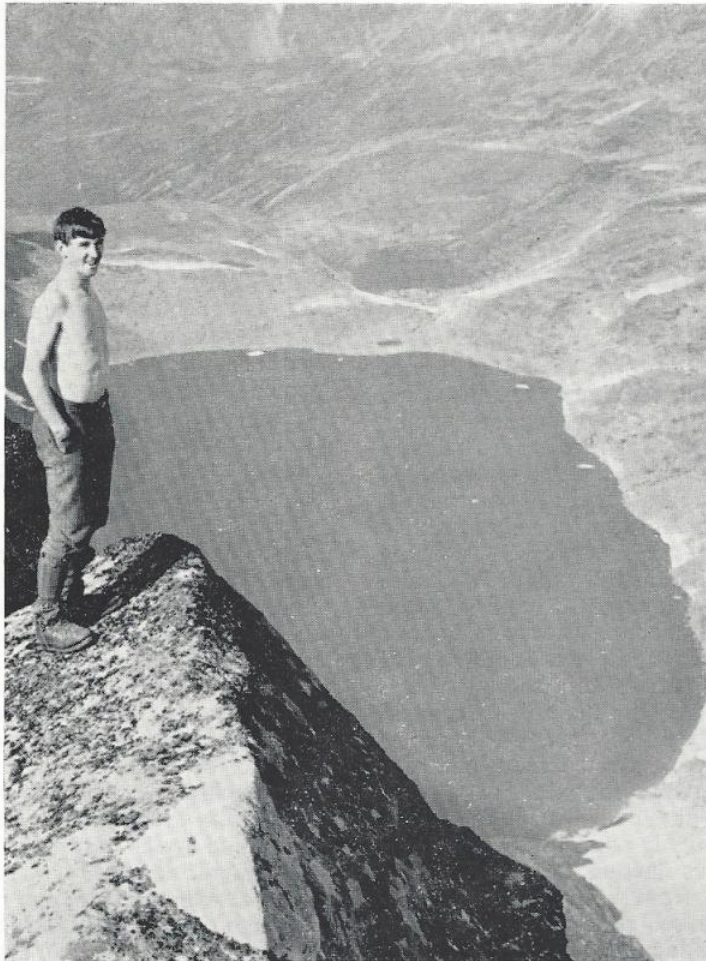
The first day was a ridge scramble taking in two minor peaks to get the feel of the rock but the following morning an early start at 0630 heralded an attempt on the gem of the Hurrungane, the 8000 feet, Matterhorn-like Storen Skagastolstind. 4½ hours hard climbing saw us relaxing on the summit trying to identify the maze of ridges and peaks stretching away on either side. Whilst other members watched our progress with some trepidation from the summit of Storen one of the leaders and myself descended the ridge on the opposite side and got involved in some rather technical climbing on an adjacent peak. Although the sport was exhilarating on firm, warm granite we heaved a sigh of relief when

we gained the summit and scrambled along the ridge with sweeping 2000 feet drops on either side. We arrived back at camp just as the sun was sinking behind the mountains after 12 hours of the most satisfying climbing I have ever experienced, having traversed the entire Skagastolstind ridge taking in 5 peaks.

So our time in the Hurrungane passed very quickly, the keen climbers finding plenty to occupy themselves on the splendid rock — a

type of granite known as gabbro which is extremely rough and offers excellent friction, whilst others walked and scrambled or hiked to a nearby climbers hut for the sake of a bath and an open-table supper. The latter is a Norwegian custom whereby for a fixed price one can eat as much as appetite will allow and, in the case of several ravenous English climbers, this proved to be quite a tall order.

Flight Cadet Flinn on Dyrangstindel Ridge





FEAF '68

'Members are requested not to entice monkeys into the mess.' So ran a sentence in the mess suggestion book at RAF Changi. A party of eight officer students and three Flight Cadets had finally arrived at Singapore. The party was headed by Squadron Leader Allerton and Flight Lieutenant Hargreaves and it was the annual Equipment and Secretarial Wing visit to the Far East Air Force.

For two weeks our home was to be Temple Hill Mess, originally a Royal Artillery mess, taken over by the RAF, and populated at present by the Navy as HMS Hermes was in port. Its dazzling white entrance, oak doors, and polished brass door hinges, made one wonder what it must have looked like during the war when the Japanese used it for other purposes than was originally intended.

On the morning following our arrival we visited HQ FEAF and were presented with lectures ranging from the Command Movements Officer to the Command Accountant. A particularly interesting talk was given by the Command Intelligence Officer, who explained the present complicated situation in South East Asia and China. After looking around RAF Changi and seeing what problems a unit so many miles from the United Kingdom has, a visit to the Officers' Club swimming pool was inevitable.

After a VC 10, a flight in a Belvedere seemed similar to the transition from a Rolls Royce to a pre-war Austin Seven. Like the Austin it was noisy and draughty as we left RAF Seletar the next day bound for a pin-

point clearing in the jungle. The jungle was relatively easy to find, but some very accurate map-reading was called for to locate our touch down point. As the Belvedere left us in the clearing a silent prayer arose with it, asking for continued guidance for the pilots map-reading ability, enabling him to find us again.

The remainder of the day was spent visiting the Police and Security Flight, the Fire Section, and Hygiene Section. The Police dogs provided the main attraction. We were treated to the spectacle of a particularly vicious looking Alsatian chasing a man and inducing him to stop by removing half of his arm in a mouthful. Fortunately the man involved was a dog-handler wearing protective clothing for the demonstration! The day was rounded off by a short demonstration of snake-catching at the Hygiene Section and an interesting ten minutes spent trying to decide whether SUO Pettigrew really could understand what their tame monkeys were saying.

The week-end provided an opportunity to visit Singapore City. Side by side stood vast modern shopping centres and frail, rickety looking houses, giving the appearance that modernisation would not win without a fight. The street markets consisting mainly of open air 'cafes' did a roaring trade with the natives, although foreigners like ourselves had first to overcome the strange and powerful aromas, before committing chop stick to rice bowl.

Following a ferry crossing to the island of Penang, we proceeded next day by coach and mountain railway to one of two units comprising RAF Penang. This was the Air Defence Centre at Western Hill, 2722 feet above sea level. The huge radar and vast amount of equipment had all arrived at the top of the mountain the same way as we had — by mountain railway, which seemed an incredible feat. In the afternoon we visited the second unit of RAF Penang, which is the Marine Craft Unit at Glugor. A brief introductory talk completed, the remainder of the afternoon was spent aboard one of the RAF launches travelling along the Penang coast.

On Wednesday we were due to return once more to RAF Changi. Before we left however, we were able to see the Supply Squadron and Support Unit of the Base. Also a walk through the hangars enabled us to see the Mirages, Sabres, and vast servicing back up available for the unit.

Thursday's programme was, once more, a visit to RAF Seletar. This time our hosts were Nos 389 and 390 Maintenance Units. For the Equipment students it was of interest to see what sort of jobs the future may bring and for the Secretarial students well it was their first look at a real packing case. Both of these units were vast and we only had time to scratch the surface of the supply world.

Of the three RAF Units on the Island only RAF Tengah remained for us to visit. On Friday we had the opportunity to observe the 'sharp-end' of the RAF. No 74 Sqn invited us to crawl all over their Lightnings, whilst the Air Traffic Control allowed us to watch the procedures they use to co-ordinate the flights on such an active flying unit. At the Regiment site the Bofors Gun teams demonstrated their speed and skill which was not quite emulated by those of us who had a go ourselves.

The week-end, similar to the previous one passed rapidly and Monday, our last day in the Far East had arrived. A visit to the Joint Services Port Unit commanded by a British Colonel and a guided tour of the Port area by an official ended with a trip back to RAF Changi by launch.

In twenty-four hours we were back at RAF Lyneham. The mosquitos however, had the last word. We still had another four weeks supply of Paludrine tablets to consume at the rate of one a day.

Throughout the visit to the Far East Air Force everyone was helpful and courteous, and very often went out of their way to let us see and question their particular role. For this we are grateful, and to any person connected with the organization of our visit who should pick up this magazine, we would like to say a sincere 'thank-you.'

The 'Hans Nansen' Expedition 1968

During April, a party of two officers and ten flight cadets spent a fortnight in Norway, at the lodge of Colonel Hans Nansen, an eminent Norwegian and a nephew of Fridtjof Nansen, the explorer, scientist and humanitarian. The purpose of the expedition was to give the participants experience in mountain and snow survival. Those taking part were Squadron Leader J. H. Copland, Flight Lieutenant H. MacLean, Under Officer D. McTeer and Flight Cadets Appleton, Hodgson, Green, Rogers, Matthews, Mott, Riley, Remlinger and Stoner.

On Saturday, April 13th, the group left Newcastle on board MS *Blenheim*, bound for Oslo. We were pleasantly surprised when the party was presented with a box of Easter eggs from Colonel Nansen. He also greeted us by radio telephone just as the Norwegian coastline came into view.

After a voyage of 36 hours, including an hour's stop in Kristiansand, MS *Blenheim* docked in Oslo early on Monday morning, and we were greeted by Lieutenant Svendsen, Colonel Nansen's assistant. With the help of bus, van, horse and cart, snow-scooter and feet, we reached the mountain lodge, built by Colonel Nansen's father in 1898, at Valhøud. The lodge is situated in the Home Mountains, near Gol, and at a height of 3,000 feet, amidst magnificent scenery.

Tuesday was taken up with a full day's skiing, although for some members of the party, the first steps on skis defied definition. However, under the guidance of Lieutenant Svendsen, the number of falls soon decreased. During the ensuing days we struggled to develop and perfect the techniques of diagonal walking, herring-boning, traversing and plough-turns. Some time was devoted to learning and practising the basics of mountain and snow survival. A snow-cave was excavated under the supervision of Lieutenant Svendsen and four members of

the group passed a comfortable night in the 'Valhøud Hilton' before mild weather rendered it unsafe for further use. Everyone tried his hand at constructing snow-shoes from readily available materials and learned how to handle the sledge.

The following days were passed practising and training for the cross-country race in which our skiing course was to culminate. The race was part of a competition for the Norway Cup, presented by Colonel Nansen. Besides the race the competition involved a bottle-stretch, a potato race, a quiz on Norway and general 'hut-culture.' Cranwell emerged victorious and won the Norway Cup from Bradfield College. The race, held on Wednesday 24th, involved completing two laps of a five kilometre cross-country course, on skis. The individual winner of the race was Flight Cadet Appleton. The average time of all the cadets was 56 minutes. On Wednesday evening, Uncle Hans, as Colonel Nansen insisted on being called, presented the prizes for the race and also presented awards to Flight Cadets Hodgson and Remlinger for being the best all-round cadets on the expedition. The Colonel was presented with an engraved tankard commemorating the expedition. A presentation was also made to Lieutenant Svendsen.

We returned to Oslo and stayed overnight in a well-appointed military hostel in the centre. The expedition was undoubtedly a great success. All who took part gained valuable knowledge of snow and mountain survival and learned the basic techniques of cross-country skiing. Colonel Nansen, whilst suffering from chronic ill-health owing to his war-time experiences, was an excellent host. His talks were interesting and amusing and at all times he showed himself to be a confirmed Anglophile, a loyal supporter of the Royal Air Force in general, and Cranwell in particular. He is an unforgettable character.

Sailing on the high Seas

About a month before the start of summer leave, I was asked by an old school-friend of mine if I would like to help him sail a boat across the North Sea. My only previous sailing venture had ended in dismal failure when the boat broke down in Yarmouth harbour before we had even put to sea. I was therefore a little sceptical about any further such ventures, but in the end, I decided to risk it and agreed to meet 'Wengen' in Bremerhaven, Germany, in early August.

'Wengen' is an old Danish fishing vessel which the owner had bought some four years previously. He had replaced all the rotten planking and equipped the boat with a new twenty-five horsepower engine, two stout wooden masts and a set of sails. She is some sixty feet long and makes a very comfortable cruising vessel.

I eventually found 'Wengen' moored at Cuxhaven, a small port near the mouth of the Elbe estuary. She had just been cruising round the Baltic and I arrived to make up the crew to five for the long voyage across the North Sea to Hull. The morning after my arrival included in its agenda a careful study of the shipping forecast. We had intended to make for Dan Helder, an island off the Dutch coast and some thirty hours sailing away. The bad weather forecast however caused us to change our plans and we decided to try to reach the island of Heligoland that evening. Heligoland is only thirty miles from Cuxhaven but at least it would get us out of the crowded waters of the Elbe estuary. When we left Cuxhaven, the sea was calm and the wind was barely strong enough to fill the sails. This was to be the last time the sea was so calm for the next ten days. It was well after dark when we steamed into Heligoland harbour after having managed seven knots in the final hour. The last few miles had been quite wild with the boat being bounced about in the rising gale.

We were destined to remain in Heligoland for another six days while we waited for the continuously strong onshore winds to drop. The deceptive calm of the harbour once tempted us to set off but once outside the outer harbour, the boat took a tremendous buffeting from the heavy seas and we had gone only two miles in an hour and a half before we turned back. The two small islands which make up Heligoland are only six or seven miles in area and it must be the windiest holiday resort in Europe. However the beauty of its cliffs and the attraction of its duty-free spirits and cigarettes bring ten thousand tourists a day there during the summer. We took advantage of our enforced inactivity to considerably reduce the level of the alcoholic beverages stock in our bonded store. We were ably assisted in this task by the crews of the two or three British boats marooned in the harbour.

By the end of the sixth day on the island we were all becoming very keen to get back to England as our holidays were almost finished. In fact the crew was now reduced to four as one member had been forced to fly back to meet an important engagement at home. Therefore, a slight improvement in the weather forecast saw us racing around stocking up for our journey, which was now to be direct to Hull. We finally got moving at about four o'clock in the afternoon. The sea outside the harbour was still quite rough even though the wind was only Force 5. We made a fairly steady four or five knots for the first few hours but the boat soon began to roll about violently as we beat into the teeth of the rising gale. I felt quite seasick at this stage but this soon passed and I felt all right for the remaining two days. The storm became quite violent during the night and we spent the early hours of the morning trying to dodge the many other ships which were in the shipping lane off the German coast. We got a gale warning on the 2 am shipping forecast about three hours after the gale arrived! It blew about Force 8 all



'Wengen,' off the English coast

night which greatly tired our small crew. We were doing watches of four hours on — four hours off and though twelve hours rest in twenty-four may seem a lot, I can assure you that it is not enough after the battering your body takes in a gale.

Throughout the next day we plodded along the coast at about four and a half knots. The wind had dropped a lot but the sea was still rough although it was slowly calming down. We passed Den Helder just before nightfall and set course from there towards Hull. As we watched the last lights of land disappearing into the distance it started to blow a gale once again. This time, there was no warning on the forecast, even after the gale had arrived. One would have loved to lash the weather forecaster to the mast and ask him if he still thought the wind was only Force 6. In fact, the gale was even stronger than the night before and during the night our jib split into two.

In the morning the wind dropped again and under clearing skies, 'Wengen' really

began to move. The sea calmed down a lot and as we threaded our way through the oil-rigs, we were averaging more than six knots even with the engine shut right down. Our only worries now were the mist, which might make it difficult to find the Dowsing light vessel off the Humber and also if we should make the early morning tide up to the port of Hull. Just after nightfall, we sighted the Dowsing light and we were in fact only a mile off course after a crossing of nearly a hundred and fifty miles. We then steamed up the Humber, enjoying the smell of Grimsby fish docks en route and just made our dock in the port of Hull before they shut the gates.

We arrived just as dawn was breaking over the beautifully still water, a great contrast indeed to the previous days. Our remaining task of getting three thousand cigarettes through customs proved expensive after which we tidied the boat up before going home for a welcome rest.

B. S. Page.

KING ROCK '68

This year it was the turn of 97 and 98 entries to undergo the rigours of field and leadership training in the well loved (never forgotten) areas around Brilon in the Sauerland of Germany. During the four week camp in September, 98 had the doubtful privilege of the first fortnight and 97 followed on for their two weeks.

The exercise was under the overall command of Squadron Leader Bridges the SRI and subordinate to him were Squadron Leader Jane the CPFO (Canoeing and Rock Climbing) and Flight Lieutenant Avens the JRI (Field Training). Section executives were provided by the newly-graduated 94 Entry and members of 96 Entry. The camp also had its normal quota of evaluating officers from Cadet Wing.

Again the exercise was organised in three sections, comprising field training, canoeing and Rock-climbing. These three activities were climaxed by the Escape and Evasion phase with units from BAOR acting as very effective enemy.

During field training sections went through various ordeals which tested their initiative, leadership ability, stamina, map reading and compass work as well as first-aid and casualty evacuation. The first day's training comprised an initial 2,000 yard-plus run (The RAF Regiment mile) which was conducted on a forest track which was uphill most of the

way. Following this, the sections were taken to the area of Rhenege and had to find a simulated 'ejectee' in a wood, render first-aid and remove him to a casualty clearing point on an improvised stretcher. There then followed a cross country march to a river which had to be crossed and the casualty carried over on his stretcher.

On the second day the cadets tackled a long Navex to a night bivouac area where they slept in para-tepees. On this they had to navigate for three miles using only sketch maps of the area. Refreshed by their night in the open, they embarked on the Navex race cross-country back to base camp. This covered a distance of about nine miles in three legs.

As a slight rest from field training, canoeing and rock-climbing were next on the agenda. Canoeing was once again carried out on the Eder-see. Here cadets learned the basic skills required to remain upright in their slightly unstable craft. The Rock Climbing was carried out on the Bruchhausen near base camp. Knots and lashings were applied fervently during this two-day phase and the long abseil was well patronised as in previous years.

As a culmination of all the sections of training, the Escape and Evasion exercise was carried out. Before setting off on their bid to beat the army all cadets attended lectures

in survival. These included building shelters, signal and cooking fires, traps, nets and snares as well as living off the land.

In previous years there have been four Escape and Evasion exercises per camp. This year, however, there were only two but they necessitated longer times as cadets were only expected to travel by night. Both exercises this year were different in various aspects. During 98 entry's, the first night and day were completed with only a few of the Directing Staff as enemy. However the object of this phase was to get the crews to build evasion shelters which were inspected and critically assessed before the cadets moved on to complete the exercise with a real live Army-type enemy. One other innovation was a canoe-crossing of the Hemmetal-sperre near Meschede at night. Needless to say the normal quota of cadets ended up 'in the bag' and only three crews (one of officers) made it unscathed during 98 entry's exercise.

For 97 the formula was slightly different. Having completed their other training, they proceeded to Escape and Evade without the benefit of the first night building evasion shelters. However an additional feature of their exercise was the introduction of an 'interrogation centre' whose delights had to be sampled to be believed. Crews caught by the Army were taken to this centre and interrogated by a highly expert, if hastily arranged, staff for up to three hours. Apart from this they encountered the normal (by now) hazards of the canoe-crossing and the vigilant army.

At the end of another successful King Rock, both entries, having returned to Lincolnshire, were agreed on the benefits and interests of the varied activities encountered. Indeed, the success of the exercise can be measured by the 'tallness' of the stories still pouring forth from the Junior Mess in wintry November.

Canoeing on the Eder-See



Sub-aqua at Lake Lesvasjog

The aim of the expedition was to recover as much as possible of the Gladiators wrecked in the Lake in the Norwegian Campaign of 1940. Preliminary investigation had shown that there were the wrecks of four aircraft in varying conditions in varying depths of water. The Royal Air Force Museum at Henlow showed great interest in the expedition and said that they wanted as many pieces of the aircraft as possible.

All divers carried their own suits, mask, snorkel and flippers with them and the aqualungs were carried in the minibus. Since the minibus arrived five days after the main party the divers covered a lot of the lake by snorkel. The water proved to be warmer, on the surface, than was expected, but visibility was not as good as expected. It was not possible to see more than 10 feet vertically but after diving down it was possible to see 20-25 feet horizontally, and due to the warmth of the water it was possible to stay in the water all morning without getting too cold. The positions of the aircraft were indicated to us vaguely by the farmer where we stayed but this proved to be so vague that we decided to investigate as much as possible of the Lake.

On the second day we found the remains of one aircraft in approximately six feet of water. This aircraft was very badly damaged but we removed some panels from it and found the number N5632 on several panels. The aircraft had suffered very badly from fire damage which seemed to be concentrated in the cockpit area presumably the fire had caught the petrol tanks. The tail section was

intact but inverted, outboard of the centre section it was possible to recognise the wings, the undercarriage and eventually after much digging in the mud it was possible to find the engine and propeller. In the general area there were signs of wreckage and these areas proved to be very fruitful. Two divers spent an hour delving in the mud and found various instruments and many rounds of ammunition. Another diver found what he described as an almost complete aircraft in a nose down attitude with the tail in approximately 15 feet of water. Unfortunately due to the current in the lake and the poor vertical visibility he lost the position of the aircraft. We found it again the next day and this time we had two divers and the boat in the area, and we managed to mark the aircraft with a dayglo balloon. That afternoon everyone went snorkelling on the aircraft. The tail was in approx. 15 feet of water and the nose was buried in the mud at approx. 40 feet. The aircraft structure was, as near as could be ascertained, complete and in reasonable condition. Two machine guns, those on the fuselage, were in position and very badly corroded, no instruments were to be found, and the propeller was on the aeroplane. Excitement was great that evening and it was decided to concentrate all our efforts on this aircraft which proved to be No N5628. When the aqualungs arrived we made a thorough survey of the aircraft and it was found that the four main fuselage members were almost eaten through by rust. The rust had appeared where the fire had broken down the surface of the metal but the remainder of the fuselage proved to be in exceptional condition. The chromium parts were as good

as new with no rust spots on, the stainless steel flying wires were excellent, and on investigation where the structure had been protected by small pieces of fabric the metal underneath was as good as new.

We had three MS 9 dinghies with us and these were attached to either side of the undercarriage legs and the third was attached underneath the cockpit. The dinghies were dragged down to the bottom by the divers and were restrained by a system of ropes. When they were all in position we blew them up using CO2 cylinders. As soon as the gas rushed into the dinghy (on the port undercarriage leg) the dinghy burst free of its restraining ropes and this was followed shortly afterwards by the one on the starboard undercarriage, the one on the cockpit staying firmly in place. The port dinghy caught on some rough metal and ripped irreparably. This was a blow to our hopes. However the dinghy under the cockpit tilted the aircraft forward even further forward on to its nose, this gave us hope that the second dinghy when positioned would be sufficient to lift the whole aircraft. The fact that the nose was further into the mud was later to prove quite a problem.

The rapid inflation rate using CO2 bottles proved to be quite a problem so with the help of the local plumber and one of our contents gauges we adapted one of the dinghies so that we could blow them up using one of the aqualungs and thus control the rate of inflation. Since we now only had two dinghies we decided to leave one on the cockpit and attach the second one to the propeller. Since the aircraft was further nose down in the mud this meant tunnelling through thick mud to pass the rope around either side of the propeller blade. This made interesting work, head down in four feet of mud with zero visibility and working by touch only. After two days of this and only partial success we decided to look for the engine lifting point and use that as an attachment point. We let the mud settle and it took 2-3 minutes to fix the shackle through the lifting point after spending two days grovelling in the mud! Attaching the dinghy presented no problem and this time the aircraft lifted off the bottom and floated in a flying attitude for the first time in 28 years! Excitement was great. We towed the floating aircraft from the deep

water and since the attaching ropes were some six feet in length we could only tow the aircraft into 12 feet of water before repositioning the dinghies. By this time the date was 18th and time was running short. We had another two days diving before the minibus left and the first day was spent repositioning the dinghies and trying to shift the aircraft and success was limited in that we only shifted the aircraft another 20-30 yards. The last days diving was spent in stripping the flying wires and bracing wires and the top left hand wing. This was no trouble, the nuts came off very easily, the wires came off easily and when we got the pieces to the shore we found that the nuts and bolts were as good as new and in some cases the original grease was still on the bolts.

During our efforts to lift the aircraft we recovered the tail section, stripped that and crated it ready for despatch. We also investigated the lake further up and found a third aircraft in very badly burned condition. Again the centre section round the fuselage was very badly damaged and the engine and propeller were in position. We recovered two panels from this wreck which showed the number to be N5705. According to the book on the Gladiator this aircraft was on the second Norwegian Campaign and was left at Bodo.

After crating the pieces they were loaded onto a 3 tonner provided by the RCAF and brought back to UK on the Andover.

All the party were disappointed that the whole aircraft was not recovered, but the Museum were very pleased with the pieces brought back and several of the pieces recovered the Museum did not have.

The best results were obtained in the experience gained by every diver. Very few of the divers had experience of working under water, and only one had any experience of lifting under water. The expedition did some 63 hours under water.

The Museum and all the divers want the job finished, and the remainder of the Gladiator brought back to this Country. This will be the subject of another application to Expedition Training next year.

OLD CRANWELLIAN NOTES

HONOURS AND AWARDS

The *Journal* offers its congratulations to Old Cranwellians who received Honours and Awards on the Queen's Birthday.

Air Marshals A. H. Humphrey (39-40B) and L. M. Hodges (37-38C) were made Knights Commander of the Order of the Bath. Air Vice-Marshal P. de L. Le Cheminant (39A) was made a Companion of the Order of the Bath. Flight Lieutenant J. F. P. Browne (77B) was made a Member of the Order of the British Empire. The Air Force Cross was awarded to Group Captain K. A. Williamson (51C) and Squadron Leader B. E. Taylor (62B). The Queen's Commendation for Valuable Service in the Air was awarded to Wing Commander G. W. F. Charles (50C), Squadron Leaders A. J. Chaplin (71A), J. N. Herbertson (76C), I. F. Weston (57B) and Flight Lieutenants P. R. Evans (65C) and W. J. Wratten (78D).

We regret an error in the last issue, which attributed the Queen's Commendation to Flight Lieutenant M. J. Webb (77A) when in fact the award concerned another Flight Lieutenant of the same name and initials.

PROMOTIONS

The *Journal* congratulates the following Old Cranwellians on their promotions on 1st July :

Air Marshals Sir Lewis Macdonald Hodges (37-38C) and H. N. G. Wheeler (35-37B), Air Vice-M Marshals F. R. Bird (38-39A), T. J. Hanlon (35-37C) and N. M. Maynard (39-40) ; Group Captains J. C. Atkinson (47C), W. J. Herrington (47C) and K. A. Williamson (51C) ; Wing Commanders D. Allison (61C), I. D. Brimson (62B), J. B. Fitzpatrick (59B), R. I. Jones (51D), J. Meadows (52D), G. K. Mossman (47B), B. H. Newton (59C), D. M. Richard (62B), M. Short (49A) and C. A. Vasey (52A) ; Squadron Leaders G. Ainley (69A), N. Bonnor (77B), J. Bredenkaamp (64B), J. W. Canning (68A), B. J. Cheater (75A), P. D. Cliff (71A), R. Cloke (75B), R. I. Finch (69A), N. A. Fox (68B), J. Graham (75B), J. S. Halkes (77A), I. Henderson (72A), J. N.

Herbertson (76C), G. H. Hopkins (64A), E. H. Hunter (76C), R. Kidney (70B), D. E. Leppard (78C), J. T. S. Lewis (73A), R. W. Lidstone (56D), R. J. Manning (73B), J. G. McCluney (72A), L. R. Morgan (64B), A. Mumford (69A), R. F. Mundy (69B), P. D. Oulton (75C), J. R. Owen (75C), A. R. P. Phipps (77A), P. G. Pinney (78C), P. H. W. D. Shrimpton (73C), C. J. Sturt (75C), G. A. Talbot (67C), A. C. Tolhurst (77B), D. M. Waller (73A), J. Weaver (59A), I. Weddle (76B), G. S. Whitley (73C), G. C. Williams (71B) and J. Wright (63C).

The *Journal* offer its congratulations to Air Chief Marshal Sir Denis Spotswood, an honorary Old Cranwellian, whose promotion occurred on 1st November, 1968.

ANNUAL REUNION— SECRETARY'S REPORT

The reunion was held on the weekend of 15th - 16th June, and for the third year in succession we had a fine Saturday and Sunday, and although it was not as sunny as the preceding two it allowed everyone to enjoy themselves and all the games to be played.

Early in June it seemed as if we would have a record attendance but as we neared the reunion date there were a number of cancellations, and the final figure for the dinner was 136. No doubt the Review by Her Majesty The Queen at Abingdon on Friday, the 14th June caused some absentees. Some tentative inquiries were received as to whether the reunion date could be altered in view of the Review, but this was not possible. Although I am sure that all Old Cranwellians know that the date of the reunion is now always on the third Saturday in June there is perhaps no harm in stressing this again for the benefit of new members.

Once again we had a very representative gathering of all ranks from Air Chief Marshal to Flying Officer. The highest rank was not represented due to the absence of Marshal of the Royal Air Force Sir Dermot Boyle, who had an unavoidable commitment ; he was sadly missed by us all. The time honoured rank of P B P O (Poor B - - - - y Pilot

Officer) was also absent, not because of the P B, but because, no doubt, that having left Cranwell so recently they feel that they have had enough to last them for a couple of years or so. I think we have all experienced that, but there have been exceptions and let me say with conviction that they are as welcome as the most senior members.

Letters of regret at being unable to attend and sending good wishes were received from :

Flight Lieutenant Peter Riley (79 Entry) now in the USA — his address is, 75 Tactical Reconnaissance Wing, Bergstrom A.F.B., Austin 78743, Texas ; Air Vice-Marshal J. S. Rowlands, now at MOD (our congratulations on his promotion) ; Flight Lieutenant T. J. Allen (77 Entry) at Inns-worth ; Pilot Officer A. F. Withers (91 Entry) at St Mawgan ; Flying Officer I. F. Clark (89 Entry) at Wildenrath ; Flight Lieutenant R. L. S. Butler (79 Entry) at Manby ; Wing Commander F. C. T. Rowe, who was one of the 1st Entry to Cranwell in February 1920 — he lives at Chagford in Devon ; Squadron Leader Peter Biddiscombe (65 Entry) at Manby ; Squadron Leader A. C. Bridges (65 Entry) who is attached to the Sultan of Oman's Air Force, Bait-al-Fulaj, Muscat, Arabia, BFPO 63 ; Flight Lieutenant C. G. Blomfield (78 Entry) was at the last moment detained on duty ; Air Vice-Marshal J. A. Gray, an early associate member and a one time Squadron Commander in the College (he had, however, managed to come to Cranwell earlier in the year for the opening of the Indoor Riding School) ; Group Captain G. ff. Powell-Shedden, who was at Cranwell in 1935/36 ; Air Commodore J. A. Holmes who was at Cranwell in 1937/38 ; Squadron Leader M. M. Foster (53 Entry) who wrote from the British Embassy in Paris ; Wing Commander A. A. J. Sanders who was at Cranwell in 1939/40 ; Flight Lieutenant P. Gooding (87 Entry) at Syerston ; Flight Lieutenant J. G. McCluney (72 Entry) at Henlow ; Wing Commander J. M. Pack (58 Entry) Commanding No 83 Sqn at Scampton. We would thank all these officers for their good wishes and hope that they may be present at the reunion in the near future.

The sports fixtures were fairly equally shared between the Old Cranwellians and

the flight cadets, the results being : cricket, won by the Old Cranwellians ; squash, won 2-1 by the cadets ; sailing, a draw with 20 points each ; tennis, won by the cadets by $6\frac{1}{2}$ to $2\frac{1}{2}$; golf, could not again be played as a match v the cadets, as the North Airfield 9-hole course had not been properly completed. However, Old Cranwellians enjoyed themselves at Woodhall Spa and Sleaford Golf Courses in matches arranged between themselves. Some very flashy new sets of clubs were observed, purchased abroad, but in some instances these or their wielders had not attuned themselves to English conditions and OC gamesmanship.

The Annual General Meeting, chaired by the Commandant, Air Vice Marshal T. N. Stack, was well attended, and the work of the committee was generally approved. A point of general interest was raised by the Commandant in which he suggested that a committee of senior Old Cranwellians be formed to maintain the old traditions of the College and to which the Commandant could refer for advice on such matters as he considered relevant. This was generally approved and the Commandant was asked to go ahead and give a report at the next reunion. It was also considered whether a portrait of a well known Old Cranwellian should be commissioned and the Commandant asked members to write to him giving suggestions for the subject of the portrait.

Air Chief Marshal Sir John Grandy, GCB, KBE, DSO, the Chief of Air Staff, was the Guest of Honour. Such are the onerous duties of the CAS that his visit was only a 'flying' one as he arrived by air shortly before dinner and departed soon afterwards. After the loyal toast and the traditional speech by the Commandant on past and future events and policy at the College, Air Chief Marshal Lord Bandon rose and thanked the Commandant. He then said how very delighted he was that the C A S could be present and went on to relate some of the off-the-cuff incidents in which the C A S and himself had been involved in earlier years. Some of these were quite unconnected with service duties. These reminiscences were enjoyed not only by the participants but also by those present, who had a peep behind the scenes. At the commencement of his speech the C A S gave his

version of the occasions related by Lord Bandon, and it would be fair to say that everyone agreed that it was a drawn match. Turning to more serious matters, the C A S gave a most lucid and highly interesting outline of the problems relating to and confronting the Royal Air Force and the policies being taken to meet them. He reminded those present that these problems, in various forms, would always be there and the C A S of the day, who might be one of the officers present, would be called upon to solve them. To meet this responsibility they should prepare themselves throughout their service careers so that they are fit to shoulder this task if they are called upon to do so. After remarking, with a smile, that he was one minute within the thirty minutes he had presumed he was allowed, he sat down to an Old Cranwellian ovation. Air Chief Marshal Sir Hugh Constantine then thanked the C A S for his most informative speech and said how very much he, and all Old Cranwellians present, appreciated the fact that the C A S had 'found' time in the midst of all his pressing duties to be present at the reunion dinner. He continued that it was his very pleasant duty to present to the C A S the Old Cranwellian tie, which carried with it the permanent position of an honorary Old Cranwellian. The dinner thus ended.

There was a full church on Sunday with a large number of Old Cranwellians present. The Reverend Tom Quin, an associate Old Cranwellian, preached the sermon and everyone was delighted to hear and see him again after his tour in Singapore. He is now Principal at Ampport House, Andover. After church the salute at the march past was taken by Air Chief Marshal Lord Bandon. After sherry and lunch the visiting Old Cranwellians departed.

No report on the reunion would be complete without extending to the College Mess Secretary, Flying Officer Armstrong, and the College civilian staff the very grateful thanks of all Old Cranwellians present. We will not forget the most resplendent buffet lunch that met our eyes on the Saturday.

How anybody could be active after such a meal passes understanding. It is all part of the kindly generous service that is given to us by the staff on reunion occasions and we thank them most sincerely.

F. E. N.

CHANGE OF ADDRESS

Old Cranwellians who have recently changed their addresses are requested to inform the Honorary Secretary, who will also be pleased to receive any news of members or reports which might provide material for the *Journal*.

THE MOST FAMOUS
SERVICE NAMES OF ALL NATIONALITIES
HAVE PASSED, AND WILL PASS
THROUGH THE DOORS OF

Cranwell
Post Office and Store

ESTABLISHED 1916
AND WE CONTINUE TO SERVE

Stanley Robinson

MINERVA SOCIETY NOTES

PROMOTIONS

The following members of the Society are congratulated on their promotion in the July list :

Wing Commander G. V. Lobley (1) ; Squadron Leaders T. S. G. Tumber (3), P. C. Machen (4), M. I. Clements (4), M. W. Ingle (4), G. J. Thomas (4), M. Cheesman (4), R. W. Scott (4), D. K. Hitchins (5), M. C. Darby (4), J. W. Wyatt (4), B. W. Dennis (5), O. J. Truelove (5), T. J. Morgan (5), G. N. Smith (5), P. D. T. O'Connor (5), J. F. Smith (5), P. A. Kelly (5).

ANNUAL REUNION

SECRETARY'S REPORT

The annual meeting and reunion was held in the Royal Air Force Club on Saturday 9th November 1968. As was anticipated in the last edition of these notes it was not possible for the reunion to be held at Bracknell as we had hoped. After approaches to certain other stations had met with no success it was decided to try the Royal Air Force Club. This turned out to be a happy decision, for 97 members and their guests converged on the Club from all parts of the United Kingdom to make the 1968 reunion the best attended and one of the most successful to date.

The Guest of Honour was Air Vice Marshal W. F. Beckwith, CBE, Assistant Commandant at Henlow from 1953 to 1957, who in proposing the health of the Society created considerable nostalgia in recalling the early days of the Cadet Squadron at Henlow.

The Society was particularly honoured once again with the presence of Air Vice Marshal Sir Thomas Shirley, KBE, CB, DL, RAF (Retd). It was equally a great

pleasure to welcome once again the Society's President and one of its staunchest supporters Air Commodore J. R. Morgan, OBE, RAF (Retd). Also present were Group Captain J. H. Stevens and Wing Commanders J. W. Price and H. A. Probert.

The attendance at the annual meeting prior to the dinner set an all time record. It would be nice to think that this indicated a healthy interest in the Society's administration. However, a more likely explanation is that the bar for the evening had been set up in the same room and could not be opened until the meeting had finished. Wing Commander G. V. Lobley was elected as Chairman to succeed Squadron Leader B. Harris for a two year term of office. A vote of thanks was made to the outgoing Chairman for his hard work and careful guidance during the Society's first two years of independence. The new committee is : Squadron Leaders T. J. French, M. C. Glen, I. Scoggins Flight Lieutenants H. W. F. Hutchinson, P. R. Lewis and Squadron Leader B. R. L. Easton (Secretary/Treasurer).

Spurred presumably by the excellent attendance the meeting voted that the 1969 reunion should also be held in the Royal Air Force Club. However, notwithstanding this clear directive the Committee will still examine the possibility of finding a suitable venue at a Royal Air Force station for future reunions.

SECRETARY'S ADDRESS

The Secretary's address is :

Squadron Leader B. R. L. Easton,
5 Mitchley View,
South Croydon,
Surrey,
CR2 9HQ.

BOOK REVIEWS

AIRLINE INSTRUMENT FLYING

G. D. P. Worthington

Sir Isaac Pitman and Sons Ltd.

80/-

As the synopsis says this book covers all subjects which are the concern of pilots who wish to obtain the Civil Instrument Rating. The first part of the book is devoted to analysing General Flying techniques to a surprising and often unnecessary detail.

It is not until Part II that Mr Worthington gets down to the integration of Instrument Flying with Radio Aids, and again the subject is dealt with exhaustively. The text of the book is very sound and manages to maintain interest particularly to the Service Pilot who may not see these aids in his Service aircraft. Unfortunately the diagrams do not live up to the standard of the text since they are invariably too complicated and too small. I also feel that the use of colour would have clarified the diagrams, particularly those of the VAR (P148) which prints the various colours, and the diagram showing entering the Holding Pattern (P 195). Perhaps colour would have raised the price beyond the reach of the average PPL holder?

The section on Integrated Flight Systems is well done within the limits already mentioned. The section entitled 'From break-off height to touchdown' recognises the difficulty of the pilot breaking cloud and orientating himself for landing and analyses the various techniques used.

The book is a serious and reasonable attempt to cull the relevant information from the UK Air Pilot, International Aeradio Guide, Jeppeson Flight Manual and many other Instrument Flight Manuals. The author is not a pilot and as a result has not always put the emphasis in the correct place. Therefore I would not recommend the book to the complete beginner and recommend that it be studied under the supervision of a QFI who has himself a good understanding of Radio Aids.

A.L.T.

SQUASH RACKETS

Teach Yourself Series Leslie Harmer & Rex Bellamy

The English Universities Press

8/6d.

Few squash players have any intention of acquiring a book on squash and are perfectly content to 'pick it up' as they go along. However for those few who believe that they can benefit from the experience of others there is now available in the 'Teach Yourself' series a sound book on the elements of the game.

'Squash Rackets' has been written by Rex Bellamy, 'The Times' squash reporter, and Leslie Hamer, professional coach to the Bath Club; the result is a very readable book which contains so much detail that it may well be used as a reference book by the regular player. The book contains the usual chapters on stroke production but also includes chapters on The Rules, The Language of the Game, Practice and Match Play. The chapter on match play is certainly very helpful to anyone who has played squash for more than a few months or to the real novice who is just a little curious as to why he is winning, or losing, points. Unfortunately the Authors open this chapter with the comment 'we cannot play a match for you' when they could have gone a long way towards this by playing a few theoretical rallies to illustrate the principles so firmly stressed elsewhere in the section.

Photographs of several of the world's top players in action are included, but they serve little purpose except to show that the players are more concerned with where they are hitting the ball than how they are hitting it. Perhaps Jonah Barrington would not have been so keen to write the foreword had he known that his own strokes were criticised.

However the book has much to recommend it and at a cost of less than three squash balls is extremely good value.

P.L.G.

SPACE FRONTIER

Wernher von Braum
Muller

35/-

Although space flight has been with us for a decade or so many people are still completely bewildered by this new terminology, and unclear as to the achievements and objectives of space research, a fact which is not surprising since the whole business is devoted to pressing back the frontiers of man's knowledge. In this small volume, von Braum, who has been described as the father of American rocketry, and who is therefore well qualified to do so, surveys the whole gamut of space achievements to date, and outlines the intentions and aims for the future.

In so doing he paints a broad picture, producing an intelligible whole into which the isolated well publicised events are fitted, in the process of which he explains in non-technical language many of the familiar but little understood terms and features of space research, such as the countdown, automatic check out, space vehicle design, zero gravity, moon landings etc. and writes convincingly of the benefits which have accrued to date, and of those likely to be gained in the future.

The whole book is liberally laced with photographs and diagrams. Many of the diagrams look as if they have been reproduced from the backs of old envelopes, original but dubious in value if they were intended to reinforce the 'layman appeal' of the book. The printer appears to have got his wires crossed on page 176, where he merely repeats parts of pages 173 and 174, and the managing techniques intended for that page will remain a source of mystery.

Apart from these minor criticisms, the book is well written, well illustrated, and very informative. Recommended reading.

A.W.

BESSEL FUNCTIONS WITH SOME PHYSICAL APPLICATIONS

C. J. Tranter

London: English Universities Press Ltd.

50/-

The excellence of the late G. N. Watson's classic work on Bessel Functions is shown by

the fact that it has stood unchallenged, unlimited and unabridged for nearly half a century. That is, until now when Professor Tranter has produced a modest sized, dare I say it, replica. As he rightly remarks, there existed a need for a trimmed down version of Watson's treatise incorporating recent developments but without undue rigour. In short, one aimed at the user rather than the professional analyst.

The scope of the book is comprehensive, the treatment fairly orthodox. Thus we cover the Bessel and associated functions their expansions and integrals followed by a useful chapter on dual control and dual series equations. Here one is referred to other books for a list of published papers which could usefully have been incorporated in the present volume. The book is then rounded off with chapters on the equations of mathematical physics solved by separation of variables and integral transform methods. An appendix on the Gamma function is included.

The book is clearly written, well produced and its chief use will probably be as a compact work of reference for advanced students of mathematical physics.

J.S.N.

AIRPLANE AERODYNAMICS

Dommasch, Sherby, Connolly
Pitman

Fourth Edition

This is the fourth and latest edition of what, since its first publication in 1937, has proved to be one of the classical texts on Aircraft Aerodynamics. The original text was based on a series of lectures delivered in the academic phase of a course in aeronautical engineering at the Test Pilot Training Division of the US Naval Air Test Centre.

The authors have recognised from the start, the need for both pilot and aeronautical engineer to be able to meet on common ground, particularly in the field of flight test work, and with its emphasis throughout on the relationships between actual flight experiences and academic theory, the text goes a long way to satisfying the requirements of both. Of course, many developments have taken place in the years since this publication of the first edition, in particular the advent of

electronic digital computers has permitted the rapid solution of problems, only the existence of which could be considered previously. Of course such problems require proper definition for the computer demanding a more complete understanding of all the fundamental facets of the problem than ever before, so that both the 'why' and 'how' of modern aerodynamics has never been more important.

In this fourth edition, refinements have been made in the original text, some parts have been rewritten, and fundamental information added. Some data on aerodynamic heating has been provided, whilst dynamic and kinematic equations of a manoeuvring aircraft are included, as well as more exact equations for the more important stability derivatives; and in the light of modern space developments there is a section on aerodynamic re-entry problems.

All in all, the revisions and additions will ensure that the book continues to fill its well established niche in Aeronautical Engineering Education for some time to come.

A.W.

HELICOPTERS & AUTOGIROS

Charles Gablehanse
Muller

42/-

The author has been associated for some considerable time both on the military and industrial side with rotating wing aircraft and this has enabled him to produce what is an interesting and complete historical survey of this, possibly the most rapidly developing area in present-day aviation.

He starts as far back as the ancient Chinese with their 'flying tops,' the first recorded instance of the application of the rotating wing principle, and traces men's dreams of practical flight from the time of Archimedes, paying tribute to those giants of aeronautical thinking who made such great studies in formulating aerodynamics theory, and those others whose single-minded application eventually gave rise to the first primitive rotating wing machines, the developments of which, with very little difference in principle we see operating in so many useful roles today.

He also devotes some space to modern developments in vertical and short take off aircraft, though some do not strictly come within the category of rotating wing aircraft.

The book is well written, and illustrated, accounts stories of dramatic missions, of the use of helicopter gunships and of helicopter airline operations. What theory is expounded is rather elementary, and the reader interested primarily in rotating theory will need to go elsewhere, however the book is an extremely valuable contribution to the literature on the subject.

A.W.

AIRCRAFT OF THE ROYAL AIR FORCE SINCE 1918

Owen Thetford
Putnam

84/-

A beautifully produced and completely up-dated edition of this standard reference. Unfortunately the price means that it will grace few shelves other than those in libraries; but for the enthusiast with 4 guineas to spend (or having generous relatives) this book is a splendid acquisition. No self-respecting General Education Scheme Library will be without one.

All the Royal Air Force aircraft are included — from Sopwith Camel to Hawker Siddeley Harrier — and there is full coverage of the latest missiles. The three-view drawings are clear, the photographs abundant (if somewhat uninspired) and the text contains much technical detail which has only recently come to light. In some instances the details of squadron service of the aircraft forms the most interesting part of the text.

If there is a weakness it lies in the introductory note. This chronological thumbnail sketch — less than 2 pages to cover the period 1945-68 — could have provided a fascinating foreword, with some detailed investigation into the political intrigue and ill-advised decisions which have dogged the recent history of military aircraft provisioning.

D.S.

SQUADRON HISTORIES, RFC, RNAS AND RAF SINCE 1912

Peter Lewis

Putnam

84/-

For both the casual student of aviation affairs and for the devotee there exists a gap in that area of reference which deals with the historical nature and existence of those fundamental agencies of British air power — the squadrons of the Royal Air Force. Regrettably, Peter Lewis's unrecognisably revamped contribution to this Golden Jubilee year of literary charivari, 'Squadron Histories,' published by Putnam at 50/-, does not bridge that gap.

As a compendium of largely dissociated items of aviation esoteria, the book has some limited value, but as a record of the essence and identity of those unique and fast disappearing amalgamations of men, machinery and tradition, it is a disappointing work. In his preface Mr Lewis apologises for the fact that space precludes his dealing more than cursorily with the 'long and exciting stories' associated with many of the 541 squadrons which have, at one time or another, formed the substance of the Royal Air Force. He then proceeds to devote slightly under half of his precious pages to a series of Appendices containing information, much of which is either totally irrelevant or duplicated elsewhere in the book. Lists of the recipients of the Sword of Honour at Cranwell, past Chiefs of Air Staff and Secretaries of State for Air, and a table of comparative ranks of the armed services are provided at the expense of any mention or acknowledgement of that patent symbol of historical significance, the Squadron Standard. In its treatment of the historical existence of each Squadron the book fails entirely to project any life or reality — it merely records, in not easily assimilable form, the birth, symbols of recognition, habitat, equipment, and in many cases the death, of a series of numbered identities. There was and is surely more to Squadrons than the sum of their parts.

'Squadron Histories' is unfortunately not sufficiently informative or pertinent to act as a useful book of reference, and it lacks the necessary literary style and interest to attract the casual reader.

B.M.B.

AIRCRAFT STABILITY AND CONTROL FOR PILOTS AND ENGINEERS

A. Dickinson

Pitman's Aeronautical Engineering Series 105/-

Anyone involved in the teaching of aerodynamics at under-graduate or graduate level and in particular with the teaching of the aerodynamics of Aircraft Stability and Control, will have been aware of the gap in the current literature on the subject at the appropriate level. The author, whose experience fits him well for the task has set out to fill this gap and has been eminently successful in doing so.

The book is based on lecture notes on the subject prepared for the Empire Test Pilots School then based at Farnborough, and is couched in terms comprehensible to both Pilot and Engineer, no small feat in itself. Whilst mathematics has been minimised, there is enough for the analytically minded, the broad aim of the book being to give a clear physical interpretation of the problems involved and their solution. No numerical design data have been included and this is perhaps the main shortcoming of the book, particularly in terms of its value to those working on flight-test research, but compensates in considerable measure by ample references at the end of each chapter. The subjects dealt with, as well as stability and control of conventional aircraft include those of canard, variable sweep, and delta aircraft, VTOL aircraft and helicopters; power operated controls, aeroelasticity and automatic control systems, including manoeuvre demand and adaptive systems, whilst emphasis is placed on the relationship between the stability and control characteristics and pilots assessment of an aircraft's handling qualities.

The book is written in a way which makes it easily readable, and is copiously illustrated with plates and diagrams which serve to amplify the text, and the final result is a book ideally suited to the needs of the student of aeronautical engineering. One minor criticism is of the publishers choice of dust jacket. Surely it would have been possible to choose a more appropriate cover illustration than an American F111. It might not even be a selling point in the States.

A.W.

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COLLEGE



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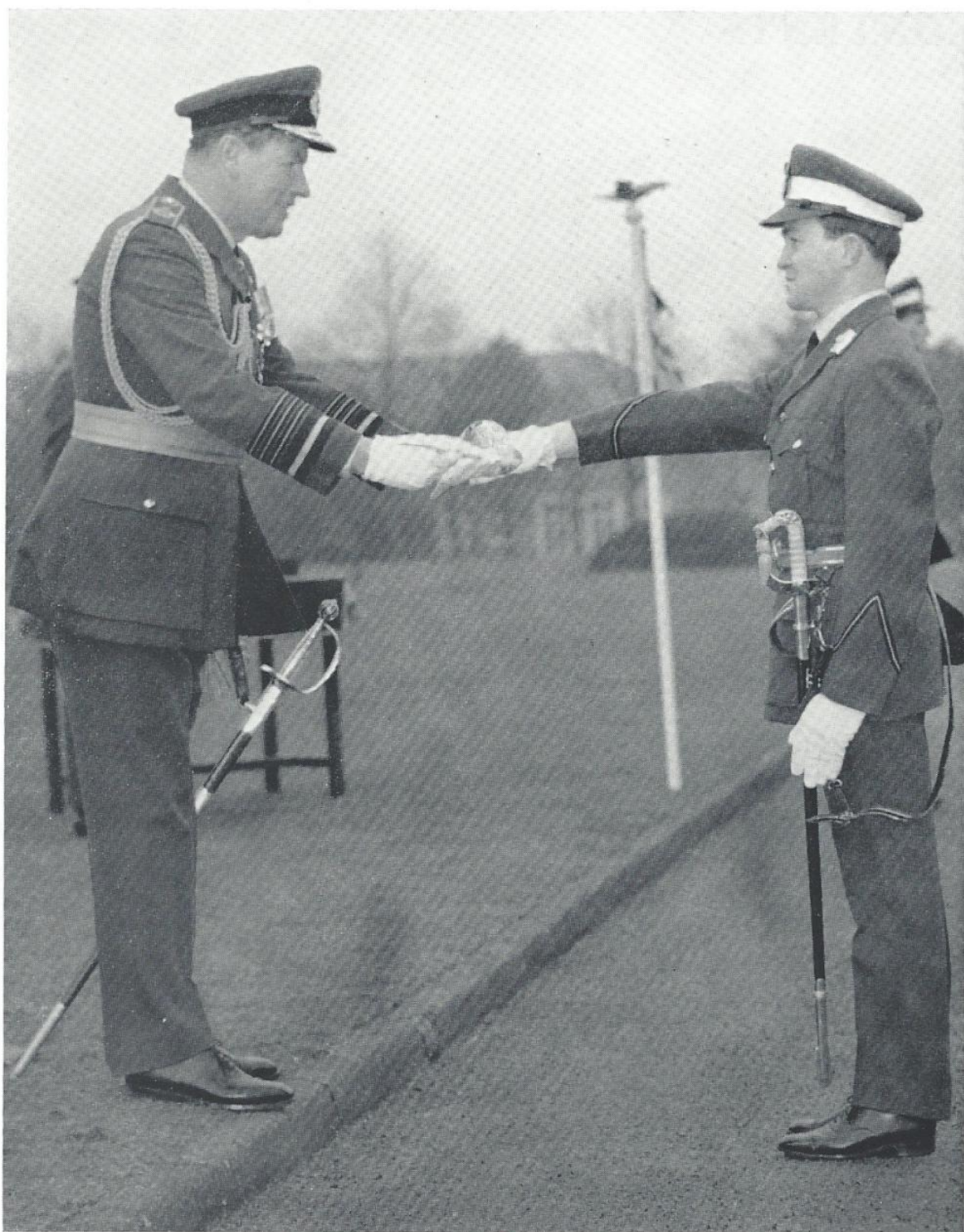
No 1

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CONTENTS

The Graduation of No 95 Entry	11
The Wings and Prizes Ceremony	14
Commissioning List	19
The Presentation of Academic Awards	23
The Graduate Entry Scheme	29
Articles and Leave Activities	34
Sport and Activities	51
Reviews	67
Old Cranwellian Notes	79
Minerva Society Notes	80
College Notes	83
Cranwell '69	93



The Reviewing Officer presenting the Sword of Honour to Senior Under Officer R. J. C. Dawson.

THE GRADUATION OF No 95 ENTRY

The Graduation Parade of No 95 Entry took place on the morning of 28th February, 1969. The weather was cold and blustery throughout the ceremony. The Reviewing Officer was Air Chief Marshal Sir John Grandy, GCB, KBE, DSO, Chief of Air Staff. The parade was commanded by Senior Under Officer R. J. C. Dawson and the Parade Adjutant was Senior Flight Cadet P. M. Riches. The Sovereign's Squadron was commanded by Senior Under Officer B. Wakely and 'B', 'C' and 'D' Squadrons were commanded respectively by Under Officer P. W. Roser and Senior Under Officers M. B. Stoner and E. Pettigrew.

As the Reviewing Officer approached the dais accompanied by the Air Officer Commanding-in-Chief, Training Command, Air Chief Marshal Sir John Davis, GCB, OBE, ADC, and the Commandant, Air Vice-Marshal T. N. Stack, CB, CVO, CBE, AFC, a fly-past of twenty Jet Provosts took place, forming the figure 95. After the Advance in Review Order, the Reviewing Officer presented the Sword of Honour to Senior Under Officer R. J. C. Dawson, the Queen's Medal to Senior Flight Cadet P. M. Riches and the R. M. Groves Memorial Prize and Kinkead Trophy to Senior Under Officer M. B. Stoner. He then gave the following address :

We have seen a fine parade this morning and all of you taking part can feel justifiably proud of your performance. Your precision must certainly have given great satisfaction to those on this side of the parade ground.

This parade at Cranwell, a famous and oft-repeated occasion now part of our history, depends on much for its success ; three major factors are individual effort, team work, leadership, all qualities ably demonstrated this morning. But these are qualities which not only make for a good parade ; they mean far more than that. They are qualities which have a direct bearing upon your whole Royal Air Force life ; the life you have chosen and upon which you are now starting.

You have reached the first major milestone of your service in the Royal Air Force ; on hearing me say that, I suspect many of you must be thinking that on this very day, at Cranwell, you are also happily unloading a number of millstones as well - I hope you are. But the point of today is that as you march up those College steps, in a few moments, you march out of your Cadet life ; you start your life as an Officer.

This is a cold morning and I am going to confine my remarks to giving you three

pieces of advice. Firstly - beware of the dangerous thought 'Well that's that, I've passed out at Cranwell and I can now sit back and have a good time.' Have a good time, yes, by all means, but you won't have one, in my opinion, if you sit back.

Life in the Royal Air Force is not just a question of getting on to the escalator and riding to the top ; you will find that that old escalator is in fact stationary. It is really a pretty steep ladder and you are well planted on the lower rung. How far you get up will depend on your own individual effort ; the opportunities are there but don't have any misguided thought that the Royal Air Force will give you a wonderful life. You have to work for it.

My second piece of advice is 'Don't get too set in your ways.' Man has lived in a changing world ever since the birth of time, but in your chosen profession, our profession, today the rate of change, the pace of change, is pretty striking ; you have to be receptive to it, alive to it and work hard to keep up with it. Next year this College will have been in existence 50 years ; the changes this place has seen in that short time are quite enormous ; they must be beyond the dreams of even the most farsighted of its founders. Traditions have been created, indeed we have



Flypast at the Graduation of No 95 Entry

very rightfully and properly observed some of them this morning but we must never allow traditions to become shackles. To you who are going to lead the Royal Air Force into the next century, there can be no doubt that you will see changes in techniques, in capabilities, beyond today's imagination ; keep up with them and your life will not lack excitement, adventure and promise. I envy you ; you will be asked to meet tremendous responsibilities ; you will find great satisfaction in the process.

My last point is in a way related to change, and that is don't ever become a 'Better Notter.' Caution, judgment, calm deliberation, yes ; but always have a go if you think it sensible and worthwhile. In my experience, what often appears to be the harder line to take, the harder job to do, turns out to be the right one.

In standing by these three pieces of advice I have given you, you will need your share of those qualities which in our nation's history have always been prevalent in young and old alike ; qualities which have invariably come to the fore when we have been up against it. I am thinking of courage, professional skill, determination, vision and humour. There are those who tend in these times to denigrate some of these qualities, to jeer at what they stand for ; they are lost souls. Have none of it : you have chosen a fine life, a good life, an adventurous one.

Gentlemen, I am glad, and proud to have been in your company this morning. I wish you all the very best of luck in the Royal Air Force. Work hard, play hard and enjoy your life to the full. You will find it very worthwhile.



The Reviewing Officer with Senior Flight Cadet P. M. Riches, Senior Under Officer M. B. Stoner and Senior Under Officer R. J. C. Dawson.

THE WINGS AND PRIZES CEREMONY

Presentations of Wings and Prizes to No 95 Entry were made by the Commandant, Air Vice-Marshal T. N. Stack, CB, CVO, CBE, AFC, in the Whittle Hall on 27th February 1969.

After making the presentations Air Vice-Marshal Stack addressed his audience :

Ladies and Gentlemen : It gives me great pleasure to be able to welcome so many parents, relatives and friends to this occasion at which we mark the successful end of the flight cadet phase of training of No 95 Entry. The course has been demanding and we fully appreciate the value of the encouragement you will have given them and the interest you will have shown during the last 2½ years.

You have just seen the distribution of prizes to the successful flight cadets, but three awards yet remain. These are the three major prizes and they will be given tomorrow during the parade by our Chief of Air Staff, Air Chief Marshal Sir John Grandy. However, I am sure you will join with me now in congratulating the winners :

The Sword of Honour winner, Senior Under Officer R. J. C. Dawson.

The Queen's Medal winner, Senior Flight Cadet P. M. Riches, and the winner of the Groves Memorial Prize with its conjoint award, the Kinhead Trophy, Senior Under Officer M. B. Stoner.

The selection of prizewinners is never easy. There have been some close-run results and I congratulate you all on your achievements.

As you of No 95 Entry leave the College you see us preparing for yet another new look. Ever since I have been here there have unfortunately been changes in the air ; and almost each time I have spoken at one of these Wings and Prizes ceremonies I either have had to mention possible changes in policy for the training of flight cadets ; or have had to refer to the latest White Paper which has normally told of changes in the Royal Air Force as a whole.

As far as the service as a whole is concerned, defence issues appear to be fairly settled, and look to remain so for some time to come. What slight changes have been announced in last week's White Paper are

for the better and, insofar as one can read between the lines, there does seem to be a growing understanding of the thesis that if it's an air matter it should be looked after by airmen.

Considering the training pattern for the Royal Air Force College, I can now say that our future is decided upon and that it is as forecast at the last Wings and Prizes Ceremony. Briefly, to get into Cranwell in future years, you will need a degree.

The reason for this is that, as always, we aim to have in the Royal Air Force's permanent cadre, officers of the highest intellectual attainments. This enables them to keep pace with the increasingly sophisticated techniques which are constantly being introduced into the Service. Trained brain power is also needed for the part we play in formulating defence policy in the ever more complicated Whitehall world ; and again, as equipment costs rise in relation to the total Defence Budget, so our responsibility for getting the most value for our money must increase. In all these aspects of Service life ever higher standards of applied thought and reasoned argument will be needed ; and to help us reach such standards we must have degree-level education.

Now where to give this deep academic training has been a question which has been anxiously debated since the requirement for degrees for General List officers was first stated by the then Air Council some years ago. I won't weary you with the details but after some experimentation and much thought over a long period it has been decided that a university is the best place for academic training - and for many reasons it can be shown that this is a logical solution.

Thus we see a natural progression in the raising of academic standards here at Cranwell for the future permanent officer, which reflects the increasing complexity of the

society in which we live. Before the war, to come to Cranwell one needed an academic qualification just above 'O' levels — the Civil Service Competitive examination ; after the war the standard was raised to 'A' levels ; and now the qualification will be a degree. But I emphasize that at no stage has the sparkle, dash or professional standard required of entrants been in any way reduced ; nor will it.

So the schoolboy who wants to come to Cranwell will know from the beginning that his path will take him from school to university and thence here, this new concept of Cranwell training being known as the Graduate Entry Scheme.

Cranwell entries who have arrived here or who will arrive here before the graduate entry scheme gets properly started can take heart in that they qualify for the General List in a shorter time and without the additional degree hurdle to surmount.

It is also important that these non-graduate entrants don't feel that they can't succeed because they don't have a degree ; this is patently not borne out by the facts. To the Service, once you are one of the permanent officers, it's your performance that counts, and not your paper qualification.

Nevertheless, what I do say is that by and large three years' mind training must be better than the present one year of academics which lacks depth and therefore much of its meaningfulness for the trainee. The future will see the Royal Air Force the better for this coming alteration in our training pattern.

In view of the changed animal to come here, the current course will patently have to be re-constructed and this we are doing in preparation for these graduate entries of the future. Since this species of new Cranwellian will be more mature and will have finished with academics, less time will be needed for his basic service training here, and at present we believe that a year should suffice.

As some of you may be aware, No 99 Entry which arrived last October has already embarked on this scheme. In round figures,

of the approximately 150 who enrolled, we expect 80 to get their degree at university (30 have already gone) ; they will then return to Cranwell for their basic service training. The remaining 70 will stay on the normal flight cadet course, 50 of them getting our CNAA engineering degree. Thus 120 out of the total of 150 will enter the General List with a degree.

The interim period in which we have both flight cadets entering here and trainees going to university may possibly continue until 1971. From then on no-one will be able to come here direct from school ; entries will be composed entirely of those from universities and the last flight cadet on this forecast is expected to leave by 1974.

It is only natural that those of us who have known Cranwell for a long time will feel sad at this change that is coming. But we must evolve ; we must keep pace with the times and the young men from university who will fill College Hall in the future will be the direct heirs of the flight cadets of yesterday and today ; and I'm sure they will guard in the same spirit and with the same loyalty the traditions that are so well looked after by the present generation.

Well, enough of the future ; what of No 95 Entry ? They arrived in October 1966 and were the first Entry to follow fully the revised 2½ year schedule. Of the original 104 flight cadets only 79 pass out tomorrow ; this number reflects the usual transfers between entries and branches and rather more than the average college suspension rate.

The academic standard on arrival did not appear to be in any way outstanding ; nor did it develop particularly — although there were some successes. Leaving out for the moment the engineers, I quote a report on the Entry's Science and Maths efforts which stated 'with a few honourable exceptions 95 Entry failed to be impressed or inspired by the stated aim of the academic phase, which is "to develop their mental powers and faculties to meet the demands of the highest ranks."' Incidentally, I had the names of four honourable exceptions brought to my notice and feel like asking them to stand up and take a bow — but will spare them.

In Humanities subjects, however, the entry is assessed as being academically above average. Oral ability and classroom participation was of a high level. Written exercises alas did not match this standard ; and the entry produced the largest 'extra English' class we have ever had at the College !

This must nevertheless have paid dividends for, amongst some good work, we subsequently had four really excellent individual projects from the course.

The flight cadets who chose to do modern languages also deserve credit ; and four of them — Bright, Miller, Remlinger and Roser passed the Civil Service Commission's Linguist examination in French, and Ball and Griffiths that in German. All these language experts attract a pecuniary award for their efforts as well as my encomium now (and I think I know which they value more !).

Amongst the Engineers, those remaining on the Entry have done well although the loss rate of 38 per cent is high. I think it is particularly praiseworthy that a branch who have to devote so much time to their studies have produced two Senior Under Officers in the entry, one of whom has won the Sword of Honour.

The BSc (Hons) class, both mechanical and electrical, is to be congratulated on a very high standard throughout. Peckett, in the electrical stream was the outstanding member and is by far the best electrical student to pass through this College in recent years. The electrical stream in the Higher National Diploma class have also had very satisfactory results.

On their arduous training exercise 'King Rock' this entry was fortunate to enjoy fine weather throughout, which helped somewhat to alleviate their discomforts. An incident on their escape and evasion exercise deserves mention. A group of escapees from 'B' Squadron displayed considerable initiative by capturing a marked map from an 'enemy' armoured car. The crew had left it inadequately guarded whilst they slaked their thirst in a nearby hostelry. How the armoured car crew explained this lack of security or for that matter the flight cadets their proximity to the pub was never satisfactorily cleared up!

And now to review the cadets' activities in the air. No 95 is the first Entry to graduate after following the standard Training Command syllabus ; they have also unfortunately suffered the highest suspension rate for some years, but I assure you that the two facts are not connected. However, of the 44 pilots who remain, no less than 18 achieved Above Average or High Average assessments ; their Ground School results were overall average. The Navigator element, by contrast, had better than average results both in the air and on the ground.

I should like to highlight the fact that the four contenders for the Battle of Britain Aerobatic Trophy put on the best displays for some years and Lawrence was a worthy winner.

No 95 has been well represented in most sports at the College. They have provided the major part of a very successful rowing team which defeated Dartmouth and won events in the Royal Air Force Regatta ; four members of 'D' Squadron provided the nucleus of the College Water Polo team which beat by handsome margins both Sandhurst and Dartmouth ; three members were in the Fencing team who for the first time overcame our chief opponents — Sandhurst, Dartmouth and Salon, all in one year. Lastly, the Entry provided two members of the Cross Country team which this year won against both Sandhurst and Dartmouth — the former not having been beaten by us for 15 years.

In all, 31 sports colours were awarded to members of the Entry. Five flight cadets — Wakely, Henderson, Clovis, Green and T. J. Williams gained double colours. Twelve members were selected for Command teams in various sports, and no less than 11 flight cadets had the honour of being selected to play for the Royal Air Force in one sport or another.

Overall, 95 Entry has put up a good show during their time at Cranwell. They have worked hard and played hard. Within twenty-four hours they hand over the day-to-day running of the Cadet Wing to the next Senior Entry. This task, as I am sure No 95 will agree, is by no means easy. I might just make the point here to our guests

that the Senior Entry largely controls the running of the Cadet Wing ; my staff only take a hand if things get out of hand ! By adopting this system we hope to provide the very real training which helps to develop the leadership abilities of our flight cadets.

Tomorrow, you of No 95 Entry march off the parade ground as commissioned officers of the Royal Air Force. The aircrew and Regiment members leave Cranwell and go on for their advanced training, leaving behind the Engineer and Equipment fraternity.

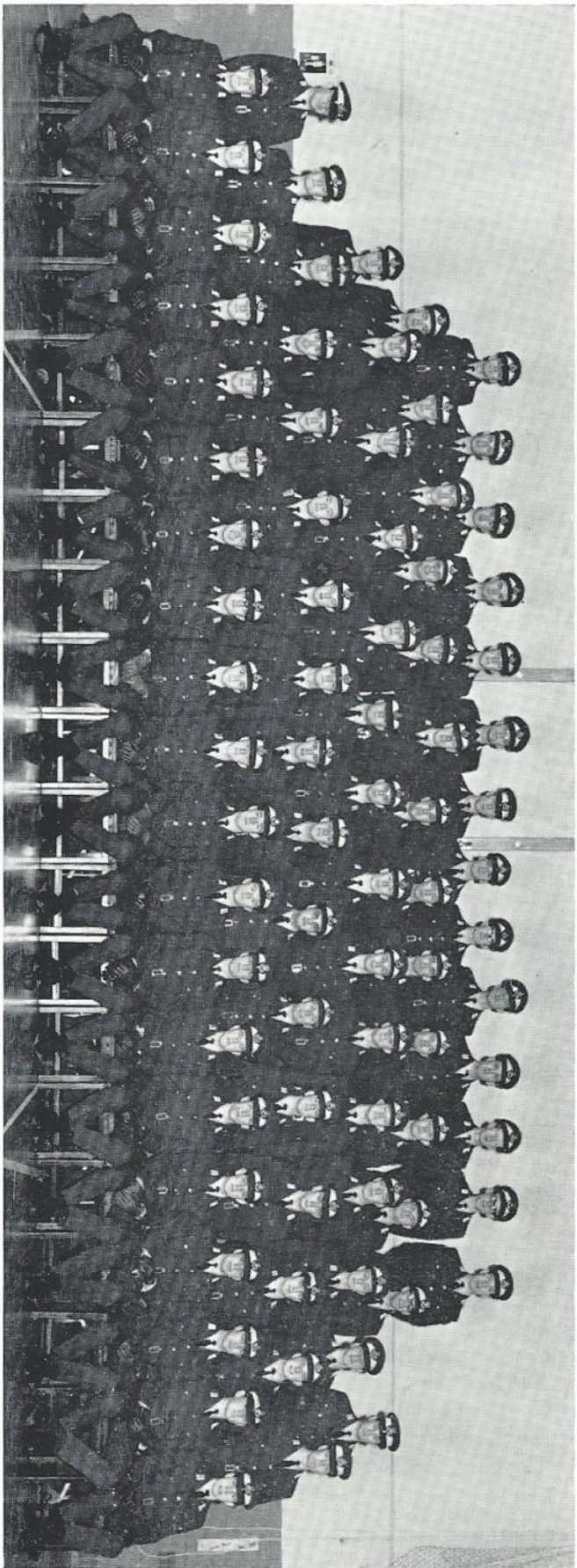
These officers have yet to complete their further specialist training studies here at Cranwell.

However, for you all, your flight cadet training is at an end ; henceforth you will be treated and respected as officers. I am confident that the training you have received and absorbed will stand you in good stead and that you will uphold the traditions of the Royal Air Force College.

Good Luck to you all !



Pictured with the Commandant are Flight Lieutenant and Mrs D. J. Lawrence and their sons. Flight Lieutenant Lawrence is serving in the Department of Engineering. Under Officer R. H. Lawrence graduated with No 95 Entry, winning the Battle of Britain Trophy. Flight Cadet C. H. Lawrence is a member of No 99 Entry, an Engineer.



NO 95 ENTRY

- Back Row :*
 Senior Flight Cadets O. M. Williams, E. Bedford, M. J. Renlinger, S. G. Griffiths, D. V. Oldham, P. R. Slawson, D. J. Webb, P. T. Bright, M. S. Britton, J. C. W. Lapsley, V. R. Denwood, C. J. Hockley, R. P. Bull, J. A. Ball.
- Fourth Row :*
 Senior Flight Cadets G. A. Rutledge, D. A. Angus, N. E. Jones, M. J. Abbott, P. V. Le Jeune, J. E. Chandler, R. A. Chivers, T. I. Boney, T. J. Williams, M. J. Drybanski, J. M. Doggart, K. C. Byrne, G. Robertson.
- Third Row :*
 Senior Flight Cadets M. H. Jones, L. G. A. Poulter, B. D. Swinscoe, R. J. West, G. R. Miller, D. Brooking, R. W. Sears, D. G. Mills, P. A. Tew, A. G. B. Vallance, N. G. Berts, S. J. Green, P. M. Riches, K. N. S. Brown, G. Cole.
- Second Row :*
 Senior Flight Cadets M. Clovis, B. W. King, P. Osborn, S. B. Jones, M. C. Williamson, G. G. Reid, N. A. Buckland, J. A. Walliker, I. C. Molyneux, S. P. Richmond, L. V. Benn, J. B. Welham, D. S. Peckett, P. J. Hoskins, S. H. Monghan, R. A. J. Mot, P. R. P. Hensley.
- Front Row :*
 Under Officers P. W. Roser, R. M. Moody, N. C. Whitlock, R. H. Lawrence, L. G. G. Cartwright-Terry, N. V. Vaughan-Smith, Senior Under Officers M. B. Stoner, E. Pettigrew, R. J. C. Dawson, B. Wakely, Under Officers K. D. Filbey, I. Sloss, D. M. Guest, C. C. R. Gilchrist, T. E. Duggan, R. J. Tydemann, G. D. Simpson, D. F. A. Henderson, Senior Flight Cadet A. S. Riley, Under Officer A. D. Heath.

COMMISSIONING LIST

No 95 ENTRY

- R. J. C. DAWSON, *Senior Under Officer (Engineer)*: *The Sword of Honour*; *The Alasdair Black Memorial Trophy and Prize*; *Rugby (Colours)*; *Canoeing*; *Athletics*; *Cricket*; *Squash*.
- E. PETTIGREW, *Senior Under Officer (Equipment)*: *The Ministry of Defence Prize for Equipment Studies*; *Swimming*; *Water Polo*; *Motor Club*; *Gliding*.
- M. B. STONER, *Senior Under Officer (Pilot)*: *The R. M. Groves Memorial Prize and Kinkead Trophy*; *Rugby*; *Squash*; *Tennis*; *Gliding*.
- B. WAKELY, *Senior Under Officer (Engineer)*: *The Philip Sassoon Memorial Prize*; *Soccer (Colours)*; *Athletics (Colours, Training Command)*; *Bridge*.
- L. G. G. CARTWRIGHT-TERRY, *Under Officer (Engineer)*: *Rugby (Captain)*; *Hockey*.
- T. E. DUGGAN, *Under Officer (Pilot)*: *Hockey*; *Squash*; *Parasailing*; *Potholing*.
- K. D. FILBEY, *Under Officer (Pilot)*: *Water Polo (Colours)*; *Rugby*; *Sailing*; *Squash*; *Choral*.
- C. C. R. GILCHRIST, *Under Officer (Pilot)*: *Sub Aqua (Captain)*; *Gliding*.
- D. M. GUEST, *Under Officer (Pilot)*: *Soccer*; *Rugby*; *Walking*; *Parasailing*.
- A. D. HEATH, *Under Officer (Pilot)*.
- D. F. A. HENDERSON, *Under Officer (Pilot)*: *Modern Pentathlon (Captain, Colours)*; *Riding (Colours)*; *Parasailing (Captain)*.
- R. H. LAWRENCE, *Under Officer (Pilot)*: *The Battle of Britain Trophy*; *Sailing*; *Hockey*.
- R. M. MOODY, *Under Officer (Pilot)*: *Hockey*; *Cricket*; *Drama*; *Karting*.
- P. W. ROSER, *Under Officer (Pilot)*: *Rowing (Training Command)*; *Badminton*; *Walking*; *Gliding*.
- I. SLOSS, *Under Officer (Engineer)*: *The Ministry of Defence Prize for Cadets following the Higher National Diploma Course*; *Water Polo (Colours)*; *Swimming*; *Badminton*.
- G. D. SIMPSON, *Under Officer (Pilot)*: *Soccer*; *Modern Pentathlon*; *Rowing*; *Debating*; *Potholing*.
- R. J. TYDEMAN, *Under Officer (Pilot)*: *Soccer*.
- N. V. VAUGHAN-SMITH, *Under Officer (Engineer)*: *Sailing (Colours)*; *Hockey*.
- N. C. WHITLOCK, *Under Officer (Pilot)*: *Hockey (Captain, Colours, Training Command, Royal Air Force, Combined Services)*; *Cricket*; *Parasailing*.

- M. J. ABBOTT, *Senior Flight Cadet (Engineer)*: Hockey; Cricket; Dramatics; Field-Shooting.
- D. A. ANGUS, *Senior Flight Cadet (Pilot)*: Cross Country (Colours); Athletics; Walking.
- J. A. BALL, *Senior Flight Cadet (Pilot)*: Cricket; Hockey; Ski-ing.
- E. BEDFORD, *Senior Flight Cadet (Pilot)*: Football (Colours); Table Tennis (Colours, Captain).
- N. G. BETTS, *Senior Flight Cadet (Engineer)*: Ski-ing (Captain, Colours, Royal Air Force); Aeromodelling; Field-shooting.
- T. J. BENEY, *Senior Flight Cadet (Pilot)*: Fencing (Colours, Command); Parasailing; (Captain); Shooting; Walking.
- L. U. BENN, *Senior Flight Cadet (Pilot)*: Swimming; Water Polo; Sub Aqua; Gliding.
- P. T. BRIGHT, *Senior Flight Cadet (Pilot)*: Rugby; Ski-ing; Climbing.
- M. S. BRITTON, *Senior Flight Cadet (Engineer)*: Fencing (Colours); Folk Music.
- D. BROOKING, *Senior Flight Cadet (Navigator)*: Rugby; Squash; Climbing; Literary and Debating.
- R. N. S. BROWN, *Senior Flight Cadet (Regiment)*: Ice Skating; Rugby; Soccer; Cricket; Journal; Parasailing.
- R. P. BULL, *Senior Flight Cadet (Engineer)*: Squash; Ski-ing; Karting.
- N. A. BUCKLAND, *Senior Flight Cadet (Pilot)*: Cricket; Soccer; Choral; Journal.
- K. C. BYRNE, *Senior Flight Cadet (Engineer)*: Badminton.
- J. CHANDLER, *Senior Flight Cadet (Engineer)*: Gliding (Captain).
- R. A. CHIVERS, *Senior Flight Cadet (Pilot)*: Sailing (Colours); Judo.
- M. CLOVIS, *Senior Flight Cadet (Engineer)*: Water Polo (Colours, Training Command); Rugby (Colours); Athletics; Sub Aqua; Folk Music.
- G. COLE, *Senior Flight Cadet (Engineer)*: Football; Cricket; Folk Music.
- V. R. DENWOOD, *Senior Flight Cadet (Engineer)*: Sailing; Choir.
- J. M. DOGGART, *Senior Flight Cadet (Pilot)*: Water Polo (Colours); Swimming; Judo; Jazz.
- M. J. DRYBANSKI, *Senior Flight Cadet (Pilot)*: Tennis; Badminton; Gliding.
- S. J. GREEN, *Senior Flight Cadet (Pilot)*: Rowing (Colours, Captain, Training Command, Royal Air Force); Shooting (Colours, Training Command, Royal Air Force); Christian Union; Walking.
- S. G. GRIFFITHS, *Senior Flight Cadet (Pilot)*: The Hicks Memorial Trophy; Football; Cross Country; Cricket; Motor Club; Potholing.
- P. R. P. HEMSLEY, *Senior Flight Cadet (Navigator)*: Ski-ing; Canoeing; Rock Climbing; Fine Arts; Choral.
- C. J. HOCKLEY, *Senior Flight Cadet (Engineer)*: Shooting (Captain, Colours, Training Command, Royal Air Force); Karting.
- P. J. HOSKINS, *Senior Flight Cadet (Pilot)*: Rowing (Training Command, Royal Air Force); Drama; Paragliding.
- M. H. JONES, *Senior Flight Cadet (Engineer)*: Badminton; Cricket; Bridge; Chess.
- S. B. JONES, *Senior Flight Cadet (Equipment)*: Badminton; Chess; Walking.
- P. V. LE JEUNE, *Senior Flight Cadet (Pilot)*: Hockey; Cross Country; Sailing.
- B. W. KING, *Senior Flight Cadet (Pilot)*: Shooting; Sub Aqua.

- J. C. W. LAPSLEY, *Senior Flight Cadet (Engineer)*: Judo; Beagling; Paragliding.
- R. A. J. MOTT, *Senior Flight Cadet (Pilot)*: *The Dickson Trophy and Michael Hill Memorial Prize*; Shooting (Colours, Training Command, Royal Air Force); Rugby; Parasailing; Motor Club.
- G. R. MILLER, *Senior Flight Cadet (Navigator)*: Rowing; Badminton; Music; French.
- D. G. MILLS, *Senior Flight Cadet (Pilot)*: Rugby; Athletics.
- S. H. MONAGHAN, *Senior Flight Cadet (Pilot)*: Mountaineering; Sailing.
- I. C. MOLYNEAUX, *Senior Flight Cadet (Pilot)*: Soccer; Cricket; Sub Aqua; Gliding.
- D. V. OLDHAM, *Senior Flight Cadet (Pilot)*: Soccer; Cricket; Sub Aqua.
- P. OSBORN, *Senior Flight Cadet (Pilot)*: Shooting; Fishing (Captain).
- D. S. PECKETT, *Senior Flight Cadet (Engineer)*: *The Chicksands Cup*; Shooting; Drama.
- L. G. A. POULTER, *Senior Flight Cadet (Navigator)*.
- G. G. REID, *Senior Flight Cadet (Pilot)*: Badminton; Gliding; Printing.
- M. J. REMLINGER, *Senior Flight Cadet (Pilot)*: *L'Ecole de l'Air Trophy for French Studies*; Rugby; Cricket; Water Ski-ing; Sub Aqua.
- S. P. RICHMOND, *Senior Flight Cadet (Equipment)*: Rowing; Field Shooting; Printing.
- P. M. RICHES, *Senior Flight Cadet (Navigator)*: *The Queen's Medal*; *The Abdy Gerrard Fellowes Memorial Prize*; *The Institute of Navigation Trophy and the Ministry of Defence Prize for Navigators*; Fencing; Tennis; Choral; Drama.
- A. S. RILEY, *Senior Flight Cadet (Pilot)*: Rugby; Cricket; Angling (Captain); Mountaineering.
- G. ROBERTSON, *Senior Flight Cadet (Engineer)*: Cross Country (Colours); Sailing; Walking.
- G. A. RUTLEDGE, *Senior Flight Cadet (Pilot)*: Riding; Sub Aqua; Chess; Motor Club.
- R. W. SEARS, *Senior Flight Cadet (Pilot)*: Fencing (Captain, Training Command, Royal Air Force); Judo; Motor Club.
- P. R. SLAWSON, *Senior Flight Cadet (Engineer)*: Squash; Music; Bridge; Motor Club; Walking.
- B. D. SWINSCOE, *Senior Flight Cadet (Engineer)*: Soccer; Basketball; Riding.
- P. A. TEW, *Senior Flight Cadet (Navigator)*: Squash (Colours); Tennis; Table Tennis (Captain); Engineering; Christian Union; Motor Club.
- A. G. B. VALLANCE, *Senior Flight Cadet (Pilot)*: *The Ministry of Defence Prize for War Studies and Humanities and the Royal New Zealand Air Force Trophy*.
- J. A. WALLIKER, *Senior Flight Cadet (Pilot)*: Rowing (Colours, Training Command, Royal Air Force); Water Polo; Squash; Swimming; Shooting.
- D. J. WEBB, *Senior Flight Cadet (Engineer)*: Cross Country; Judo; Rugby; Water Polo; Music.
- J. B. WELHAM, *Senior Flight Cadet (Engineer)*: Soccer; Golf; Motor Club.
- R. J. WEST, *Senior Flight Cadet (Pilot)*: Hockey; Athletics; Choral; Angling; Sailing; Gliding.
- O. M. WILLIAMS, *Senior Flight Cadet (Engineer)*: Rowing (Colours, Royal Air Force); Badminton; Paragliding; Field-shooting.
- T. J. WILLIAMS, *Senior Flight Cadet (Pilot)*: Tennis (Colours); Rugby (Colours); Bridge.
- M. C. WILLIAMSON, *Senior Flight Cadet (Pilot)*: Rugby; Cricket; Field-shooting; Angling; Walking; Bridge.



Sir Kenneth Porter addressing his audience in the Whittle Hall

THE PRESENTATION OF ACADEMIC AWARDS

A ceremony to mark the award of Bachelor of Science Degrees and Higher National Diplomas in Mechanical and Electrical Engineering to No 12 Engineering Degree Course and No 13 Engineering Diploma Course was held in the Whittle Hall on 3rd December 1968. The certificates were presented by Air Marshal Sir Kenneth Porter, KCB, CBE, CEng, FIEE, FRAeS, FBIM.

After making the presentation Air Marshal Sir Kenneth Porter gave the following address :

Commandant, Gentlemen, I am honoured and delighted to have been asked here today to present Degree and Diploma certificates and I thank the Commandant both for asking me to do so and for so warmly welcoming me.

It is always a nostalgic experience for an ex-flight cadet to come back to Cranwell. As the Commandant has told you, I came to Cranwell from Halton where I had been trained as a Fitter (Aero-Engine) and I am naturally pleased that there are ex-Aircraft Apprentices amongst the recipients of Degree and Diploma awards today. Whilst I was here, College Hall was slowly being built, we lived in hutted accommodation, four or five to a hut, and we did not have to work very hard. Now Whittle Hall and Trenchard Hall have been added, the huts have all gone, and, I understand, the cadets have to work very hard, so to me the changes are very great. I enjoyed my two years here so much that I was very sorry to leave and despite doing very little work learnt an enormous amount without realising it.

Engineering in the Royal Air Force pre-war was very amateur by comparison with its highly professional status of today. With the increased ranges, complexity, and value of equipment, the contribution of Royal Air Force Engineer officers is now vital to operational efficiency but never forget that Engineers, in common with other ground

branches, exist only to support the aircrew and to provide serviceable aeroplanes, armament, and the ancillary equipment. We Engineers should strive to provide the maximum front line strength with the minimum of men to support it. Engineering efficiency is measured in inverse proportion to the number of Engineer officers and tradesmen; the more there are, the more inefficient is the overall service provided. Our long-term aim should be to achieve the ultimate in engineering efficiency by not being required at all.

You have now taken the first step on the road of your Royal Air Force career by acquiring the knowledge necessary to keep equipment serviceable or to repair it when it doesn't work. I know only too well that it has not been easy to qualify as an Engineer and at the same time to undergo the general Royal Air Force officer training which your civilian counterparts do not have to undergo. That you have successfully met these demands in the face of the many diversions and distractions to which you have no doubt been subjected is greatly to your credit. However, without wishing to depress you, I must emphasise that you will have to go on learning for the whole of your professional life if you are to have a successful career and the most valuable thing you will take away from here is not the knowledge you have acquired but the ability to acquire knowledge.

Engineering knowledge and practices are still developing fast and although the basic knowledge you have acquired during your training will always stand you in good stead as a foundation on which to build your careers, you will not be able to build from it without making the necessary bricks. The bricks can be described as the application of principles to the practical engineering problems of the Royal Air Force. There will be unlimited opportunities of applying these principles but in order to do so in a positive and practical manner it will be necessary first of all for you to develop the ability to analyse problems impartially and then to find logical solutions. To do this successfully requires that you must know a very great deal about everyone else's job in order to discover precisely what their problems are. In my experience, once a problem has been precisely defined the solution is more often than not both cheap and simple. A reputation as a highly efficient Engineer is gained by producing simple, cheap, solutions that can be put into effect quickly rather than sophisticated and expensive solutions.

In your first appointments you may be disappointed to find that your duties do not require you to employ all the engineering knowledge you have acquired here - it is a complaint which I often hear - but you should remember that this knowledge has been imparted to fit you for a wide variety of engineering jobs throughout your careers so that only a small part may be used at any one time in a junior appointment. I advise you not to complain that your knowledge is not being fully used but to use every opportunity to learn the enormous amount about the Royal Air Force that you don't know. Ask questions all the time and never take anything for granted, the more questions you ask and the more you probe into the reasons why things are done in a particular way, the more knowledge you will acquire and the more value you will be to the Royal Air Force and to yourself. Don't be afraid of being constructively critical; it is surprising how often a re-appraisal of the facts will show that there is either a better way of doing a job or that it is unnecessary. A questing mind and the exercise of one's intellect in order to effect improvements can make every job wildly exciting and leave one impatient because there is insufficient time

to get done all the many things which one can see are waiting to be done. After nearly 41 years service I know that I still have much to learn and I still have a long list of things waiting to be done. At times I have no doubt that you will be tempted to conceal your own ineptitude or laziness by blaming your inability to get things done on some remote 'THEY.' In my experience THEY usually means ME. I can't get something done because I don't know how to do it, because it's too much effort to get it done, or because I am not competent enough to convince others that it needs to be done. Put all your effort into doing the things which are within your own competence and leave the THEY to worry about themselves and the jobs for which they are responsible. The simple secret of success in any walk of life is to do whatever job you are given to the very best of your ability and with the maximum energy of which you are capable; you cannot do any better and if you fail you will not afterwards be able to blame yourself for the results.

All organisations are made up of people. Remember that each person in an efficient organisation is essential for its success. Some play a more important part than others, but failure of any one of them to do his job properly has an adverse effect on the whole organisation. Each is a unique individual with emotions, ambitions, likes, and dislikes, and each wishes his contribution to be recognised. As Engineer officers you will control the activities of more airmen than any other branch, it is of vital importance that you should not regard airmen as bits of machinery but that you should care for each of them, and that you should go to great trouble to make everyone serving under you realise that you consider them to be individually important and that you are personally interested in each one of them. The simple definition of leadership is the ability to inspire a man to do more than he would otherwise do. All men are capable of catching fire and the problem of leadership is to set their fuel alight. Some men have, so to speak, a leaky container and catch fire so easily and in such an uncontrolled way that one spends half one's time trying to put them out, others are easily ignited and burn steadily all their lives, but the test of leadership is the ability to set alight those men whose fuel is contained in

reinforced concrete containers and where a considerable effort is needed to break down the casing before the fuel can be lit. The way in which each man exercises leadership is different, because it depends upon the individual's personality, but no man can exercise leadership unless he cares for the people he leads. The personal satisfaction that you will get from inspiring those under you is out of all proportion to the effort which this entails. Without the ability to lead and to manage, your engineering abilities will be wasted so I ask you always to put people first and things second.

I cannot finish without saying a word or two about the Royal Air Force in the future. The British people acquired an Empire reluctantly and having acquired it adopted a policy of preparing the Colonies for self-government and independence. Our aim has almost been achieved and soon we shall have no Empire. We should be proud of this and we should be boasting about our achievement instead of complaining that we are a second class power because we have given up territory. In the same way we must, as military experts, be concentrating our efforts on designing our Air Force to support our changed foreign policy in the most efficient way and not waste time or emotion complaining about a reduction in our size. The right size for the Royal Air Force is that which is required for the safety of the Realm in the political circumstances of the time. When I joined the Royal Air Force in 1928 it was about 30,000 strong and was equipped with out-of-date aeroplanes and meagre supporting facilities. The present policy provides for an Air Force three times as big to be equipped with first class aeroplanes, weapons, and supporting equipment. In real terms our effectiveness is at the very least 1,000% greater than it was before the war. The young airman, NCO, and officer, is far better in every way than his predecessors and the Royal Air Force of tomorrow will also be much better than it has been in the past. It is a habit of the inefficient and mediocre old men, when they are no longer able to compete, to criticise the young but I strongly advise you as you get older to realise that succeeding generations will be even better than yours and to encourage rather than criticise them. It is, in any case, a very good

investment since when you become old your well-being will depend on the efficiency of the young.

Finally, I ask you never to forget that efficiency is measured by the ability to do the essential jobs at the minimum cost. Today 48% of the air estimates is spent on men and 55% of the men are technical tradesmen. You should employ your engineering ability to get the work done with the minimum number of men. I have found that most men can do three times more than one thinks they can, that no one has ever been killed by overwork, and that if two men are established to do work which could be done by one, both are likely to get ulcers.

Many of the Engineer officers and flight cadets who are here today will not qualify for a degree but the possession of a degree does not necessarily mean that a man is a good Engineer. The job of the Royal Air Force Engineer is to make, mend, and keep things working and his success is determined not by the possession of degrees but on how well he does the jobs to which he is appointed. There are first class Engineers who have no academic qualifications as such and there are poor Engineers who possess high academic honours. Nevertheless the modern Air Force requires professional engineers and it is important that all Royal Air Force Engineers should gain professional recognition as Chartered Engineers; I therefore hope that those of you who do not gain or have not gained degrees or diplomas at the end of your training will continue to study so as to qualify for membership of the appropriate professional engineering institutions. To all of you I say, do not be depressed if at the start of the career race you are not amongst the leaders; the ultimate winner is the man who never gives up until the race is over. Sir Francis Drake said it better than I can when he wrote to Lord Walsingham that 'There must be a beginning of any great matter, but the continuing to the end until it be thoroughly finished, yields the true glory.'

Gentlemen, I wish each one of you success and happiness in your Royal Air Force Engineering career.

No 12 ENGINEERING DEGREE COURSE

Flying Officer P. J. CLOUGH : BSc (2nd class Honours, 1st division).	Flying Officer G. J. OUGHTON : BSc (2nd class Honours, 2nd division).
Flying Officer J. B. COATES : BSc (2nd class Honours, 1st division).	Flying Officer J. D. REVELL : BSc (2nd class Honours, 2nd division).
Flying Officer D. FOWLER : BSc (2nd class Honours, 1st division).	Flying Officer P. G. ROBINSON : BSc (2nd class Honours, 2nd division).
Flying Officer N. GUNARATNAM : BSc (2nd class Honours, 1st division).	Flying Officer J. GREEN : BSc (3rd class Honours).
Flying Officer C. D. HINDS : BSc (2nd class Honours, 1st division).	Flying Officer R. D. JOHNSTON : BSc (3rd class Honours).
Flying Officer J. K. NEWTON : BSc (2nd class Honours, 1st division).	Flying Officer C. J. MASKELL : BSc (3rd class Honours).
Flying Officer A. J. P. STYLES : BSc (2nd class Honours, 1st division).	Flying Officer R. J. WOOD : BSc (3rd class Honours).
Flying Officer D. DIAMANDOPOLOUS : BSc (2nd class Honours, 2nd division).	

No 13 ENGINEERING HIGHER NATIONAL DIPLOMA COURSE

Flying Officer I. C. BAILEY
Flying Officer B. C. BARRETT
Flying Officer M. C. CHARLTON
Flying Officer P. DYER
Flying Officer G. P. HERMER
Flying Officer C. W. H. HOARE
Flying Officer R. I. HOGG
Flying Officer M. J. L. HURCOMBE
Flying Officer P. A. LOVERIDGE
Flying Officer W. LYNCH
Flying Officer T. W. PARKINSON
Flying Officer B. P. J. PEARCE
Flying Officer C. W. PRATLEY
Flying Officer N. SEMPLE
Flying Officer R. A. SLACK
Flying Officer P. J. SMITH
Flying Officer J. W. STEWART
Flying Officer M. J. WARD
Flying Officer R. L. WILSON



By courtesy of Sleaford Standard

Cranwell in January

THE GRADUATE ENTRY SCHEME : A MILESTONE IN CRANWELL'S DEVELOPMENT

by

SQUADRON LEADER A. M. NEWBOULD BA

University Advisory Officer

In December 1968, Mr Gerald Reynolds, Minister of Defence for Administration, announced that the Royal Air Force would in the future recruit its direct-entry permanent officers from the universities. Behind this decision lay new thinking on the evolution of Cranwell's role as the first Air Academy. Lord Trenchard's original concept of it is as valid today as it was 50 years ago, but technological and social changes now dictate changes in the pattern of Royal Air Force recruiting which must be reflected in the internal structure of the College. As flying and professional training have become increasingly complex and expensive, it has become more and more difficult to maintain a challenging academic content in the Cranwell course. Yet the future leaders of the Service require more than ever before a 'mind-stretching' exercise early in their careers to prepare them for the increasing complexities ahead. The problem might have yielded to a variety of less drastic solutions, but other factors were working to force the all-graduate decision.

In an age of expansion in tertiary education, of emphasis on qualifications and of initial progress according to GCE A-level performance, Cranwell's entrance requirement of 2 A-levels is increasingly likely in the future to attract rejected university applicants rather than the really valuable young men who now and in the past have preferred Cranwell training to a degree university. If nothing is done there is a danger that the College, forced to draw its recruits from a relatively lower cut of the academic cake, will suffer a drop in standards - not, perhaps, in absolute terms, but certainly relatively. Attempts to obtain degree recognition for the standard Cranwell course, a move that might be expected to maintain the quality of recruiting, have met with only limited success. The CNAA Degree Course for

Engineers was achieved, but for other branches the results were disappointing. True, 20 flight cadets obtained external degrees in a recent experiment, but any general award of degree status proved impossible. It would have been possible if the course could be lengthened to four years and if financial considerations were no object, but our numbers are relatively so small that we cannot compete with the universities in offering a range of degree courses economically. We have, therefore, to face the fact that the type of young man on whom Cranwell's great tradition has been built will more and more be found in the universities, and that is where we shall have to look if we wish to bring him back.

While Cranwell's prospects have been subject to these growing doubts, the Royal Air Force university cadetship scheme has been establishing itself as a major contributor to commissioned man-power. Cadetships are awarded, after selection on the basis of personal and academic qualities, to those about to enter university or already there. The undergraduate is appointed and paid as an acting pilot officer while he is studying, and becomes a member of his University Air Squadron. After obtaining his degree, he passes on to flying and professional training in his normal Service environment and thereafter is absorbed into the General List more or less *pari passu* with his Cranwell contemporary. At the time when the all-graduate policy was reaching the point of decision, there were about 150 university cadets in residence at universities. Their number had reached such proportions that contraction might soon be necessary either at the universities or at Cranwell. From there, it was not a difficult step to decide that one of the two methods of recruitment should be replaced entirely by the other ; and when it came to deciding which was to

go, national expansion of tertiary education coupled with the need for economy dictated that the universities, not Cranwell, were the logical provider of the graduate recruits we need.

All this is now passing into history ; but how is the decision affecting the College at present ? To see Cranwell life ostensibly going on today as it always has, one might be excused for imagining that nothing had changed at all. But the MOD (Air) instructed as long ago as September 1968 that, in anticipation of eventual Air Board agreement, preparation for the changes was to start immediately. With No 99 Entry due at the end of that month, the College received the following directive :

The prime purpose of the first year of training for the members of No 99 Entry who are not engineers is to equip the maximum number of flight cadets to find places in civilian universities, colleges and the engineering degree course at Cranwell. Other considerations are to be subordinate.

Of the 150 or so destined for No 99 Entry, 18 who were holding offers of university places took them, with university cadetships and much encouragement, without ever coming to Cranwell. 41 were bound for the Cranwell engineering degree course. The remaining 90 were assembled in College Hall on the Sunday evening of their arrival, expecting probably to hear a standard speech of welcome. Instead, the Assistant Commandant (Cadets) told them that they could choose between taking the standard Cranwell course and going to university after all, and that they had three weeks in which to make up their minds. The decisions were agonisingly difficult to make - What were their chances of a university place ? How would the decision affect their careers ? What would happen if they failed at university ? What should they study ? These and a hundred other questions were discussed between staff and flight cadets, headmasters and parents, day in and day out for three weeks. In the end, about 60 decided to try for university and 30 to stay for the standard flight cadet course.

The business of finding university places

for the 'pre-university stream,' as it was named, was a branch of staff work new to the Service. Although the university term had already started, some diligent detection found immediate university places for 12 cadets who were cleared and transferred to university cadetships in a matter of days. The remainder of the pre-university stream started a wholly academic year at the end of which they were to re-sit two GCE A-levels in which they had previously failed or obtained only low-to-medium grades. Applications for university entrance in October 1969 were completed with the help of headmasters and sent to the Universities' Central Council on Admissions (UCCA) during November and early December. No restriction was placed on the choice of degree subjects, although some effort was made to select studies which would be of tangible benefit to the Service. University cadetships are tenable for three years and, because Scottish universities provide in the main four year courses, there were problems in finding suitable degree courses for Scottish applicants.

The final results of the pre-university year cannot be foretold with complete accuracy at the time of going to press, but about half of the applicants have already received and accepted unconditional offers of university places. This is a very much higher proportion than the national average, reflecting on the fact that the Cranwell applicants, unlike most sixth-formers, already have a clutch of A-levels 'in the bag.' (It might also reflect a liking by universities beset by student troubles for candidates with a Cranwell background.) Of the remainder, all but three have received conditional offers from universities which they may or may not satisfy by their performance at A-level in June. Additionally, certain selected polytechnics and technical colleges, notably Portsmouth College of Technology, have made generous offers of places at minimum entrance requirements as a fall-out option for those who do not obtain a university place. In fact, only four candidates remain without an unconditional offer from either a university or a college, and even they have relatively easy conditional offers. With these offers now held and the UCCA clearing scheme to come, all but four of the pre-university stream are certain of a place on a

degree course in October, and there is a good prospect that all will find a place. If any are left over in October without a place, they will return to the No 99 Entry standard course by means of a special shortened academic course. Summing up the probable results of the year, of the 150 starters all but the 30 flight cadets taking the standard Cranwell course and the handful who, for various reasons have been discharged from the Service will have found a place on a degree course either at a civilian institution or on the CNAA Engineer degree course at Cranwell. Such a result will represent a considerable achievement in an operation which started at extremely short notice and which is wholly unprecedented in the history of the College.

What of the future? Now that Spring entries have ceased, No 100 Entry will assemble in October 1969. In overall numbers it will be similar to No 99 Entry, but as many as possible will be encouraged to take university places straight away without coming to Cranwell. Subtracting the Engineers, there will be a reduced number who will have the same choice as No 99 - to join the pre-university stream or to take the standard Cranwell course. Looking further ahead to October 1970, it appears virtually certain that No 101 Entry will be treated in the same way as Nos 99 and 100. Thereafter, it is anticipated that the university scheme will be so well established that it can absorb the whole of succeeding years' intakes, and the College's training pattern of the past 50 years will thus draw to a close. In its place, Cranwell will give reality to a new vision which is just as much in keeping with Lord Trenchard's original concept. With its airfield complex, fine buildings and unrivalled facilities, it is obviously ideal for bringing together all graduate entrants to the Service for their professional training, and so to give them the unique Cranwell stamp. Much discussion of the details remains to be done, but there will be every scope for the College to contribute as vitally to the security of the nation in the future as it has done in the past.

One cannot close this chapter without commenting upon some of the risks and drawbacks of the change to graduate entry. One question is uppermost in the planners' minds: will we be able to recruit enough

graduates to meet our needs? There is no easy answer - the lures of industry and the professions are great - but experience during the interim years of Nos 99, 100 and 101 Entries will provide the clues, and results will be closely monitored. Once the scheme is established and widely known, it should attract the very best men just as Cranwell has done in the past. Fears that Service pay double or treble the normal university grant will attract the wrong type of recruit can easily be rendered groundless by the Selection Boards. Our eggs are now firmly in the universities' basket, and we must see that they are not addled. Another question is on a more personal level; what of the academically less gifted young man of great personality whose contribution in the past has been so significant? A university degree is beyond his reach, yet we shall continue to need him. However, since the all-graduate policy applies only to the direct-entry permanent commissions, there will be plenty of scope for this young man to enter by a variety of short-service options and, if he proves his worth, transfer to full career terms.

Finally, the biggest unknown of all what will university life do to our men? We know the Cranwell product well, and have every reason to place reliance and pride in it, but our experience of graduates is more limited and most of those we have were recruited after, not before, their degree courses. On the credit side, we may expect broader minds, greater capacity for complex reasoning, and a better grasp of dialectic. The only likely debit is in the field of personal qualities, and here we might pinpoint two danger areas - the 'political' trap and the 'wine, women and song' trap. On the 'political' side, our cadets will be almost unique in having active career ambitions, and this should be incentive enough for them to avoid any political involvement of an undesirable nature. We have no KGB in this country, but that does not mean we have no interest in security risk. The 'wine, women and song' trap is different - the student is his own master for the first time, and some are weaker than others. Certainly there will be more temptation at universities than in the rigid, all-male atmosphere of Cranwell. But all young men, traditional Cranwell products included, become their

own masters at some stage of life, and it is perhaps better that they learn their lessons before they bear full Service responsibilities. We may expect on the one hand greater intellectual breadth and capacity, on the other a loss of the standard mould that has shaped the high standards of the old-type Cranwell flight cadet. The breaking of chains does not dictate the direction in which the captive will escape, but we have every reason to hope that the good sense and integrity of our chosen men will steer them through.

There are problems, and serious ones at that, but no one will deny that the Royal Air Force is moving boldly to match its highest level of recruiting to the highest level of potential manpower. The Cranwell we know may go, but a new Cranwell is being created out of the old which will continue the proud traditions and high standards of its illustrious forebears and which will be as well tuned to the needs of its time. *Superna petimus* indeed.

UNIVERSITY ENTRIES AT CRANWELL

The following announcement appeared in the magazine 'Aeroplane' on 31st September, 1934 :

In future, all officers who are appointed to permanent commissions in the R.A.F. from the Universities will be trained at the R.A.F. College Cranwell, instead of at one of the Flying Training Schools. The first entries under this scheme were posted to Cranwell on September 29.

University candidates for permanent commissions must be under 25 years of age, have taken a degree after three years' residence, and have been recommended by the govern-

ing body of a recognised university. After passing the Medical Board at the Air Ministry they are attached to a flying unit during the long vacation. If the Commanding Officer's report is favourable they are granted a commission and posted to a flying establishment and given twelve months' seniority.

University entries normally have five months' flying training instead of the ten months given to those appointed to short-service commissions.

THIRTY YEARS ON

by Flight Cadet J. B. S. HILTON

' That the pattern may subsist for the pattern is the action
And the suffering, that the wheel may turn and still
Be forever still '

That was T. S. Eliot's way of remarking that History repeats itself, that it is not life that changes, but our reaction to it. Apply his remarks to at least one aspect of life at the College itself and he may well have had a point.

Much has already been said and will continue to be said about the future of Cranwell. We know that in its present form it will cease to exist - whether this is for better or worse is not given for us to question. Today's

flight cadet becomes tomorrow's 'Aerocrat' - beautiful jargon, beautiful but virtually meaningless. What will these 'Super Cadets' gain from life over and above the ordinary flight cadet? A simple enough answer - a degree, the product of a University training and a necessary requirement for entrance to the College. In present-day terms these cadets will be special, a subject for close scrutiny in the coming years. However, they are not pioneers in this field.

Leaving aside the entrance to the Royal Air Force already afforded by the University Cadetship scheme, a policy such as is envisaged did exist once, 34 years ago, i.e. at the end of the first quarter of the College's existence. This highly original scheme lasted 18 months and only three entries profited from the experience.

The first post-graduates, fresh from University, unaware of Air Force life, entered the College on the 29th September 1934 with only a few members and graduated from Cranwell six months later.

The second party of postgraduates arrived between February-April 1935 and graduated at the end of Summer 1935, whilst the third group arrived on the 1st October 1935. When they left in March 1936, Cranwell had lost interest in the scheme, which was dropped altogether. Why? The fairest answer seems to be that the graduates were too old for the other cadets but not old enough for their instructors and therefore never managed to identify themselves with either group. A great pity, but prejudice rears its head in strange places. Whether this was the actual reason the scheme was dropped, there is not information available to say.

When the University Cadetship scheme was inaugurated, this by-passed any such difficulties. Unfortunately the scheme meant that very few of the graduates saw the inside

of Cranwell as we do. Again this is a great shame, since anyone entering the Royal Air Force should at least have the opportunity of seeing the other Air Force, and its training.

The future scheme will presumably by-pass all the past problems besides raising a few of its own. All the cadets will be post-graduates together with the benefits of a Cranwell training in leadership: an ideal combination for one desperately trying to reach the upper echelons in a service career. It is only a pity the move comes after a break of 34 years.

Did the post-graduates of 1934 gain anything from mixing their training? Will the future cadets gain anything? It is unfair to criticise a scheme that failed on technicalities, technicalities which may never arise again, in a scheme envisaged to supply the Royal Air Force with officers for the rest of its independent existence. Whatever is said at this early stage is likely to stem from mere philosophical thought, to be laughed at by those who have managed without degrees, and possibly sympathised with by those who have succeeded either because of or in spite of these qualifications. Next time you look through the photographs in College Hall look for three Courses in particular; try to imagine what life at Cranwell meant for those Graduate Cadets as they look down at you: in 1979 look at the photographs of their successors. Only the names will be different. The experience revealed by their faces could well be the same.

- 'That the pattern may subsist,' as it has.
- 'For the pattern is the action and the suffering' and the experience.
- 'That the wheel may turn,' as it is.
- 'And still be forever still,' as it will be, eventually.

PRE-WAR GRADUATE ENTRY COURSES

No 1: B. Ball, B. R. Burnett, R. F. A. Edleston, F. G. Frow, J. D. Hinks, J. C. MacIntyre, R. E. A. Traill.

No 2: W. G. Bannister, W. F. Beckwith, G. H. Foss, P. E. Hadow, R. A. I. Harrison, E. A. Howell, P. B. B. Ogilvie, P. J. Sloan.

No 3: T. F. Barker, J. C. Bevan, B. H. Boon, G. Cornwall, D. M. H. Craven, L. Dads-well, J. R. A. Embling, A. R. Fane de Salis, N. Fisher, A. Foord-Kelcey, G. W. Peel, B. J. R. Roberts, K. B. F. Smith, F. W. Thompson, T. W. K. Walker, W. P. Whitworth, A. B. Rae.

ZERMATT 68-69



'Why are you going to Switzerland?'

'That's where the action is man, besides my folks pad down there.'

'I see, but is there any real reason for your going there?'

'England's just not my scene this time of year man.'

'How much English money are you taking out of the country?'

'Few leaves man.'

'Exactly?'

'Bout eleven quid.'

Such was the scene at Folkestone as a representative of the country's top two per cent of the intelligence strata held rather profitless conversation with a Passport Inspection Officer. It was not until the generation gap had been forcibly levered apart that the five flight cadets making the pilgrimage to Zermatt for the inter-service college ski races were able to pass through to

the inviting embraces of the cross-channel ferry. An eventful, if protracted train journey across the continent eventually deposited the team, weary and not a little ill at ease from the delights of the food provided on European railway stations, at Zermatt, Switzerland, on the evening of December 21st.

The party were accommodated in the Imhof chalet — all, that is, except Nigel Betts who was accommodated with two delightful young ladies with, more important, their parents, Air Vice-Marshal and Mrs Crawford-Compton. The chalet accommodation proved most successful. It consisted of a floor in a block which held five such chalets.

From this accommodation the remaining four cadets — Jerry Cartledge, Robbie Hunter, Glenn Thorpe and Bruce Handyside

went forth every morning to the snow fields above Zermatt. For the first week a surfeit of cloud and snow made skiing an occupation for the dedicated, and needless to say, found the Royal Air Force team and its associates often the only people on the slopes at all. Nevertheless, even if one could not see further than the tips of the skis, the snow itself was very good and some useful training was done, especially by the less-than-ace members.

The Royal Air Force skiers were separated into three main strata. The Royal Air Force team and reserves made up an approximate 'A' team while the hopefuls and other trainees made up a 'B' team. Both 'A' and 'B' teams had the services of Swiss trainers. Below these was a 'C' team which consisted of those of a very much less advanced standard, and who were very ably instructed by the Lieutenant Commander in charge of the Dartmouth skiers. Of the College team Nigel Betts trained with the 'A' team, Bruce Handyside with the 'C' team, and the

remainder with the 'B' team. The fifteen-strong Sandhurst team made their own arrangements.

The temperature on the mountains remained in the order of -20°C throughout the trip, and if properly attired this was quite acceptable, especially with the sun shining as it did during the second week. However, early one morning when the teams were preparing a slalom course in the shade of the mountain, the temperature dropped to about -40°C . Under these conditions several members suffered varying degrees of frostbite. One poor unfortunate from the Dartmouth team had his ear swell up to twice its normal size owing to the malady. The saddest part of the anecdote is that although he received predictably little sympathy from his associates neither (and this was far more important to him) did he have any success at the discothèque for the rest of his holiday.

The inter-service college races were held



on the last day of the holiday and consisted of a giant slalom and two special slaloms. BRNC Dartmouth won thanks to the help of Andy Baird, who is now of English team standard and beat Nigel Betts by a clear four seconds in all races. It would be interesting to see if Nigel could reach this standard if he were given the same opportunities to train that 'Fishhead Killy' receives.

The Royal Air Force College nevertheless came a creditable second. Jerry Cartledge did very well as did Robbie Hunter and Glenn Thorpe. It was only unfortunate that

the points system required that the times of the best three competitors for each team overall should be taken, rather than the best three in each individual race. Robbie Hunter and Glenn Thorpe both had one good run and one poor in the Special Slalom, and if the latter system of scoring had been used would have won. The author attempted all three races but was fortunately not scoring, the rules state 'four to race, three to count.' They were the first races he had ever competed in, and as such, provided gate and time-keepers with a little light relief.

THE MEETING

The audience prepare for it hours in advance, travel long distances in heavy rush-hour traffic, queue for ages in the rain, and finally take their seats. There is the sense of occasion, being present with thousands of other people, all waiting to hear him speak. No wonder they are susceptible to all the normal pressures of group intimidation so well understood by Hitler.

While the audience is seated, waiting, tensions are strengthened by excitement, expectancy, comings and goings on the platform and the entrance of the massed choir. These pressures are then intensified by community singing, which tends to unify the group and leads to self-identification with it, and the content of the songs, which are about self-abandonment and full surrender.

The singing is initiated and controlled by one of the professional song leaders, who appears happy and confident. The feeling that others are now in command is communicated to the audience. A professional sings a solo — a well-known and well-loved song, everyone knowing the words but not being allowed to join in, and so mouthing them silently.

Next, the audience is encouraged to act as a body by sitting, standing and kneeling when told to do so. The people get used to the idea of obedience, and doing what everyone else is doing. The anxiety to conform and belong is induced.

At last he appears, often, just a few significant minutes late. The unbearable tension is suddenly released. He immediately gains the undivided attention of the audience. The platform is in darkness except for several spotlights trained on the one person. There are no distractions in the carefully controlled atmosphere, no applause, no outbursts. The voice is amplified and seems to come from all directions — harsh, metallic, insistent. There can be no deflating personal contact — but there, in command, at the centre of the meeting, is the one man who can provide the answers.

His message is short, simple and repetitive, like a series of advertising slogans calculated for anxiety and a sense of guilt. The choice too is simple — accept his word or face the condemnation of the world. It would be hard not to accept his word after experiencing the atmosphere of this meeting.

A. N. R. WHARTON

DEATH DOUBTS

' Green, translucent eyes express the violent mood,
And the heart, a gnawing sickness,
Shrieks at the mirrored recognition.
 Those eyes, my friend, those eyes
 Haunt my hours of loneliness,
The hours I dream and
 Dream alone.

Paint me, friend!
 Wash my doubts with writhing strokes;
 Tear the sweeping bristles; grip the faceless canvas;
Create essence out of nothing.
Contort the knife,
Scratch, and feel life
In a dancing branch —
 When
Frost crackles the tree
 The bare tree with the solitary leaf,
 Madly listless in the grey half-light
 Of winter.

 I grope,
 Pressure is on my bones, solid air
Bursts my pumping veins
Thrusting steel within and without me,
 Consuming me
 And I, a creature
 Do not understand.

Doubts are of the dark earth,
The worm, the tangling root,
The rotting beard, moistened by the
 Soundless rain
 I see, I feel, and yet I do not understand.

Work the grey stone, my friend.
Chisel, shape, work it to perfection.
Hone the edges — smooth, gentle — so!
 I live on, you see, my life
 My name — it lingers there
 Carved in grey stone.'

S. G. APPLETON



Ancelle 1969

A fourteen-hour air and coach trip is usually too much for anybody — including Cranwell Cadets. Luckily, our outward journey to Ancelle was split by a few hours' rest at Royal Air Force Abingdon.

We arrived at l'Ecole de l'Air at Salon in time for an early lunch. Several hours later, we arrived at Ancelle, a small village high in the Alps, which was to be our 'home' for the next week. Having chosen our bunks and decided to live out of suitcases rather than unpack our belongings, there was little to do except visit the village and discover what entertainment we could expect for the week.

The following morning we started in earnest to learn what we could about that impossible but rewarding sport of skiing. While some members of the party were

drawing kit from the stores, the rest were discovering that the slopes outside our chalets provided the first challenge. We also discovered that it is relatively easy to ski in a straight line over flat snow, but unfortunately, at the bottom of this slope was a cart-track and also a wooden fence. Once started, it was difficult this first morning to turn and to stop, and these two obstacles claimed several victims.

For the next two days we were confined to the slopes of Ancelle, graduating from the nursery slopes to the more difficult slopes in two days, where most French beginners take at least three weeks.

After a day's rest, which was spent seeing some magnificent Alpine scenery, our last

two days were spent at neighbouring ski-resorts of Pra-Loup and La Merlette.

Pra-Loup was several miles to the east of Ancelle and boasted some really magnificent views over the surrounding mountains. Here we discovered how pleasant riding in ski-lifts can be, and how much practice we really needed before attempting the slopes there.

The following day we visited another local resort, La Merlette, which was much smaller than Pra-Loup, but where large buildings are being constructed to make it, eventually, one of the largest centres in France.

We left Ancelle for La Merlette full of hope and fear that our journey would be wasted. The general strike in France that day meant that there was little or no electricity for the ski-lifts. This gave us, in fact, about half an hour's skiing on our final day,

and we returned very disappointed to Ancelle.

The journey home to Cranwell was undertaken with no enthusiasm at all. Apart from an extremely enjoyable week, as guests of the French Air Force, which was now over, the farewell party the night before had taken its toll. The only event which livened up the return trip was at Royal Air Force Benson, where the officers' party arrived at the customs office to be relieved of a large quantity of money by a smiling official against several large casks of wine.

All that remains now is express our thanks to Squadron Leader Jane and the officers who accompanied us, and also to the very tolerant instructors at Ancelle. Apologies may be due to those civilians who were heard to exclaim, on several occasions, 'Oh, les Anglais' as their party was sent flying by a speeding skier in a blue anorak, taking the shortest way down the slopes.

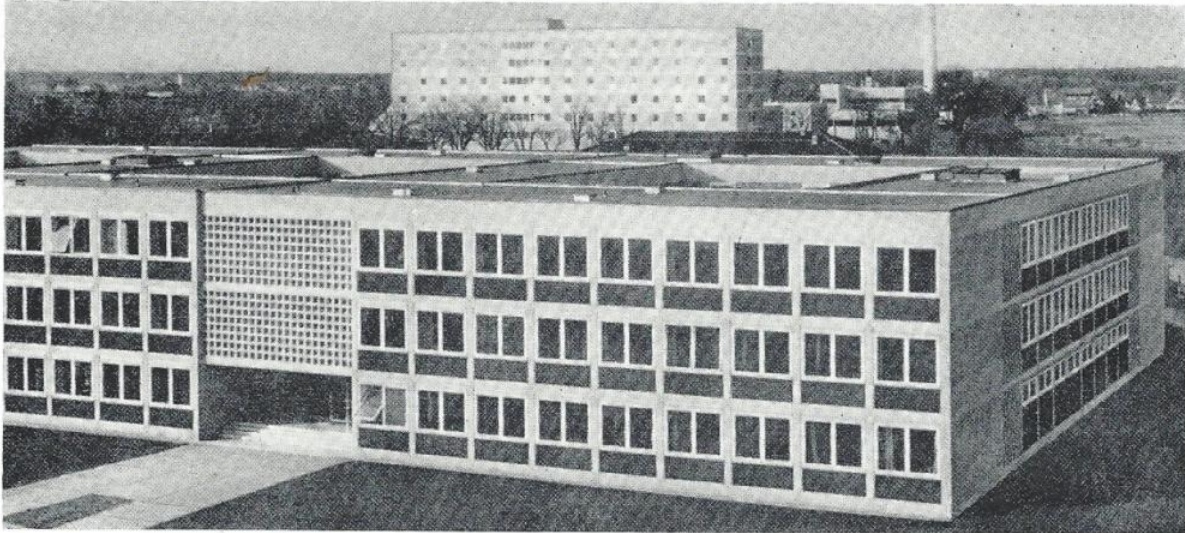


LISTEN

*Listen, listen to the wind,
The waning wind which cuts the dales,
Feel its cold streams trickle through your hair,
Buffet your face, smarten your eyes with grit,
Listen, listen to the rain,
Drumming heavily on the tight glass,
Drenching the drawly leaves.
Listen, listen to the silence of snow,
Soft as the wisps of fleeces caught on summer hedges.
Listen, listen to the steady drip of melody,
From ice's sculptured organ pipes,
Hanging in realms,
Row upon row of pearly notes,
Listen, listen to the waves pounding on the shore,
The deep sigh of the sea,
The fraction of a minute's pause — the eternity,
Before the water rolls its curve,
Dashing foamy fingers between the stones,
Drawing its gown from gurgling shingle,
Listen, listen to the thunder,
The rolling muffled rumble of rocks,
Cascading down an echoing tunnel,
Listen, listen to the soft sway of rushes
Along grey wandering margins of rivers,
The dreamy hush that lulls the heavy-headed stalks.
Listen, listen to the steady tick of time.*

S.M.

VISIT TO THE OFFICER SCHOOL OF THE GERMAN AIR FORCE — NEUBIBERG



The Officer School — Neubiberg

On November 11th 1968 a party of six flight cadets, commanded by Squadron Leader J. D. B. Christie, visited the Officer School of the German Air Force at Neubiberg.

This visit to our German counterpart was the first by members of the Cadet Wing, although there were already links between Trenchard Hall and the Technical Academy at Neubiberg.

The party arrived late in the evening at Munich Airport, where a party of officers welcomed us and accompanied us to Neubiberg. The following morning we met the Commandant of the Officer School, General Jaitner, and spent the rest of the day touring the Officer School and the Technical Academy. Both are housed in modern, comprehensively equipped buildings, and throughout the various courses great emphasis is placed on the study of English.

The Officer School trains cadets from all the specialist branches within the German Air Force, although unlike Cranwell specialist training does not start until after the

Neubiberg course. During this period of academic and officer studies, time is split evenly between science and humanities and frequent reference is made to the history and function of the NATO alliance.

In the remaining days of the visit we were given a tourist guide around Munich, which is only eight miles from Neubiberg, and a helicopter ride across Southern Bavaria. Although the flight had to be curtailed because of worsening weather conditions it proved to several members of the party that the Bell UH-1D is an effective cure for any hangover induced by the potent local brew. Both by day and by night Munich is a pleasant and sophisticated city and not unnaturally the flight cadets made good use of the local knowledge of their hosts and spent some time in the world-famous 'Hofbräuhaus'.

Throughout our stay we were greatly impressed by the spirit and efficiency which is so evident at Neubiberg, as well as the generosity of our hosts. We all look forward to a return visit to Cranwell by our German counterparts.

A CITY'S STREETS

A city's streets are filled with tears
Of people's loves and people's fears.
And of the pain they know will come,
Like pain of past and present spun.
They're born to pain but not prepared
For knowing that no other cares.
Their hearts and minds are screaming, shouting;
Words of anguish in silence mouthing.
But not in life is comfort found,
And in death's grasp they hear no sound.
Nor do they touch or see or feel,
But on their bones men build unreal,
New bars and goals in which to hold
Corpses of men whose minds were sold.
And more pain comes, and more and more,
And mindless men fling wide the door
To stem the flow of terror's tide,
And men commit suicide.

D. S. POLLARD

EXERCISE RHINE CRANE



The Brandenburg Gate — behind the Wall

On the 18th March flight cadets of Nos 98 and 99 Entries, accompanied by a number of officers, flew from Lyneham to start a five day visit to units of the British Army of the Rhine. The flight had been postponed for a day and transferred from Waddington because of the poor weather conditions, and this unfortunately meant losing a whole day out of the programme. After journeys to Royal Air Force Gutersloh, Hanover, and Royal Air Force Gatow the groups dispersed to their particular host units and plunged straight into the programmes for day two.

All the groups received basically similar lectures and demonstrations, designed to

show the political and military situation and what the Army has to deal with it. During live demonstrations many cadets had the chance to drive or shoot one of the many items of kit that the Army made available, and in the process everyone learned something about how a modern army functions.

The flight cadets of No 98 Entry, who spent their visit in Berlin, had perhaps the most striking view of the international political situation and what it means to the Army in Germany.

It is amazing, in a way, to see how alike Berlin is to any other modern city in the



The 'Iron Curtain'

West, remembering at the same time that it is completely surrounded by Russian armour.

The sight of the Berlin Wall really brings home the horror of the situation. It is in areas where the Wall can be seen that the feeling of imprisonment is strongest. This, if anything, symbolises the Iron Curtain for many in the party, and the trip to East Berlin did little to relieve the overwhelming

impression of a powerful and ruthless machine poised only yards away, and ready and willing to strike.

At the end of the visit the parties returned to Waddington a little poorer, some the worse for wear, but with a worthwhile insight into the political and military situation in Europe, and how it affects Britain.

NEW YEAR IN MALTA



Back Row: Flight Lieutenant Straughton, Flight Cadets Platt, Thomas, Hewlett, Pine, Lawrence, Straw, Edington, Parr, Jasinski.

Front Row: Flight Cadets Hall, Wardhaugh, Kenvyn, Frost, Vacha, Roberts.

On 30th December 1968, 33 cadets and officers from the Royal Air Force College flew from Waddington to Royal Air Force Luqa in Malta by an Argosy of Air Support Command. The purpose of the trip was for the cadets to play squash and two rugby matches against local Maltese clubs. The party returned on Friday 3rd January 1969, having seen the New Year in in Malta.

The journey to Luqa took over seven hours, which included an hour's stop at the

French Air Force base of Istres in southern France where some cadets were lucky enough to catch a glimpse of the Jaguar. There were sub-zero temperatures and low cloud when we left Waddington; there was also low cloud when we arrived at Luqa but the temperature was in the mid fifties.

The first evening was spent settling down in our quarters in the Officers' Mess at Luqa and in getting acquainted with the Mess itself. Unpacking took no time and within

an hour of landing all of us were enjoying drinks in the bar.

The squash team had Tuesday morning free and were able to tour parts of the island. The rugby team, however, had their first physical exercise since leave began, in the form of a 'Straughton' workout designed to get rid of the Christmas excesses. Some of us felt quite ill afterwards. In the afternoon the first of the rugby and squash games took place. The College XV played the Overseas Club XV and the squash VII played a Royal Air Force Malta squash VII. Both teams won. The rugby match was played in Halfar in almost perfect conditions. Although it may have been too hot and the grass was a little long a fast open game was played by both sides and the College XV were worthy winners by a score of 19 pts to 8 pts. The squash team won by 4 games to 3.

After the game the players went down to the Marsa club house for a few drinks to set them on the way to a happy New Year. Several flight cadets attended the New Year's Eve Fancy Dress Ball in Luqa Mess that evening in rugby kit and were a great success. Those who did not attend initially were all present by the early hours either in rugby kit or dinner jackets. A good time was had by all even if it was nearly dawn when the last cadet finally climbed into bed. Everyone was up by 10.00 for a tour of the

island which ended at Silema Wimpy Bar where the rest of the morning was spent trying to recover from the excesses of the night before.

The rest of Wednesday and Thursday morning were free and various areas of Malta were visited including Straight Street and the Dragonera Palace Casino. On Thursday afternoon the final rugby and squash games took place. The College XV played a Combined Services XV again at Halfar and once again they were the winners of a fast, open game, this time by 21 pts to 6. Flight Lieutenant Straughton, a current Royal Air Force player, guested for the College. The squash team played a Malta VII and lost by 5 games to 2.

The rugby team spent Thursday night at the Luqa Rugby Clubhouse where a party 'swung' until midnight.

We were awakened at an unearthly hour on Friday morning and by 08.00 were airborne. After a two hour delay in Istres because of bad weather in England, we finally landed at Benson in thick fog. From there the party dispersed for a weekend rest after a most enjoyable, if rather tiring, four days.

The visit was a great success and an invitation has been extended to tour again next New Year.

THE LOST BODY OF A CHILD

A child may smile
Patience for the coming years
Wreathes indulgence round the brain
But the masked is dropped, the false identity is lost
Through broken teeth he weeps again;
Suffering the overwhelming fears,
Is stopped awhile.

J.B.S.H.

SOCIETY

' I invite you
to stoop and
Contemplate your situation.
Your trouble is
you cannot see or clearly
Diagnose the fault.
you masticate
Words and thoughts.
you gnaw ideas
To juiceless gristle;
But in the end you only
Delegate your problems to society—
Society, the prude,
the blank hypocrisy of
Bourgeois moderation
that smuts the white
greys the black.
Society is the spineless mouthpiece
of the self-indulgent middle-class—
The Acacia Avenue tribe
dieted on Muggeridge and Corn Flakes,
whose dogs
Pee privately behind the neat privets.

Row upon row
the faceless ones
Mouth society's creed
the Law of Life

and passion
lies murdered
In the gutter.

HYPOCRITES!

you're all alike, but
Polythened off;
Mirrored,
you exist blindly
in sealed transparent bags
which you tighten
so that,
Unaware
you shrink.

Cannibalised,
you suffocate yourselves.
Poor fools!'

S. G. Appleton

THOUGHTS ON A VISIT TO FRANCE

Last September, three flight cadets went to France at the expense of the French Ministry of Youth and Culture to attend a ten-day course at Annecy. The theme of the course was 'Discovery of Annecy — its lake and its surrounding countryside'. 46 'stagiaires', or participants, most of whom were students, attended the course and the balance was roughly half-French, half-English.

I travelled from Victoria and crossed the Channel on the overnight boat from Newhaven to Dieppe. I met John Mabbott on the boat, but the third cadet, Brian Page, had decided to go to Annecy by the Dover-Calais route, so we did not see him until we arrived at the 'Maison des Jeunes' at Annecy. This was to be our home base for the next ten days and although many of us poor, uninitiated English suffered violently from the French ideas of gastronomy, the hospitality we received there was excellent. The actual building was a sort of YMCA or young people's hostel — I say 'sort' of because there is no organisation in England that provides hostels as well-equipped, as comfortable and as go-ahead as the 'Maisons des Jeunes' in France. There are two such hostels in Annecy alone, and Annecy has a population of only 40,000.

Our first day there was heavy going, as most of us were short of sleep. We had the opportunity of taking a general look at Annecy — first impressions, if you like. It is a particularly interesting town — tourist centre, industrial, and a town that is both very modern and very ancient. A perfect balance has however been achieved to prevent the two elements of young and old from becoming tangled in each other, something many British town planners would do well to note. The old part of Annecy is charming. Narrow, cobbled streets wind beneath tall, red-brick houses which seem to resent the noisy intrusions of the modern cars which cough their way up the hill towards the chateau. The chateau itself dominates the old quarter and although the hard, stark architecture reminds one of the

'bad old days' — dark plots, deep dungeons and autocratic dukes — it is nevertheless 'très imposant'. We visited it our second evening there in order to see an exhibition entitled 'Annecy — its past, its present, its future'.

This exhibition was the subject of one of the most tiring yet rewarding aspects of the course. We were split up into small groups of two to five people and were sent round the town with a questionnaire in order to ask the townspeople if they had seen the exhibition. My group of four visited some modern flats in the morning and drew an entirely negative response as far as the questionnaire went. People's reactions to us were varied and sometimes stunning. One old lady called Mme Tourniquet (a name that is permanently engraved on my mind) threw open the door, stared at us, and then slammed the door shut. She seemed to do this all in one movement: tramps, without a doubt. Another old lady invited us into her evil-smelling and almost totally unfurnished flat and spoke to us toothlessly for one hour, at one point bursting into tears when talking about her husband who had died in the war. This was a harrowing experience, yet it brought us into close contact with people, and the only way to learn about a region is to meet and talk with the people. This lesson was hammered home time and time again and there was no doubt that we benefited from this approach. The average tourist gains only an impression of the places he has seen — a pretty church, a heated argument with a drunken taxi-driver, a meal at a restaurant. We succeeded in gaining a far greater insight through talking and, in some cases, actually living with the local inhabitants.

The other activity of the course which enabled us to do this, was the final exercise, the climax of the course, spread over two days. We split up into small groups and chose an activity or aspect of the region that interested us enough to make a study of it. A French friend and I decided to study a little village on the opposite side of the lake,

about eight miles from Annecy. We had passed through it a few days before, but had not had the time to examine and explore it in any detail. Our first day there was, in the weather-man's terms, a 'scorcher', but we succeeded in unearthing from the little town hall a little, wizened old man who gave us a considerable amount of literature and personal reminiscences on the history of the village, which is called Talloires. The community used to be dominated by the large abbey, but this fell into decline and has now been converted by an enlightened American into a four-star hotel. The tourist industry is Talloires' only real source of income, and as a holiday resort it is superb — lakeside beaches, towering mountains and facilities to meet the varied needs of the modern holidaymaker. It is, in my opinion, an ideal place, but it is faced with many problems that are not at first apparent. Employment is one. In a bad season (as this past summer has been) people who rely on a purely seasonal income are going to be in difficulties once winter sets in. Also, there is the problem of youth. It is very difficult to attract young people to a town that has no stable industry, and it is just as difficult to persuade the town's own youngsters to stay. Many go to Annecy, some seek their fortunes further afield — in the factories of Lyon or in the cosmopolitanism of Paris. Much of this information we gained from the 'curé', an engaging and hospitable old gentleman, who had been a leading figure in the Resistance during the war.

Of course, we did not spend each of the ten days tramping about and asking people what were sometimes annoying questions. We visited a number of towns and tourist attractions of the region, like Geneva and Chamonix. Geneva is a fine city and we were given a free afternoon there. Financial reasons forbade me to go on an all-out spending spree, so I decided to look round the city by myself. I started by trying to find an art gallery where there was an exhibition of modern painting, a number of famous names appearing on the bill-board. I never found this gallery but my search took me through the old part of Geneva, around the magnificent Cathedral. Here again, within a stone's throw of the busiest shopping centre of the city, were narrow, musty streets teeming with old timber-beamed shops selling antiques, rugs, paintings and cande-

labra. I remember particularly a gabled archway under which were two ancient cannons and an old well. Above the outside horizontal beams were some beautiful figures, the colours of which had survived centuries of wind and rain. In the end, I found another art gallery and an industrial museum, both of which were interesting, though in different ways.

The day we spent in Chamonix was, at first, a failure, later a raging success. We had travelled there by coach the previous night and the weather had been appalling. We passed through a number of fashionable ski-resorts, but on this particular night these places looked like exported Bradfords. However, we spent a most enjoyable evening with a Franco-German course running concurrently with ours at Chamonix.

The next day was fine on the Mont Blanc side of the valley, nestling at the bottom of which lies Chamonix. On the other side it was cloudy. However, it was up this slope that we went on the 'téléphérique' or ski-lift. It is a queer sensation dangling above a valley suspended only by relatively thin metal strips of wire, but until we entered the clouds we had a marvellous view of Mont Blanc towering up above the other side of the valley. The purpose of the trip was to obtain an official group photograph on the summit of Le Brevent. This was eventually achieved and we returned down the mountain for lunch.

In the afternoon (another 'free' half-day) four of us went up on a frighteningly steep rack-railway to see 'La Mer de Glace' which is an enormous glacier. The view after we alighted from the tiny red railway train was breathtaking. On one side of the valley was a green mountain flecked with cascading waterfalls and shrouded in mist, while straight ahead was blue sky, glistening white snow and the sharply defined pinnacle of the Aiguille du Midi. Then underneath us lay a vast mass of ice, rippled by time and movement so that ridge after ridge of hard, steel-grey ice swept up the valley like a rolling tide.

The impressions of a tourist? Perhaps, but the scenery of Haute-Savoie devastates the mind if the scope of one's travelling experiences has, like mine, been confined almost

solely to the British Isles. Lakes, mountains, waterfalls and an endless panorama of fabulous views reel through the mind in profusion. Yet our course taught us more than just an appreciation of natural beauty. We met people, and living in such close co-operation with French students broadened our appreciation of the problems they had to face. The events of May-June, passionately relived in a number of stirring, abusive songs, became alive. It is important to realise that anarchists like Dany Cohn-Bendit were disliked by most of the students. His particular triumph lay in the fact that at the

critical moment he was able to lead, and leaders in a revolution are grasped at as a drowning man grasps a straw.

The phrase 'sorry to leave' smacks of cliché, yet most of us were reluctant to return to England. A final thought? You guessed — the rain was pouring down when we reached London, one and a quarter hours late after diversions due to floods.

'Vive la France'!

S. G. APPLETON

THE DREAM OF THE MATADOR

I am the matador, sword poised to strike
At the wondering creature flailing at my feet.
Behind me the accolade the drunken cheers that greet
The final thrust, the severed ear, the bloodied air of triumph.
Yes, my friends, the game is done; the weary bull has lost,
And I, the weary victor, won.

But never always so.

I am the hunter now, counting the hours
Unsure of life, mind undoubting death.
My back is weak, my sight no longer young must fail.
See the dry gullies of my face and know
That the time will come when I must fall.
Head bowed on chest will sense the acrid pall,
Will feel the sunlight searing to my veins,
Burning the blood that spilt across the plains
And gave the minions pleasure in the sight of sudden pain.
I am the baited bull, knees bent in supplication.
Give charity in the kill, and leave no deathly trace
Where we in conflict rose and fell.

J.B.S.H.

SPORT AND ACTIVITIES

RUGBY

	<i>Played</i>	<i>Won</i>	<i>Drawn</i>	<i>Lost</i>	<i>For Points</i>	<i>Against</i>
1st XV	33	17	0	16	415	515
2nd XV	23	8	3	12	186	246
3rd XV	21	16	1	4	335	100

Drawn in graph form, the results for 1968-69 would show a series of violent peaks and troughs but the final mean would in fact indicate that the season was just about average. Although there were several notable wins, particularly against Dartmouth, the severe defeat suffered at the hands of Sandhurst has overshadowed all else.

The nucleus of players left over from the previous season was small, and because of players being involved in training camp detachments to Germany, the composition of the team varied greatly for the first month of the season and results were disappointing. However, once the new entry (No 99), had arrived, the 1st XV began to settle down under Park's captaincy and build up for the traditional Sandhurst and Dartmouth matches.

Unfortunately, all the hard work, both in training and matches came to nought, and at Sandhurst the team put up what was undoubtedly the worst performance to date in losing 30-0.

Dartmouth proved to be a different matter. The team reached its full potential at last; they played excellent rugby and co-ordinated extremely well to win a 'cliff-hanger' 8-6.

The New Year saw the next major event in the rugby calendar when the 1st XV went to Malta for what is hoped will become an annual tour. Although the touring party was weakened by 95 and 96 Entries having to remain at Cranwell, a high standard of rugby was produced and the team came back with two excellent victories.

The preparation for the visit to L'Ecole de l'Air at Salon appeared to be going badly with disappointing defeats at the hands of Leicester, Bedford and Northampton. However, the lessons meted out by these strong rugby clubs did not go unheeded. At Salon, good strong physical rugby was played by

the whole team and, in spite of some controversial refereeing, the College came away from a memorable visit with a sound 14-9 victory.

At the time of writing, snow and ice has caused a great many games to be cancelled, with the result that the entire rugby club is lacking match practice. This is unfortunate because the season is far from over, and a tour of Germany is imminent.

The second and third XV's have played some entertaining and enjoyable rugby and have provided a useful pool of reserves, particularly forwards, for the 1st XV. Although there was a noticeable waning of enthusiasm towards the end of term the results have been generally encouraging especially the 3rd XV, who lost only four matches out of 21 played. As last season the main failing of all three teams (apart from three or four resolute individuals) has been a chronic weakness in the art of tackling and falling. This defensive weakness led to some very heavy scoring against the 1st XV on two or three occasions.

We were very sorry to see our Guiding Officer, Squadron Leader I. Weddle posted soon after the Dartmouth match. He has ably steered flight cadet rugby affairs through some rough seas for the past two seasons, and has put in a great deal of overtime both on and off the pitch. Our new Guiding Officer is Squadron Leader R. B. George.

The prospects for the next season would seem to be promising; nine members of this season's 1st XV should provide an excellent basis on which to build a reasonable team for 1969-70.

Colours were awarded to R. J. C. Dawson, D. J. Edington, C. D. Evans, J. A. Hall, M. H. Straw and I. D. Vacha. A. J. Park, M. Clovis and T. J. Williams earned colours in the 1967-68 season.

BASKETBALL

This season has been the first that the College has played in the Lincolnshire League. Our eventual position in the League was joint second, and the team finished the season at their best, defeating Grimsby 72-31 to win the Lincolnshire Plate.

The season started badly, with a series of injuries, but thanks to Flight Sergeant Boxall's coaching and much encouragement from our guiding officer, Major J. M. Ingalls USAF, we 'came good' in time for the annual Sandhurst and Dartmouth matches.

During the first half of the Sandhurst match poor covering allowed a fast moving Army team to keep level, but in the second half the College team regained form and went on to a 72-40 victory, completing a fine hat-trick of wins.

The Dartmouth match was another good

win for the College team, and the final score of 72-36 does not do justice to the degree of supremacy that the team established.

University sides from York and Birmingham, together with the American Alconbury 2nd team, have provided the toughest opposition and also stimulated us to play our best basketball. In contrast the matches in the Southern Division of the League provided very few difficult games, and several were won by handsome margins with the first five watching from the bench.

The team's record stands at 22 wins and 12 losses. Akehurst has been top scorer, with over five hundred points, and team captain Joyner is not far behind.

Colours were awarded to Akehurst, Joyner, Womphrey and Duguid, who takes over the captaincy next year.

MOUNTAINEERING

The Society has been quite active during the periods of better weather this winter. Three expeditions to Wales were organised, the latest of these in conjunction with the Walking Section, and we hope that future liaison, particularly with transport, will encourage more potential hill walkers, mountain men and rock gymnasts to participate in our activities.

Many people would tend to shy away from the prospect of clinging grimly to a rock face in pursuit of enjoyment; the present trend of the Society is away from this image and towards a broader interpretation of 'mountaineering'. The experiences of current members in Norway last year have led us to believe that a balanced combination of technical climbing, scrambling, ridge walking, snow climbing when available, superb scenery and lungfuls of fresh air makes for the greatest enjoyment in the mountains.

This was adequately revealed when four members visited the Lake District over the

Spring half-term break. The first day was spent trekking over the snow covered hills, with some fine technical climbing on the face of a small rock outcrop and an epic ascent of an ice filled gully. The following day, while one pair tackled a gully, the other did three rock routes in Langdale, and then walked down to the nearest cafe for gallons of hot, sweet tea, well satisfied with their efforts.

On the home front Stanage Edge also saw several visits and a number of excellent mountaineering lectures at Leicester have been attended. Furthermore, thanks to our equipment member, a number of film shows, which stimulate interest for future expeditions, were held during the winter.

Our aim this Summer is to organise as many trips as possible to Wales and Derbyshire and to stimulate more interest in our new concept of mountaineering. We hope that you will join us on the hills.

SOCCKER

The soccer club has had a most enjoyable, though only moderately successful season. The 1st XI had a fine start including an encouraging display against a star-studded Icarus team. However, this high standard was not maintained consistently throughout the season. In consequence, we could only draw with Sandhurst (away) and disappointingly lost at home to Dartmouth. Our football was generally attractive but we lacked the 'killer' instinct in front of goal.

In the Argonaut Cup, we were knocked out in a replay by Old Cholmelians, a London-based team. We were more successful in the subsidiary competition, the President's Shield, in which we have reached the final after a really hard-fought semi-final against Oxford (away). The final is due to be played on May 10th, probably in London. Let us hope we can end the season on a high note by bringing the Shield to Cranwell.

For the 2nd and 3rd XI's a full fixture list was arranged. Bad weather, unfit pitches and, in some cases, reluctant opposition

curtailed the number of matches actually played. However, all members played hard and enthusiastically, making the 1st team fight to keep their places. In fact, several of the 2nd XI came into the 1st XI and gave very sound displays, including Clifford who had a good game in our important Shield semi-final.

Colours this season were awarded to Under Officers Guest and Tydeman and Flight Cadets Penny and Woods.

The soccer club are grateful for the work done on their behalf throughout the season by the Guiding Officers, Wing Commander Nabarro, Squadron Leader Hearnshaw and Squadron Leader Procter. Their interest in the teams and their sound tactical advice was reflected in the enthusiastic attitude of the players.

We should like to extend our thanks to Wing Commander Nabarro and we wish him every success when he leaves the Air Force later this year.

SKIING

The season was opened with a training weekend in the Cairngorms to prepare for the Inter-Service College races to be held in Zermatt after Christmas. For the first time the party travelled to Aviemore and back by rail. This proved to be a perfectly satisfactory means of transport for a weekend's skiing in Scotland.

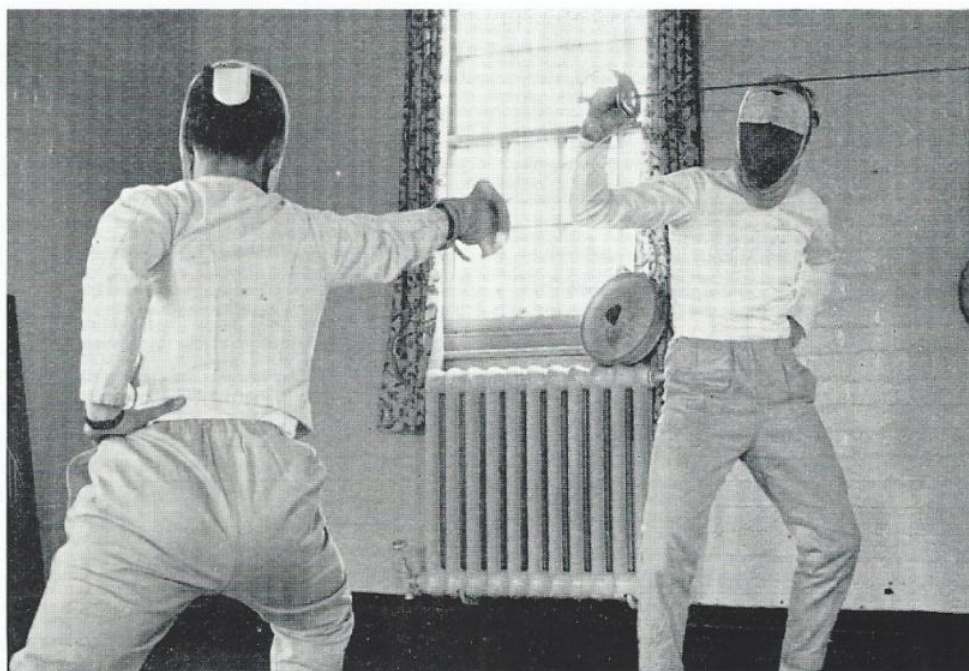
Cranwell came a close second to BRNC Dartmouth in the Inter Service College races. If Acting Midshipman Andrew Baird, a British National skier, had not been able to ski for Dartmouth, it would have been an easy win for Cranwell. It is expected that next year the rules will be changed so as to enable all cadets and student officers to ski in the races.

In February another training weekend was held in Scotland in preparation for the Royal Air Force Inter-Unit Championships. A combined College and Unit team will be entered in these races, which will take place on the 12th and 13th of March. This team should provide a challenge for Kinloss who won last year.

Other skiing trips will be 'Hans Nansen' to Norway and another to Ancelle in France as guests of L'Ecole de l'Air.

Colours were gained by Flight Cadet Hunter and by Flight Cadet Cartledge.

FENCING



Owing to the lack of facilities in our new fencing salle the Fencing Club has not been able to entertain as many visiting teams as they would like. We did, however, manage to have a very good match with the Royal Naval Engineering College Manadon, and hope to visit them in March.

It has been quite a successful season, with the team defeating both Sandhurst and Dartmouth. This was followed in early

February by an excellent visit to L' Ecole de l'Air at Salon. Everyone had a very enjoyable time, and for the first time the team managed to make it a sporting hat trick, by defeating the French. Incidentally, we have won all of the last three matches.

Thanks to a lot of hard work by everyone the team has managed to maintain a very high standard, despite the lack of a permanent coach.

WALKING

Since the last period of walking the following changes have taken place. Flight Cadet North has been appointed Captain, Flight Cadet Haigh Vice-Captain and Flight Cadet Kenvyn Secretary.

Throughout this term all walking activities have been seriously restricted because of adverse weather conditions and flight cadets' commitments to other sports and

activities at the College. However, in November an attempt was made by a party of eight flight cadets at the Lyke Wake Walk. Unfortunately this had to be abandoned at the 20 mile stage owing to gale force winds and driving rain and sleet.

Future plans include entering two teams for Ten Tors and at the moment an extensive training programme is well under way.

FIELD SHOOTING

During the winter term the Field Shooting Society comes into its own. This season has been no different. Shooting started at Barkston Heath on October 1st, the beginning of the pheasant season, and has continued through until 21st January at regular intervals.

The shooting has been quite good this year, thanks largely to our game-keeper SAC Morrell, whose efforts to attract game provided us with many a good pheasant dinner. The hares confirmed, however, seemed to be fewer this year, perhaps promising well in that respect next season. In addition to Barkston, there have been some visits to the Wash hoping for duck, but although we have helped to contain the growth of the redshank population, our excursions into the saltings have in other respects been disappointing. Most of the members of the Cadet Shoot have had a day with the Officers' Shoot at some time during the season, either at Cranwell or Fulbeck. On these occasions, as

the game has been driven, there has usually been more sport than we have had at Barkston.

On the clay pigeon side of our Society, things tend to take second place when rough shooting is in full swing. However, we did find time to prepare for and take part in the Sandhurst and Dartmouth triangular held at the West London Shooting Grounds on January 18th for the Moss Bros Trophy. In a very exciting match, with Cranwell leading at the half-way mark, Sandhurst emerged the victors with 119 points to our 101, with Dartmouth trailing with 88. We should like to thank Moss Bros for arranging this enjoyable day and hope to bring the Trophy back to Cranwell next year.

Finally our thanks to our new Guiding Officer Squadron Leader Christey, who has taken over so ably from Squadron Leader Le Brocq, and to Pilot Officer Forsyth for his continued interest in the Society.

MOTOR CLUB

The season opened well with a most enjoyable visit to the Motor Show at Earls Court in October by the Guiding Officer and 40 members. However, this proved to be the only major external visit made by the club during the winter, as although visits to Lotus and BRM had been tentatively arranged, in the event both firms have had to postpone these until the summer.

Evening film shows covering various aspects of Motor Sport were arranged during January and March. These were very popular and were well attended by members and their friends.

Perhaps the most interesting and successful activities have been the Navigation Tests organised by the club. After negotiation with the College authorities and the local police, the first of these events—designed to test the skill and mental agility of members—was held in December. Despite a cold, wet afternoon 35 members took part in this as drivers, navigators or marshals and although many basic mistakes were made the event was acclaimed as a popular success and more demanded. To meet this demand similar events testing different navigation techniques were organised in January and April and proved to be equally popular and successful.

The club has had a good winter season and members taking active part in the various events and activities have averaged between 30-50 throughout. In the forthcoming season

visits to factories and race meetings—including the British Grand Prix— will be arranged and the current series of navigation tests will continue.

BEAGLING

After over eighteen months of absence from the College sports scene beagling has returned with renewed vigour, with greatest support coming from 99 Entry. Although there was a noticeable lack of beagling experience at the beginning of the season the situation is steadily remedied with enthusiastic guidance from the hunt staff. The society hunts with the Per Ardua (RAF) Beagles regularly throughout the winter months.

Beagling is the art of hunting a hare in its natural surroundings with a pack of small hounds which rely entirely on their noses to work the twisting line which it has followed. In other words they hunt by scent.

There is a fascination in beagling not easy to define—there being so many reasons for its appeal to different people. Some like it for the companionship and friendships which are formed on the hunting field and at the end of Meet tea or the associated social functions eg, Beagle Ball & Tennis Tournament. Some go along just for the exercise, some because they love to see the hounds at

work, and some because of the countryside's strong attraction. Whatever the reason might be it cannot be doubted that people go beagling because they enjoy it. If anyone is interested, more information can be obtained from the Society's officials.

The Per Ardua Beagles pack hunts twice a week. Their country lies in the Blankney, Belvoir and South Notts Foxhounds countries. They also hunt by invitation of the Masters of Foxhounds in the Burton, Southwold, Brocklesby and Grove and Rufford countries on occasions.

The season has been fairly successful, with few meets cancelled because of bad weather, there were 49 meets and at the time of going to print the pack has killed 10½ brace.

The sport has many attractions and is as strenuous as one cares to make it and provides a good opportunity to get about and associate with people who are not in the service. Many of the members of the Per Ardua Beagles are civilians.

DRAMA

The main event in the section's calendar during the winter was the production of 'The Devil's Disciple' in November. This venture involved over forty members of the section and established something of a record in costume bills. While the 'Devil's Disciple' took up most of the members' time we were still able to make visits to Nottingham and Stratford.

The lack of a clubroom is still felt and several would-be designers and stage managers are being forced to keep their ideas at a theoretical stage. In order to give as many people as possible some practical experience, we are repeating the experiment of producing three, low-cost one act plays. Our longer term plans include a major production in July and another crack at the Kesteven Drama Festival later in the year.

MODERN PENTATHLON

The winter term opened with a promising start with the recruitment of over ten members of 99 Entry to the sport. A gradual building up of the training programme was organised, this intensifying considerably immediately before and after the Christmas leave.

By January, from the resultant selective process of our strenuous training programme, had emerged ten individuals from which our teams could be selected.

Although the winter term is usually a training period the College competed in two competitions in January and February and will take part in a further two in March before the main competitive season begins.

Our first competition was a Tetrathlon match against Durham University. It was both enjoyable and beneficial, especially to the two new members who competed giving them the unestimable benefits of competition experience. The more experienced first team gave Durham a close match in the first three events and then pulled away in the running to win comfortably.

The Royal Air Force Tetrathlon Championships gave all the new members the opportunity of competitive experience. The training they had done since October paid off well and a marked improvement was seen in all the individuals. The Cranwell first team illustrated the benefits of our training by taking the first team prize. As a result of his performance in this competition the Captain, Under Officer Henderson, was offered a place in the team to represent the Royal Air Force in the Army Tetrathlon Championships.

It is hoped that the improvement within the teams will continue in the matches with the Army Catering Corps and Royal Air Force Halton in March. We should have the foundation upon which to hold one of the strongest Pentathlon teams the College has seen in recent years. A great measure of this development must be credited to our departing captain Under Officer Henderson, who will be a great loss to the team but who may be reassured in the knowledge that he leaves behind the strong foundation that has been lacking in Modern Pentathlon in the College in recent years.

TABLE TENNIS

Though the Table Tennis team did not have as successful a table tennis season as last year, their performance on the whole was very creditable. As a result of their winning the third division of the Grantham Table Tennis League in 1968 they were promoted to the second division for this season and naturally encountered harder opposition. Nevertheless, in this division they finished in third position, having played 13 matches, winning six, drawing six and losing one. Though the number of draws indicates the closeness of the matches it also reflects the difficulty which the team faced throughout much of the season: the inability to raise the side at all times. The absence of Senior Flight Cadet Bedford, the captain, through injury

for 4 games, and Senior Flight Cadet Tew, the vice captain, for flying commitments for 3 games, and their graduation before the last 3 games of the season were scheduled to be played, meant fielding weaker sides. The standard of the cadets' play did vary but Senior Flight Cadets Bedford and Tew, and Flight Cadet Bell generally played consistently well and were ably supported by Flight Cadets Neo, Summers and Joyner.

The enthusiasm and skill of Senior Flight Cadets Bedford and Tew will obviously be missed in the coming season but under the guidance of the new captain, Flight Cadet Bell, with Flight Cadet Hayes and other enthusiasts from No 99 Entry the team should be able to hold its own.



SHOOTING

Owing to the absence of a report for the full bore season last summer term, a few words must be said of the trials and tribulations encountered away from the warmth of our indoor range. We again had difficulties with range bookings at Beckingham and had to spend much time at the 25 yard range in grouping practice with the SMG and pistol.

The revived tradition of shooting against the RMA Sandhurst was given an added boost by having two matches. We lost the first match owing to particularly severe mist hanging over the range giving the Army, it was thought, a chance to use their latest infra-red sights. However, the return match was won.

The .22 season promised a very weak team which thankfully did not materialise, the team performing miracle after miracle. We were unbeaten in the first stage of the Nobel

inter-station competition which was run separately throughout each command. In the final shoot off against Cranwell Unit we had a convincing victory and as such are Training Command Champions for 1969. In the second stage, which includes all commands, we have so far reached the quarter finals with great hopes of at least getting to the semi-finals.

We were placed second in the Royal Air Force Fiftieth Anniversary Competition, and in our weekly shoulder to shoulder matches with universities, we were unbeaten except for when a mid-term Ball clashed with an away match against London University and the team's initiative and success in finding unbreakable excuses was discovered. Both RMA Sandhurst and BRNC Dartmouth were beaten convincingly for the second year running.

Hockley, Mott and Green shot for Training Command in the Inter-Command Competition, and Fitzpatrick was reserve. Hockley, Mott and Fitzpatrick also shot for the Royal Air Force with Hockley and Fitzpatrick shooting in the Inter-Services Competition in March.

Looking to the future, the strong support of Hockley, Mott, Green and Peckett will be

sadly missed and fresh support is always welcome. This is not a sedentary sport as thought by some. In the winter we are away from the elements; however, in the summer frequent 600 yard run downs quickly reveal the unfit, and stamina is one thing the competitors still have to have to be able to shoot accurately en route from 600 to 100 yards. Come and join us.

SQUASH

The 1968-69 season was not as successful in terms of results as had been hoped. This is mainly attributable to the difficulty in fielding the strongest side imposed by the very demanding flying programme occasioned by the appalling weather conditions. The first five consisted of Hunt, Deacon-Elliott, Tew, Hodgson and Warren, and on the occasions when they were all available they gave a good account of themselves, particularly against Leicester University and Imperial College.

The match against RMA Sandhurst was lost 1-4. It was played on a bitterly cold day on very slow courts, and several of the team failed to adapt to those conditions and played below their expected form. The exception was Hunt who played a strong well-controlled game to beat Reid-Felstead convincingly, thus gaining more than adequate revenge for his narrow defeat by the same player in last season's match. The match against BRNC Dartmouth was close fought, being only decided in the last event when Tew finally triumphed in the fifth game having been two games to love down. This gave the College the victory by 3-2.

A team of seven, with a reserve, visited Malta over the New Year period. The tour, undertaken in conjunction with the Rugby club, was a great success, socially as well as competitively, and it is hoped that it may become an annual event. Two matches were played. The first, against Royal Air Force

Malta, was won 4-3, but the second, against a stronger all-Island team, was lost 2-5, including a splendid match in which Deacon-Elliott narrowly lost to the leading Maltese player. There is no doubt that the opposition were the better team, but the hospitality extended to the College team the previous evening at the Officers' Mess New Year's Eve Ball may have contributed to the magnitude of the defeat.

The second team fixture list was curtailed because of the lack of experienced players. This team has been weakened on occasion owing to the demands of the first team. Nevertheless a number of enjoyable matches have been played, and it has provided an opportunity to introduce some new players into competitive squash.

Members of both teams have benefited from the opportunity to gain experience in games with a number of officers, both in team practice sessions and in organised matches. The frequent appearances of the Commandant, on court, have given great encouragement and contributed to the improvement of the standard of squash, as have the coaching efforts of the Guiding Officers. Sgt Probert has continued his classes for beginners, which are essential to provide players for next season, when all the members of this year's first team will have left the College. Colours were awarded to Deacon-Elliott and Tew.

WATER SKIING

The water skiing season was greatly extended last year. The club ski'd throughout September and October, finally calling it a day in the middle of November. This was made possible by the fact that several members now own complete wet suits, as well as having the use of the equipment provided by the College.

This now consists of quite a sizeable stock since the recent additions, including two new wet suit jackets, and a life belt. We expect that these will be extremely useful when teaching new members of little or no experience.

The new year was heralded by a skiing week-end in the middle of January but since then the weather has prevented further skiing. Advantage has been taken of this lull by

having the boat and engine serviced for the forthcoming Season.

The number of club members decreased a little at the beginning of the period due to the graduation of 94 Entry, and, as it was hardly the time of year to encourage beginners to try their hand at skiing, we did not attempt to fill the vacancies. Several people have, however, requested membership for the summer season.

It is hoped that some members of the Society will be able to take the skiboat to the Norfolk Broads during the Easter break. This will give much wider scope to the more experienced skiers, who tend to be cramped by the restrictive dimensions of the Trent. This trip should prove to be an interesting start to what we hope will be an even more interesting and very successful season.

GLIDING

The highlight of the Gliding Club's activities during the past months was a Trenchard Award Scheme Expedition to the Scottish Gliding Union's site at Portmoak. The aim of this expedition was to provide an intensive period of ridge and wave soaring and to attempt to beat the Royal Air Force College Altitude record of 22,500 feet; four flight cadets participated and, although the record was not broken, a 'Gold C' height gain of 10,000 feet was achieved and one flight of 5 hours completed the pilot's 'Silver C' qualification.

The club's Ka7 glider flown during the expedition was purchased in Germany and has already proved to be a great asset to the club. Much of the work required to bring the

glider up to the required airworthiness standards was undertaken by the club members.

The club statistics show that during 1968 although the number of launches was down on that of 1967, the number of hours flown had increased encouragingly. This was due largely to an increase in the amount of cross-country flying, a number of successful gliding camps and expeditions and an overall increase in the number of soaring flights made. Now that the club is in possession of a relatively high performance aircraft the outlook for the 1969 Summer season is good and every opportunity will be taken to make up for a very poor end to the 1968 season.

ANGLING

Unlike less hardy groups in the College Society, who vanish inside at the first sign of a stiff frost or sprinkling of snow, the Angling Section has braved the winter weather and had a quite successful season.

Although the sea has been left alone, since autumn the Section has been out regularly in small groups visiting local ponds and rivers at Beckingham and Culverthorpe, and to one good pond just off the Skegness

road. Some good catches of pike, (small though they be), and roach have been made and, of course, several leviathans were lost inches from the net.

Spring and warmer weather unfortunately herald the close season for coarse fishing, but no doubt sea fishing and trout fishing in the Sleas will continue to give us as good sport until the new season opens in June.

CHRISTIAN UNION

During the Winter and Spring terms the members of the College Christian Union have enjoyed a varied programme. Cadets and officers have gathered together each Thursday evening to learn more about Christ and the importance of the Gospel.

We have been greatly honoured by the visits of our distinguished guests, including Dr Belgrave (a medical missionary in Nigeria), Major W. Batt, who is returning to lead a weekend conference in May, and Admiral Sir Horace Law. Meetings have also included a varied selection of films, Bible studies, talks and discussions.

We were very sad in January to say farewell to Flight Lieutenant R. Bell, one of the founder members of the Union. We all wish him success in the future and hope to see him again. Also we have lost the cadets of 95 Entry and two Pilot Officers of 94 Entry, again we wish them all the best in their new postings.

The Christian Union continues to sponsor the fortnightly visits to Rauceby Hospital. Members of the Christian Union and others visit the patients every other Sunday afternoon, and once a month some patients are invited to members' homes for tea.

CROSS COUNTRY

At the beginning of the Winter Term the Captain's list for Cross-Country showed a mere eleven names, so it was obvious that to fulfil our fixture list very few runners would be allowed to take rest-days. In fact, this has been one of the most successful seasons in the history of the College. In the pre-Christmas period, especially, some notable results were achieved. The best performance was undoubtedly the victory over Sandhurst on their own course, and the score, 38 points to

40, shows how desperately close the match was. This was only Cranwell's second victory over Sandhurst since the war. Against Dartmouth, we filled five of the first six places. Other good victories were achieved over the Universities of Nottingham, York, Sussex, and Imperial College. The College team was placed 4th in the Wyton Road Relay, 15th in the University College Relay, and 3rd in the big King's Grantham inter-schools race.

During the Winter term the 'star' of the team was Bowden, who was very well supported by Burton, Clark and Leigh. After Christmas, injuries and flying commitments further reduced the strength of the club, and it was often difficult to raise a full team. The trip to Laarbruch to compete against Royal Air Force Germany and the Royal Signals Regiment was enjoyable from every angle except the heavy defeat we suffered. However, we achieved good performances in the Royal Air Force Championships and in the Hyde Park Road Relay. In the former, held at Halton, Appleton, fully recovered from injury, finished 3rd and ran for the Royal Air Force in the Inter-Services Champion-

ships. Burton, who ran consistently well throughout the season, finished a very creditable 19th.

In the Hyde Park Relay, which is something of a classic event with over one hundred British and foreign university teams competing, we finished 44th—11 places up on last year.

Colours were awarded to Bowden, Appleton, Burton, Clark, Leigh, Robertson, and Angus. Four cadets also ran for Royal Air Force teams during the season—Bowden, Appleton, Burton, and Clark.



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JUDO

The outstanding achievement of the Judo Club this term has undoubtedly been the performance of members of the College team in the first-ever Royal Air Force Judo Championships and Training Command Judo championships. The Royal Air Force Championships, held in September at Cranwell attracted many Judoka of various grades and abilities from stations all over England. Despite being hit by injuries, the College teams both achieved second place in their competitions. Flight Cadet Bottery fought very well to become Royal Air Force Lightweight Judo Champion.

For the Training Command Championships, held here in January, two very strong combined College and Station teams—one novice and one senior—were entered. The novice team succeeded in defeating teams from Locking and three teams from Halton, but when the time came for the Senior Team event, Cranwell found themselves with no opponents! A hasty reorganisation produced Cranwell 'A' and Cranwell 'B' teams. For the record, Cranwell 'A' was the winner. Cranwell also produced most of the other champions. Flight Cadet Pine is Novice Champion, Flight Cadet Bottery is Senior Lightweight Champion, and from the station, SAC Humphries is Senior Middle weight Champion.

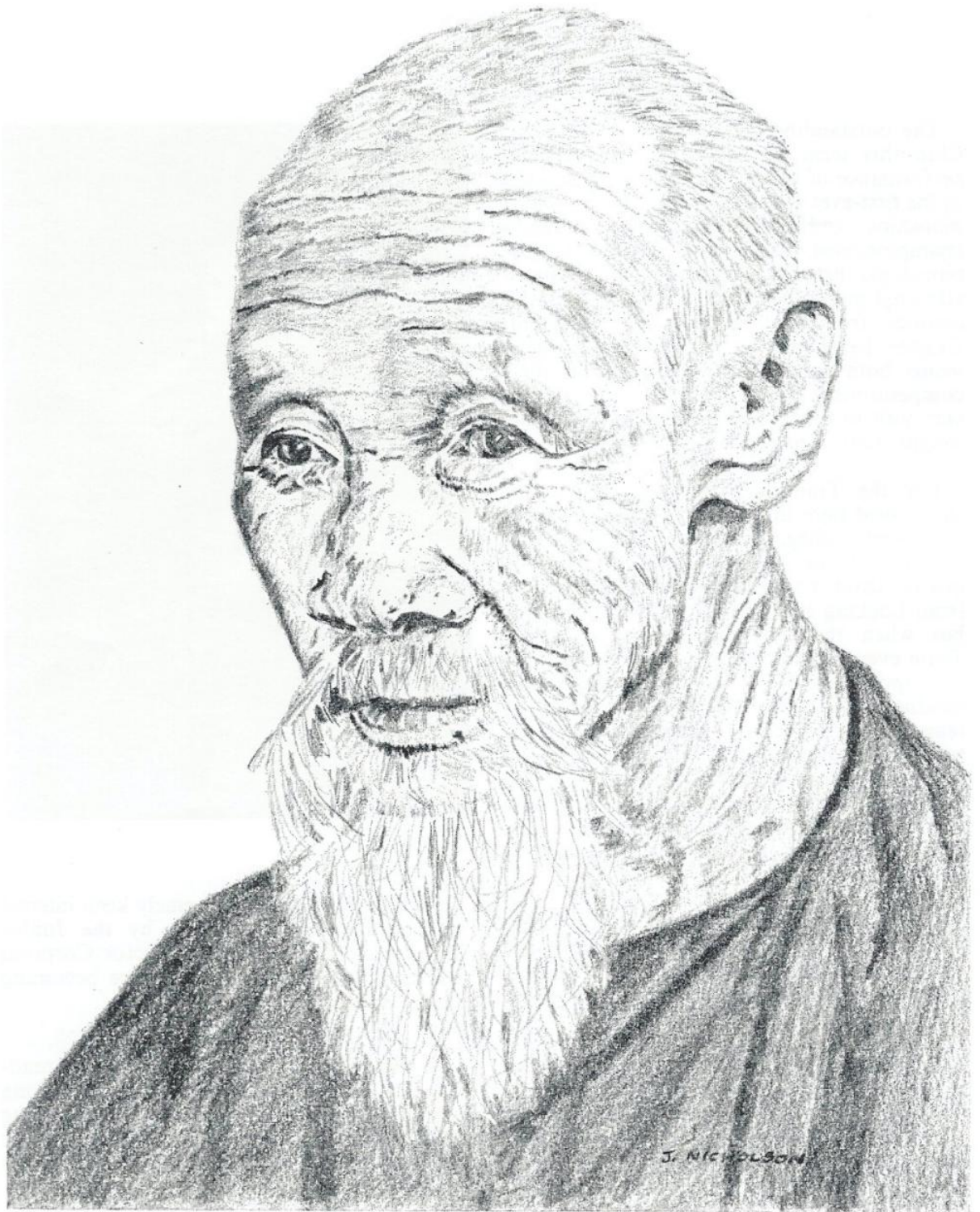
The College team took part in the Dartmouth and Sandhurst fixtures. Although beaten by Sandhurst, we managed to defeat Dartmouth, by the narrow margin of seven points.

A number of cadets also attended a Judo course and grading held by Flying Officer Thomas (1st Dan) at Royal Air Force Bawdsey. This proved to be a very helpful weekend course, and everyone benefited from tips and skilful advice on technique.



Within the College, extremely keen interest has been shown, especially by the Junior Entry and, thanks to our instructor Corporal Marcantonio (1st Dan) many are becoming very able Judoka.

A final word of thanks must go to Squadron Leader Delap (3rd Kyu) who, after a long association with the club as both guiding officer and team member, is leaving us. We wish him and his family every success for the future.



Drawing by Joyce Nicholson

REVIEWS

TRESPASS

Emlyn Williams's 'Trespass' is not one of his best known plays; after the Little Theatre production in October it is relatively easy to see why. The play has admirable moments of tension, but overall it is too long and diffuse, making minor points ponderously and skating over major ones. 'Trespass's' basic theme of the recall of the dead bringing no happiness and of truth destroying belief are indeed serious, but the audience of 1968 has not the same interest in the particular power of the occult demonstrated in the play that the audience of 1947 presumably had.

'Trespass' tells the story of the effects of Christine Henting's desire to recall her husband Philip from the dead. She is prepared to go to any lengths and to risk being monotonously cheated in order to fulfil her ambition. In her house are her mother-in-law Mrs. Henting, her daughter Gwan who is Philip's step-daughter, and Lionel Dewar, who researches into the supernatural. To her house come Bill to be librarian, Mr Grice, a lugubrious undertaker, and Mrs Amos and her tame medium Saviello, ostensibly an Italian peasant. After one piece of trickery fails, Saviello is exposed as a Welsh tailor, only to be revealed as a fake fake-medium who really can contact the dead. Saviello is bribed to stay, Philip's recall is long and vivid enough to show that his love was not for Christine but for Gwan, and Saviello dies at his work.

The opening of the play was the slowest and most irrelevant I have ever watched in the Whittle Hall. It serves to point the plot, give some meaning to the title and to introduce Bill, but Bill is a minor character, and in view of some of the later revelations it is hard to see why Bill's past needs to be the one to be uncovered or why the conversation had to be so pointedly carried on with so many

Godot like pauses. Audiences today really can catch on very quickly.

Although the play was not impressive, several points made the evening worthwhile. Top billing must go to the two main performers. Cicely Sandford's Christine Henting was completely convincing. The part calls for a grande dame performance and Mrs Sandford caught exactly the poise and assurance needed at the beginning of the play. Her journey through anxiety to despair gave the play the momentum it needed. John Boyce Ellingham's Saviello deserves every credit. He was at his best when the Welshman inside the fake Italian was allowed to emerge. John Ellingham has played many parts for the Little Theatre; he has played none better than this.

A welcome feature of the production was the return of John Sandford as Lionel Dewar. As usual he got completely inside the part and pitched his performance at the right level. Geoffrey Shaw found himself in a predicament that is not unique for the amateur producer. Illness in the cast meant that he had to play the role of Bill himself. It is to his credit that he captured the psychological nature of the part. Andrew Whyte's undertaker was performed competently, although the role could hardly be called central.

Marie Priestley was nicely fussy and well meaning as Philip's mother, but it would be welcome to see her playing a younger role once in a while. She is too talented to be eternally cast as the elderly relative. Gwan's part is probably the most difficult of all. She has to give the play drive, has to make the most dramatic revelations, and yet has to take second place on stage to Christine. Gillian Whitby coped well with the part,

although at times she could have been more impetuously young. Julie Phillips as Mrs Amos did enough to show that she has an efficient sense of timing and of the comic. Marie Weaver as the maid was generally unobtrusive except for one or two eccentric entrances and rapid exits.

The Little Theatre is exceptionally fortunate in having a talented and inventive back stage staff ; every production is blessed with a set that would be rightly admired in any theatre, and there is an attention to detail that adds realism to the productions. The main set for ' Trespass ' lived up to expect-

ations, but the back drop for the first scene gave the impression that one was about to watch Vaudeville Follies. Archie Rice would have played his heart out in front of it. The lighting generally worked well in the dramatic moments though Saviello's death lost some impact because of a too dark stage, and night fell with a staggering suddenness more suited to the road to Mandalay than to the Welsh hinterland.

Whatever the Little Theatre tackle, talent shows through. I should like to see it show through on more challenging material.

J.V.T.

THE DEVIL'S DISCIPLE

The Drama Section of the College Society presented *The Devil's Disciple*, by Bernard Shaw, in the Whittle Hall on the 26th and 27th November 1968.

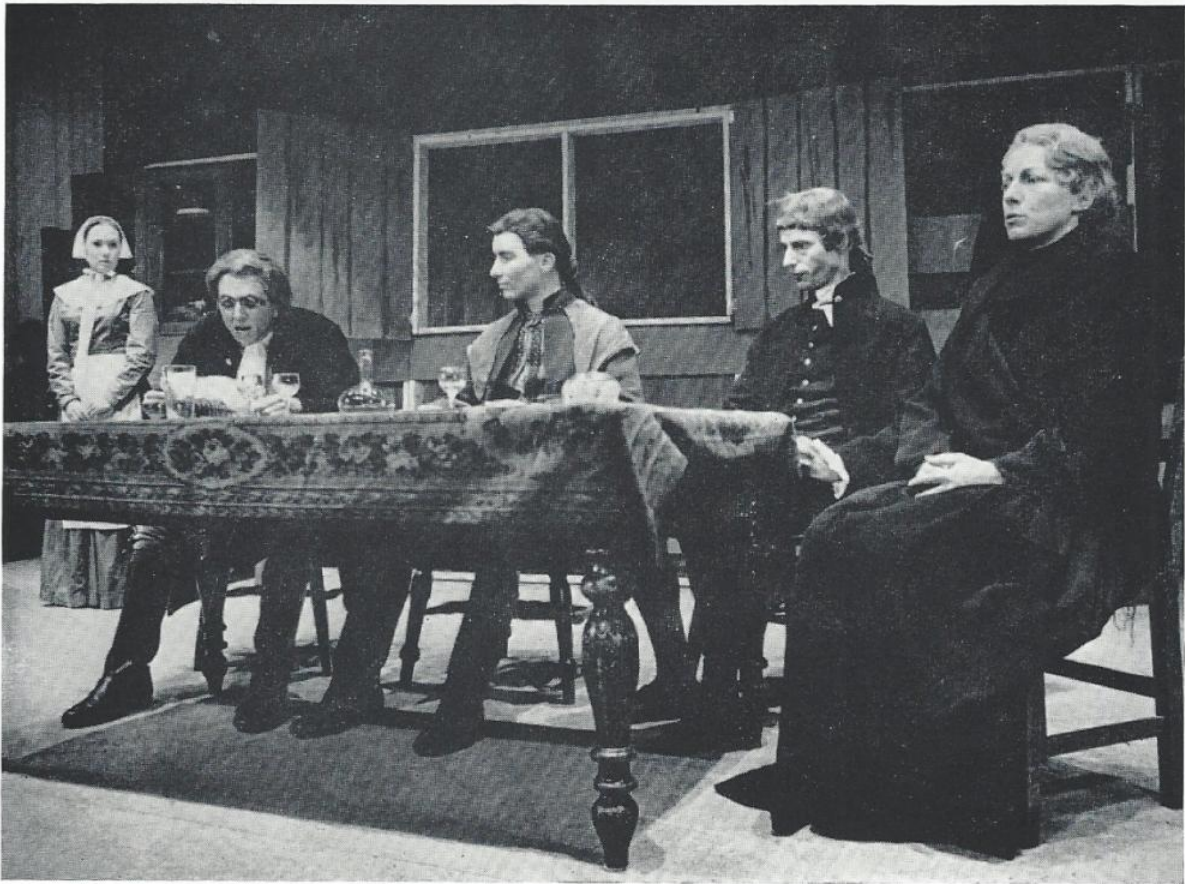
This play suited the society, offering a wide choice of parts for the cadet actors and for the actresses brought in for the production. Its plot concerns the dilemmas faced by a number of characters in a small New Hampshire town during the American War of Independence. Dick Dudgeon, the Devil's Disciple of the title, is the local ne'er-do-well, rejected by his family and despaired of by their neighbours. He is arrested by the British in mistake for the Reverend Anderson, a suspected rebel leader. Rather than save his own skin by revealing the truth, Dick resolves to go to the gallows in Anderson's place. Judith Anderson, the minister's wife, is torn between her natural instinct to save her husband, and her desire to prevent the martyrdom of one she begins by hating and ends by loving. Dick is only saved in the nick of time by the arrival of Anderson himself, waving a safe-conduct and demanding the surrender of the British Army.

Under David Leith's thoughtful direction the problems were clearly set out and the play moved along at a brisk pace. All the principal actors and actresses were well-suited to their parts. Dick Dudgeon was perhaps too attractive a personality to be

really convincing as a villain ; but this was the fault of the writing rather than the actor, Keith Hartley, who showed great promise and a wide range of expression. As the Reverend Anderson, Sinclair Hilton gave a telling portrayal of this man of the cloth who in the hour of trial finds that it is his destiny to be a man of action. Verley Carrington conveyed Judith's growing anguish supremely well.

Graham Stirrup gave an admirable performance as General Burgoyne, the British commander with problems of his own. He ably captured the fine humanity, the ironic humour and the delicacy of sentiment of this genuine historical character. Roger Moody gave the general's second-in-command, Major Swindon rather too obtuse a character, but his clashes with Dick Dudgeon came off well. David Payne exploited to the full the comic possibilities of the Sergeant.

Among the other characters, Cicely Sandford was outstanding as Dick's mother, a sour Presbyterian widow who, ' being extremely disagreeable, was held to be exceedingly good.' She dominated Act 1, bullying her younger son, the simpleton Christy (a good performance by Robert Deacon Elliott) and her down-trodden niece Essie. Mary Leith looked just right in this small but important role, and she certainly cried well.



Reading the Will

Verley Carrington, John Bridle, Keith Hartley, Sinclair Hilton, Cicely Sandford.

Richard Calder and David Frost played the remaining members of the Dudgeon family, the alcoholic Uncles William and Titus. Janet Hersee, as Aunt William had nothing to say, but looked suitably crushed and anxious.

The only surprise in characterisation was John Bridle's Lawyer Hawkins, who seemed too much of a red-faced buffoon. Perhaps the make-up was to blame ; all the men had a healthy, fresh-faced look about them.

Of the other seventeen members of the cast, all that can be said is that they looked and behaved like the officers, soldiers and citizens they were meant to represent. The

final crowd scene was particularly effective.

Problems of staging, with four scene changes, were solved by using cut-out sets to suggest the style of building one would expect in eighteenth century North America. The lighting and costumes were appropriate, and one striking and successful idea was the sudden ominous descent of the hangman's noose from the top of the stage to mark the beginning of the final scene.

With this production the cadet Drama Section have set themselves a very high standard. The play was entered for last year's Kesteven Drama Festival competition, and though it did not win, the society certainly deserved its placing near the top.

N. McL.



The crew of the Pinafore

HMS PINAFORE

This year's production by the College Choral Society was Gilbert and Sullivan's 'HMS Pinafore,' which was presented in Whittle Hall on the 12th and 13th March.

'Pinafore' stands or falls by its music, so it must have come as a nasty shock to the director of this production to learn that the College Orchestra would not be available. However, two seasons of 'Opera for All' have shown that the piano can be an effective substitute, and the Society was fortunate in having two first-class pianists available in Hilary Bedworth and Air Commodore Suttle. I feel that the credit for the musical success of the show must go above all to them. They struck a fine balance right from the overture, helping out the less-experienced singers, and for once it was possible to hear every word sung on the stage.

The plot of 'Pinafore' is the most trivial of all the Savoy Operas, but it calls for a

great deal of choral work, and this was well done. The sailors all looked and sounded very cheerful in their dazzling, neatly-pressed whites, as they busied themselves with mops and squeegees, doing nothing in particular. The ladies' smart outfits in navy blue and white were as happy a match for the men's uniforms as their voices were for the tenors and basses.

Among the principals, Kay Eburne had the first solo as Little Buttercup, the bumboat woman. Having had a hand in every aspect of this show, from publicity to costumes, Kay might well have been utterly exhausted by opening night. But there was no sign of this as she skipped on to the stage. A very experienced singer, Kay has a full, mellow voice which was well displayed here.

Sir Joseph Porter was played by Ian Wilson, who looked well in the costume. He

does not have a strong voice, but sang his way quite nonchalantly through the intricacies of the patter song. Two Welshmen, Sidney Rees and Vivian Jenkins, played Captain Corcoran and Ralph Rackstraw, and these parts were obviously in safe hands, despite Vivian's cold. Mick Verity played Deadeye Dick with a fine air of engaging rascality. As the two leading seamen, Roger Pearce and Kevin Reen were in good voice.

The part of Josephine, the Captain's daughter, is one of the most taxing in all G and S. Gloria Ringrose was quite at home in the medium registers and though sometimes defeated by the highest notes, still showed plenty of promise as a Gilbert and Sullivan soprano.

As Hebe, Sir Joseph's first cousin, Pauline Stephens had a much smaller singing part than in 'The Gondoliers,' but she made the most of the opportunities that came her way.

From the musical point of view this 'Pinafore' was on the whole a success,

Mick Verity



Gloria Ringrose and Sidney Rees

excellent in its choruses, very good in its duos and ensembles, and perhaps not quite so good in some of the solos. As a dramatic production the situation was less happy. Apart from some effective crowd movements the whole production was much too static. There was none of the 'business' which one expects in a Savoy Opera, and which can add so much to the humour. Once again I understand that the problem was lack of time. Ideally, an operetta should have as much rehearsal time spent on production as on vocal practice, but this was definitely not the case here.

Ian Burton's set was both attractive and practical, the low doorway (or should it be hatchway?) in the centre suggesting murky 'tweendecks'. Something went wrong with the lighting at the beginning of Act II, when no spotlights appeared to pick out the singers against the surrounding night. Otherwise the effects were good. And mention must be made again of the superb costumes, home-made by a devoted group of ladies, which lent an air of festivity to the whole proceedings.

With operetta, it is usually a toss-up whether the audience enjoys the show more than the participants. In this case the score must have been about equal.

N. McL.

All photographs in the Review Section by courtesy of The Sleaford Standard.

BOOK REVIEWS

LION IN THE SKY

N. SHORROCK

30/-

*Literary Services and Production Ltd for
Federal Publications*

'Lion in the Sky' tells the story of the Royal Air Force in the Far East. Its publication is timely - on 18th April The Times reported that the Royal Air Force Base at Seletar, for years the flying base of the Far East Air Force, had been handed over to the Singapore Armed Forces flying training school: the end of an era, though assuredly not the end of Seletar's colourful history.

The book is an affectionate chronicle of Seletar from its earliest days, and covers a wide span of years and of events, including the Japanese occupation. Written by an amateur, 'Lion in the Sky' has little pretension to style, but it is full of anecdotes about personalities and events which enliven the book for the casual reader. Naturally, the book will be of greatest interest to those who served in the Far East, particularly at RAF Seletar. The book is well illustrated, with some interesting photographs. In short, 'Lion in the Sky' is a labour of love, pleasantly produced.

B.M.B.

FENCING

C-L DE BEAUMONT

8/6

EUP

C-L De Beaumont, OBE, as President of the Amateur Fencing Association and of the British Empire and Commonwealth Fencing Federation as well as an inter-

nationally renowned fencer himself is well qualified to write on this subject.

He has written this book in the hopes that 'it will enable aspiring fencers to teach themselves the reasons for the various fencing movements, how these movements should be applied and co-ordinated and that it will also increase their interest and enjoyment in the sport.'

The author makes it clear that fencing is a complex sport which cannot be learned from a book. What is not so clear is the author's interpretation of an 'aspiring fencer.' It would be optimistic to expect a complete beginner, even an aspiring beginner, to understand the intricacies of the moves described in the book.

The book includes an interesting background history to the sport, the three weapons, foil, épée and sabre, and some notes on competitive fencing. Whilst the book does not cover any new ground its clear and concise description of the fencing movements will be appreciated by all readers with some prior fencing knowledge.

It is a pity that the benefit of the author's great personal experience is not fully utilised by suggesting a logical lesson progression for the reader who is trying to teach himself fencing. It would also help the reader if training and technique were discussed separately under their own headings.

However, after reading the book, there is no doubt that it will serve as a useful reference, and increase the interest in, and the enjoyment of this sport.

J.J.L.T.

THRUST FOR FLIGHT

W. THOMSON

30/-

Pitman

This is the latest of the Pitman 'without formulae' series, and is a very worthy successor to the previous volumes. The format follows closely that used in previous volumes, it having been found to be a reasonably efficient means of presentation, avoiding the use of chapters as such but splitting the book into smaller, more convenient sections. A series of some 48 black and white plates, at the end, and 70 well-drawn schematic diagrams distributed throughout the text contributes to the undoubted technical excellence of the layout.

The author has drawn on a lifetime's experience and interest in the internal combustion engine in its various forms, and has succeeded in producing an imaginative, and easily readable work which discusses the principles of piston and turbine engines in readily comprehensible terms. It has of course been written primarily with aircraft engines in mind, and such engines have been used almost exclusively as illustration, but the book is sufficiently broadly based to be of value with respect to engines for almost any other applications.

The book starts with fundamentals, setting out the principles common to propulsion by propeller, fan and jet, and goes on to detail the most suitable applications of each type, based on the various considerations of efficiency, weight and complication. Where possible, treatment of the various types is integrated to show fundamental similarities or differences in principle, and the book ends with an introduction to the rather complex problem of engine controls.

This is a useful and informative book, which within its self-imposed limitations is quite successful in presenting the principles of propulsion in a clear and concise way, and will be found equally valuable to the engineer or the technically-minded layman.

A.W.

ANALOGUE COMPUTERS

K. N. DODD

10/-

EUP

The historical review of early analogue devices is an interesting exposition in simple terms and serves to introduce the present day computer. However, large quantities of the following chapters contain material which is now mainly of historical interest. Any student wishing to teach himself analogue Computers should read the notes on the bookleaf, 'a background to analogue devices' and 'applications of analogue techniques,' and the passage on page 165 'we have considered matters which are somewhat removed from analogue computers.'

In fact there are sufficient chapters such as Servomechanisms, Servomechanisms and Applications, Gyroscopic Instruments, Auto-pilots and Automatic Landing, and Fluidics to make the student reconsider the title of the book and only the widest interpretation of 'Analogue Computers' justifies their inclusion.

Moreover their inclusion has been at the expense of more valid material in the field. Only about one fifth of the 187 pages of this book deals with electronic analogue computing. The method of amplitude and time scaling are not mentioned and in spite of a large section devoted to servomechanisms, servoset potentiometers are not mentioned. Machine volts, real time iterative operation, digital mode control of integrators are not explained and the modern hybrid computer is dismissed in less than one page.

For a book published in 1969 one would wish to see standard analogue computer symbols, transistor and semi-conductor circuitry, up-to-date terminology and statements. 'Transistor and integrated circuits are now rapidly replacing thermionic amplifiers' (page 90) is a sentence more suited to the past tense. Any elementary text must be as up to date as possible and contain simple explanations. However some pre-knowledge must be assumed in a book of computing and the understanding of resistors, capacitors, Ohm's Law seem typical examples. This book therefore appears to lack balance between its attempt to cover a vast field around analogue computing and the explanation of simple computing components and techniques.

J.N.G.

OLD CRANWELLIAN NOTES

HONOURS AND AWARDS

The *Journal* offers its congratulations to Old Cranwellians who received Honours and Awards in the New Year's Honours List.

Air Marshal H. N. G. Wheeler (35-37B) was made a Knight Commander of the Order of the Bath. Air Vice-Marshals S. B. Grant (37-38B) and T. N. Stack (37-39C) were made Companions of the Order of the Bath. Squadron Leader P. G. Cock (59C) was made a Member of the Order of the British Empire. The Air Force Cross was awarded to Wing Commanders A. McN. Christie (54A), D. J. Edwards (57A) and M. H. Miller (47A) and Squadron Leaders R. W. Millward (63A) and A. L. Roberts (74C). The Queen's Commendation for Valuable Service in the Air was awarded to Squadron Leaders A. C. Doggett (57C) and J. R. Harper (57A).

PROMOTIONS

The *Journal* congratulates the following Old Cranwellians on their promotions :

Air Marshal Sir Andrew Humphrey (39-40B) ; Group Captain H. A. Merriman (53A) ; Wing Commanders R. F. Banks (53D), A. Beill (56D), J. H. Bishop (54D), R. G. Bowyer (58A), H. E. Clements (48B), J. S. Cresswell (64A), R. Dick (56C), D. G. Gregory (53D), M. Hughes (53C), E. H. Legget (53A), I. R. Martin (61C), J. Peel (55D), H. T. Price (47A), and R. J. Spiers (48A) ; Squadron Leaders R. W. G. Adams (74B), G. D. Andrews (73A), G. L. Aylett (68B), P. Bannister (74A), R. F. Birch (77C), J. F. P. Browne (77B), H. Buckham (69C), C. P. J. Coulcher (71B), H. G. Cracroft (72A), R. B. Crowder (75A), G. C. Crombie (78D), P. R. Davis (65A), M. J. C. W. Dicken (73C), D. F. E. Eden (65A), A. C. Edmunds (70C), K. G. Evans (69B), R. B. Gilvary (72A), D. Goucher (73B), D. Haller (75A), R. E. Johns (76B), B. C. Johnson (77B), I. A. R. Kearl (62A), P. E. M. Kent (74A), D. R. Kuun (73C), I. C. R. McIntosh (61B), J. R. Morgan (75A), R. B. Nelson (71C), Q. M. B. Oswald (67B), T. C. Porteous (76A),

J. Purcell (73B), R. P. Slayter (74A), M. H. Smith (75A), R. L. Thomas (72C), S. H. Tottman (59D), and W. J. Wratten (78D).

OBITUARIES

AIR MARSHAL SIR DOUGLAS MACFADYEN

Air Marshal Sir Douglas Macfadyen, KCB, CBE, died suddenly and unexpectedly whilst visiting friends in Lincolnshire, on 16th July 1968. He was a member of the second entry and graduated from the College in 1922, having won the Sword of Honour, a distinction which he saw repeated by his son, Flight Lieutenant I. D. Macfadyen (83D) in 1963. He also won the R. M. Groves flying prize.

In his early career he flew in Iraq, Palestine and Aden, and was an instructor to the University of London Air Squadron.

In 1939 he commanded No 105 Squadron in France, and from January 1940 until Dunkirk was concerned with planning duties at HQ British Forces in France. After Dunkirk he joined the Directorate of War Organization, and subsequently commanded Royal Air Force stations in Britain. Later he went to North Africa on organization duties.

He became Director of Policy (Air Staff) in 1944, and Commandant of the Officers' Advanced Training School in 1946. He took the Imperial Defence College course in 1948 and was then appointed Director of Plans and later Assistant Chief of the Air Staff (Policy).

In 1952 he became Air Officer Commanding British Forces, Aden, and in 1953 was appointed Commandant of the Staff College at Bracknell. One of Sir Douglas's most distinguished appointments was as Air Officer Commanding-in-Chief, Home Command, from 1956 until his retirement in 1959.

Air Marshal Macfadyen leaves a widow and two sons to whom we offer our deepest sympathy.

GROUP CAPTAIN D. H. LEE

We record with regret the death in November 1968 of Group Captain D. H. Lee, CBE, DFC, who graduated from the College in 1934.

Much of his early career was spent on fighter squadrons and as a flying instructor, including a period with No 3 British Flying Training School in the USA in 1941. Later in the war he joined No 620 Squadron and was for a while reported missing after an aerial battle in 1944. Amongst his appointments after the war he was a member of the Royal Air Force Delegation to Greece from 1947-49, and of the Directing Staff of the Royal Norwegian Staff College from 1952-54.

He will be remembered chiefly at Cranwell as Assistant Commandant, a post he held from 1954-7, during which he and his wife played a considerable part in the College life.

We extend our sincere sympathy to Mrs Lee and her family.

FLIGHT LIEUTENANT J. S. WATSON AND PILOT OFFICER I. S. PRIMROSE

We report with much regret the deaths of Flight Lieutenant J. S. Watson and Pilot Officer I. S. Primrose in a flying accident on the 24th January 1969.

Jack Watson was a member of 73 Entry, 'C' Squadron and won the Dickson Trophy and Michael Hill Memorial Prize on graduation in July 1955. For several years he was a

captain on Valiants and in 1965 took the Central Flying School Course at Little Rissington. He served as a flight commander at Acklington before returning to the Central Flying School in 1968 as a member of the staff.

Ian Primrose graduated with No 93 Entry in 1968. He too was a member of 'C' Squadron, and was a very keen sportsman, who took an active part in College life. After leaving College he went to Royal Air Force Valley for advanced flying training, before joining the Central Flying School at Little Rissington.

Our sincere condolences are offered to the families of both officers.

KING EDWARDS VII'S HOSPITAL FOR OFFICERS

Retired Old Cranwellians may not know that they and their wives are eligible to use one of London's best known hospitals - King Edward VII's Hospital for Officers (Sister Agnes's).

Although the hospital is outside the National Health Service and is entirely dependent on voluntary support, its charges are much lower than those of other leading hospitals.

Those interested can obtain full details from :

The Appeals Secretary
King Edward VII's Hospital for Officers
6 Buckingham Place
London SW 1

MINERVA SOCIETY NOTES

PROMOTIONS

The following members are congratulated on their promotion in the January 1969 list :

Squadron Leaders M. A. Berry, M. D. Fripp, C. J. Hyatt, R. V. Latin, K. E. J. Monkhouse, G. D. Rork, J. L. Seldon, A. H. P. Wilson.

MEMBERSHIP

Membership is open to all past and present officers of the Royal Air Force and Commonwealth Air Forces who were at one time cadets at the Royal Air Force Technical College Henlow. The subscription is 5/- per annum. The Secretary/Treasurer, Squadron Leader B. R. L. Easton, 5 Mitchley View, Sanderstead, South Croydon, Surrey, CR2 9HQ will be pleased to answer queries and to supply banker's order forms.

HISTORY OF THE MINERVA SOCIETY

What is the Minerva Society ? How many people have asked this question since 'Minerva Society Notes' first appeared in the *Journal* some three years ago ? Some will have known that it has some connexion with that place called Henlow ; there are certainly others who are still puzzled. For those who are interested in finding out a little more about Minerva here is a brief history of the society.

In October 1952 the first entry of Technical Cadets arrived at the Royal Air Force Technical College Henlow. There were about 25 of them and they were to be followed by annual entries of between 30 and 40 cadets. Of each entry approximately half did one year's training at Henlow and then went on to university to read for a degree ; the other half completed a three-year engineering course at Henlow.

The pattern of cadet life was perhaps inevitably based to a considerable extent on the 'Cranwell Model' and in a remarkably short time the genesis of a very healthy tradition could be sensed among the cadets at Henlow. It was natural, therefore, with the departure of the early entries that there was a strong demand for the establishment of some form of association of ex-technical cadets. Under the guidance and with the keen support of the Assistant Commandant, Group Captain (now Air Vice Marshal) W. F. Beckwith, an inaugural meeting was held at Henlow on the 18th July 1956. The meeting decided unanimously that such an association should be formed. Strangely enough, the meeting was unable to decide on a title and it was not until the next annual general meeting that the name 'The Minerva Society' was adopted. The name derives from the crest of the Technical College on which the central motif is the head of Minerva the Roman Goddess of Wisdom.

The main object of the society was to hold an annual reunion at which members could meet and renew old friendships. This took the form of a sports afternoon with rugby, soccer and hockey matches against the

cadets. The annual general meeting was held in the evening followed by the reunion dinner. For many the AGM started in 'The Dirt House' a much loved pub on the Hitchin road and it was very often impossible to complete that part of the business in time to attend the next part of the meeting which took place in the Mess at Henlow.

Reunions at Henlow became something of an annual pilgrimage for Minervans serving in the United Kingdom. Then in 1961 it was announced that the Royal Air Force Technical College was to be amalgamated with the Royal Air Force College at Cranwell. It was expected that from 1963 onwards all technical cadets would be trained at Cranwell. In the event there were delays and the last entry to arrive at Henlow was No 13 which spent a year there before moving to Cranwell.

From 1961 therefore, the society's future was in question. There were four courses of action : to disband the society ; to seek to amalgamate with the Old Cranwellian Association ; to close the society ; or to expand it into a professional association of engineer officers. A postal vote was taken in order to get the opinions of as many members as possible. This showed that there was no question of disbandment and that the bulk of opinion was divided between closing membership and expanding into a professional association. The committee agreed to carry out a feasibility study to see how the proposal to expand the society could be implemented. As a result of this study the committee recommended to the AGM in 1966 that there was no future in trying to change the role of the society from that of a social one to that of a professional body. This recommendation was carried.

With the final move of the Technical College from Henlow the society was faced with making a number of changes. The Commandant had until then been President and the Assistant Commandant had been Chairman of the Society. The society now elected Air Commodore J. R. Morgan, OBE, BSc, CEng, MIMechE, FRAeS, RAF (Retd), a past Director of Studies at

Henlow, to become President for a five year term of office ; the chairman and committee were elected from the full members of the society. At the same time the rules for membership were amended so that full membership was open to all past and present officers of the Royal Air Force and Commonwealth Air Forces who were at one time cadets at the Royal Air Force Technical College Henlow. This meant that all entries up to and including No 13 would be eligible to join the society. The committee also has power to invite certain people to become Honorary or Associate Members.

A further change imposed on the society was the venue for the reunion. The last reunion to be held at Henlow was in 1965. Regrettably since then the heavy commitments on the Officers' Mess have made it impossible for the station to accept a Minerva reunion. The last three reunions have been held at Brampton, Bracknell and the Royal Air Force Club, the last one being attended by a record number of 97 members and their guests. The Royal Air Force Club has many advantages but many members feel that it

would be nice to have a permanent home on a Royal Air Force Station. Every attempt is being made to find such a home but it will be another year or so before a decision can be made on a suitable location.

The society has this year endowed a prize to the value of £10 to be competed for by first year engineering cadets at Cranwell. The award will be based on performances in the examination taken in the first year of the three-year degree course.

That then is the brief and rather turbulent history of the Minerva Society. In spite of the changes imposed upon it one thing is very clear ; the spirit of Henlow lives on and the bond which was built up amongst those who started their RAF careers together at Henlow is as strong today as ever it was. The society has been criticised both from outside and within for being too inward-looking. Such criticism may have some substance but is bound to be countered by the inevitable rhetorical question : ' Can one become a member of an old boys' association if one is not in fact an old boy ? '

Air Commodore J. E. Bazalgette DFC



COLLEGE

NOTES

AIR COMMODORE J. E. BAZALGETTE, DFC

Air Commodore John Eadon Bazalgette, DFC, was appointed Assistant Commandant (Cadets) of the Royal Air Force College on 23rd December, 1968.

Air Commodore Bazalgette, who was educated at Dulwich College, joined the Royal Air Force in 1941, training as a pilot at the United States Navy Air Base at Pensacola, Florida, and at Windrush in the United Kingdom.

During the Second World War he served with 272 Squadron in Malta, Sicily and Italy, and later as a flying instructor at East Fortune and Kinloss.

Immediately after the war he served in Coastal Command in connection with the Anti-submarine Development Unit before being posted once again to the United States where he filled an appointment with the Commander, Operational Development Force from 1948 to 1951.

This appointment was followed by two years at the Air Ministry in the Operational Requirements Department.

He served in the Korean theatre in 1953

and afterwards was posted to the Royal Air Force College as Personal Staff Officer to the Commandant, remaining until 1956 when he was assigned for duty in Ceylon.

After attending the Staff College Course in India from 1958 to 1959 he was promoted to Wing Commander and in 1960 took command of 206 Squadron at St. Mawgan.

He attended the College of Air Warfare in 1962 and in 1963 returned to the Air Ministry for duty in the Air Secretary's Department as Group Captain.

This was followed by further duty in the United States as Assistant Director, Tactical and Technical Development at SACLANT NATO Headquarters in Norfolk, Virginia.

In 1966 Air Commodore Bazalgette returned to the United Kingdom to command the Maritime Base at Kinloss, which appointment he held until his present posting to the Royal Air Force College.

The *Journal* warmly welcomes the new Assistant Commandant (Cadets), Mrs Bazalgette and their family.

AIR COMMODORE R. G. WAKEFORD
MVO, OBE, AFC

Air Commodore R. G. Wakeford, MVO, OBE, AFC, completed an eventful tour as Assistant Commandant (Cadets) last December.

Coming to his post in August 1966 when the College was settling down after the great changes caused by the merger with the Technical College, Henlow, he had to put into effect the reorganisation of the cadet course following the decision to reduce it to two-and-a-half years. During the next two years he was engaged in a great deal of involved planning entailed by two policy changes of great significance for the College : first, the proposal to set up the Royal Defence College; and then, when this project had fallen into abeyance, the decision of the Air Force Board to encourage as many flight cadets as possible to accept university cadetships.

His wise guidance to flight cadets and his stabilising influence were of the greatest

Air Commodore and Mrs R. G. Wakeford



value at a time when change was in the air. With his firm but friendly approach, he was able to exert a great influence on the lives of all those who came under him. He endeavoured to see as much as possible of flight cadets in training. Interested in a wide range of sports and activities, he was equally concerned with seeing them at play. As President of the Royal Air Force Squash Association, he was particularly pleased with the progress of members of the College squash team.

He is now attending the course at the Imperial Defence College. We extend our very best wishes to Air Commodore and Mrs Wakeford and their family.

GROUP CAPTAIN R. DUCKETT
OBE, BSc

Since first serving at Cranwell as a civilian instructor in 1938, Group Captain Duckett has had two tours at Henlow and three at Cranwell.

From September 1955 until early 1963 he was Senior Tutor (Science) and was acting Director of Studies for several months, being awarded the OBE for his services to the College. On promotion in January 1964, he returned to Henlow as Chief Instructor Basic Studies Wing, later moving again to Cranwell where he served successively as acting Director of Studies, ADOS (SH) and finally ADOS (E).

With such a background, his experience of the College is almost unrivalled and in a few lines it is impossible to pay full tribute to his valuable services. He has been an active participant in the great changes which have taken place over the years : from working in wooden shacks to the gilded halls of Whittle and Trenchard ; from students with a few dubious 'O' levels to graduates and post-graduates. Throughout this turbulence he has maintained a cheerful equanimity and a ready wit which has enlivened many a Guest Night.

His charming wife was well-known for her enthusiastic support of, and participation in, so many College activities and both are remembered with affection by many generations of Cranwellians and a wide circle of friends amongst local residents.

They leave to join Headquarters Training Command and our good wishes go with them.

HONOURS AND COMMENDATIONS

The *Journal* offers its congratulations to the following personnel of the College who have been awarded honours and commendations in the New Year's Honours List :

Air Vice-Marshal T. N. Stack, Commandant and Air Officer Commanding, was made a Companion of the Order of the Bath.

Warrant Officer F. J. Cattermoul was made a Member of the Order of the British Empire.

The Air Officer Commanding-in-Chief has commended the following personnel for meritorious service :

Flight Lieutenant L. Meadows, Flight Lieutenant N. A. Parker, Chief Technician A. V. B. Crawford and Mr J. B. Ellingham.

The Air Officer Commanding has commended the following personnel for meritorious services :

Flight Sergeant F. W. D. Joint, Sergeant T. N. Hutchinson, Sergeant H. Orme, Sergeant G. H. Vaughan and Senior Aircraftsman J. M. Stonehouse.

In recognition of his meritorious service in Royal Air Force Germany, Corporal K. G. Hadley was awarded an Air Officer Commanding-in-Chief's Commendation.

Mr H. W. HENCHER, MBE

The *Journal* offers its congratulations to Mr H. W. Hencher, the Cadet Records Officer, on being made a Member of the Order of the British Empire.

After the war, during which he served with the Royal Air Force, Mr Hencher spent five years at No 16 Maintenance Unit, Royal Air Force Stafford, where he fulfilled various civil appointments. He came to Cranwell in 1952 and for his first seven years occupied the post of College Bank Accountant, before assuming his present position.

Mr C. W. BENNETT, BEM

The *Journal* offers its congratulations to Mr C. W. Bennett on his being awarded the British Empire Medal.

Mr Bennett has served at Cranwell for forty years and is now Head Cook in the Senior Mess, an appointment which he has held since 1963.

IMPERIAL SERVICE MEDALS

During the Winter Term, Imperial Service Medals were presented to the following members of the civilian staff :

Messrs H. M. Boby, F. W. Granger, V. M. Potter, J. McKay and T. B. Lawson.

The *Journal* offers its congratulations.

PROMOTIONS — No 96 ENTRY

The following promotions were made in No 96 Entry in February, 1969 :

'A' Squadron : Flight Cadet Senior Under Officer A. P. Matthews ; Flight Cadet Under Officers P. N. Derbyshire, R. M. Collier, M. Davies, P. A. Bottery.

'B' Squadron : Flight Cadet Senior Under Officer S. G. Appleton ; Flight Cadet Under Officers G. R. Hodgson, A. J. Park, C. Cruse, C. D. Evans.

'C' Squadron : Flight Cadet Senior Under Officer S. W. Hunt ; Flight Cadet Under Officers C. N. Morris, B. N. B. Leigh, C. K. Neo, C. J. Everitt.

'D' Squadron : Flight Cadet Senior Under Officer E. J. Waterfall ; Flight Cadet Under Officers W. G. Simpson, R. J. G. Calder, D. T. Bills, W. Metcalfe.

INTER-SQUADRON COMPETITIONS

The competition for the Prince of Wales Trophy and the title of Sovereign's Squadron was won in the Winter Term by 'D' Squadron, who were winners of the Chimay Trophy and the Ferris Cup and came fourth in the Knocker Cup.

THE EXTERNAL DEGREE SCHEME ANTEDATES OF SENIORITY

Antedates of seniority have been awarded to nineteen graduates from Nos 81-90 Entries who read for external degrees of the University of London whilst at the College. Flight cadets from the General Duties, Equipment and Secretarial Branches took part in the scheme.

The Royal Air Force has always recognised the value of high academic standards, and the policy of awarding antedates of seniority to attract young men with degrees and professional qualifications into the service is well established for Direct Entry commissions. On a modified scale (nine months' or three months' seniority according to class of qualification) it is extended to officers of the Engineering Branch graduating from the College with BSc degrees or Diplomas in Technology.

The External Degree Scheme demanded great effort from the flight cadets involved, who had to reach satisfactory professional standards in their respective Branches, as well as study for their degrees, and it is very much to their credit that such results were achieved. Recognition in the form of antedates has been given on the same scale as for Engineer graduates from Cranwell. Thus the two officers with 2nd class honours receive nine months' and the others three months' seniority in their present rank, back dated for pay purposes to December 1968.

The graduates are: Flying Officers R. P. Slogrove BA (2nd class honours - 89) and A. J. Kearney BSc (Econ) (2nd class honours - 90); Flight Lieutenants R. P. O'Brien BA (81), A. Q. M. Ross BA (81), R. C. Betts, BA (83), D. A. Bradford BA (83), T. Eeles BA (83), M. P. Kaye BA (86), V. E. Ayres BA (87), K. A. Crowley BA (87), K. D. Rhodes BA (87), P. A. Walliker BA (88), A. N. Wise BA (89); Flying Officers G. A. Ayre BA (83), C. A. Gardiner BA (89), A. R. MacDonald BA (89), H. K. W. Middleton BA (89), K. H. Minton BSc (Econ) (90), G. J. Pilgrim-Morris BSc (Econ) (90).

THE WRIGHT JUBILEE AEROBATIC TROPHY

Flight Lieutenant R. L. B. Bell of No 2 Squadron who was the College's individual aerobatic display pilot for the 1968 season

is to be congratulated on winning the Wright Jubilee Trophy for 1968.

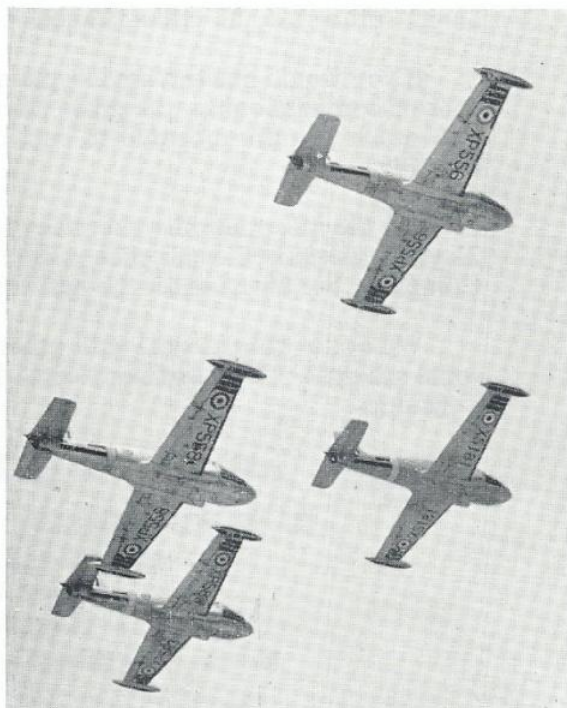
The Wright Jubilee Trophy is competed for annually at the Central Flying School. Each competitor gives a display of aerobatics timed to last not more than five minutes. The display is entirely individual and is assessed for composition, continuity and the choice and quality of each manoeuvre.

THE POACHERS

With only one member remaining from the highly successful 1968 season, the 'Poachers' have spent a strenuous winter building a new team and training for the 1969 aerobatic season.

The surviving member from last year's team is Squadron Leader W. P. Jago who will lead the team in the coming season. Flight Lieutenant G. W. Timms is the deputy leader and the four-man team is completed by Flight Lieutenant R. H. Screen and Flight Lieutenant R. J. F. Harrison. Flight Lieutenant M. B. Langham is the reserve pilot for the season.

The season promises to be a hectic one with displays in the Isle of Man and on the continent.



COLLEGE UNIT SPORT

WINTER 1968-69

If Britain suffers from a national failing in the sphere of sport it is probably the inability of the 'powers that be' to appreciate the problems of the humble athlete. It is heartening therefore, to report on a season at Cranwell in which increased grants and improved facilities have provided the stimulus for great participation and achievement in an ever-increasing range of sporting activities. This is particularly noticeable in the 'minority' sports of ski-ing, fencing and sub-aqua diving. In all three sports Cranwell enjoyed a highly successful season. Four skiers were seeded in the top twelve in the Royal Air Force and at least two of these can reasonably expect to represent the Royal Air Force next winter. Flight Lieutenant A. S. Painter fenced regularly for the Royal Air Force and Flying Officer M. E. Watterson represented both the Women's Royal Air Force and the Combined Services in this sport. The highlight of the sub-aqua season was a well-organised and very successful diving expedition to Lake Lesvaggjog in Norway on behalf of the Royal Air Force Museum at Henlow.



Flying Officer R. Clark

Away from the ski-slopes, the fencing salle and the silent world of the sub-aqua enthusiast it would be hard to imagine a more successful season than that enjoyed by the Station cross-country and squash teams. The cross-country team has won every major Service trophy, accomplishing the cross-country 'treble' in winning the Royal Air Force Championships, the Henlow 10-mile race and the Wyton four-by-five mile relay.

The team also won the Lincolnshire Services Cross-Country Championships for the third successive year. Flying Officer Roger Clark who is an English international athlete won the Royal Air Force Individual Championships and was also the Midland Counties Individual Champion. Flying Officer J. Jones, Sergeant W. Cameron and Senior Aircraftman M. Hurd all represented the Royal Air Force during the season.



Flying Officer M. MacPherson

The Station Squash team won the Royal Air Force Inter-Station Competition for the fourth successive year and fared well in the Royal Air Force Individual Championships providing three players out of the last eight and the eventual winner, Flight Lieutenant P. D. Stokes, who is a Great Britain player.

In the increasingly popular sport of judo Corporal 'Marc' Marcantonio represented the Royal Air Force, captained the highly successful Training Command team, and also captained and coached the Cranwell team. Junior Technician A. Humphries also represented the Royal Air Force in this sport.

The station had a successful season in small-bore shooting, badminton and rugby. Flying Officer M. Macpherson captained the Women's Royal Air Force shooting team and Squadron Leader J. N. Gearing and Pilot Officer D. McTeer represented the Royal Air Force at badminton. Flight Lieutenant R. Straughton represented the Royal Air Force at rugby.

VISITS

Visitors to Cranwell during the Winter Term included :

SEPTEMBER

On 19th. Air Marshal N. A. Otu, Chief of Defence Staff Ghana and Air Commodore Ashley-Lassen, Commander of the Ghanaian Air Force.

On 24th. General D. S. Fanali, Chief of Staff of the Italian Air Force and seven senior officers of the Italian Air Force.

OCTOBER

On 7th. One officer and six cadets of the Netherlands Royal Military Academy, who made a reciprocal general interest visit to the College.

On 8th. The Commandant and Directing Staff and students of the Royal Air Force Staff College, Andover, who visited the Royal Air Force College to introduce the current Staff College course to the Flight Cadet and Engineer Officer training facilities at the Royal Air Force College.

Spode Plate presented to General Grigaut



Dr Horace King with the Commandant

On 10th. Doctor Horace King, Speaker of the House of Commons, who made a general interest visit to the College and attended the Fiftieth Anniversary Guest Night.

On 14th. Brigadier General W. Ahlert, three staff officers and eight officer students of the Federal German Air Force Technical Academy.

On 18th. Air Vice-Marshal J. F. Powell, Director of Educational Services and Air Commodore E. A. Stockwell.

On 22nd. Lieutenant Colonel H. Burton, Major E. Warrell and Major E. Yackell from the Air University Maxwell, United States Air Force, visited the College to give presentations on the latest United States Air Force developments in weapons systems and space activities.

NOVEMBER

On 14th. Lieutenant Commander L. Ramades of the Indian Navy, Air Commodore J. E. Mitchell, Director of Recruiting.

On 18th. General Sir Charles Harrington, Chief Adviser, Personnel and Logistics, together with Lady Harrington and Air Chief Marshal Sir John Davies and Lady Davies.

Major O. Gargidi and ten cadets of the Italian Air Force Academy.

DECEMBER

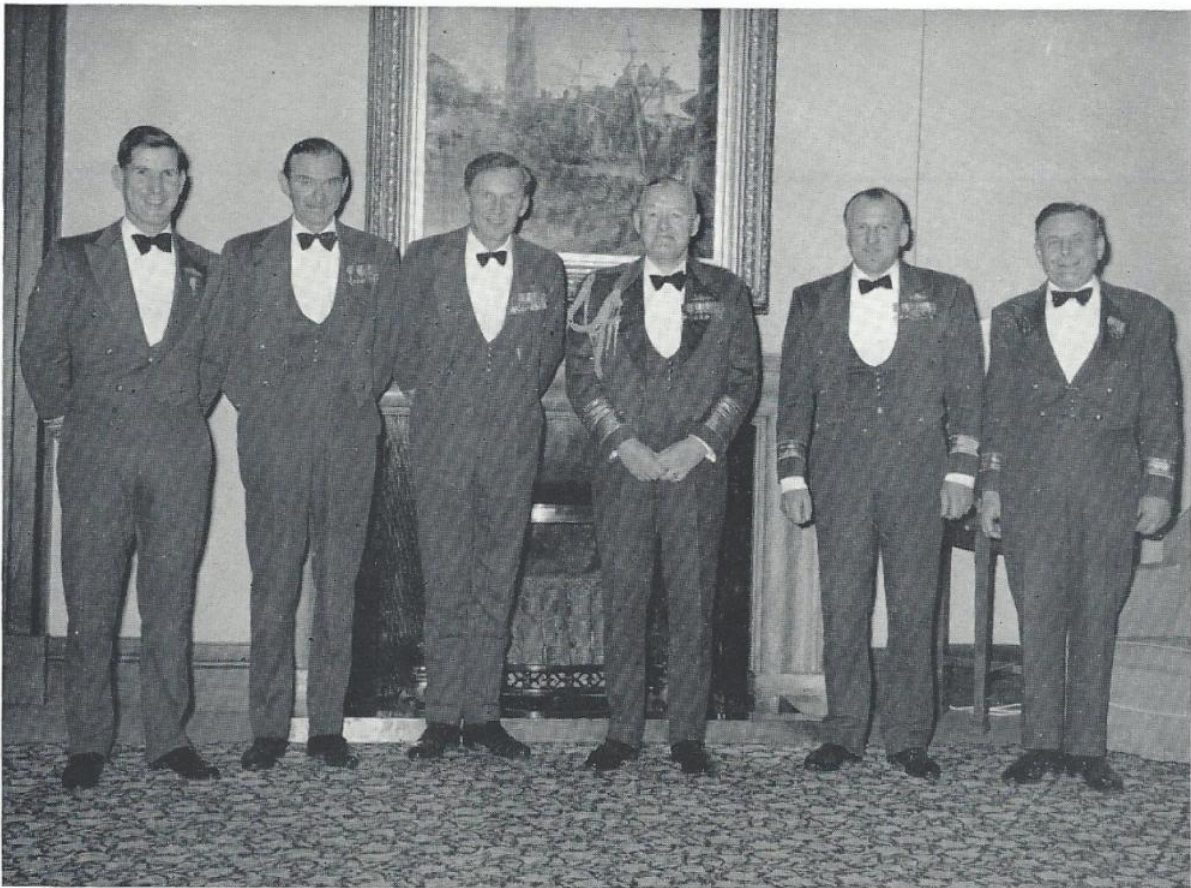
On 3rd. Air Marshal Sir Kenneth Porter, Air Officer Commanding-in-Chief, Maintenance Command, who was Guest of Honour and presented the prizes at the

congregation for the presentation of academic awards to graduates of No 12 Engineering Degree Course and No 13 Engineering Diploma Course.

On 7th. The Right Reverend J. B. Longmuir, Moderator of the Church of Scotland, who was the Guest Preacher at St. Andrew's Church.

On 10th. Twenty Air officers and fifty British and American servicemen and civilians who visited Cranwell to attend the formal presentation of the Major Study Project carried out by No 1 Aerosystems Engineering Course.

On 11th. Le Général de Brigade Aérienne C. Grigaut, Commandant, L'Ecole de L'Air, and a party of five officers from L'Ecole de L'Air.



Air Chief Marshal Sir John Davies (fourth from left) with the Station Commander, Assistant Commandant (Engineering), the Commandant, Assistant Commandant (Cadets) and the Director of Studies.

JANUARY

On 6th. Lieutenant Sanhueza of the Chilean Air Force, who visited the Equipment and Secretarial Wing.

On 13th. Professor K. L. C. Legg, who gave a Royal Aeronautical Society lecture in Whittle Hall.

On 30th. Professor R. H. Pear who gave a lecture entitled 'Man and Political Organisation' in Whittle Hall.

FEBRUARY

On 3rd. Air Commodore A. H. Wheeler who gave a Royal Aeronautical Society lecture in Whittle Hall.

On 4th. The retiring Commander-in-

Chief, Training Command, Air Chief Marshal Sir John Davies, who was the Guest of Honour at the College Hall Guest Night.

On 6th. Major General N. Crookenden, Commandant of the Royal Military College of Science, Shrivenham.

On 16th. The Chaplain-in-Chief of the Church of England, The Venerable W. E. G. Payton, who was the Visiting Preacher at a combined service in St. Michael's Church.

On 21st. Dr F. S. Dainton, Vice-Chancellor of Nottingham University.

On 28th. Air Chief Marshal Sir John Grandy, Chief of the Air Staff, who was the Reviewing Officer for the Graduation Parade of No 95 Entry.



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STORAGE
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TRAVEL AGENTS

PICKFORDS

the telephone directory will give you our nearest office

CRANWELL '69

<i>The Cuban Missile Crisis and Crisis Management</i>	94
<i>The Black Man in America</i>	99
<i>Hovercraft</i>	103
<i>Management and Management Training : The Behavioural Sciences</i>	110
<i>The Contribution of a Military Organisation to Developing Nations</i>	116
<i>The Fibre-Reinforced Material Revolution</i>	120
<i>Defence and the Balance of Payments</i>	124
<i>Notes on Contributors</i>	131

THE CUBAN MISSILE CRISIS AND CRISIS MANAGEMENT

by WING COMMANDER J. WALSH

The recent publication of '13 Days,' the late Robert Kennedy's account of the Cuban missile crisis of 1962, has drawn attention again to the lessons that can be learned from that tense and dramatic situation of conflict, which was the first direct test between the United States and the Soviet Union in which nuclear weapons were the issue, thus making their use more than a possibility. This short book, which does not add much to our knowledge of the details of the events, is of particular interest as an inside account of the 'management' of the crisis, an aspect that has been the subject of considerable study since 1962.

In retrospect now, it is evident that crises could very well have been caused in the 1950s by the fear of surprise attack and by the fear of accidental war caused by mechanical or human error. By the 1960s, however, so

much attention had been given to measures to prevent these potential causes of general war from taking effect that surprise attacks and accidental outbreaks could largely be ruled out. It was logical, therefore, to consider that general war in future could only be pre-meditated. If pre-meditated, a war would probably begin slowly and deliberately, through the major powers taking up positions over issues, and these beginnings could therefore be controlled or managed. Taking a classic example from the past, one could see how an awareness of the need for crisis control by the major powers would have prevented the outbreak of the First World War. The Berlin crisis of 1961, coupled with the research done in crisis management at the big research centres in the USA, suggested that crises could now be 'managed.' In the following year the Cuban missile crisis gave particular em-

phasis to certain lessons of crisis management which some observers had already noted.

Some Lessons of Crisis Management

The first lesson was that the threat of force, including nuclear weapons, could be used skilfully as a bargaining instrument. In the Cuba situation, the threat was not used rashly or in a blundering fashion, at least by the USA, and 'deterrence,' far from being a rigid, isolated concept, was a continuous and central part of United States diplomacy. The object of military victory has often been described as the imposition of one's will on the enemy. Owing to the largely favourable outcome of the Cuban crisis for the USA, with the imposition of its will on the Soviet Union, it could almost be claimed that October 1962 saw as great a victory for American arms as did May and August 1945.

For the threat of American force to be successful, military power had to be seen by the Soviet Union to be readily available: Army, TAC and MATS units were quickly moved into Florida for possible use in an invasion; reconnaissance aircraft were on constant watch; and strong naval units were positioned in the crisis area. Of particular importance was the fact that SAC was on alert throughout the crisis. The Soviet Union was clearly inferior tactically and strategically, by land, sea and air. The President, who saw that a purely political response was out of the question, had a wide range of military options at his disposal: from 'a full retaliatory response' (which he threatened if any nuclear missile was launched from Cuba against any nation in the western hemisphere) to the smallest military operation, he had the full spectrum of force from which to make his choice. In fact, his choice could not, in the situation, be wide and it narrowed down to a selection from three military measures: the invasion of Cuba, the bombing of the missile sites with conventional bombs, or a blockade to prevent further offensive missiles reaching Cuba and to put pressure on the Soviet Union.

The way in which the decision to use the blockade was made points out a further lesson. President Kennedy did not wish to use the national security machinery which had been created by previous presidents

because he thought it too cumbersome. He formed, for the crisis, an unofficial 12 man group which came to be called the 'Executive Committee'. A major problem was to force these officials to adapt themselves to a situation in which the President might have only a few precious minutes in which to make a decision which might mean all-out war. In such a situation, an hour for discussion is a tremendously long time. In this private circle, the President probed continuously, examining the ideas of others, throwing them back and forwards, always with a view to getting the others to appreciate the consequences of their suggested courses of action.

One result of this kind of probing and scrutiny was the appreciation of the need for increased planning in the future. Contingency planning could be important in forcing officials to face up to possible consequences and in helping to dispose of rash proposals at an early stage, but it had particular importance in directing attention to the relatively small number of options feasible in a given situation. Although planning could never be a substitute for commonsense and much improvisation would always be necessary in any situation, such planning is, of course, vitally necessary so as to determine what military resources should be made available to meet arising contingencies. Much of the planning would inevitably not be used but the time spent would not be wasted since the effect of the exercise would be to steep officials in particular problems.

The problem of warning cannot be separated from the problem of decision making and planning. Even a great emphasis on advance planning cannot guarantee foresight, but signals could be acted upon with speed and crises indentified at an early stage so as to avert or moderate disaster. Intelligence, on which so much depends, as in the Cuban situation, will rarely be comprehensive, exact and authoritative enough. Roberta Wohlstetter, however, after comparing (in 'Foreign Affairs,' July 1965) the intelligence warnings that were available for the Pearl Harbour and Cuban crises, suggests that the authorities could do much by "a more thorough analysis of reports, by making more explicit the framework and assumptions into which we must fit any new observations

and by refining, sub-dividing and making more selective the ranges of response we prepare so that our response may fit the ambiguities of our information and minimise the risks both of error and inaction."

Another lesson which was evident was the importance to the United States of the support of her allies in a crisis. The role of the allies in the Cuban crisis pointed out the need for prompt and if possible, prior, consultation amongst allies if they are to play their part in controlling a crisis. The rapid public acceptance of the American position by Britain, France and the Federal Republic of Germany increased the moral authority with which the President was able to speak. If even one of the three had failed to rally round, the position of the United States could have been undermined. It was the support of the Organisation of American States that helped to give a legal basis for the blockade, and the willingness of the members to follow the United States lead gave a jolt to Mr Khrushchev's ambitions. Instead of Cuba's receiving the sympathy of the world as a David against a Goliath, it was made to appear in the role of an outlaw, stirring up trouble which might gravely affect the whole world.

'The Final Lesson'

In his book, Robert Kennedy gave particular stress to what he obviously considered was the most important principle of crisis management. 'The final lesson of the Cuba crisis,' he writes, 'is the importance of placing ourselves in the other country's shoes'. During the crisis, he points out, his brother spent considerable time and intellectual effort on trying to visualise the effect of a particular course of action on the Russian leadership. He understood all too well that no action could be taken against his powerful opponent in a vacuum. He was very concerned not to disgrace Mr Khrushchev or to humiliate the Soviet Union, and to lessen the possibility of Soviet escalation. From this approach came the decision to blockade rather than invade or bomb, a very limited naval action under direct personal control, (since a blockade is an act of war, the operation was described as a quarantine), and the decision to board a non-Russian ship first, indicating resolve to carry out the blockade

but without humiliating the Russians. Robert Kennedy says that the President always asked himself 'Can we be sure that Mr Khrushchev understands what we feel to be our vital national interest?' Thus did the President assess all possible courses of action, and he tried to make clear to the Soviet Union that the United States had the limited objective of re-assuring itself over its own national security, brought into jeopardy by the offensive missiles in Cuba, without attempting to prejudice the national security of the Soviet Union. Mr Khrushchev was given, in a situation in which Soviet power was clearly inferior to that of the United States, room to disengage without going to the very brink of the abyss, or to use another metaphor, without burning his bridges.¹

The President thus allowed Mr Khrushchev to retreat with a certain grace and he may in fact have made more concessions than were in retrospect necessary. Mr Khrushchev was able to salvage some dignity by claiming, after the crisis, that he had not been scared off but had merely acted prudently, stressing too that his initial objective had been achieved since the President had given him a promise that there would be no future invasion of Cuba.

Some Difficulties for the Future

In the period of East-West detente which has developed in the years since 1962, there has been a tendency for many in the West to conclude that the way to crisis management in the future has now been clarified. As I have indicated above, lessons have been learned which will always be applicable. There are, however, some inescapable difficulties which could magnify the problems of crisis management in the future. One of these concerns the effect of changes in the balance of deterrence and the relationship between nuclear and conventional military power. Some observers have recorded of the Cuban crisis that it was the predominance of its strategic power that put the United States in a favourable bargaining position; while believers in the effectiveness of conventional

¹ The similarity between riot control and crisis control (in each case a way of retreat should be left open) has been commented upon.

strength, although not denying the role of SAC, are convinced that what mattered most was the availability of great non-nuclear strength in the area of conflict. Although it is obvious that each type of strength had its part to play, it is certainly difficult to assess the relative importance of each in the Cuban crisis. One might, however, conclude that peace was maintained largely through asymmetrical deterrence (resulting from the preponderance of United States nuclear forces over those of the Soviet Union) and the question is then raised 'What if a similar crisis develops in a situation of parity with the Soviet Union?' It is arguable that the Soviet Union might have acted differently in the Cuban crisis had it then had parity, and the United States too might have acted differently. For example, a counter-blockade of Berlin, where the Soviets had tactical superiority, might have been the Soviet response to the blockade of Cuba, a step which might have been very escalatory. Again, under conditions of nuclear parity, would the Soviet vessels have been pulled back from challenging the blockade? It is quite possible that their captains might have been ordered to refuse inspection, just as the Americans themselves expected the *Pueblo* to resist when faced by a locally predominant navy, and from that point onwards, ships might have been sunk and conditions of war might have ensued. There is no need, then, to belabour the point that symmetrical deterrence might have less effectiveness in containing a crisis. A related point is that the Soviet leadership learned the sharp lesson of the importance of having adequate conventional force at hand in a major crisis. In the last few years, the Soviet Union has done much through building up its navy and its strategic mobility to be able to project its power into distant parts of the world. Although the Soviet leadership is cautious about involvement, the projection of this power further afield will tend to increase the chances of confrontation with the west.

A further problem is that despite the East-West detente, the West may have even greater difficulties in the perception of Soviet behaviour and willingness to take risks. At the time of the Cuban crisis it seemed incompatible with the Soviet Union's behaviour to put missiles on an island thousands of miles away and only 90 miles from the USA, when it

had not put any missiles even in Chinese or satellite territory. It was difficult for the American President to believe, even when the reconnaissance evidence was brought before him, that the Russian leader had committed such a seemingly irrational act. Even with the growing trust (in the sense of a belief in Soviet 'responsibility') which has developed over the last few years, the invasion of Czechoslovakia has made it difficult for western leaders to persuade their peoples that it is worthwhile trying to understand Russia's leaders. The 'culture gap' is as great or even greater than ever, and even though communication becomes quicker and easier than ever before, there is no reason to think that it will be any easier to 'get the message' through to the Russians and to understand their international behaviour.

There is no sign that the world will cease to be affected by crises in the future, for they seem to be a condition of the international system. Pre-conflict situations currently exist all over the world. In the near future, the world could become less stable than it is today, partly at least because the two super-powers appear unable to solve their major internal problems, but particularly because the opportunities for sudden and revolutionary change may become more widespread. Crises tend to exist at three levels: for example in Vietnam there is the conflict within South Vietnam, next the conflict between North and South Vietnam, and then the conflict protruding into the international/cold war level. The Middle East crisis can be viewed in the same way. First, the conflict within Palestine/Israel, next the conflict at the Middle East regional level, and then at the international level. The opportunities for a chain reaction from local to regional and world levels such as took place in 1914 are too obvious to require explanation. If crises are looked upon by the super-powers, as sometimes in the past, as opportunities for competition in risk-taking and as exercises in one-upmanship in which the prizes are points scored over rivals, the outlook is black. If there are genuine attempts by the super-powers to contain them at the local level, with due regard paid to the other's vital national interest and to the lessons of the Cuban crisis — particularly that of refraining from backing the other into a corner — the prospects for the world are better.

THE BLACK MAN IN AMERICA

by CAPTAIN T. M. KLUZ, U.S.A.F.

'That the Negro American has survived at all is extraordinary : a lesser people might simply have died out, as indeed others have. That the Negro community has not only survived, but in this political generation has entered national affairs as a moderate, humane, and constructive national force is the highest testament to the healing powers of the democratic ideal and the creative vitality of the Negro people.'¹

It all began in 1501 with the arrival of the first black man in the New World. 362 years later the black world stopped and the black man 'got off.'

'I do order and declare that all persons held as slaves . . . henceforward shall be free ; and that the Executive government of the United States, . . . will recognise and maintain the freedom of said persons.'²

President Lincoln freed the slaves on first

¹ D. P. Moynihan, in L. Rainwater and W. L. Yancey (eds) 'The Moynihan Report' and 'The Politics of Controversy' 1967 p. 29.

² R. Basler (ed) 'The Lincoln Papers' Vol VI 1953, p 28.

January 1863 ; in 1963 Martin Luther King Jr contemplated their equality. 'I have a dream that one day this nation will rise up, live out the true meaning of its creed : We hold these truths to be self evident, that all men are created equal.'³

Four million slaves were freed in 1863, most of them remained in the deep south in a rural environment. The white counter reaction began almost immediately. The Ku Klux Klan surfaced in 1866, frightening the freemen into a sub-level of society. Black men were tormented, tortured and sometimes lynched, a most convincing plan of action to keep them in their place. Within twenty years the 'Jim Crow' system of segregation had made its mark and the southern states legally enforced segregation. Separation, albeit an expensive device, became a way of life in the South. Every form of contact from transport to education was divided into two separate hierarchies. In 1896, the Supreme Court in

³ King speaking to throngs at the march on Washington, August 28, 1963.

Plessy vs Ferguson decreed that separate but equal facilities are constitutional. 'As long as equality of accommodation existed segregation did not constitute discrimination.'⁴

In 1900, 83% of the black population lived in Southern rural areas. However, the Great War sounded the trumpet call to Exodus and the great migration began, granted at first only to the old Southern cities (Atlanta, Birmingham, Mobile, New Orleans, Jacksonville and Charleston) but soon thereafter north to the promised land! Traditionally wars have helped the very rich and the very poor and this was the case here. Jobs were plentiful, immigration from Europe was drying up and the mysterious grapevine of communication abounded with stories of the good life of New York, so they came.

There were problems. Not since the great Irish and German immigration after the potato famines of 1847-48 were there so many antagonisms arising in the Northern cities. Most of the blacks, having been farmers, found the city devoid of the traditional devices of sustenance. Their reaction brought increased crime waves, prostitution rings and devalued property, figures that were only equalled by the period of 50 years earlier. The result was racism in the North on a scale never before witnessed. In 1870 the Irish immigrant had his church burned, and he and his family were stoned; in 1915 the Afro American had his Baptist Temple burned and his family beaten.

Regardless, the black man was doing better than ever before, until 1929 when economic chaos assaulted the United States. As usual the unskilled and semi-skilled were the first to be redundant, and since this was the black man's predominant work category he found survival difficult. Until 1937, the negroes economic circumstances were very poor and migration to the north almost ceased. It would not increase again until the second great conflagration of the twentieth century began in 1939, and then it surpassed rapidly the earlier high levels of 20 years before.

⁴ The decision of 1896 stood until 1954 when it was overruled in '*Brown vs School Bd of Topeka, Kansas*, 1954.

This migration has continued unabated until now in 1969 - almost 80% of all negroes live in urban locations. Washington DC and Gary, Indiana have black majorities, by 1975 it is reckoned that half a dozen northern American cities will also have a Negro majority. Their political power is growing by leaps and bounds and so is the pressure they can exert on the governmental authorities.

But what of the cities themselves? We are familiar with the problems of the urban situation. I am most in sympathy with the magical mystery 'they' which seems to run the American city. Wherever you go people refer to 'they'; 'they' are fixing the streets, 'they' are not collecting the dustbins this week, or 'they' are pre-emptying my property to build a housing development for blacks. 'They' are the super power, 'they' are authority; fair or unjust, 'they' seem to control our very destiny. Sooner or later we scream for identity, we must react and when we do we are stymied by a great 'Chinese Wall' of bureaucratic red tape that seems capable of stifling our very existence. The

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Negro seems to be most confused by the local governmental subterfuge, and being less sophisticated he reacts more violently. Legally he has made great strides since 1954. He votes, buys and sells property, attends the drama or ballet and is entitled to the same devices of an affluent society that is his white counterpart. The great halls of Justice have given him equality, now he must earn the respect to hold it. 30% of black families earn £3000 or more per annum. * More black students are at University than ever before. Harlem is the wealthiest black community in the world. But still we hear of protests, of demonstrations, of riots and varied other forms of civil disobedience. Of 21 million Afro Americans in the U.S.A., almost fifty per cent are poor (less than £1200 per annum). Labour unions accept very few blacks as apprentices for skilled training, four times as many blacks as whites fail the Armed Forces mental tests, one third of all black children live in broken homes, 25% of all black homes are headed by a female and the illegitimacy rate among black women is eight times as high as that for white women. The societal structure is as weak as the economic structure.⁵

When Dr Gallup or Dr Harris poll the black men of the city they find that 45% of them state 'police practices' as the primary reason for ghetto grievances.⁶

Others state unemployment and housing as the prime problem but less than 5% blame the government directly. In fact 75% of all blacks claim their lot has improved over the last 15 years. *

Nevertheless there is a crisis.

⁵ There has been much controversy between black leaders and government concerning the extent of social disorganisation among Negroes. See 'The Negro Family' by Professor Moynihan for the main arguments.

⁶ Professor S. M. Lipset of Harvard supports this position. He finds a majority of policemen reflecting working class opinion, which is traditionally conservative in racial matters. Dr Lipset also makes this comparison; a cosmetologist (ladies hair stylist) receives about 1200 hrs of job training while a new policeman gets about 200 hrs of training before he is given his gun and sent out to patrol the streets.

* Office of Economic Opportunity Washington DC.

1. Professor Moynihan, Advisor to President Nixon on Urban Affairs, states that negro family life is deteriorating.

2. The Federal Bureau of Investigation states that the negro crime rate is rising faster than legal officers are able to deal with.

3. Mayor Lindsay of New York states that the welfare rolls of his city are growing by 20,000 new cases each month. He now has one million on the N.Y.C. welfare rolls.

4. Governor Rockefeller states that American cities are rapidly losing their viability. As the ghettos grow, the middle class moves to the suburbs and the tax base of the city declines.

5. The Urban League reports that the quality of education offered in black city schools is inferior to all other education in the U.S.A.

6. The Black militants (only 5% of black society) demand 'some of the action,' a share of the affluency that pervades White America of the sixties.

7. The Federal Government reports that the rate of inflation is 5%, a spiral which the lower income groups traditionally have most difficulty in keeping up with.

The lists are endless, the grievances are many. It is so easy to draw on cliché 'time heals all wounds' or the like, but clichés do not solve human problems. The Afro-American has to be accepted, he must get a reasonable education, his family life must be restructured, and in the long term to gain respect he must earn it. The white man holds the key, only he can make real progress come from a real crisis.⁷ It is he that must ponder the question, 'does talk about three hundred years of slavery and oppression stir in me any feeling of racial culpability'?

⁷ I thank Peter Schrag of the 'Saturday Review' for pointing out that in oriental philosophy, crisis and opportunity are the same word.

HOVERCRAFT

by PETER WILLIAM FOSS

It is now ten years since the first British Hovercraft flew. SRN1, built by Saunders - Roe and financed by NRDC was a simple craft built solely to test the air cushion principle. In the years that followed several development craft were built leading to the commercial operation of the Cross-Channel SRN4 and the sheltered water SRN6. Hovercraft have been operated in many parts of the world - as military craft in Borneo and Vietnam, commercial craft in Norway, America, Germany and Sweden (although most operating experience has been gained between the Isle of Wight and the mainland) - and as exploratory craft in regions inaccessible to other powered vehicles. Recently for example, an SRN6 travelled some 200 miles up the Amazon shooting rapids in its path.

The hovercraft principle has also been applied to vacuum cleaners, lawn mowers,

airbeds for badly burned people, conveyor systems, and the transport of heavy and bulky objects such as transformers and even houses.

The conquest of the air has always fascinated people. In Belgium today, and to a lesser extent in the USA it is possible to design, construct, fly (and crash ?) an aeroplane relatively free from official intervention. A similar state of affairs existed in this country before the Second World War but came to an end with the Flying Flea craze. The Flea was a French ultra light aircraft powered by a motor cycle engine which, if it managed to leave the ground, had dangerous stability characteristics at the stall.

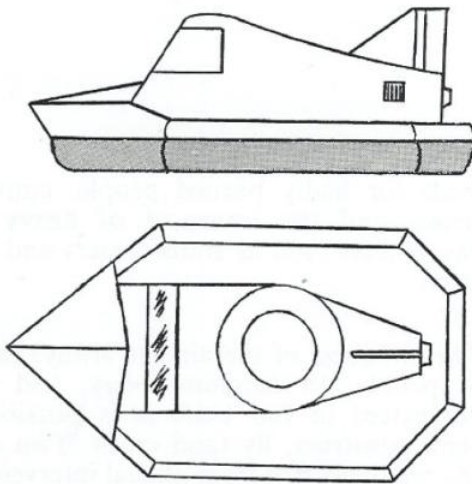
Since then, however, the Flea has been developed into a safe aircraft although it is doubtful whether the era of the do-it-yourself

aeroplane will return to this country.

Fortunately the light hovercraft can fulfil the urge some people have to fly their own creation, since at the present time officialdom is satisfied with a few elementary precautions. Several craft have now been flown and rallies are organised where these machines can compete against each other. Although Cranwell has now retired from the rally scene, the College is still concerned with hovercraft through the design and construction of the Cranwell Hovercraft Group CH-2 and the Aerodynamics Squadron programme of wind tunnel investigation of hovercraft stability.

The Hovercraft Group was founded by Flight Cadet D. R. Green who initially constructed a working model in 1961, and out of which came the single seat CH-1 and which made its maiden flight on May 4th 1963.

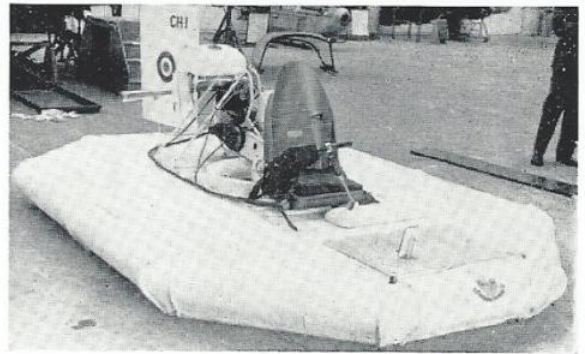
THE CRANWELL HOVERCRAFT GROUP CH-2



0 2 4 6 FT.
Scale

The craft measured $12\frac{1}{2}$ feet long by $8\frac{1}{2}$ feet wide, hovered about six inches from the ground and flew at a maximum speed of 30 m.p.h.

A larger craft was proposed but it is unlikely to be built. CH-2 was 18 feet long by



THE CRANWELL HOVERCRAFT CH-1

10 feet wide with an estimated all up weight of 1500 lb. The lift fan was designed to be powered by a Rover gas turbine APU. Originally forward propulsion was to have been provided by a single propeller mounted between the fin and the rudder, but for better control the final version would probably have had twin fins each incorporating a Volkswagen engine / propeller unit. (A drawing of the original design is shown).

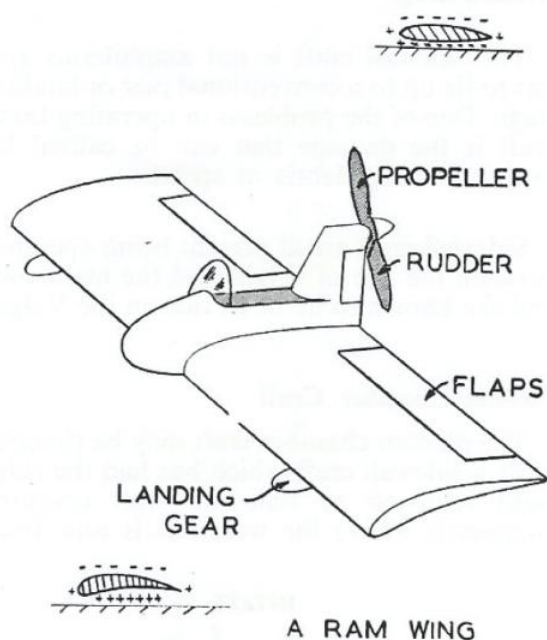
The Development of the Air-Cushion Principle

An excellent reference to the historical development of ACV's is Leslie Hayward's 'The History of Air Cushion Vehicles' which shows that thoughts on hovercraft date back to 1716. A detailed history will not be given here, although a few facts will be noted in passing.

The hovercraft principle can be thought of as having developed along two distinct but converging lines of thought, that is, as either a low flying aircraft or a high flying boat. It must be pointed out, however, that the hovercraft is neither an aircraft or a boat, but forms part of another class of vehicles which, although in the main airborne, can never be divorced from the ground or water.

Firstly, considering the craft's aeronautical development, it is known that the downwash behind a conventional lifting surface (such as a wing) is reduced in the presence of the ground. A reduction in downwash automatically reduces the induced drag of the wing, which is a large component of the total drag at low forward speeds. Since the overall drag is now lower, less power is

needed to fly the aircraft. At the same time it is found that the stability of the aircraft is generally improved.



It is, of course, necessary to develop enough lift to support the aircraft's weight. A symmetrical wing section flying near the ground will produce a venturi effect between it and the ground. The lower surface will develop suction pressures with subsequent loss in lift. It is necessary to use a wing section which, close to the ground acts as a divergent - convergent duct. In this way a positive lower surface pressure can be developed. Such a wing is known as a ram wing.

T. J. Kaario of Finland is considered to be the pioneer in this field, flying his first ram wing in 1935, achieving speeds of 43 mph with a 20 hp motor.

In 1966 Bell suggested that, if the rotor slipstream were blown into a plenum chamber attached to the undercarriage of a helicopter, the machine would be able to fly a few inches above the ground even if the helicopter was too heavy to fly on its own. A plenum chamber is an open box in which the dynamic pressure of the slipstream is

converted into static pressure to lift the hovercraft.

From the above it can be seen that to transport a given load a hovercraft requires less power and is, therefore, more economical than an aeroplane or, alternatively, for the same power can carry a far greater load than an aeroplane.

Consider now the hovercraft as a 'high flying boat.' The power developed by the engines of a conventional boat has to overcome three main resistances - the drag caused by making the waves, wave impact on the hull, and skin friction from the wetted surfaces. If these drags can be reduced the boat will be able to travel at a higher speed for the same installed power, or can maintain the same speed on less power.

Streamlining the hull reduces the wave dependent drag, but since this tends to increase the surface area of the hull the skin friction drag is increased. Skin friction drag is also increased when barnacles attach themselves to the hull, since the boundary layer is made more turbulent by the increase in roughness of the surface. The rate of growth of barnacles seems to depend on the time of year and the part of the world the ship is in, but in adverse conditions the power required by the ship to maintain a given speed may well have doubled after six months.

The limitation on the top speed of the ship is, therefore, mainly due to skin friction drag, which itself depends to a large extent on the coefficient of viscosity of the fluid through which the hull is moving. In 1875 William Froude suggested that if the fluid in contact with the hull was air instead of water the skin friction drag would be reduced since the coefficient of viscosity is lower for air than it is for water. This was to be achieved by pumping air between the hull and water but the Government and shipbuilders of the time were sceptical of the idea. Gustav Laval of Sweden experimented unsuccessfully with air lubrication in 1882, but in 1916 Captain Dagobert Muller-Thomamuhl of the Austrian Navy successfully built a torpedo boat on these prin-

principles which achieved a maximum speed of 47 knots for a total installed power of 480 hp

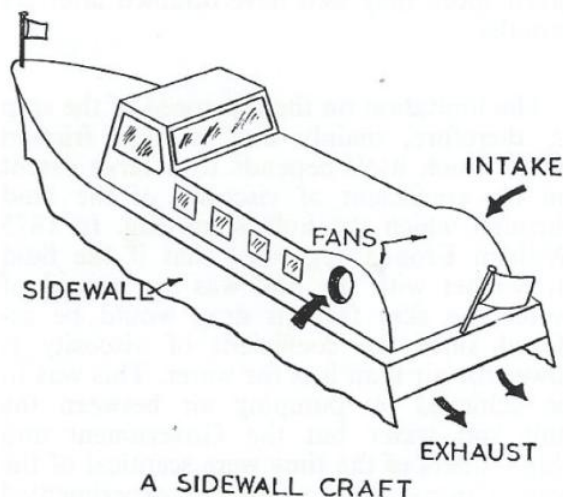
In 1953 Christopher Cockerell began his now famous experiments which led to the building of a full size machine to test the hovercraft principle. This was the Saunders-Roe SRN1 which flew in 1958 and which laid the foundations of the British Hovercraft industry.

TYPES OF AIRCUSHION VEHICLES

There are five main sub-divisions of the ACV family - the ram-wing, sidewall craft, plenum chamber craft, peripheral jet craft and the levapad. The ram-wing has already been discussed and will not be mentioned again.

The Sidewall Hovercraft

This type of craft uses the basic concept proposed by William Froude in 1875. Externally the craft is very similar to a boat, except for the addition of fans. The fans blow air into the space between the bottom of the hull and the water, alleviating skin friction drag. Forward propulsion is usually by water screw.



The term 'sidewall' is used because the cushion is prevented from escaping from the

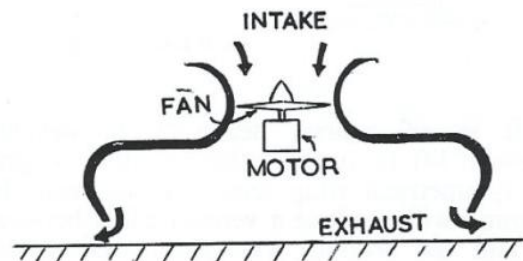
two long sides by an extension of the hull which projects down into the water. It is not possible to prevent air escaping from the stern without increasing the wave drag out of all proportion to the saving in skin friction drag.

The sidewall craft is not amphibious and has to tie up to a conventional pier or landing stage. One of the problems in operating these craft is the damage that can be caused by hitting floating debris at speed.

Sidewall craft are at present being operated between the Isle of Wight and the mainland, and are known to be in service on the Volga.

Plenum Chamber Craft

The plenum chamber craft may be thought of as a sidewall craft which has had the sidewalls removed so that the craft operates completely above the water. It is now fully



PLENUM CHAMBER CRAFT

amphibious and can land on a beach to load and unload. Approximately 22% more power is needed to maintain the cushion since the air can now escape from every side of the craft.

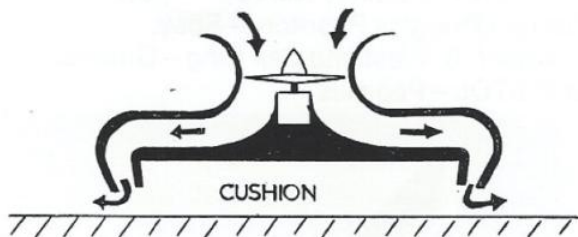
In the plenum chamber the dynamic pressure of the air leaving the fan is converted into static pressure, which means that flow velocities out of the cushion are relatively low and ground erosion is not severe. The craft can operate over most types of terrain without digging out a crater for itself.

Plenum chamber craft are built by Britten-Norman Ltd. who call them 'Cushioncraft,' and the type is favoured by the amateur constructors because of the relative

simplicity of the structure.

Peripheral Jet Craft

The lifting performance of the hovercraft can be improved by pumping air out in a high velocity jet around the periphery of the craft, which supplies the cushion with air and acts as a seal. The deflection of the jet



PERIPHERAL JET CRAFT

by the ground causes lift to be developed in addition to that obtained by the cushion pressure. If, however, the velocity of the jet is too high serious ground erosion and re-ingestion may take place when the craft is hovering over soft terrain such as mud, sand or pebbles.

Peripheral jet craft are, therefore, more efficient than plenum chamber craft, and it is probably for this reason that most of the commercial hovercraft seen today are of this type.

Peripheral jet craft are built by the British Hovercraft Corporation under the original name Hovercraft.

The Levapad

The levapad is an extremely crude type of lifting device which differs from the sidewall, peripheral and plenum chamber craft in not having a space in which the cushion can be contained.

The pad is a flat surface which is supplied with air from a compressor. Hoverheights are limited to thousandths of an inch since a very strong suction is developed between the pad and the ground.

A levapad rail foot has been suggested for use with a tracked hovercraft. These are high speed trains intended for fast inter-city communication. Although slower than aircraft the block time should be better since the longest part of a short haul air journey - that of getting to and from the airport - has been eliminated.

The French firm of Bertin have built an experimental train on which speeds of 235 mph have already been achieved. The train is powered by a gas turbine but future trains could be powered by linear induction motors.

PROPULSION SYSTEMS

The power supplied to a hovercraft is used to provide both lift and thrust. Separate engines were used on early experimental craft such as the SRN1 and CC2, and are used on many amateur craft today. Although simple in concept and construction, engine services are duplicated and the number of controls and gauges increased. The total engine weight tends to be excessive for the actual power required at any particular time since the power required for lift is a maximum at low speeds and decreases as aerodynamic lift is developed, while the thrust power required increases as speed increases. Both functions could, therefore, be obtained from a single engine which has less power than the combined total power of two separate motors. This type of propulsion system is said to be 'integrated.'

British Hovercraft Corporation use an integrated mechanical system in which the engine drives both a fan and a propeller through a gearbox. Larger craft requiring more power use more engines, although each engine still drives a fan and propeller. Engines may be coupled together to ensure that all fans and propellers turn at reduced power in the event of an engine failure. The gear ratios of the propeller and fan drive shafts are constant, so that reducing engine speed reduces the speed of both the fan and propeller. Forward flight speed is increased by coarsening the propeller pitch so that it absorbs more power. The hoverheight must necessarily decrease since the fan is receiving less power than before. Conversely, an increase in hoverheight is achieved by de-

creasing the pitch of the propeller blades.

The integrated air system acts in a very similar way except that air is bled from the cushion to provide a thrust for forward flight. A greater thrust results in more air being taken from the cushion with a subsequent decrease in hoverheight. A valve is used to control the relative flow of air to provide propulsion and lift. An advantage with this particular system is that it results in a very much quieter hovercraft, since most of the noise from a propeller driven craft comes from the vorticity shed from the propeller tips. A craft which uses this type of propulsion is CC4 which has two pairs of centrifugal fans mounted vertically.

TURNING AND PLOUGH-IN

To turn any vehicle it is necessary to supply a force towards the centre of turn which reduces the vehicle's momentum in the original direction and increases it in the final direction. A wheeled vehicle supplies this force, which acts at right angles to the direction of motion of the vehicle, through friction between the tyres and the ground. An aircraft supplies this force by banking.

A hovercraft has the disadvantage that the friction between it and the surface is extremely low and it is impossible to bank since the hovercraft is so small. One solution is to vary the direction of the propulsive thrust, by swivelling the propeller or deflecting air jets. The former is done on large hovercraft, but usually involves too much complexity for the smaller craft.

A method which must be employed on fixed thrustline craft is to yaw the craft towards the centre of the turn, initially decreasing thrust to reduce the momentum in the original direction and increasing the thrust when the craft is yawed.

While this may easily be done on a craft which has two propellers mounted side by side, difficulties arise with the craft which only has rudders for yaw control. The rudders will not be effective at low speeds unless they are situated in the propeller slipstream. When the craft is yawed by rudder, the fin develops a side force in the

opposite direction to the centre of turn, causing the hovercraft to skid out of the turn. The craft executes a wide, skidding turn which is far from circular, the nose of the craft being yawed at any angle up to 90°.

During the initial stages of the turn a considerable rolling movement is being applied by the inertia force acting through the centre of gravity and the fin side force acting usually through some point above the centre of gravity. This rolling moment is opposed by the cushion (assuming compartmentation is employed) and the moments due to the aerodynamic and intake momentum drags. Should the skirt contact the surface an additional destabilising moment is developed which usually cannot be opposed and the craft overturns. This is known as "plough-in." Skirt contact usually occurs around the bows, especially if the craft has a high thrustline. To prevent this happening air is ducted to the outer front sides of the skirt ensuring that there is good air lubrication between the skirt and the water.

Plough-in is most likely to occur when the sea is dead calm, especially if the centre keel or bag has been damaged.

CONCLUSION

The pages of the various technical magazines reveal the tremendous interest that there is in the light hovercraft. It is relatively easy to construct a hovercraft which will fly, although care must be taken with the design and construction to obtain a craft with a good performance.

The hovercraft offers the possibility of putting aerodynamic principles to use, some practical aircraft construction to be undertaken, but above all the opportunity to do plenty of safe 'flying'.

The Engineering Society at Cranwell has a well equipped workshop in Building 109 where craft may be built, and the aerodynamics laboratory has low speed air tunnels in which the aerodynamic characteristics of the hovercraft may be studied before the maiden flight of the full-size machine.

Would you like to become a 'hovernaut'?

MANAGEMENT AND MANAGEMENT TRAINING : THE BEHAVIOURAL SCIENCES

by SQUADRON LEADER A. J. I. DAVIES

'If we neglect to gather up experience as we go, we expend the knowledge of every day on the circumstances that produce it.'

Thomas Paine: 'American Crisis' 1776

The first article in this series on 'Management and Management Training' took a general look at the meaning of management and the philosophy underlying Management training. The aim of this article is to look in general at the work of the Behavioural Scientists in management training.

What are the Behavioural Sciences ?

The Behavioural Sciences are concerned with information and generalisations about human behaviour. In management training their application is to the social process which is called managing. The data sources are varied and Figure 1, although not ex-

haustive, exhibits the main ones. Fig 1 does not, however, indicate to the reader that connections exist with other disciplines, particularly, economics and applied technology. Pay and cost control are at the same time, both economic and psychological issues. Resistance to change has often engineering as well as psychological ramifications. Similarly, the study of organisational goals and values stems from Social Philosophy while Political Science has provided a basic philosophy about formal organisations, particularly the rules to which men ought to be

data while we maintain the necessary interdisciplinary approach where the training objective demands it.

What Value have the Behavioural Sciences in Management Training ?

Basically, the Behavioural Sciences have values for management in three ways :

- They formulate abstract concepts and provide data about human behaviour in systems of interdependency.

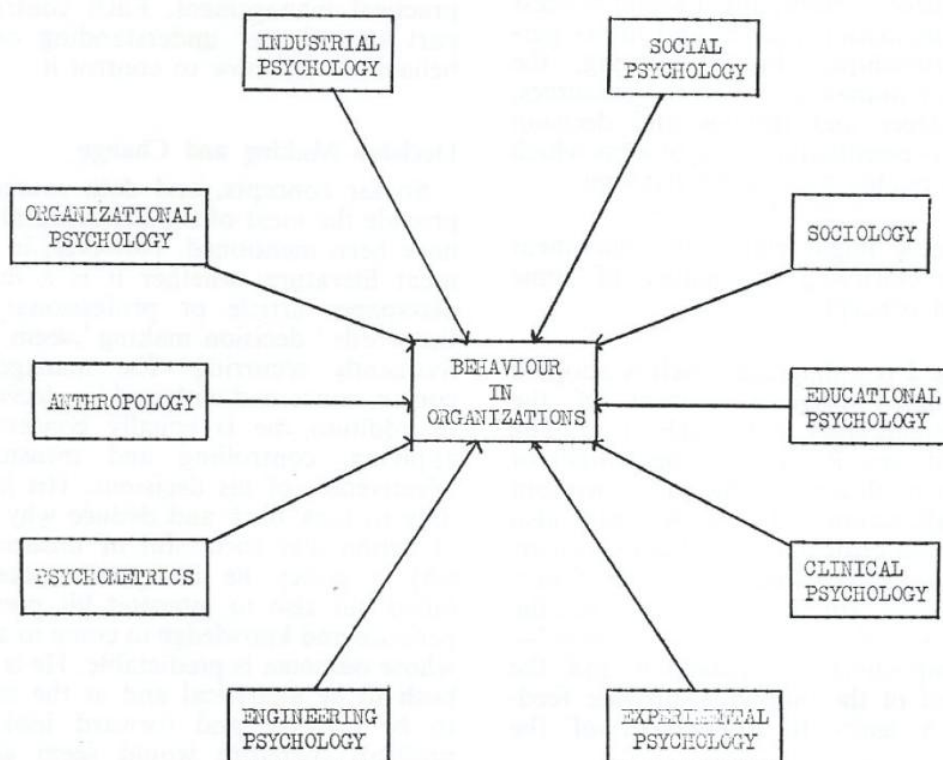


Figure 1: Some of the disciplines which contribute to the Study of Behaviour in Organisations.

committed. 'Hard data' is, however, our concern and therefore psychology, (occupational, clinical, educational, social and organisational) remains our main source of

- They provide a means of handling data and thinking about complex relationships.
- They contribute to the decision-

making programme with respect to change.

It is, therefore, not by chance, that during the last 30 years the bulk of literature and research in the management field has stemmed from men who have applied their knowledge of the behavioural disciplines to an examination of the nature and improvement of management practice and management training. It is as a result of the work of men like Allen, McGregor, Likert, Argyris, Bass, Haire and many others that the impetus to contribute new research findings and new concepts proceeds undiminished.

Concepts and Data

Management is essentially a social process involving interactions, inter- and intra- personal relationships, objective setting, the utilisation of human and material resources, personal values and feelings and decision making. It is essentially, too, a process which often has a readily measurable outcome.

An example might clarify this statement as well as clarifying the nature of some behavioural concepts.

In Figure 2 is a diagram which is adopted from Homan's original concept of the system of small work-group behaviour. The parallel with any Royal Air Force flight or section can be drawn by the reader without further elaboration. The reader will also notice that the critical area is that of 'Emergent Behaviour' in which the level of outcome is decided. He will notice, too, that the system is closed-looped. The 'outputs'—task accomplishment, satisfaction and the development of the individual—provide feedback which leads to adjustment of the 'inputs.'

Behavioural studies relate consistently to a general conceptual approach such as this. Research in communication, value systems, status, motivation, personality, attitude formation, human aptitudes, learning and appraisal methods show that within the critical area of 'Emergent Behaviour' the correlations between independent human, organisational and technological variables are likely to furnish data which give guidance as to the nature of the factors influencing the

'output' in Figure 2. The knowledge of such data and the means of handling it are critical to the behaviour of any officer who is to manage his section effectively.

Studies in work group behaviour, since the days of the Hawthorne Experiments in the late 1920's and early 30's have also brought a better understanding of the dynamic forces in operation in group behaviour, particularly in the nature, cause and effect of change on organisational behaviour. Task analysis, studies in environmental conditions, selection of personnel, the nature of authority, equipment design, job analysis and objective setting are still further facets of the application of the Behavioural Sciences to the problems of practical management. Each contributes in part to a better understanding of human behaviour and how to control it.

Decision Making and Change

So far concepts, and data sources which provide the meat of the Behavioural Sciences have been mentioned. However, in management literature, whether it is a text book, newspaper article or professional journal, the words 'decision making' seem the most frequently recurring. The manager is, of course, concerned with *making* decisions but, in addition, he is equally concerned with applying, controlling and measuring the effectiveness of his decisions. His job is not only to look back and deduce why a course of action was successful or unsuccessful or why a policy he instigated succeeded or failed but also to interpret his previous experience and knowledge to come to a decision whose outcome is predictable. He is expected both to be analytical and at the same time to be creative and forward looking. His problem therefore would seem simply to ensure that :

- He gets the information upon which a decision can be based.
- He interprets the information and tests its relevance.
- He interprets his previous experience and estimates its relevance to the problem.
- He predicts the likely outcome of his decision and the effectiveness of the outcomes.

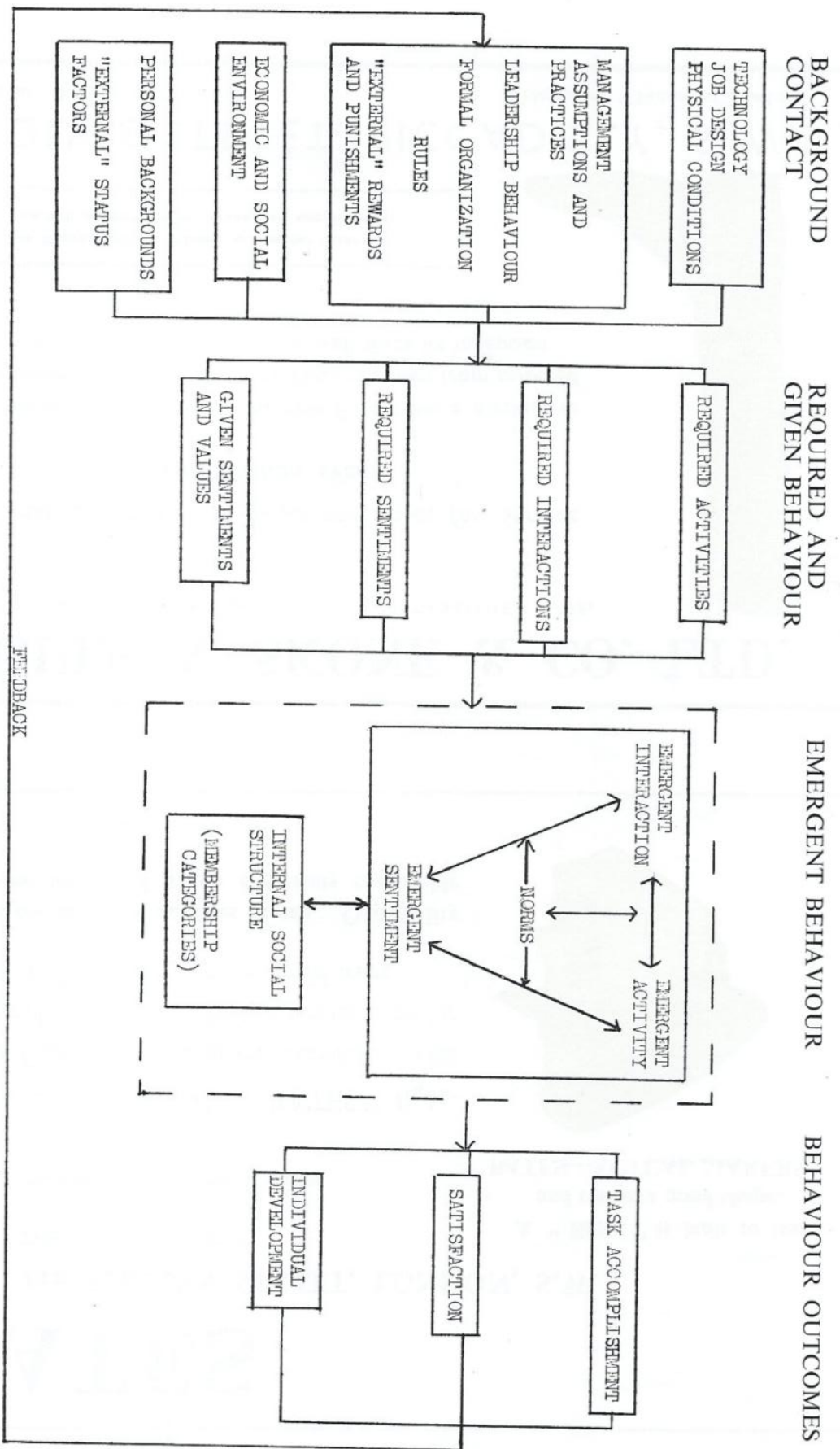


Figure 2: Small Work Group Behaviour: A Conceptual Scheme.

(After Homans)

Going through as simple a four-stage process such as this would seem to be a rational problem solving behaviour that most would claim to follow. However, both experience and research indicate that often a far from rational approach is taken, particularly in conditions of uncertainty and change. The decision maker, at each stage in the process, despite his intention to be rational is limited by attitudinal, motivational and group factors. Much can be done at each stage to reduce these restrictions on creativity, inventiveness and accuracy of decision and this is part of the task of the Behavioural Scientist involved in management training. In this sense the Behavioural Science Squadron in Engineering Management Wing complements the work of Management Science Squadron which is involved in teaching quantitative decision-making techniques.

Behavioural Sciences and Training Strategies

In management training circles one often hears the expression 'before sensitivity training and after' applied to the transition which has taken place from the old 'human relations' courses to modern management training strategies. There is no question that Sensitivity Training and research in training methods since the '50's' have had considerable impact not only in management training but other adult training areas. Basically the change is to recognise that teaching cognitive skills on their own does not produce the desired behavioural change in trainees. This has led to the use of training strategies which seek to induce attitudinal change while, at the same time, imparting new knowledge and skills. Case studies, group dynamics exercises, and management style workshops have become an integral part of the overall training strategy. The student is made to review his own behaviour against the mirror of the data which is made available to him and to study his own effectiveness in realistic situations.

The training objective of the Behavioural Scientist involved in Management Training is, to present selected data and to create training situations which enable a trainee to develop an appreciation of the human environment in which he is to make rational decisions and control behaviour so as to achieve the objective of the organisation in

which he works. To achieve his own objective the trainer must, therefore ensure that the student has :

- Studied the nature of human beings and the nature of their differences.
- Learned the nature of his future task.
- Become aware of his own strengths and weaknesses.
- Been taught to anticipate the likely effect of his behaviour on those he has to manage.
- Developed the right attitudes to his future role and identified himself with the organisation's objectives.
- An awareness of the needs of individuals and is sensitive to situations which he is likely to meet.
- The ability to make decisions which, as far as possible, are rational and objective.
- A desire to be creative and forward looking.

This is a tall order for any course of training and although the Behavioural Scientist might express his doubts as to the efficiency of the training he gives because of the difficulty of measuring their effect he is unlikely to deny that this is (a) what he is trying to achieve and (b) what needs to be done if managerial effectiveness is the ultimate goal. Certainly the advances in training strategy and the nature of the content lend themselves better to the study and understanding of human behaviour in organisation than ever existed in training in this field.

Conclusion

I have made no attempt to outline syllabuses of training in Behavioural Science in Engineering Management Wing nor dealt with the Behavioural Scientist operating in a consultancy role, my aim has been to give the reader some idea of the approach and concern of the Behavioural Scientist in the broadest terms. I would emphasize that, by itself, Behavioural Science would not present a complete training for the manager. Although in the final analysis it is the behaviour of men that determines the effectiveness of any organisation, without the technical skill and knowledge of techniques within an organisation, complete effectiveness would be impossible. Behavioural Science, therefore forms no more than a part, if essential part, of the training of a manager.

THE CONTRIBUTION OF A MILITARY ORGANISATION TO DEVELOPING NATIONS

by FLIGHT LIEUTENANT W. M. CROSS

In a number of ex-colonial countries there now rule, or have ruled, military governments of one sort or another. This article will examine the political role the military can play in shaping the future nation in the transitional societies of Afro-Asia, that is, those societies moving from a traditional, subsistence level, agrarian society, towards an industrialised, high living standard, universally educated society, based on the European and North American pattern. This article sets out to show that the military as a political body, although in some cases a reactionary and retarding influence on its country (an image more often associated with the Latin American brand of military rule, with which this article is not concerned) is more often the most suitably equipped native institution that can encourage technical ad-

vance and provide a stable political environment.

THE BACKGROUND

The post colonial period of the Afro-Asian state is concerned principally with creating a nation from a country with often ill-chosen borders inherited from colonial administration. Within these boundaries there may live ethnically differing people, traditionally warring tribes, differing religions, and a variety of languages, all of which must be made to pull towards the same end if the state is to survive economically.

In the days leading to independence the people are unified by a common aim of

freedom and self-determination, however vague the meaning of these ideals may be. They have a common enemy.

After the initial exhilaration of independence day has died down, the problems the new state has to face and overcome in order to create national unity and political stability become apparent. Traditional quarrels and arguments reappear in the bush and in parliament, minority groups fight for their autonomy, economic aid fails to reach the 'grass roots,' due to poor administration or misappropriation, rural areas react against attempts at modernisation and cling determinedly to their traditional practices. Lethargy and disillusionment with the administration grows. To cope with this deteriorating situation, the country has probably inherited a constitution based on Parliamentary Democracy, one ill-suited to solve its problems.

Often, into this growing chaos steps the Military. What place has the uniformed politician in the transitional society? It is often supposed that military rule is a permanent threat to liberal, progressive government, and civil liberties, but perhaps the nature of military rule coming to power in Afro-Asian nations may be establishing the basis for effective, representative civilian government.

In order to examine the role of the military politician, we will first look at the political implications of a modern organisation (the military) in a disorganised society and then see how such an institution may help to shape attitudes towards westernisation in other areas of the state, and finally have a general look at the military-civil relationship which may either bring the military to power or give them a strong influence in the development of their country.

The result of rule by a colonial power and later national civil governments has been a series of attempts to change the habits of the indigenous peoples by replacing their traditional structures with western organisations. These attempts have very often ended in failure with one frequent exception . . . the introduction of a modern military organisation. It would appear that a modern armed

force is easier to establish than other modern social organisations in a transitional society.

THE MILITARY AS A MODERN ORGANISATION

Western Influence

The military has always been a mixture of traditional ritual and conservatism, and more progressive attitudes. Tradition tends to dominate during the periods of little technical innovation, and progressive attitudes when there is a rapid change in military technology, as in the European armies since 1939.

The new armies have been strongly influenced by western military technology, rather than becoming conservative organisations as their traditional backgrounds might have suggested they would. They have tended to model themselves on the World War II conventional army of the West. There are a number of reasons for this. The countries' independence movements began as a direct result of events during and after World War II. The colonising power had trained army units from the indigenous people, and these units had fought in the War [e.g. Kings Own African Rifles and the Arab Legion]. The armies of countries gaining independence soon after the war and those countries which had revolutionary guerrilla movements seeking independence, found a ready source of weapons from the large surplus of small arms left as a result of the War. The threat to hardwon independence, their most prized possession, from traditional enemies has resulted in many small arms races, all too readily boosted by military aid from the developed world. Hence the still agrarian societies of Afro-Asia have in many cases successfully developed organisations which until recently were the monopoly of the industrialised states. This situation has some bearing on the political role the military can play.

The Assets of the Military

One characteristic of the modern army is the wide range of technical skills required in the supporting branches if it is to function successfully - Engineers, signal corp, supply organisations, medical personnel, and, if it is lucky an air arm with its own associated specialist services. And, possibly most im-

portant of all, in order to control this, a large staff which has to look to the West for guidance in modern management and training techniques, as many of these skills are often in short supply or ill developed in the civil area.

Many of the more intelligent officers have, therefore, industrial and management skills more advanced than those of their civilian counterpart. Equally they are aware of lack of economic and technological development on the civilian front, so necessary if the country is to progress through its transitional stage. The Modern Army in a predominantly traditional society is synonymous with technical development.

The Influence of the Military

If a man is to become a useful part of a modern organisation, he must adopt modern attitudes. This is the case with the army recruit. He leaves his village background of traditional and particularistic relationships and moves to a more impersonal, technical world of the industrialised society. The peasant who leaves the land to seek his fortune in the city is undergoing the same process, but the change is much more rapid, for overnight he finds himself living in a strange world with different values, little of which he understands. He is insecure and his future survival difficult to foresee. This introduction to the modern world leads to the growth of unstable and extreme political groups in the population. The army recruits transformation is slower. He can see what his future will be which helps him to assimilate the changes he is called on to make. His everyday existence is secure. For the soldier, the change from old to new is more complete and effects a wider area of his life, whereas a city dweller's life is a mixture of the modern and many habits and customs brought from his village. The soldier is forced to mix with people from all parts of his country, while his civilian counterpart will probably settle in an area of the city alongside people from his own village or district. Service life is designed to build up esprit de corps which binds its members into a strong unit. These factors, more than anything else, probably ensured that the modern armed force continued to survive as a workable organisation after independence whereas other western type

of institutions tended to fail.

The required level of technical skills associated with a modern army provide a large reserve of trained manpower, which must eventually benefit the economic and technical development of the country as a whole.

The military is frequently a national orientated organisation; therefore, its members are more likely to identify themselves with their country than with their tribe or village community. The army tends to remain the one united national body when the rest of the community is suffering from interfractional squabbles. A notable exception to this case is of course present day Nigeria.

Although in some countries the selection of officer and enlisted men is still determined by traditional social backgrounds, there are others, notably in the Middle East and Africa, where the rank structure does allow a soldier of poor background to progress through the ranks and thereby improve his status in society. This is most likely in countries where



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the military is held in high esteem as the protector or creator of the country's independence. A change to this essentially modern approach to rank may help to influence the civilian community to promote and select people based on their ability and achievement rather than on birth-right.

MILITARY DOMINATION

The relationship between the military organisation and the civilian governing body and events which may lead to a strong military influence exercised through civilian government or induce the military to seize power, varies from country to country. The relationship may depend on the form of colonial influence the country experienced, the role a military organisation played in hastening independence, or the extent to which the major world powers have a political and economic interest in the area in which the state is situated. However, it is possible to identify a number of situations in which the military is likely to dominate.

Firstly at a time when traditional ruling political, and possibly social orders have collapsed the military is the only organised body capable of wielding political power and preventing anarchy or civil war. This situation existed in China between the fall of the last Emperor and the establishment of Communism. To a limited extent, this is also true of events in Pakistan which led to a takeover by Yahya Khan and the re-establishment of martial law.

A second situation of military domination is found in Thailand. Here the officer corps has developed as part of a small educated elite drawn from the traditional ruling families. They continue to exercise their control through the politically dominating military institution. This country has not undergone the idealism of an independence movement and until recently the demand for democratic institutions has been weak. Therefore the ruling position of the military has been stable. In Jordan there is a strong revolutionary movement thrown up by events in the Middle East centred on the Arab/Israeli conflict and in this case the established army, based on the Arab Legion,

is the protector of the traditional form of rule.

Further examples are found in countries which have undergone some form of colonial rule, and whose passage to independence was not brought about by a violent revolutionary campaign by underground movements. During their period of colonisation these countries were re-organised on a basis of western administration, justice, democratic process, and armies. For reasons discussed the latter was most firmly established. The others, although continuing to exist after independence had not been fully accepted or understood and therefore failed to function effectively. As development slowed down, administration failed, and the country became politically and administratively unstable, the army was the only body equipped to take over power. This it did with the stated policy of establishing stable conditions while civilian bodies better prepared themselves to resume control. Ghana is an example of this form of takeover, although in this case the position of the established Ghanaian army was threatened by the creation of Nkrumah's own private force.

There is the case when a country has hastened its independence through the activities of a revolutionary movement (for example South Yemen). These movements are made up of both military and political arms, the two branches becoming more distinguishable as independence is negotiated. After independence the military arm is likely to form the basis of the conventional army whilst the political arm forms the government. However military prestige and influence is likely to be high throughout the state as the creator of freedom.

CONCLUSION

From the article we may conclude that the military can act as a force for political stability at times when no other body is able or willing to provide it. It may play a major part in its country's development as a source of trained technicians and administrators. It quickly recognises failure of the civilian sector to live up to promises of economic and technical development and a progressive political environment, and it will seize power in an attempt to assist the establishment of these processes.

THE FIBRE-REINFORCED MATERIAL REVOLUTION

by FLIGHT LIEUTENANT R. E. PICK AND FLIGHT LIEUTENANT A. G. TOTTLE

At present, research into fibre-reinforced composite materials is an extremely active topic in applied materials science. These materials are normally referred to in technical literature as composite materials, but this is really something of a misnomer. Almost all of the alloys in use at present are composite: in other words, they contain more than one phase. What is so special about the new materials is the nature of the second phase.

Alloys such as steel normally consist of sets of very thin plates, or lamellae, of cementite, (iron carbide) embedded in a soft matrix of ferrite, or virtually pure iron. The plates give the steel its strength, while the soft matrix allows it to deform under an applied load, and so prevent it from being brittle. What we are doing in the new materials is to use a new, lighter matrix, such as aluminium or plastic, and replacing the carbide plates by much stiffer or stronger

materials, of which the newest is the carbon fibre developed by the Royal Aeronautical Establishment, Farnborough.

Why Composite Materials ?

The logic of aircraft design dictates that, in a supersonic aircraft, the saving of one pound in the aircraft structure allows an increase of two pounds in the final payload. A different example is provided by the fan blades in the new Rolls - Royce RB 211 engine. These blades have to be both light and stiff, and the specific stiffness (stiffness - to - weight ratio) required by the designers is beyond that of any normal metal.

The following table compares the mechanical properties of several available matrix materials. Note that the specific properties for metals are all about the same, and that the plastics seem to have little to offer at this stage.

Material	Density (d) lbs./in ³	Youngs Modulus (E) lbs/in ² × 10 ⁶	UTS lbf/in ² × 10 ⁴	E/d (x10)	UTS/d (x10 ⁶)
Alumin. Alloy	0.10	10	8	1.0	0.8
Titan. Alloy	0.16	17	16	1.0	1.00
Alloy Steel	0.28	28	18	1.0	0.63
Nickel Alloy	0.28	31	16	1.1	0.56
Beryllium	0.07	44	9	6.3	1.3
Nylon	0.04	0.3	1	0.07	0.25
Epoxy resin	0.045	0.5	0.8	0.11	0.20

The only really outstanding metal is beryllium, but this has two serious disadvantages : it is not very ductile, and it is extremely expensive.

The ceramics form a potentially useful class of materials. They are strong and stiff, and have very high melting points. The properties of some ceramics are given in the following table.

Material	Density (D) lbs/in ³	E lb/in ² (× 10 ⁸)	$\frac{E}{D}$ (× 10 ⁸)
Alumina	0.14	74	5.3
Boron	0.11	64	5.6
Beryllium oxide	0.10	100	10
Carbon whiskers	0.08	140	17
Silicon carbide	0.11	80	7

Note that no values are given for tensile strengths. This is because the properties of ceramics depend largely on the surface condition of the specimen. Attempts to design highly stressed parts in ceramics have usually failed because

- designers have not learnt the limitations of these materials, and
- materials scientists cannot guarantee the material to be free from surface defects.

Thus the only realistic way to make full use of brittle substances as structural materials is to use them as fibres surrounded by a relatively soft matrix.

Properties of the Matrix

The matrix has to perform several functions. It has to provide a proportion of the strength, and this proportion varies from system to system. It has to protect the brittle fibres from surface damage, which could weaken them considerably. It tends to prevent the spread of cracks from one fibre to the next one, and it transmits the stress from one fibre to the next by allowing shear stresses to act at the fibre - to - matrix interface.

Some Background Theory

At this point, it is worth giving some of the theory behind the use of fibre-reinforced materials, as this will then allow us to see how various systems operate.

These composites usually contain separate parallel fibres embedded in a relatively soft matrix and aligned in the direction of the expected load axis. For long fibres, the principle of combined action gives :

material = matrix = fibre
 strain = strain = strain.

NOTE that this does *not* mean that the stresses are equal.

Now let us consider a composite specimen stressed to a level below the point of failure :

$$\text{Failure stress} = V_f \cdot E_f \cdot e + (1 - V_f) E_m \cdot e$$

where e = strain, V_f = volume fraction occupied by the fibre, and E_f and E_m are the elastic moduli of the fibre and the matrix respectively.

If the composite contains discontinuous fibres, shear stresses at the fibre-matrix interface transfer the stress from matrix to fibre as the matrix is loaded. If the fibre is comparatively short, insufficient stress can be applied to the fibre to break it. The stress that can be transferred through unit length of fibre will then be limited by either the elastic limit of the matrix or the shear strength of the interface.

The geometric stress concentration caused by the shape of the fibre tip will tend to cause premature failure of the matrix near the tip, and for this reason fibres are used as long as possible. In addition, longer fibres allow the transfer of larger stresses. Fibres with length-to-diameter ratios of 100 : 1 are used.

The theoretical criteria for maximum strength are as follows. The fibre must have a high elastic modulus, and must be able to bear large elastic strains. The matrix material should also have a high elastic modulus, and be able to withstand large strains without failing. Normally, there should be as large a volume fraction of the fibre as possible.

Fibre Alignment

The use of strictly parallel fibres gives very uneven strengthening ; the material is very strong along the direction of the fibres, but weak across them. Unfortunately, most designers are accustomed to using isotropic materials, and so we have to use fibres lying in many directions. The disadvantage of this type of material is that we lose up to 80% of the strength and stiffness. One partially

effective solution of this problem is to design the component in such a way that the stresses lie along certain axes, and to align the fibres along these axes as far as possible.

Matrix Materials

Resins are light, cheap and easily shaped. However, they also have low elastic moduli, which means that they bend easily under stress. They have poor temperature resistance, and cannot be used above about 200°C. Another factor against resin is that they have poor erosion resistance. As a result of this, test blades of Hyfil, a resin-based composite are now being test-flown with a nickel leading edge.

Metals are being investigated, as they have fairly good inherent properties before the introduction of the fibre. They have much better high-temperature properties, and also improve the component's behaviour under oblique stress.

Ceramic matrices have been investigated to some extent, but have shown little promise. This is mainly because ceramics are brittle, and so tend to fail at very low strains. However, they may hold out some promise of use as very high temperature materials.

Manufacture of Components

The important technological difference between conventional materials such as metals and the new materials is that metals are made in one process and then shaped by another, while the fibre-reinforced materials are usually made in situ. In other words, the material and the component are made at the same time. This has required manufacturers to rethink their processes completely, which probably explains the reluctance that many British firms are showing towards the use of fibre-reinforced materials.

Another problem arises when two pieces are required to be joined together. If a highly aligned product has been used, then any joining method that requires the components to have holes drilled in them, such as bolting rivetting etc., will cause damage to the brittle fibres, with a consequent loss of good properties. The best answer so far developed

is to use special adhesives. Alternatively, the whole joint has to be redesigned, as in the control rods used in the VC 10.

Actual Materials

Let us now turn to some actual systems in use at present. Probably the best known fibre-reinforced material in general use at the moment is fibreglass. This consists of a resin base, reinforced with silica fibres, and has been in use for several years. It is fairly easy to use, and is available as a kit to use in refurbishing car bodies, for example. However, it is a relatively inefficient system, because the silica fibres are very susceptible to surface damage, and these lead to a marked deterioration in mechanical properties.

Typical properties are :

Density	=	0.06 lb/in ³
UTS	=	42 × 10 ³ lbf/in ²
Modulus	=	2.8 × 10 ⁶ lbf/in ²
UTS/d	=	0.7 × 10 ⁶
E/d	=	0.45 × 10 ⁸

Hyfil is probably the most interesting of the new materials, because of the extraordinary properties of the carbon fibre incorporated in it. This fibre is one of the stiffest substances yet discovered, particularly when its extreme lightness is also considered.

The fibre is produced by carefully heating a Courtaulds fibre so as to leave a strand of partly crystalline carbon behind, with the crystallites aligned along the axis of the fibre. The actual details of the starting material and the heat treatment have not been fully released yet for obvious reasons but the Americans are expressing considerable interest in the process.

At present Rolls-Royce are producing fan blades by a batch technique, the main stages of which are as follows. The fibres of the starting material are laid out parallel on a frame. They are then oxidised and carbonised in stages. Next the carbon fibres are stripped from the frame, and the liquid resin rolled out over the sheet of fibres and allowed to set. This produces a sheet of raw material from which appropriate shapes can be cut out. These shapes are carefully assembled to make up the blade, with the various layers having their axes in the appropriate direct-

ions, so as to give the correct mechanical properties. The blade is then hot pressed. This causes the resin molecules to link up from sheet to sheet, so that a coherent structure is produced.

Typical properties are :

Density	=	0.06 lbs/in ³
Modulus	=	24 × 10 ⁶ lbs/in ²
UTS	=	165 × 10 ³ lbf/in ²
UTS/d	=	2.8 × 10 ⁶
E/d	=	4.1 × 10 ⁸

As stated above, Hyfil is still a very new material, and its full range of possible applications has only just begun to be exploited. However, there are various problems, some of which are enumerated below.

General Problems

Firstly, the combination of brittleness and stiffness of the fibres makes production a highly skilled task, and also a somewhat slow one. This also adds to the cost ; at present, Rolls-Royce cost each RB 211 blade at £1000.

Secondly, bolts and similar fasteners cannot be used. If they were, then the section of the component between the hole and the end would probably pull out when the load was added. This has already led to a considerable amount of re-thinking on the part of the designers.

Thirdly, the present method of building airframes using spars and stringers covered by a skin will probably have to be replaced by stiff skins stabilized by a low density polymer foam. Problem — where to put the fuel ?

Fourthly, the plastic matrices used for Hyfil are subject to abrasion, over heating and have a very low thermal conductivity, so that heat generated by air / skin friction cannot easily be dissipated.

However, the picture looks very bright for Hyfil, if only we can begin to train designers into thinking along new avenues of design, so as to exploit the particular properties of this and other new materials, rather than merely adapting traditional thinking and processes.

DEFENCE AND THE BALANCE OF PAYMENTS

by SQUADRON LEADER D. F. BUNCE

One of the most persistent problems that has confronted the economy of the United Kingdom since 1964 has been that caused by Balance of Payments deficits. Adverse balances of £399m, £91m, and £404m on the current account of the Balance of Payments have been achieved in the years 1964, 65 and 67 respectively. To remedy this situation deflation followed by devaluation in 1967 followed by more deflation in 68 and 69 together with measures to increase productivity at home and control expenditure abroad have been the main strategies adopted by the Government. For the services this has meant reductions of overseas commitments and control of defence expenditure and manpower employed in the services at home. While it is not the purpose of this article to consider measures that could be taken to remedy an adverse Balance of Payments, it is worth considering where defence features in the Balance of Payments and in so doing perhaps clarify some of the confusion that surrounds this account. Accordingly it is hoped to show what is meant by the Balance of Payments, where defence fits into this account, what measures have been adopted by the Government to ease the burden imposed by defence expenditure on this account since 1964 and then consider the impact of such measures from a purely economic viewpoint.

The Balance of Payments

The Balance of Payments is the account which shows the relationship between payments made by this country to the rest of the world and receipts gained by this country from the rest of the world. To many it appears to consist only of payments received for goods exported and payment made for goods imported. While such payments and receipts are important and have been stressed

by Government action to control them they are by no means all that is relevant to this account. Other factors such as income and payment for services, capital movements and monetary movements all affect our monetary relations with other countries and thus must feature in the Balance of Payments. Because of the multiplicity of items making up this account it is convenient to divide the Balance of Payments into two main sections, with each capable of further sub-division. They are :

- (a) the Current Account
 - (i) Visibles
 - (ii) Invisibles
- (b) the Capital Account
 - (i) Long Term Capital Account
 - (ii) Monetary Movements

Of the two main sections by far the most publicised is the current account which deals with the import and export of goods, visible trade, and the payments and receipts for services, invisible trade. The former is self explanatory and the latter includes payments and receipts for shipping, banking, insurance, tourism, civil aviation, interest profits and dividends, private transfers and Government services either given or received by this country. It is rare for the receipts and payments of the current account to balance exactly with the result that if total receipts exceed total payments we have a surplus on this account, if total payments exceed total receipts we have a deficit. Since before the end of the last century Britain has imported more goods than she exported with resultant deficits on the visible account. These deficits have largely been made good by surpluses being achieved on the invisible account. Thus earning more for services rendered,

than paying out for services received has for many years in the past been sufficient to bring the whole of the current account into surplus.

The Capital Account as its name implies deals with the movements of capital in and out of the country. Some movement of capital may be required to settle a deficit on the Current Account. This can be likened to an individual who if he spends more than he earns must make good the difference by borrowing, selling an investment to realise cash, or by dipping into reserves. This is not all, however, that is involved in this account.

Investments may be undertaken by the Government or UK residents in foreign countries thus losing foreign exchange without reference to the state of the Current Account and similarly foreign Governments, firms or individuals may undertake investment in this country thus gaining us foreign exchange. If there is an adverse balance in the Current Account and on the Long Term Capital Account then this must be made good by some accommodating change in the monetary movement sector. A simple summary of the Balance of Payments for the UK between 1964 and 1967 should illustrate the above points.

SUMMARY OF THE UK BALANCE OF PAYMENTS 1964-67

Current Account (credits + debits —)

	1964	1965	1966	1967
Visible Trade				
Imports ¹ (F.o.b.) (—)	5003	5049	5244	5660
Exports (F.o.b.) (+)	4466	4777	5108	5023
	— 537	— 272	— 136	— 637
Invisible Trade				
Government (net)				
Military (inc military aid)	— 268	— 268	— 274	— 256
Other expenditure (net)	— 164	— 179	— 187	— 197
Shipping	— 43	— 10	— 15	+ 1
Civil Aviation	+ 27	+ 27	+ 30	+ 29
Travel	— 71	— 97	— 78	— 39
Other services	+ 267	+ 270	+ 302	+ 347
Interest profits and dividends	+ 413	+ 470	+ 422	+ 410
Private Transfers	— 23	— 32	— 49	— 62
Invisible Balance	+ 138	+ 181	+ 151	+ 233
Current Balance	— 399	— 91	+ 15	— 404
Balance on Long Term Capital Account ²	— 370	— 203	— 104	— 86
Balance of Current and Long Term Capital Account	— 769	— 294	— 89	— 490
Balancing Item	+ 41	+ 67	— 10	+ 175
Monetary Movements ²	+ 728	+ 227	+ 99	+ 315

¹ Excluding deliveries of, but including payment for US Military Aircraft and Missiles.

² Assets : increase / decrease+. Liabilities : increase+ / decrease—

Source : Central Statistical Office.

Defence Expenditure in the Balance of Payments

From the foregoing table it would appear that defence expenditure features only in the invisible account but this is not true. Undoubtedly the sum involved in the invisibles has received wide publicity and is large as is indicated by the following table for the period 1965-68, taken from 'Statements on Defence Estimates' for these years.

Defence Expenditure in the Invisible Account 1965-68

	Military (net) ³	Military aid ⁴
1965	£239m	£29m
1966	£246m	£25m
1967	£240m	£21m
1968	£234m	£10m

In this account these costs represent payments of foreign exchange used to support our forces overseas and include payment of overseas servicemen's pay, employment of local contractors and workers, purchase of local materials, etc. They do not represent the total cost of maintaining forces overseas as much equipment and services are supplied from the UK and do not represent costs in foreign exchange. These figures are net payments because certain receipts are gained from R & D levies and United States Forces stationed in the United Kingdom.

It should also be remembered that certain defence payments feature in the visible account and some in the Long Term Capital Account. In the former case the most easily identifiable are the costs involved in the purchase of foreign military equipment such as the purchase of United States Aircraft.

The following table gives an indication of

the importance of such purchases.

⁵ Purchase of Foreign Military Equipment 1966-1969

1966-7	£47m
1967-8	£74m
1968-9	£65m
1969-70	£49m

There are also additional concealed defence costs in the visible account in that much of the defence equipment supplied by the firms in the United Kingdom to the Services has some import content.

Defence expenditure has also recently featured in the Long Term Capital Account of Balance of Payments as much of the equipment supplied by the United States has been purchased on credit with loan facilities being given by the United States Eximbank.

Government Action

Faced with adverse Balances of Payments and the need to save foreign exchange Government action to reduce defence expenditure involving foreign exchange has been directed in part to the visible account and to the invisible account in the reduction of spending on overseas bases.

On the visible account foreign exchange savings have been made with the cancellation of the order for F111s, irrespective of the reasons for it, and the insistence that certain British components be included in the construction of Phantoms to be delivered to the Royal Air Force. On this account it can be argued that were fewer purchases made abroad and more at home then more foreign exchange could be saved. Yet it must be realised that decisions to buy foreign equipment are normally taken only after procurement from domestic sources has been rejected

³ 'These figures are close approximations, as detailed costs of Forces in Germany are not always published in 'Statements on the Defence Estimates.'

⁴ Military Aid is part of related expenditure not included in the Defence Budget.

⁵ It should be noted that some of these costs are offset by Ministry of Defence sales.

Source: 'Statement on the Defence Estimates' - 1966, 1967, 1968, 1969.

on the grounds of higher costs, inferior quality or unacceptable delivery dates. The longer term non-quantifiable costs involved in the purchase of foreign equipment, for example the impact such decisions will have on our aircraft industry or future technological developments essential for a highly developed industrial state are obviously important but are outside the scope of this article. Nevertheless in evaluating the cost of buying United States aircraft on our Balance of Payments it can be argued that some offset should be made from the exports of our aircraft industry which might not have been possible had it been involved in the development and production of such aircraft for the Royal Air Force.

Where purchases of foreign aircraft have been made and, as in Germany where foreign exchange has been paid for the stationing of British troops, attempts have been made to alleviate the strain on the Balance of Payments by stimulating higher exports through offset deals. If we are involved in foreign exchange costs of £9m then, it is argued, that to offset this cost the country who is gaining the benefit should place orders for goods and services with the United Kingdom to the same value to offset this cost. While this 'tit-for-tat' arrangement may appear extremely plausible, it is difficult to assess, whether such offset deals represent receipts that might not otherwise arise in normal trade and therefore by how much they can be counted as a true benefit to the Balance of Payments. The criteria for judging the value of these deals are: does the sale of goods to countries under such offsets represent sales that could not have been undertaken without the deal and would it not be possible to use the resources for producing such goods to gain other exports? Such questions are difficult if not impossible to answer and indeed the whole concept of 'offsets' is open to question. If this idea is taken to its logical conclusion surely it can be argued that it should include all goods and services traded outside defence with perhaps a resultant dislocation of international trade.

Other action on the visible account has been the encouragement of arms sales either from the Government or from private firms.

Where existing arms are disposed of at an economic price then the balance of payments will benefit. If however resources are devoted to arms production with a specific view to export then it should be questioned how much better the Balance of Payments would have been had such resources been devoted to produce other exports.

It is therefore difficult to evaluate the impact of such Government measures on the visible account and this difficulty is equally apparent in considering the results of action on the invisible account.

The cost of maintaining bases overseas with the consequent strain imposed on the Balance of Payments was recognised long before the dramatic changes characteristic of the last five years were introduced. It is, however, largely because of adverse Balances of Payments, a clearer presentation of overseas defence costs as presented in defence estimates and the reaction of the Government to reduce these costs, mainly by withdrawal of forces, that military expenditure overseas has gained such publicity. The Statement on the Defence Estimates 1966-67 clearly showed the extent of this overseas expenditure.

GEOGRAPHICAL ANALYSIS OF EXPENDITURE 1966-67

Table 1 Geographical Attribution Overseas

	£m
Germany (excluding Berlin)	199
Berlin	4
Far East (excluding Hong Kong)	235
Hong Kong	16
Middle East	66
Mediterranean	67
Other overseas areas (incl. RAF Staging posts)	18
Total	605

The above figures were the estimated expenditure directly attributable to forces deployed or planned to be deployed overseas in 1966-67. They included all support costs including supplies provided from the United Kingdom. The actual foreign exchange costs were tabulated as follows:

OVERSEAS MILITARY EXPENDITURE AND RECEIPTS 1966-67

£s million

Local Defence Expenditure by Area

Germany	Far East	Middle East	Mediterranean		
89	95	28	38		
Other Areas	Other HQ Expenditure		Total	HQ Receipts	Net
31	19		300	54	246

Defence white papers since 1965 have noted the need to reduce the foreign exchange costs of maintaining troops overseas. The Statement on Defence Estimates 1965 noted 'the other central problem is how to meet those military responsibilities throughout the world from which we cannot honourably or prudently withdraw, without causing too great a drain on our resources and so frustrating our other national purposes at home and abroad' and the fact that 'our forces in Germany impose a heavy burden on our Balance of Payments.' To relieve this strain, withdrawal of forces from Aden was announced in 1966 and a streamlining of the bases in Cyprus and Malta was undertaken. The Government policy decisions taken on defence expenditure overseas between 1966 and 1968 can best be summarised by the following excerpt from the 1968 Statement on the Defence Estimates.

'The major decisions which the Government has taken may be broadly summarised as follows :

- a. Britain's defence effort will in future be concentrated in Europe and the North Atlantic area.
- b. We shall accelerate the withdrawal of our forces from Malaysia and Singapore and complete it by the end of 1971. We shall also withdraw from the Persian Gulf by the same date.
- c. Service manpower will eventually be reduced by more than

75,000 forecast in the Supplementary Statement on Defence Policy 1967 and the reduction will be spread over a shorter time.

d. The carrier force will be phased out as soon as the withdrawals from Malaysia, Singapore and the Persian Gulf have been completed and the rate of new naval construction will be reduced.

e. The Brigade of Gurkhas will be run down by 6000 by 1971.

f. The order for 50 F111 aircraft has been cancelled and the Royal Air Force transport force will be cut.

g. Support facilities, including Headquarters and Ministry of Defence will be cut.

h. No special capability for use outside Europe will be maintained, when our withdrawal from Singapore and Malaysia and the Persian Gulf is complete.

i. We shall, however, retain a general capability based in Europe, including the United Kingdom, which can be deployed overseas, as in our judgment circumstances demand and can support United Nations operations as necessary.

The financial result of this review was that reductions of £110m would be made in the forecast estimates for 1969-70 and that by

1972-73 the defence budget would be reduced by a further £210m-£260m. Much of this saving, by following a policy of withdrawal of bases and streamlining remaining bases overseas, would be made in foreign exchange even though the devaluation in 1967 had aggravated the foreign exchange burden, especially in Germany.

Though such a vast withdrawal has prompted much comment for and against, especially as to its military merits, only the economics aspect will be dealt with in this article. From an economic viewpoint justification of such action can be made by considering the invisible account of the Balance of Payments since 1952.

UK Trade in Invisibles - Annual Averages of Cyclical Periods

		1952-5	1956-60	1961-4	1965-7
		£m	£m	£m	£m
Debits	Government	233	278	418	494
	Shipping	418	635	692	770
	Civil Aviation	39	60	101	152
	Travel	99	156	228	290
	Other services	182	218	268	351
	Interests, profits, etc.	287	380	444	574
	Private transfers	69	104	124	179
Total		1390	1830	2275	2810
Credits	Government	134	69	42	42
	Shipping	538	632	663	799
	Civil Aviation	39	68	124	176
	Travel	93	139	184	219
	Other services	327	420	529	633
	Interest, profits, etc.	513	635	799	955
	Private transfers	73	98	116	128
Total		1717	2061	2458	2951
Net	Government	- 99	-209	-376	-452
	Shipping	+ 57	- 3	- 29	+ 29
	Civil Aviation	0	+ 8	+ 23	+ 23
	Travel	- 6	- 17	- 44	- 71
	Other services	+145	+202	+261	+282
	Interest, profits, etc.	+226	+256	+355	+381
	Private transfers	+ 4	- 6	- 8	- 51
Total invisibles net		+327	+230	+183	+141
Total less Government		+426	+440	+559	+593

Source : UK Balance of Payments Preliminary Estimates for 1968. Detail may not add to totals because of rounding.

While on the credit side of the foregoing table invisible earnings have increased from £1717m to £2951m in the period under review, the debit side has shown a greater increase from £1390 to £2810. This has meant that total net invisible earnings have decreased from £327m to £141m, and the main reason for this is to be found in the increased Government expenditure undertaken abroad. Though such expenditure consists of aid to developing countries, representation, information and trade services and subscriptions to international bodies, by far the greatest proportion is defence expenditure overseas. While some have argued that other invisibles such as aid should be reduced, Government action has been directed mainly at reducing defence expenditure. In this respect it superficially appears that by withdrawing forces from overseas and closing bases the full foreign exchange cuts can be saved together with a savings made in administration and supply of goods undertaken from the United Kingdom. While there will be some real savings it is hardly likely that the Balance of Payments will benefit by the full extent of the proposed reduction in overseas costs, especially in the short term. By withdrawing from a base area costing £Xm in foreign exchange the real saving is likely to be less than the £Xm though it is difficult to say by how much less. The reason for the difference between apparent and real savings is because of the impact such a withdrawal might have, on the economy of the former base area, the costs involved in the withdrawal, and the economy of this country by increasing the number of home residents. A brief examination of these points will show their relevance.

If Britain withdraws from an area then this is likely to have repercussions on our visible trade. Not only will servicemen who perhaps have purchased British goods in the local economy no longer be contributing to our exports or induce local traders to stock British goods, but some reduction in the national income of the country must be expected if British expenditure on defence in the area ceases. This will be most pronounced in areas heavily dependent on British defence expenditure and may result in unemployment in such areas with consequent reductions in consumption followed by reductions in the import of British goods.

Where defence expenditure has been the mainstay of such an economy some overseas aid may have to be given in the short term to alleviate the consequences of withdrawal and allow time for readjustment to civilian industry.

Costs will also be incurred in the actual movement of troops and their families to the UK, accommodating them at home and in the impact such a movement will have on the import bill of this country and its general consumption level. These costs would be further increased were it decided to introduce contingency plans to support former base areas in future troubles by mounting frequent exercises, training troops overseas or producing weapon systems in this country to implement such plans. If, however, withdrawal is made from overseas areas and the size of the forces is proportionately reduced, manpower should be freed for civilian industry and the Balance of Payments may greatly benefit.

When dealing with the "concealed costs" incurred in withdrawing from overseas exact quantification is impossible. Most will be short term costs and after they have been paid the Balance of Payments will gain an additional real benefit. Nor is it possible to quantify the costs incurred by taking such action in the political field, nor the impact such action might have on British investment overseas, which has been stressed by some quarters of the press.

The relationship between overseas defence expenditure and the Balance of Payments is therefore more involved than the pure statistics make out. What must be considered is how much better the balance of payments would be without such defence spending rather than merely considering what apparent savings can be made. It is with these real savings made therefore in the short and long term and not the apparent savings that should be equated with the military security foregone.

Even then the benefits gained from such reductions alone made by the Government cannot be considered as a panacea for all of Britain's economic problems, or as a final solution to Balance of Payments deficits, but such reductions should alleviate one source of aggravation of these problems though not eliminate their cause.

NOTES ON CONTRIBUTORS

Squadron Leader A. M. Newbould gained a first class BA Honours degree in Classics from Bristol University in 1955 and joined the RAF in the same year. He has served as an instructor at the OCTU, as Schools Officer in Nicosia, and at the School of Education where he taught the English Language Course for foreign students and was joint author of the Science Programmed Course. In 1966 he became Senior Education Officer at RAF HQ Unit Uxbridge responsible for administering MOD, Mintech, Embassies and all overseas RAF elements not under overseas commands as well as having a large resettlement commitment. In 1968 he came to the RAF College and has held the position of University Advisory Officer responsible for administering the university entrance scheme.

Wing Commander J. Walsh is Senior Tutor (Humanities) at the RAF College, and teaches a broad Strategy-Defence Policy Course to Cadets.

Captain T. M. Kluz holds an AB degree in History and a MA in American History from Temple University, Philadelphia. His Master's thesis was a study of the evolvement of American Foreign Policy in the Caribbean Area from 1778 to 1840. Capt. Kluz has served nearly six years in the USAF, first as an education officer at Lackland Military Training Centre, Texas, later as personnel officer of Charleston AFB, South Carolina. Capt. Kluz is preparing to do PhD work in social and cultural history of the United States. He has been in the International Studies Dept at Cranwell since arrival in August 1967.

Peter William Foss gained a BSc (Eng) from London University and DCAe from Cranfield. Between 1964 and 1966 he was employed in the Aerodynamics Department of the British Hovercraft Corporation concerned with the pre-flight development of the SRN4 and performance aspects of SRN3, 5 and 6. He came to Cranwell in 1966 as a civilian education officer in aerodynamics and is also responsible for B.Sc. (Hons) degree projects on Hovercraft. He is also consultant to Rotorsport, a small Belgian Company based at Farnhout which is developing and manufacturing single and two seat autogyros.

Squadron Leader A. J. I. Davies gained a BA (Hons) degree in Educational Psychology and a Diploma of Education and Teaching Certificate specialising in Experimental Psychology at the University of South Wales and Monmouthshire. He joined the RAF as a commissioned officer in 1954 and has served as a Training Officer, as a Staff Officer and as a Station Education Officer. In 1966 he became OC Behavioural Science Squadron and Head of Subject in Management Wing of the RAF College, which involves the development of programmes, syllabuses and exercises for Management Courses at the College with particular reference to the Behavioural Science aspects of Management Development. He is an Associate Member of the British Institute of Management and is particularly interested in Group Dynamic Training with a view to evaluating the methods for possible use in the Royal Air Force.

Flight Lieutenant W. M. Cross was educated at Leeds Modern School and graduated from Cranwell in No 81 (A) Entry. He has served with 215 Sqn in Singapore, 114 Sqn at RAF Benson, at the CFS on No 141 course and has been a QFI at the College since March 1968. He has travelled extensively through Borneo, Malaya, Thailand, Vietnam, Cambodia and has been interested particularly in the nature of nationalist movements, the influence of Russia and China in these movements and the approach the West should take in dealing with such movements.

NOTES ON CONTRIBUTORS (CONTINUED)

Flight Lieutenant R. E. Pick gained a BSc (Hons) degree in Metallurgy from Imperial College London in 1951, became an Associate of the Institution of Metallurgists in 1961 and completed a DAE in Materials Science at the College of Aeronautics, Cranfield in 1963. Before entering the RAF in 1963 in the Eng (Mech) Branch he worked in Metallurgical Research for English Electric and as a Corrosion Inspector for Caltex in Bahrain. During his service career he has served at RAF Finningley in Engineering Control and came to the College in 1967 where he holds the position of Senior Lecturer in Metallurgy.

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Squadron Leader D. F. Bunce gained a BSc (Econ) Honours Degree from London University in 1957 and joined the RAF in 1958. He has served in GES and Training posts and came to the RAF College in 1966 where he has been employed as a lecturer teaching 'Economics of Defence.'



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