

THE
ROYAL AIR FORCE
COLLEGE



JOURNAL

CRANWELL

JANUARY, 1967

VOL XXXVIII No 2

THE ROYAL AIR FORCE COLLEGE JOURNAL

JANUARY, 1967

VOL XXXVIII

No 2

| | |
|---|---|
| Managing Editor | Wing Commander D. D. W. Nabarro |
| Editor | Flight Lieutenant P. T. Robinson |
| Assistant Editors | Squadron Leader D. F. Bunce Flight Lieutenant A. C. Rogerson |
| Advertisement and Business Manager | Squadron Leader J. T. G. Richards |
| Cadet Editor | Under Officer K. H. Minton |
| Assistant Cadet Editor | Senior Flight Cadet A. J. Kearney |
| Cadet Sub Editors | |
| Articles | Under Officer C. A. Humphrey Flight Cadet P. C. Butt |
| Vacation Activities | Flight Cadet T. St. G. Coldicott |
| Sports and Activities | Flight Cadet C. C. C. Coville |
| Photographic Editor | Flight Cadet D. J. Betts |
| Art Editor | Senior Flight Cadet D. G. Cadwallader |
| Editorial Assistants | Under Officers S. C. Gruner and T. W. Kirkland Senior Flight Cadet C. M. Rackham Flight Cadets A. T. Ford, M. W. Johnson D. W. Pollard, K. D. R. Mans, B. M. Cottam, A. F. Jones, A. M. Roberts, B. P. J. Pearce, P. G. Summers, R. J. Bowler, I. C. Bailey, T. I. Jenner, and T. J. Benford |

Edited and Published at the Royal Air Force College, Cranwell, Lincolnshire

and Printed by Dolby Brothers, Limited,

West Street, Stamford, Lincolnshire.

CONTENTS

| | <i>Page</i> |
|--|-------------|
| The Graduation of No 89 Entry | 122 |
| The Wings and Prizes Ceremony | 126 |
| The Opening of Trenchard Hall | 129 |
| The Feast of Saint Ferris | 134 |
| In the Aerodynamics Final Exam | 135 |
| La Patrouille de France | 136 |
| A Baptême | 138 |
| Vague's Eye View of Sheep | 139 |
| Nomads | 144 |
| The Lark | 145 |
| The Devil's General | 147 |
| Book Reviews | 151 |
| Vacation Activities | 153 |
| Sports and Activities | 189 |
| Old Cranwellian Notes | 219 |
| College Notes | 221 |
| Commissioning List | 227 |
| College Diary | 229 |



By courtesy of the Lincolnshire Echo

THE GRADUATION OF No 89 ENTRY

The Graduation Parade of No 89 Entry was held on the morning of the 18th August, 1966. The Reviewing Officer was General Sir A. James H. Cassels, G.C.B., K.B.E., D.S.O., the Chief of the General Staff. The parade was commanded by Senior Under Officer R. P. Slogrove and the Parade Adjutant was Under Officer J. J. Pook. The Sovereign's Squadron was commanded by Under Officer K. W. Cartlidge and 'A', 'C' and 'D' Squadrons were commanded by Senior Under Officers G. A. Robertson, R. K. Jackson and I. M. Johnson respectively.

As the Reviewing Officer approached the dais a formation fly-past of nine Jet Provosts took place. After the Advance in Review Order the Reviewing Officer presented the Sword of Honour and the Queen's Medal to Senior Under Officer R. P. Slogrove and the Kinkead Trophy to Under Officer J. J. Pook, and then gave the following address :

Gentlemen :

When I was asked by the Chief of the Air Staff to take this parade today, I was obviously extremely honoured, but I was also very happy and pleased, and so I should like to start by thanking the Royal Air Force for the great honour they have done me.

Next, I should like to congratulate you all on a first class parade. I know only too well how much hard work is involved on these occasions, and you have shown that it is well worth it. It has been a most excellent parade which reflects the greatest credit on you and your instructors, so I congratulate you once again and say: "Well done !"

Now this is the first Graduation Parade at this College since Cranwell merged with the Technical College at Henlow and those of you who are specialising on the technical side are unique because you are the first people to graduate from this College, and it is surely a great moment in the history of this great College.

To you on parade today, it may seem a bit queer that a "brown job" has been asked to take the parade. I would suggest that there is one very good reason. The Services today are becoming more and more integrated. In recent times we have fought so many wars, incidents and forays together that it is now second nature to expect help and co-operation from each other, and so I would ask you to do your utmost to be a co-operator.

You must stick up for what you honestly believe to be right, but don't assume that you are right. There are inevitably two or three sides to every military problem. You of course will think that the Royal Air Force is the best Service. It would be completely and utterly wrong if you didn't. But also remember that the other two Services think they're pretty good too, and they think that they are the best. So try and appreciate their problems, which are quite different from yours, and thereby become a good co-operator and therefore the sort of officer that we need so badly in the future. That's my first bit of advice.

The second bit I'm sure you have heard before, and I make no apology whatsoever for saying it to you again. Now that you have gained the Queen's Commission, it is up to you to be a leader, and to set the highest standards which that honour requires. How do you do it? If I may give you a tip or two

The first thing, I think, is that you must never ask your men to do something which you are not prepared to do yourself. I do not of course refer to the highly technical skills which you have in your Service, but in the general field you are the people who must be prepared to 'have a bash' first, and, if possible, to do it better than your men. You will then be in the splendid position of being able to give that excellent order which the

Queen described so aptly last year as 'Come on,' and she went on to say: "Isn't that very much better than 'Go on'?"

Second : know your men. I know it is more difficult in your service to know exactly who your men are ; it's much easier in the Army for instance, but there must be men for whom you are responsible and who indeed are responsible for you. So get to know them, and get to know them well. You must know where they come from, you must know all about their parents and their families, you must know all about their troubles and their aspirations. If you do this and you do it practically and well, then they will begin to regard you, so to speak, as their 'Service father.' And if you get into that state where they will bring their troubles to you, then you have gone a very, very long way to being a good leader.

Third : Be fair and warm-hearted in all you do, but at the same time remember that

when necessary you've got to be firm. High standards and correct standards must be maintained, and that is where firmness comes in. You will find that it needs a lot of moral courage, but don't let that deter you, because in the long run the men will respect you for it.

I would like to sum up by saying three things Put your Queen and your Country first, always and all the time. Put the comfort and the welfare of your men second, always and all the time. Put your own comfort and your own welfare last, always and all the time.

It only remains for me to wish you every success in the future as an officer of the Queen in the Royal Air Force. I only hope that you enjoy yourselves as much as I have during my service in the Army. I'm sure you will. Work hard, certainly ; but for goodness' sake play hard too and enjoy yourselves. The very best of luck and good fortune to you all.



By courtesy of the Lincolnshire Echo

The Reviewing Officer inspects 'D' Squadron



Senior Under Officer R. P. Slogrove, winner of the Sword of Honour and the Queen's Medal, receiving the Sword from the Reviewing Officer

THE WINGS AND PRIZES CEREMONY

Presentations of Wings and Prizes to No 89 Entry were made by the Commandant, Air Vice-Marshall I. D. N. Lawson, C.B., C.B.E., D.F.C., in the Whittle Hall on 17th August, 1966.

After making the presentations Air Vice-Marshall Lawson addressed his audience.

Once again, it gives me very great pleasure to welcome the large number of parents and friends of the graduating entry. No 89 Entry is by far the largest to graduate from Cranwell. It is the first entry to graduate since the merger of the two Colleges, and although the technical cadets started at Henlow, they can rightly claim to be the first technical cadets to graduate from Cranwell.

The size of the entry has caused a change in the traditional arrangements for the lunch in that the entire graduating entry has in the past sat down to lunch with their guests in the college dining hall. We are only able to accommodate the prizewinners, the under officers and the graduating members of the sovereign's squadron. I apologise to those who will not be in hall, but I can assure them that just as good a lunch is being provided.

In the past it has been the custom for the Commandant's valedictory speech after the Wings and Prizes ceremony to cover the lurid history of the graduating entry at Cranwell. My remarks usually ranged over the entry's activities from their arrival to departure — its prowess, or otherwise, at the formal and informal aspects of the syllabus. Now I believe that the full chapter concerning 89 Entry is well known already to the entry itself, and is probably familiar to their parents, relations and friends present in the audience. Today, I shall depart from established practice and speak for a short time about the next step, that is, your career in the Royal Air Force, addressing my remarks directly to those who will graduate tomorrow.

When you leave Cranwell as commissioned officers you will feel, understandably, that you have made the grade and can relax. After three years of arduous training you are suddenly no longer under the microscope; your minor shortcomings will go un-noticed. This is quite true. The scope for development of complacency and the acceptance of the second best is unlimited. Furthermore, the much wider spectrum of the Royal Air Force possesses opportunities, challenges and rewards which you may, as an Old Cranwellian, expect to come your way. But I would remind you that Cranwell is not the only source of general list officers; in fact about 75% of the list have other origins. The present standard of direct entry officers is high, and competition among them for general list commissions is very keen. Those who join you on the general list will be remarkably able, having been selected in many instances on the basis of their proved merit after an operational tour. At Cranwell you have gained your commissions on the strength of your training and your potential. Unless you now develop sufficient self-discipline, application and enthusiasm, you will find the other entrants achieving the positions and rewards that you anticipate.

What advice then can I give to help you during the first ten to fifteen years in the service when you will be proving yourselves? It is this . . . Today you are the senior entry at the apex of the Cranwell pyramid. Tomorrow you will be commissioned and become just another officer in the broad base of the larger Royal Air Force pyramid. This fact, and all it implies, must be faced squarely.

There will be no automatic advancement. Promotion is not the preserve of Old Cranwellians. Each step up the pyramid will be contested keenly. However, your training should have given you the equipment and technique to realise your potential and achieve promotion amidst competition. But you, and only you, can put that equipment to work and keep it serviceable.

Just to quote a practical example of what a truly professional approach can do, I would refer you to this year's Devizes — Westminster Canoe Race, the Ten Tors Expedition and others. The College teams really applied themselves in a professional way to doing well in these events — and they did. Winning the World Cup was another example of sheer professionalism. Let's face it, the day of the amateur, airy-fairy approach is over. This may be a pity, but it is now a hard, professional world and the sooner this country accepts the facts, the better for all.

In the long term all three aspects of your training — specialist training, officer training and academic training — will be seen to be equally important. In the immediate future it is your professional ability that will be paramount. Unless you succeed in becoming a true professional in your own specialisation, in the air, in the office, or in the workshop, you will neither merit nor receive the recommendations that secure advancement to senior rank.

Provided you realise that you have to be highly professional and pass your promotion examinations at the earliest opportunity, in some ten to twelve years' time you should be squadron leaders with operational experience, having just attended, or about to attend the Staff College. It will be then that the academic value of your training should stand you in good stead, provided you have built upon it in the meantime by wide reading — especially in defence matters — and have developed the art of communication; for however brilliant your ideas they are valueless unless you can communicate with and convince others. Eventually you will hold positions of responsibility, where you will be required to evaluate and decide policy matters concerning some particular aspect of the service.

Let us look for a moment at the nature of the Royal Air Force with which you will be dealing fifteen or twenty years hence. I think we may safely postulate several of its characteristics. Firstly, the service will be no larger than it is now; the probability is that it will be smaller. Secondly, I believe it will have grown increasingly cost-effective and efficient. Plans have already been prepared to reduce the numbers of Commands, prune the administrative tail, and sharpen the teeth. Thirdly, the integration with the other services that has started with the combined Ministry of Defence will have progressed further. This does not spell the end of the Royal Air Force, or the Royal Navy or the British Army. Their individual *raison d'être* will survive and in the lower echelons they will remain as separate, but harmonious, fighting services, prepared to fight or deter an enemy, but not each other. However, the higher command and administration of the services will fuse together and the practice of grouping elements of all three services into functional commands under a unitary commander will become prevalent. This will lead to a far greater scope for the promising officers in all three services which will more than offset any decline in the number of top-ranking command positions within individual services. But it will also lead to wider and more acute competition. This you will certainly recognise when you later attend the service colleges of higher education such as the J.S.S.C. or the I.D.C.

If you are to make your mark in this increasingly challenging, competitive and rewarding field you must sustain wide horizons, keep your minds flexible, understand the military significance of scientific development, and be ever ready to adopt new and more efficient techniques to achieve greater effectiveness and better man management. Now these are not just a few pompous clichés from the Commandant but, though I say it myself, some very sound advice.

I also believe that whether we like it or not the time for inter-service parochialism and prejudice has passed. The last Defence White Paper, which has set the pattern for the future, was based upon a rational analysis of the role of the armed forces, and the equipment they will require. Furthermore, it was related to what the country can, or will,

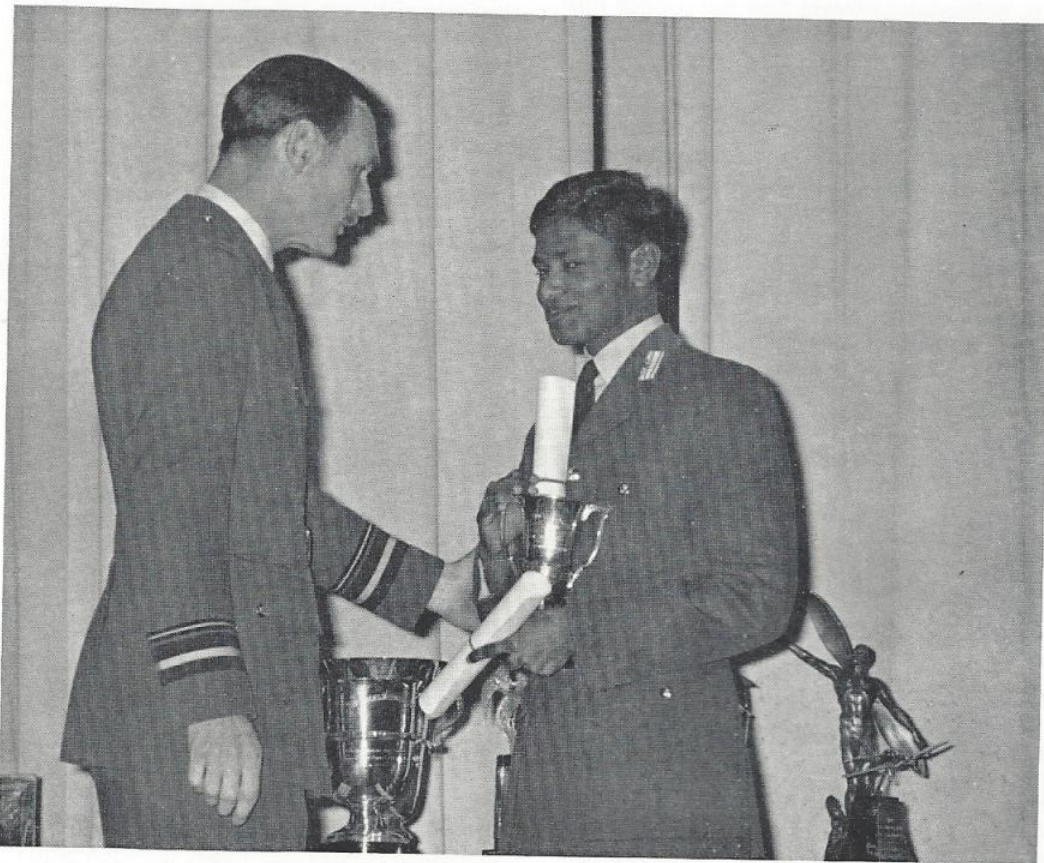
afford. In other words, it was relevant to the realities of international politics, the national economy, and the national political and social climate. This is how our decisions in the future should and must be based.

Now I don't want to give you the impression that true leadership is outdated and that human feelings can be disregarded when reaching logical decisions. Nothing is further from the truth. Only through sustained leadership will the armed forces be ready to meet the successive challenges resulting from changes in roles and the introduction of new equipment. *Operations at all levels involve the use of men, and men are flesh and blood and require leaders.* It will be your responsibility

to understand your men fully and gain their trust. Only then will you be able to employ increasingly effective techniques of man management and know that your men will respond to your leadership in times of crisis.

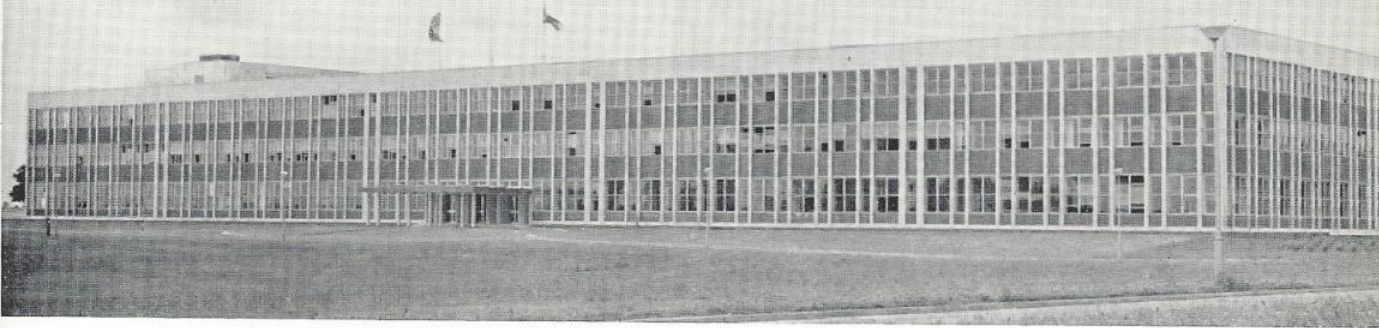
To sum up, your future is full of exciting challenges, but from now on you only can ensure that you will be prepared to meet them. If you maintain your preparedness and efficiency, set wide horizons, and give your men the leadership they deserve, your rewards will be great indeed.

I wish you God speed and the best of luck and good fortune.



Senior Flight Cadet N. Gunaratnam, winner of the Chicksands Cup and of the Abdy Gerrard Fellowes Memorial Prize, receiving his prizes and scroll from the Commandant

THE OPENING OF TRENCHARD HALL



The Rt. Hon. Viscount Trenchard of Wolfeton, M.C., accompanied by Viscountess Trenchard and the Hon. Hugh Trenchard, visited the College on 17th May, 1966 to perform the official opening of Trenchard Hall and to unveil a plaque commemorating the occasion.

The ceremony was attended by Air Marshal Sir Patrick Dunn, K.B.E., C.B., D.F.C., Air Officer Commanding-in-Chief, Flying Training Command, together with approximately 250 other guests, including high ranking R.A.F. officers, representatives of the other two Services, senior government officials, local dignitaries and senior officers of the R.A.F. College, many of whom were accompanied by their ladies.

Viscount Trenchard was greeted on arrival at Trenchard Hall by a General Salute and a fly-past of six Jet Provosts. The Queen's Colour was then marched on.

Air Marshal Dunn made an introductory speech welcoming Viscount Trenchard to the College. In reply Viscount Trenchard gave the following address :

“ I am very conscious of the honour and privilege of being asked to open this magnificent building today. I have never had anything personally to do with the Royal Air Force, and the invitation comes to me simply as son of my father, who had so much to do with it and with Cranwell in particular. With a name like Trenchard I decided to be a soldier in the War and am now a businessman. But perhaps since I hold all the papers of my father through those early days, I may be able to convey to you in a few words supported by some quotations from those early papers, what perhaps he might have thought on this occasion of the combination of all officer training (general and technical) at Cranwell.

Undoubtedly he would have been thrilled with this wonderful building, with unique facilities. And, incidentally, let me compliment all those concerned with its erection who have completed the work inside two years from the laying of the foundation stone by the Chief of Air Staff. When the Chief of the Air Staff laid the foundation stone he spoke of my father's policy as ‘ one of long term investment, ’ and indeed those early papers contain many criticisms — including some from idle critics — who accused him of creating the Royal Ground Force rather than the Royal Air Force, because he put such emphasis, from a very meagre budget, on training.

Let me quote some extracts from a paper in 1919 which show the kind of thinking at that time, and bear out this policy of long term investment. The first one (speaking of the Air Force) :—

‘ The necessities of War created it in a night, but the economies of Peace have— to a large extent — caused it to wither in a day, and we are now faced with the necessity of replacing it with a plant of deeper root. As in nature, however, decay fosters growth and the new plant has a fruitful soil from which to spring.’

And, again, another quotation :—

‘ We now come to that on which the whole future of the R.A.F. depends, namely the training of its officers and men. The present need is not, under existing conditions, the creation of the full number of squadrons we may eventually require to meet strategical needs, but it is first and foremost the making of a sound framework on which to build a service which, while giving us now the first essential service squadrons, adequately trained and equipped, will be capable of producing whatever time may show to be necessary in the future.’

There are many quotations in relation to the emphasis necessary on the technical side of the R.A.F. From the papers of 1919 and a few years thereafter I have extracted these two quotations. These are from a talk :—

‘ This is really what I may call an Engineering or Scientific Age. In the past, were not the services supported by what I may call ‘ the squires ’ who had the money, the brains and the men ? Now it is rather industry and engineering’ . . . And again . . .

‘ There are all sorts of trades ; engineering is not only putting a crank-shaft into a bearing. There is the clothing engineer, the photographic engineer, fitting engineer, wireless engineer, etc., etc.’ . . .

He was worried, from those early papers, it is clear, about the effects of specialisation in this technical service. During the first World War there had clearly been some friction between technical experts who had never flown and some pilots, and he wanted, as far as possible in that less technical age, all

fliers to learn some technical subjects. He wanted as many technical officers to learn to fly. I think in the age in which we now live where there is no alternative to specialisation, and where things must become more and more specialised, it is clear that he would have been very delighted at the idea of basing all training — general and technical of all branches — all officer training, at one establishment, and so, within the limits of specialisation, mixing as he always wanted to, as far as possible, minds of all kinds. He was very keen (in his own words) ‘ to link the Air Service with the scientific side of the nation as a whole.’ He wanted the Air Force to get the reputation, and I believe it has got it — and held it — for the finest general and technical training in the country. He wanted this not only for the efficiency of the Air Service but to attract the best people into the Air Force. He also wanted it so that those who left at any time during their career had no difficulty in getting a job in civilian life — whether or not they had degrees, diplomas or had simply passed through the general side of Cranwell.

I believe that his hopes have been realised. As a business-man I can certainly testify that the reputation of Cranwell stands high and that the reputation of all technical training in the Air Force has stood high, and still does.

You may be wondering whether this man Trenchard was very academic-minded, with this tremendous emphasis on training at a moment when the very existence of the Air Force hung by a thread due to pressures of economy. Well, as a further comfort to those who may not have had the opportunity to get a degree while on their service training, I must tell you that he used to recount with great glee that he failed for the Navy because he spelt the word “ Why ” “ YI ” !! His highest academic achievement was at the Central Flying School at Farnborough where, at the beginning of the first World War, after taking his civilian pilot’s certificate, he set his own examination, examined his own papers, passed himself out and (as he used to proudly say), he had kept the same high standard ever since !

You may be interested and even amused by the next quotation which refers to the establishment of Cranwell, dated 1919 :—

‘The channels of entry for permanently commissioned officers will be through the cadet college, from the universities and from the ranks. The cadet college will be the main channel. The course will last two years during which the cadets will be given a thorough grounding in the theoretical and practical sides of their profession and will in addition learn to fly the approved training machine, at present the Avro. The College is to open at Cranwell in Lincolnshire early next year ; an ideal place for the purpose, with a large and excellent aerodrome and perfect flying surroundings. It will be necessary to accommodate the college temporarily in huts erected during the war, but every endeavour has been made to render these as suitable as possible, and it is proposed to erect a permanent college in the near future.’

I still see a few huts about today. Whether you would all agree about the ideal siting of Cranwell would perhaps depend upon one’s point of view !

There is an interesting file of lighter correspondence with Brigadier-General (Air Commodore from the beginning of 1920) Longcroft, the first Commandant at Cranwell. Some of the highlights include a letter

from my father in January 1920, after Longcroft had had an operation on his nose, which says :—‘ I hope you will have your nose made all right, and that you will be able to get the parson of the church to return thanks for your recovery !’ And shortly before this is correspondence between them, with Longcroft appealing for the establishment of a church which would cost £30,000, giving all the reasons why it was not desirable to pray in the gymnasium. In reply my father said ‘ The government will build a church in due course, there is no doubt about that, but it will not be at present. I do not agree with you that the services cannot be held in the gymnasium at present.’ It is obvious that the two references are connected, and that my father was gently pulling Longcroft’s leg in relation to his nose !

If he were here today, what might he say to those who will have in their hands the shaping of the Air Force and its efficiency in the future ? I really don’t know One point I think he would have included is best illustrated by a quotation from his lecture to Air Force officers in 1926 :—

‘ There is another point I now want to refer to. It is, I think, the essence of the Air Service, and it is that I do not encourage, nor I hope will any officer encourage, the idea of ‘ brains through



the usual channel.' What I mean by that is that I want brains to be pooled in the Air Service. I want free discussion with the young officer as well as with the senior officer to be encouraged, just as I encourage it in my own room. I have heard many officers say — if they have not said it they have intimated it — that they love to come and talk to me without their senior officers, but I say to them "Do you also encourage junior officers to talk to you?" It is not carried out to the same extent, but you must pool brains and not pass them through the usual channels. You will not lose in discipline in encouraging everybody to give their views. This is one of the points on which I have been keenest in building up the Air Service.'

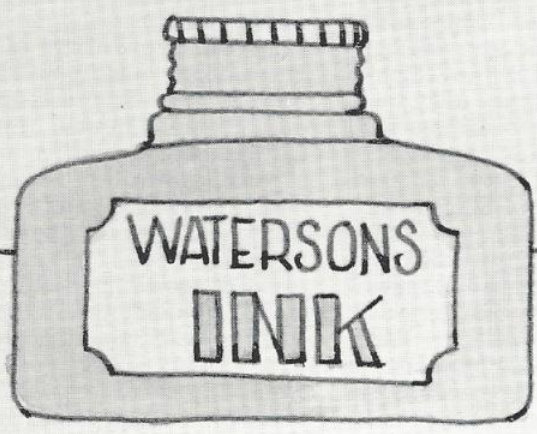
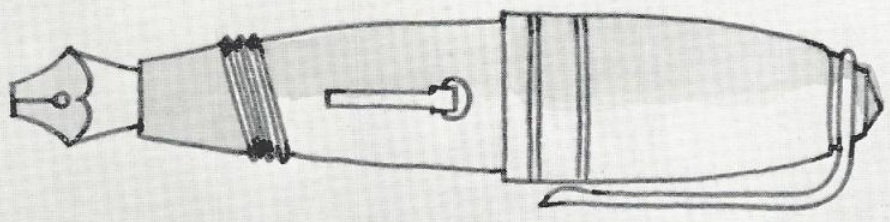
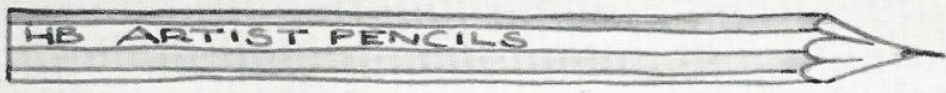
Ringling in my ears is another oft-repeated injunction of his when he asked someone to do something and one said 'Yes, I will do it,' one used to get the reply 'What's wrong with now?' And remembering this, without further delay, it is my privilege and pleasure to declare Trenchard Hall formally open."

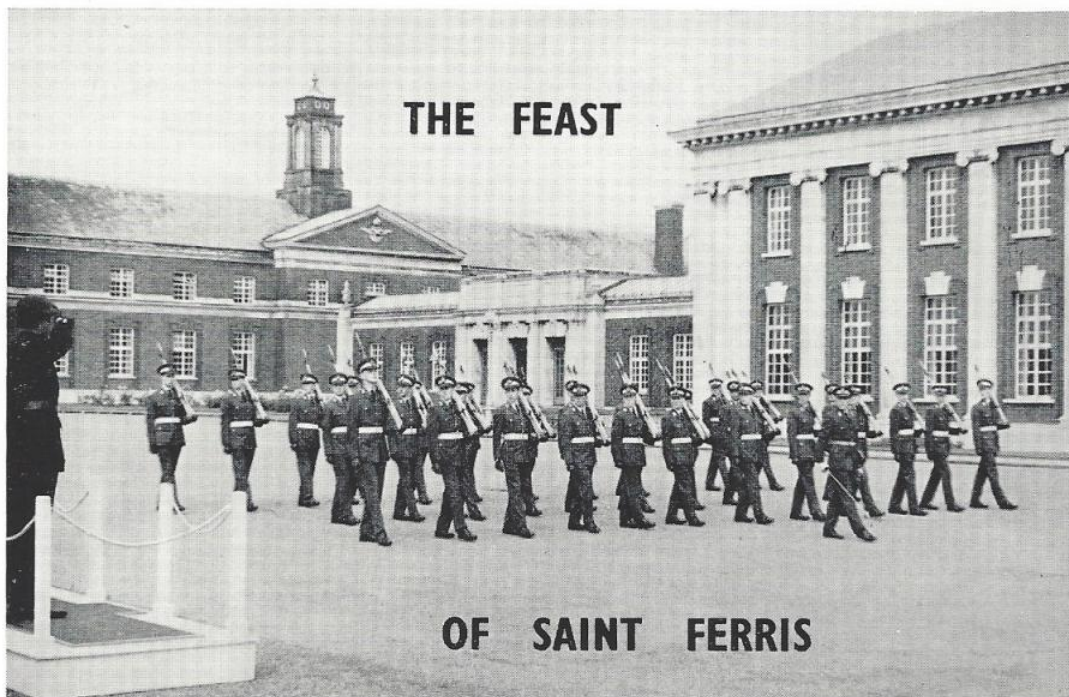
The Viscount Trenchard then unveiled the commemorative plaque. The Queen's Colour with its escort squadron was marched off and Viscount Trenchard entered Trenchard Hall where he signed the visitors' book and was taken on a tour of the building and of the Aerothermodynamics Block. Visiting guests were also conducted round Trenchard Hall to view the facilities.

Afterwards, the Viscount Trenchard and guests were entertained to luncheon in the College Hall.



The Viscount Trenchard signing the visitors' book





A lone trumpeter stands at the central steps of the Mansion House. His instrument is raised to his lips and he blows slowly and deliberately. He is playing "The Advance," and from the corners of the grounds come the worshippers. They are quiet, all that can be heard is the tramp of feet and the beating of the drum as the pilgrims reverently come to pay their allegiances to St. Ferris. On their left shoulders they carry weapons, highly polished; and on their belts they carry long knives soon to be fixed to their weapons and brandished in defiance of the evil spirits who may dare to encroach on the sacred worship ground. For this is the Feast of St. Ferris.

The pilgrims are dressed all alike, a beautiful shade of super washable blue and at various parts of the body, white is worn; a nostalgic reminder of the days when these people wore white as a symbol of youth and innocence. But today they come, not as foundlings, but as mature and responsible worshippers, each one intent on proving his worth as a follower of St. Ferris.

The ceremony is a short one controlled by the beatings of the drum and the gesticulations and utterings of the high priest at the van of the formation. There are periods of standing still, of slow marching and of fast marching; all quaint in themselves and, in some cases, quite brilliantly executed.

No one is quite sure of the history of St. Ferris, many would like to find out, but it is believed that he came from far, far away during an even more far off time. His followers were few in number but soon increased, especially when they began to brandish their long knives and utter sweet little phrases like:

"Get yor air cut hits Ferrus next wheek." and, "Hi don't care hif hes honly got one leg, hes on Ferris on Saturday."

By sheer brute force and a certain amount of ignorance thrown in for good measure, the followers increased. None of them seem to know why they do it. No one seems to



enjoy it, but if they don't do it the gods will be angry and certain things will fall from certain great heights — or so they are led to believe.

Clearly the feast is a strange one, but one cannot help but applaud the efforts of this stout band of "followers" who are not quite sure of what they are following. "I've fixed my bayonet, fix ye yours," and they always do !

K. H. Minton

IN THE FINAL AERODYNAMICS EXAM. CRANWELL
8th FEBRUARY, 1966

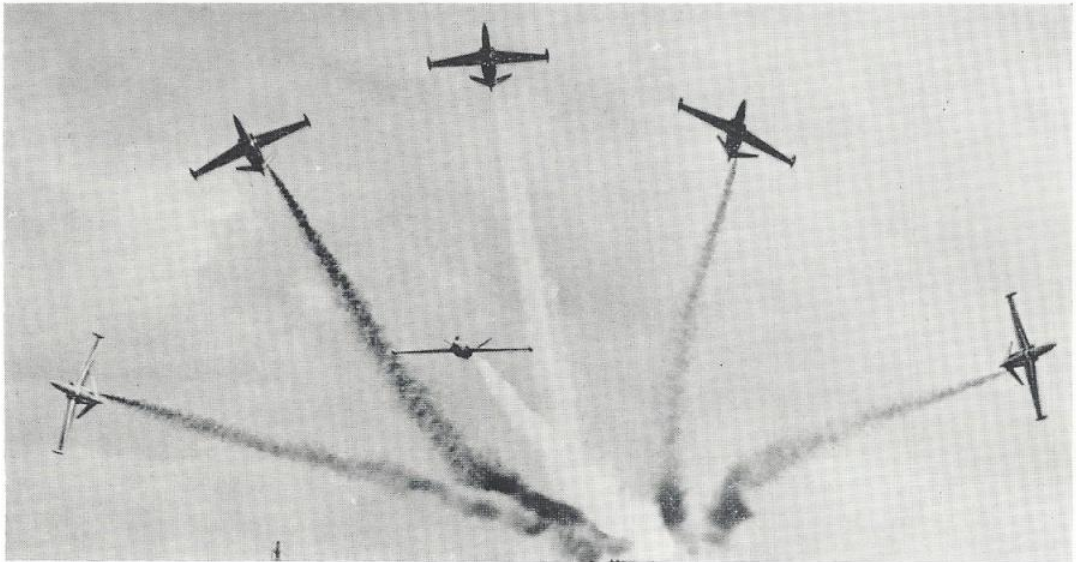
What of knowledge ? Full of care
At exam time, we sit and stare,
Pondering hours, no better spent,
Wondering where Pi and Lamda went.
" Prove that Ackeret was right
In theory."

Does high speed flight
Mathematics prove,
We do it better than you, dove,
You free-born soaring bird on high ?
What use have you for formulae ?
Learnt not the ways of calculation ?
Never sat examination ?
And yet you've felt warm Summer rain.

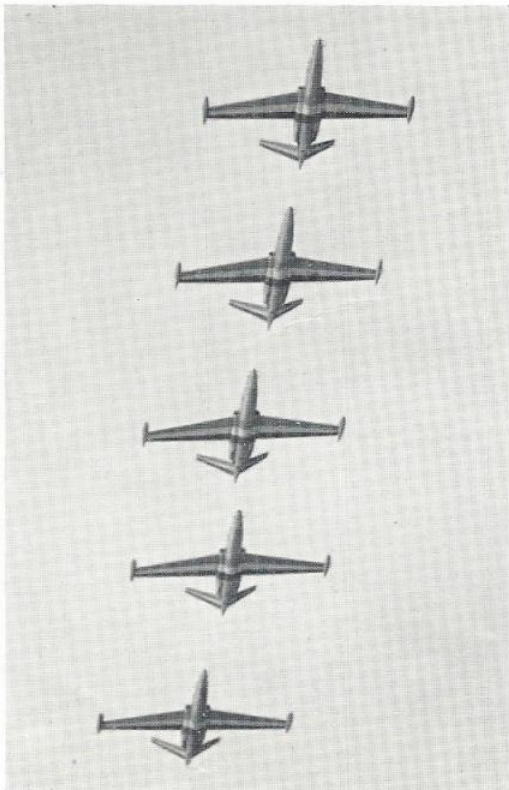
God damn Bernouilli's brain !
What of time, if full of care,
We have no time to stand and stare ?

With Apologies

Rog



LA PATROUILLE DE FRANCE



To demonstrate to large audiences, abroad as well as in France, the quality of their service, the ability of their pilots and the worth of their technicians, and to arouse interest in their youth, are the principal ends sought by the "Armée de L'Air" in forming a national aerobatic team called "La Patrouille de France."

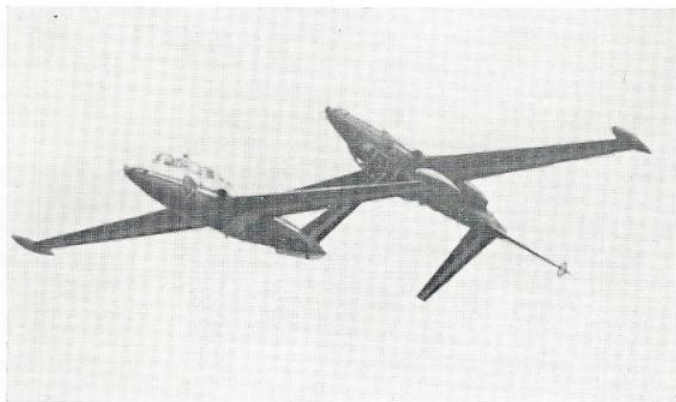
Since the last war similar teams, by their dash and originality, had placed France high up the ladder. Many of the older generation of fliers may still remember the exploits of the famous "Patrouille d'Etampes." Indeed during the war itself the pilots, in order to survive each aerial engagement, had to exhibit the same qualities learnt in the bosom of their aerobatic teams: self-discipline, supreme judgement and mutual trust.

With peace appeared the first jets, and towards 1950 the first teams equipped with Vampires and F84 Thunderjets were seen.

"La Patrouille de France" itself was formed in 1954 when the resumption of the French aircraft industry allowed fighter squadrons to be equipped with French aircraft. But as the performance and complexity of the aircraft increased it was no longer

possible actually to equip aerobatic teams with such aircraft, the most advanced in technology. Therefore, since 1964, the honour of housing the Patrouille has gone to the "Ecole de L'Air," where the training aircraft are the 'Potez Magister CM170' and these are used by the Patrouille. Previously they had used 'Mystere IVA's' and 'Ouragons.' The Magister, a peculiar, yet pleasing even graceful aircraft, has much the same performance and range as our Jet Provost. Also, like the Provost, it can be used in the ground attack role, being easily fitted with machine guns and rockets.

Their sequences are polished and ambitious, colourful — accentuated by the tricolour scheme of painting, and use of the tricolour smoke — and generally carried out



The Mirror

with the 'élan' typical of the French. They certainly impressed the assembly of on-lookers on the Cranwell flight line when they helped to inaugurate "Semaine Française."

M. Roberts.



The Low Level Underpass

A BAPTÊME

On Thursday 21st July, a dull and cold morning, two officers, five cadets of No 89 Entry and the crew of a Cranwell Varsity set off on a southerly heading to Salon. Cranwell had been asked to send representatives to witness a Baptême at l'Ecole de l'Air. L'Ecole de l'Air does not have a Graduation ceremony similar to Cranwell's. The great occasion of the year is the Baptême, or naming ceremony, which takes place at the end of the first year when each junior entry, until then known as "poussins," is given collectively the name of a French Air Force hero.

Wind, warmth, and a partially overcast sky greeted us at Salon. Our hosts, including the expatriate Squadron Leader J. Loxton, head of the Language Department at l'Ecole de l'Air, apologised for the poor weather, installed us in our accommodation and lavished generous hospitality upon us. Consequently, cadets and officers rose late on the Friday, the day of the Baptême, and spent the day in the sun, conserving their energies.

The ceremonies started at 1800 hours with the arrival of M P. Messmer, the French Minister for the Armed Forces, in the Presidential Caravelle. Then followed a short flying display ; the ever spectacular Patrouille de France in their Fougas ; solo aerobatics by a Mirage III and a glider ; and an incredible display of formation flying by six Noratlas of the Patrouille Guimauve who emulated the Patrouille de France. A flypast in vic at about 300 feet on one engine (each !) and their finale, a bomb-burst, left us ruminating on the rigidity of our own Air Staff Instructions.

After an excellent buffet supper, guests assembled around the parade ground. It was by then quite dark. At 2130 the floodlights were switched on and illuminated l'Ecole de l'Air on parade. At 2133 as M

Messmer began his review an aerial salute by three Mirage IIIc's in close formation at about 500 feet, with glowing after-burners, added to the spectacle. After the Review, the Commandant, General Lecerf, named the two entries Promotion Tricornot de Rose and Promotion Roland Garros. A march past concluded the parade at about 2015. This was followed by a brief respite to allow a change into mess kit for the Ball.

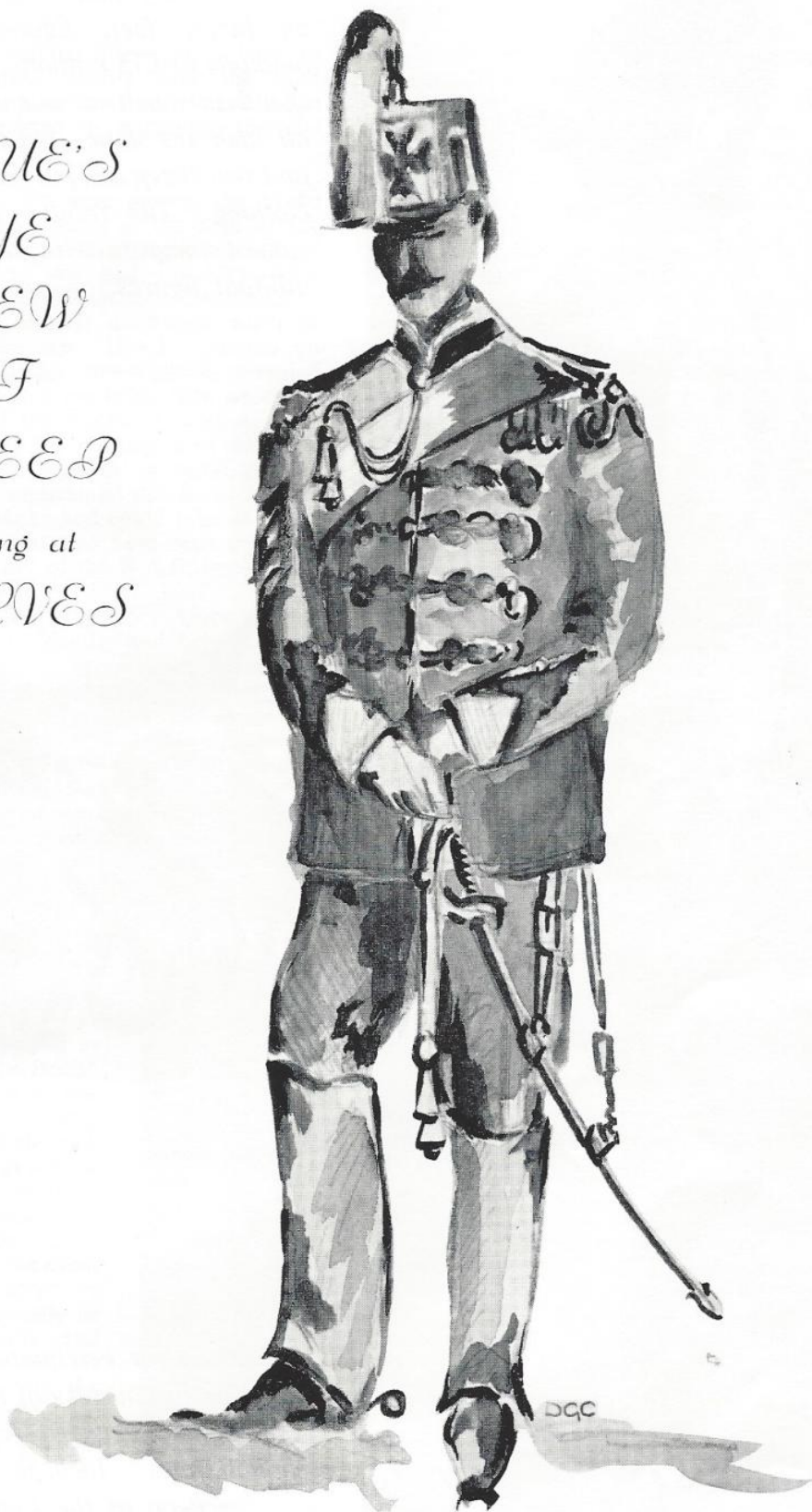
The Ball is held in the Batiment des Elèves, the main academic building, which permitted five dancing areas each with a different band. The gaiety, splendour, and sense of occasion remained undimmed throughout the night. Following tradition, breakfast of coffee and croissants was taken in the cafes of Salon at 6 am.

On Saturday, a day of rest and relaxation but little sleep, was capped by a visite touristique along the Côte Bleu to Marseille in the evening. Bouillabaisse and other potent local dishes were eyed but declined on health fears. The efforts of an acute struggle to wake on Sunday for the return flight were in vain. The aircraft would not start and the fault could not be rectified locally.

Sunday was spent frugally as funds had dwindled rapidly prior to our anticipated departure. On Monday a visit to the Consulate in Marseille produced a healthy flight imprest with surprising ease. This financed another visit to the Côte Bleue and Marseille, and allowed a little eating. The next day the relief aircraft arrived to rescue the stranded party. With marked reluctance we boarded the aircraft, left the warmth and hospitality of Provence, and returned to our austere Lincolnshire redoubt, just in time for No 89 Entry's Law and Administration Examination.

Squadron Leader M. L. Sinel

VAGUE'S
EYE
VIEW
OF
SHEEP
Playing at
WOLVES



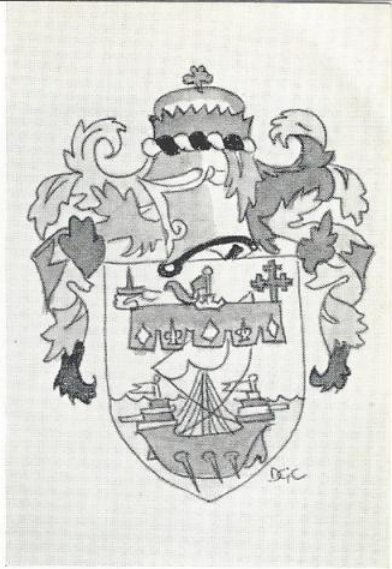
The money that is spent annually on faces, feet, figures and hair amounts to £75 million. We do not spend so much on our uniforms—we all look the same—but we decided to find two sheep and put them in wolves' clothing. The result—Joan of Arc cannot compare with these two fair militant figures.



Dressed for ceremonial, Exclusive material, by courtesy of the De Cranwell family, hangs in regal but non-chalant folds. Ideal for that important luncheon at the Lodge.



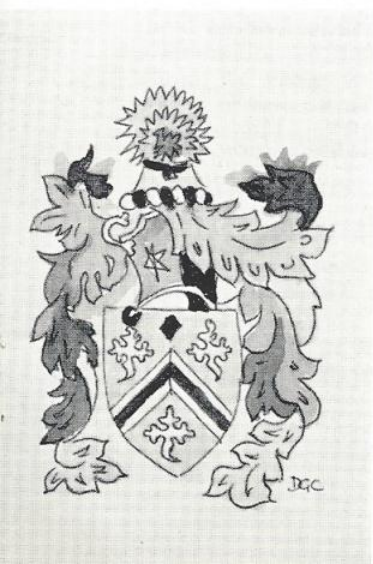
The result—an outfit marvellously easy to wear—no longer just for rare occasions. A look with both a past and a future.



Blue is the colour for the season, stridently offset by



white and brass. The military look is about to take Carnaby Street by storm.



We proudly present outfits that will go straight to the Warrant Officer's head. Pictured here, blue baratheon cut with brilliant precision.



Most items are available from any good Supply Squadron. Section and Reference Number sent on request.



Never has naked steel looked so alluring. This look cannot kill, but the dramatic emphasis on white is heavenly.



photographs
tony steel

drawings
glyn cadwallader

text design
richard slogrove

acknowledgements, pamela parkinson, sheila baddeley

NOMADS

I

Howling gale sand-blasting granite rock,
Endless shifting sand-dunes
Like a sea ;
Water, swirling,
Whipped malevolent and grey ;
Wind,
Like human,
Nomad wanderer,
Widow of a time-worn waste.

II

Time
Heals all things, kills and cures :
Time a barren desert we inhabit,
Entombed, enmeshed, ensnared by
A cage we scarce perceive,
— Or if perceived
We do not understand.

III

Imagination straying
The meadows of beauty
Roamed, by mind, at will :
Harmony, Contentment, much sought
But not much found
Fleeting —
Elusive as a dream
Half understood.

M. W. Johnson



The Lark

Of the myriad nightmares besetting the amateur stage-director, surely the most terrifying is the one where his leading actor

falls sick shortly before the dress rehearsal. Frank Hilton was faced with this very problem, and the manner in which he not only

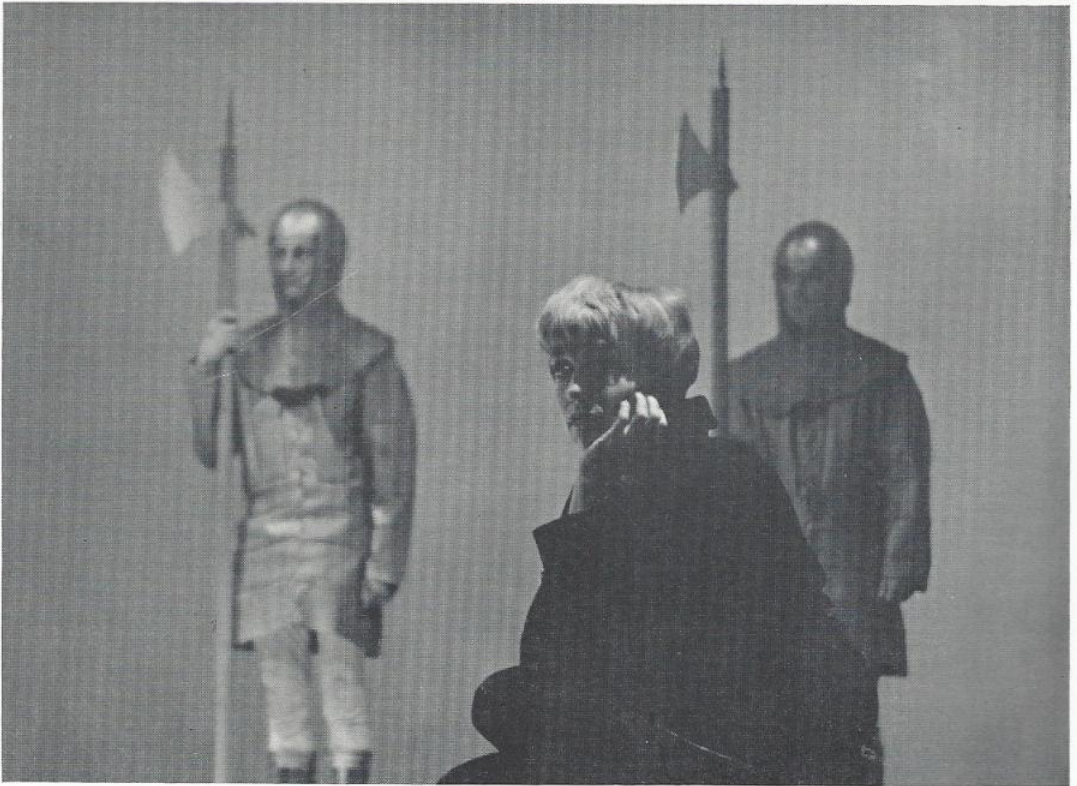
produced successfully a challenging play but assumed, convincingly, the important role of the Inquisitor merits the highest praise.

“The Lark” was chosen as the Cadet Drama Section’s contribution to the Semaine Francaise and, to theatre-lovers at least, must have been the highspot of a week packed with outstanding social occasions. Those of us in the audience who feared a dull, esoteric piece were agreeably surprised to see a production which had humour as well as high drama, was spectacular, moving and at moments horrifying, and in which only the insensitive could fail to become “involved.”

Anouilh uses the flashback technique, pioneered by Pirandello in “Six Characters in Search of an Author,” to recount the events leading up to the trial and burning of Joan of Arc. The public gallery in the trial scene which dominates the play contains the persons who, in their various ways as well-meaning friends, bitter enemies or cynical

opportunists, have helped or exploited the Maid on her way to the stake, and as the play unfolds the sharp contrast between the spiritual pigmies who seal her fate and the heroine’s superhuman qualities is finely drawn. Joan is the embodiment of goodness, simplicity and hope soaring like a lark above the morass of political manoeuvrings, cynicism, ignorance and bigotry which surrounds her.

This is a part which most amateur companies would find exceedingly difficult to cast, since it requires an actress of considerable talent and experience. Cecily Sandford possesses both these attributes in good measure. She achieved some truly moving moments — notably in the prison scene — and her sense of timing, control, clarity and, most important of all, pace were an example which should have been followed by the whole cast. I felt that her rather coquettish treatment of the scene with Beaudricourt (played with gusto by Ian Johnson as a red-



Cecily Sandford as Joan of Arc

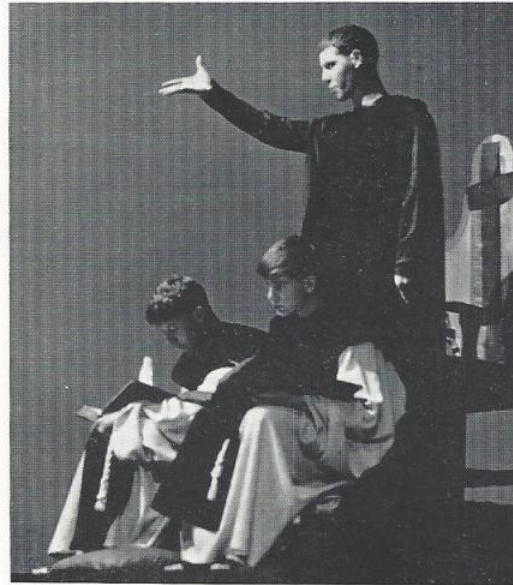
blooded, libidinous, four-square squire) was not quite in character with Anouilh's Joan, whose tomboyish ambivalence seems to preclude feminine charm, but this was a small defect in her otherwise excellent handling of the role.

In a cast of twenty-five it is impossible to achieve a consistent standard of acting but it is to their credit that no part was bungled. The Archbishop, Agnes Sorel and the young Queen failed to come across the footlights convincingly but made up for it by being visually "right." I particularly liked Paddy Waugh's Bishop of Beauvais, quiet and sincere; Mike Dyer-Ball's vapid, vacillating Dauphin; Leonard Marshall's cold, calculating Warwick; Denis Sauzier as Brother Ladvenu, the lone voice pleading for humanness and mercy in face of religious intolerance; and Verley Carrington, a versatile actress who, as the Dauphin's mother-in-law, helped rescue the play when it threatened to sag in the middle.

Although the production was not perfect—some scenes were obviously under-rehearsed or lacked pace, some of the acting could have been less wooden, the dialogue did not always have the right emphasis—a great deal of original thought had gone into it. The production team, too numerous to mention individually, made an excellent job of the

lighting, costumes, scene-shifting and decor. Front of house organisation was, as usual, very efficient and the lady responsible for floral arrangement deserves praise. This was certainly the best cadet production so far staged in Whittle Hall, and it merits the accolade as much for its visual excellence as for the sincerity of the acting.

P. M. H.



The Inquisitor

THE DEVIL'S GENERAL

It is doubtful whether the World will ever forget the calculated inhumanity of the Nazis, and the audience in the Whittle Hall in April was reminded once more of the dark days of the Third Reich by the Cranwell Little Theatre's production of "The Devil's General" by Carl Zuckmayer.

Zuckmayer, an outstanding German playwright, fled to the United States before the beginning of the Second World War in the belief that Hitler would be overthrown by the resistance movement in Germany. In this play, first produced in Zurich in 1946,

we see this resistance movement taking shape — aircraft crash because technicians who produce them are using the wrong alloys, since they are convinced that the only way to get rid of the Nazis is to lose the war, in spite of the fact that good men who are not Nazis are sacrificed by this action.

General Harras of the Air Force, who is not a member of the Party, is suspected by the Gestapo of being a saboteur because of his open contempt for the regime. A heavy drinker and a popular figure, Harras is an expert in the technical sphere of aircraft



Marie Priestley, Max Roberts, Jane Gledhill, Bob Travis and Pat Rowley-Brooke

production. Although he finds Nazi ideology repulsive and is not afraid to utter his convictions, he cannot resist the opportunities to further his personal ambition. Neither the voice of conscience nor totalitarian pressures seem to have much effect in undermining his resilient individualism. When the play opens, he is faced with the problem of discovering the cause of a number of crashes of his aircraft. His defiance is not even diminished after Gestapo interrogation for suspected pro-Jewish activities, after which he is given

ten days to trace the origin of the mechanical fault. He refuses to join the Party and thus to submit to the Nazis although he realises that his days are numbered. Finally, when Eilers' widow Anne puts the blame for her husband's death on Harras and points out that Eilers was supported by a faith in a better future for Germany through National Socialism whilst Harras served a cause which he held in contempt, he is made aware of his moral guilt, for which he subsequently atones by destroying himself.

Clearly "The Devil's General" is a difficult play to produce ; it demands a large, competent cast and a strong player for the role of Harras. Also the production must be clear-cut so that the arguments in the continual 'Nazi' debate are fully comprehensible. Fortunately the Producer, Michael Hesketh, was able to give us a reasonably taut production, with attack and projection and individual performances of quality. The whole play turned around General Harras, played by Bob Travis who gave a performance of professional calibre, showing maturity, humour, confidence, love and fear with moving conviction. He strode the stage as a General should — tall, handsome and always poised.

Three of the other characters, unfortunately, were not entirely successful. Edward Spindler was miscast as Oderbruch, Harras's chief engineer, and proved incapable of responding to this demanding part of a German committed to resisting the regime by acts of sabotage. Eilers (Chris Masterman) was too stiff and looked too young for the part. The scenes between him and his wife did not come off. Anne (Marie Priestley) lacked projection in Act I but on the other hand her underplaying was ideally suited to the very important scene where she accuses Harras of being morally responsible for her husband's death.

The young Germans — Putzchen (Dominique Coleman), Lieutenant Hartmann (Patrick Rowley-Brooke) and Diddo (Jane Gledhill) were well cast. Dominique Coleman played confidently the role of a young German girl brought up to accept National Socialism without question, a vigorous and healthy supporter of the regime with a flirtatious nature. Hartmann is a much more difficult part to play but Patrick Rowley-Brooke quietly and convincingly built up the complex character of a young German officer who retains basic principles of behaviour even after indoctrination and whose ideals are finally shattered when he witnesses Nazi brutality to civilians. Jane Gledhill as Diddo once more made us aware of her sensitivity and capacity for acting in the love scenes between herself and Harras.

As far as the established order is concerned, Dr. Schmidt-Lausitz of the Propaganda Ministry (John Ellingham) was all one could wish for as a cold, ruthless and inhuman representative of the Party. He rightly inspired fear in Harras with his thin reedlike voice. The tension of his performance was fortunately relieved by the revelation of his cowardice when Harras pretends to be about to shoot him. Sigbert von Mohrungen (Neil McLellan), on the other hand, in his capacity as President of the Aircraft Supply Department, toes the Nazi line against his wishes, Neil McLellan in his first Little Theatre role played with sincerity and feeling the problems of a man who is a victim of the totalitarian state.

All the other characters were convincing. Olivia Geiss (Verley Carrington) reminded us of the carefree days before the war. To the part of Korrianke, Harras's driver, John Sandford brought individualism and humour; his bearing was soldierly and he gave every impression of being a useful man to have around. John Towey gave us a fussy and energetic Otto, the restaurant proprietor.

The set was functional if not remarkable ; the Producer, faced with three set changes, elected to divide the stage in two with the result that the small area available for the party in the restaurant lent the affair a necessary intimacy — problems of movement were solved by a circular progression to the buffet table at the rear of the set. The costumes were extremely good and Cecily Sandford had clearly paid a great deal of attention to detail in creating period hair styles and dress. Make-up was in several cases too heavy but was entirely successful in transforming Verley Carrington from an attractive young woman to a lady of 'a certain age.'

This was the best serious production seen by the reviewer at Cranwell and it deservedly led to The Little Theatre's winning The Scott trophy for the best full-length play of the year in the annual competition organised by the Kesteven County Council. It is to be hoped that the play's success will encourage the Little Theatre to attempt drama of this type more often.

D. A. W. B.

BOOK REVIEWS

THE FIGHTERS— THE MEN AND MACHINES OF THE FIRST AIR WAR

Thomas R. Funderburk : *Arthur Barker* : 45/-

There can be few servicemen in the Royal Air Force who are unfamiliar with the background of this book. Even if they have escaped the flood of material appearing in these anniversary years of the First World War, they will have been introduced to the evolution of aerial combat through lectures on the history of the R.A.F. or perhaps through study for promotion examinations.

However, not all will have had the enthusiasm to break through the dry crust of official notes and summaries to sample the more appetising meat below. Mr Funderburk is an enthusiast and he has cooked a rich pie with a minimum of crust, sufficient to whet the bluntest of appetites. Yet it is very much the mixture as before.

"The Fighters," of course, describes "those epic days when men first spread their wings in war" and traces through biographical sketches, personal anecdotes, photographs and detailed line drawings the coming of age of pilot and flying machine : from birth to maturity in four shattering years. The author skilfully blends a wealth of material, some of it new, into a chronological account which illustrates the evolution of stringbag into sophisticated weapon, of chivalrous knight into dedicated killer. The aircraft become personalities, ageing before their time in the face of an escalating technology, while the men become machines as, through a combination of rigid self-discipline and insubordinate recklessness, they overcome (in Von Richthofen's words) the inner Schweinhund — the triumph of mind over matter.

This is a well tried dish but still a fascinating and infallible recipe. One sighs with nostalgia. Oh for the days when one went solo at three feet, could become an instructor after only twenty-two hours flying, a combat pilot in weeks, an Ace in an afternoon and could borrow an aircraft for a spot of duck shooting. But massed formations and the concept of air supremacy spread attritional warfare into the third dimension and the "age of chivalry" ended almost before it had begun. They are all there, the legendary aces in their legendary machines, with the British for long periods at least six months behind everybody but the Americans.

For the most part, then, this is a mixture as before with Mr Funderburk following his predecessors even in technique — the clichés, the touches of romanticism and even the resort to racy slang. This is a pity for his economical and forceful style is sufficient to evoke the pace and atmosphere he requires without such artificial aids, which unfortunately seem inseparable from this type of book. Occasionally the temptation to interpose his own personality becomes too great and we are embarrassed with gratuitous "funnies." One or two slips, too, reveal the author's preoccupation with the men and machines to the detriment of accurate background. What student could forget the younger Von Moltke ? Perhaps it would have been better for Germany if Falkenhayn had been Chief of the Imperial General Staff from the beginning as the author maintains.

It would be churlish, however, to expect "The Fighters" to be what clearly it is not intended to be, and on its own level the book succeeds admirably. Painstaking research has produced new material to enliven the old fascinating themes and there is much

useful information on the development of organisation and tactics. The real justification of the book, however, lies in the photographs and delightful line drawings which illustrate the text, and in the skill with which the close and developing relationships between the men and their machines are described. The attractive layout, in scrap-book fashion, is spacious and imaginative and the book should provide a useful source of information and an inspiration for all who are air-minded.

J.G.H.

THE ILLUSTRATED HISTORY OF WORLD WAR II : VOLUMES 13 and 14

Trevor N. Dupuy : *Edmund Ward* : 13/6 each

These two small volumes, respectively entitled 'The Air War in the Pacific : Air Power Leads the Way,' and 'The Air War in the Pacific : Victory in the Air,' continue Colonel Dupuy's sixteen volume history of the Second World War.

The books are written by an American for an American readership. They are very brief and amount to a potted history of the air war in the Pacific and South East Asia from 1941 to 1945. As in previous volumes the author has a tendency to ignore British operations or to describe them as Allied. He is also inaccurate at times in his descriptions of British and Australian aircraft.

The volumes are useful, however, in giving an outline description of the often complex military operations in the Pacific and South East Asia and in explaining the part played by air power in the war against the Japanese.

P.J.G.

THE STRUGGLE FOR PEACE

Leonard Beaton : *George Allen and Unwin* :
21/- cloth, 10/6 paper

This short book is designed as a companion to a television course on military power in the world. It covers a very wide field, from the history of The Bomb through delivery systems, strategy, crisis management, to non-European areas of conflict and problems of peace keeping. The author therefore faced a considerable problem in selecting and presenting his material. Most of the facts are fairly easily available to the

intelligent layman but it is unusual to find so many together in such a small space. This is one of the great merits of the book, another is the clarity of the exposition.

The book has considerable coherence in its first half where the author covers the development of nuclear weapons and the effects on this on Europe and the United States. Changes in Western strategy and forces are made clear, as are the strains in the Western Alliance, but it would have been useful to have an equivalent treatment for the Communist bloc. The chapter on Crisis Management only contains brief accounts of the Berlin and Cuban crises. The remainder of the book does not have the unity of the first half. It is an attempt to deal with the rest of the world and must inevitably be very sketchy. The list of great power interventions, for example, has little value without analysis.

It is perhaps unfair to criticise this book for its omissions as it will doubtless be supplemented by the television material. As an introduction to a course it has a certain value ; as a book to consolidate the work of a course it has great value, but it cannot really stand on its own despite the lucidity of the presentation. It seems to be a rather expensive 118 pages.

P.T.R.

TEACH YOURSELF FURTHER CALCULUS

F. L. Westwater : *E.U.P.* : 8/6

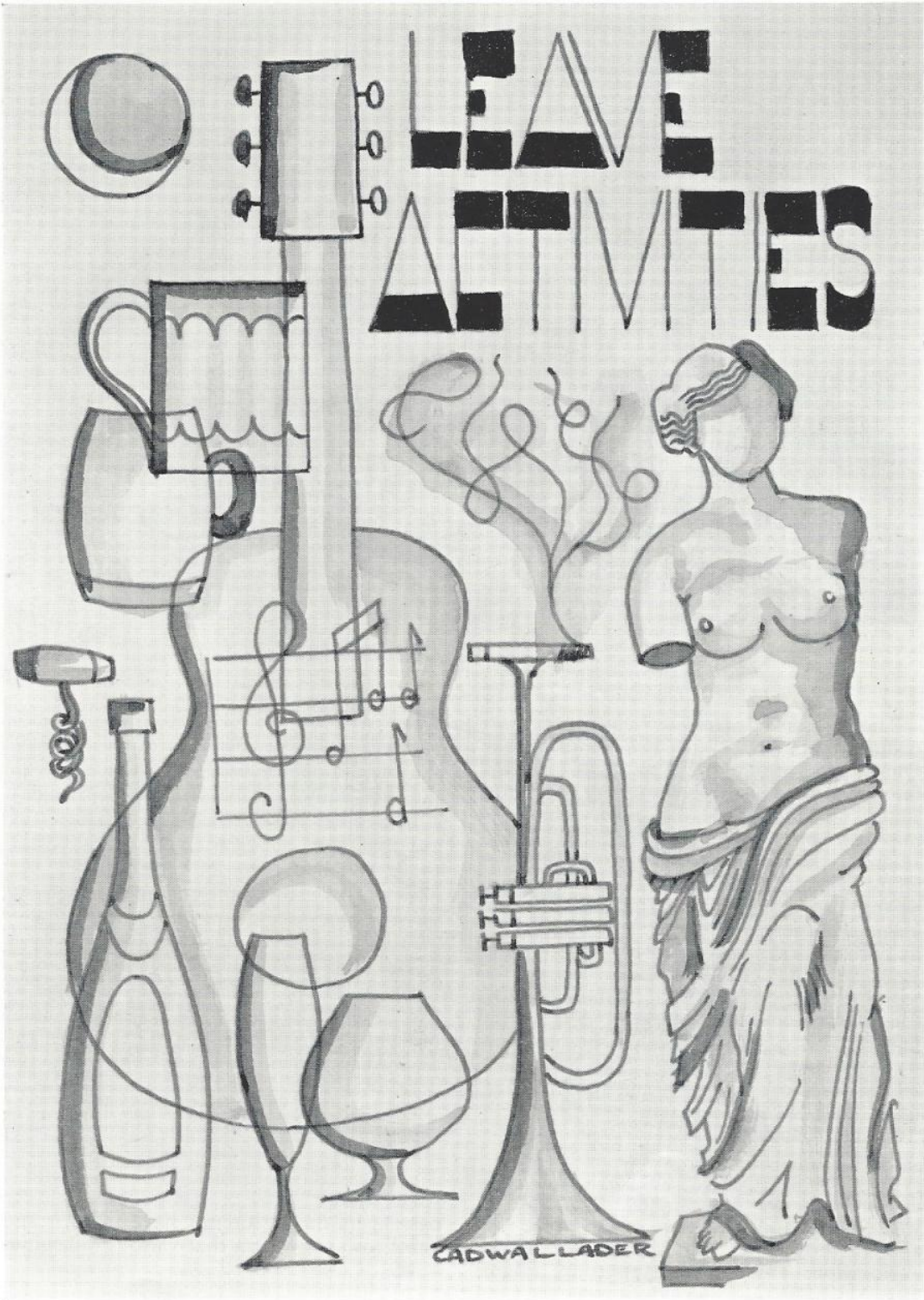
The book is one of a standard low-priced series. It sets out to treat a fairly advanced topic within this limitation.

The introduction and first chapter are quite ambitious and the importance of rigour in Analysis is stressed. Later portions of the text are not all consistent with this, however, and in places the merest glance at topics is given, without the warning that this is the case.

The overall impression is of too ambitious a concept for the price range.

A bibliography and suggestions for further reading should certainly be added for the benefit of any serious student.

R.W.S.



QUIZAN '66



The Cranwell Party Overlooks the Desert

The original intention behind this expedition was that six cadets should make Quizan the base for a journey into the famous Rub Al Khali, the Empty Quarter. Later, we found that this place Quizan is mis-spelt on English maps and is really Jesan, but however you spell it the Foreign Office disapproved of the plan that it should be our base because of its proximity to the Yemeni border. In fact, when we did eventually reach Jesan, a small fishing port on the Red Sea in the south west corner of Saudi Arabia, we found it a fascinating place, full of mud and grass huts of African influence, and people who might be anything from Sudanese to Yemeni. There was also an armoured car, Russian made but Egyptian used, and a tented camp seething with "enough" troops.

Way back in June, however, we had decided that our base should be at Jeddah where the Saudi Arabian army would be able to provide us with vehicles for desert exploration. This was organised by Flight

Cadet Abdullah who kindly arranged for the Saudi Ministry of Defence to assist us with the expedition. Indeed, when the five of us did eventually assemble at Jeddah on Sunday, 11th September, we were not to know that although our hopes of crossing the desert to Riyadh had been confounded, there was ahead of us a fortnight of immense activity, interest and enlightenment.

The scope of the expedition embraced all forms of travel, by land, sea, and air, and we had never even hoped to see quite so much of Saudi Arabia as we did in a brief fortnight. In a very short time after our arrival we became involved in the customs of a Muslim country. After all, one is caught by surprise when one's driver suddenly stops the vehicle and descends for one of the five daily prayers. This procedure presents no difficulty on a barren desert track; it is only when the passengers on an aircraft have to turn and kneel towards Mecca that various difficulties arise.

It was at Khamis Mesheit, a small town on a comparatively fertile plateau which lies about 10,000 feet above sea-level, that we first joined our hosts on the floor for supper. An Arabic supper is the same as an Arabic lunch, and it seldom varies its recipe from day to day. To us, it was a splendid novelty ; we were led onto the flat roof of the barracks in which we were staying, and there on the stone floor were eight large, enamelled dishes, in which various recognisable members of a stewed sheep lay on an enormous quantity of boiled rice. These steaming dishes were surrounded by smaller plates of savouries — olives, tomatoes, onions, and peppers, and on the edge of the rainbow coloured mat on which this feast was spread there were dozens of oranges, apples and bananas.

We five cadets and about thirty Arabs filed round the roof and squatted cross-legged on the edge of the 'table cloth.' For us uninitiated Britons, this in itself was an uncomfortable enough manoeuvre, and it is disputable which is more difficult, the squatting or the eating, for one has no eating implements except the right hand, and it is surprisingly difficult to convey handfuls of rice and mutton from ground to mouth if one has not mastered the technique. This meal was a great experience. Later, when we had shared several more such meals, we found that, despite handfuls of Entero-Vioform, the stomach occasionally despaired at the diet.

It was while we were at Khamiz Mesheit that we managed to include a day of rock-climbing. We headed out into the desert with two drivers who evidently thought they knew the way ; but they were mistaken. After about an hour of driving around the base of a mountain, we met an Arab farmer with whom we came to an agreement over a bucket of water and an apple, so he hopped up on the Land Rover and guided us to some impressive rocks. We spent the afternoon on these rocks, sometimes finding it very difficult to persuade one of the enthusiastic drivers that his efforts to haul Condon up the rocks on the end of his safety line were entirely misguided.

We returned to Jeddah via Jesan, where a coast-guard launch took us out to Farasan

Island. This island is speckled with coral rocks, but the driver of the Russian vehicle in which we made a tortuous half-hour journey to the only apparent village seemed totally oblivious to the hard-going ; unfortunately, we were not. We had the sheep and rice lunch in grand style on this special occasion — Faisal Abdullah was an honoured guest. After we had eaten, we adjourned for a coffee and tea drinking session while the remaining islanders, in descending order of precedence, sat down at the places we had left and took their turns in groups of about forty to carry on where we had left off.

We returned to Jeddah for a day or so before flying up to Medain Salih in a Dakota chartered by the Ministry of Defence. Medain Salih is about four hundred and fifty miles north-east of Jeddah, a flight of about three and a half hours, and when we reached what was apparently the destination we expected to see an airfield of sorts. It was, therefore, a little disconcerting when we descended to about fifty feet and appeared to be landing on a distinctly bumpy desert surface, but then a great relief when we climbed again to about 1000 feet above the forbidding rocks. After one more circuit we came down again with all the appearances of a landing and indeed we touched down on the sand. Happily, it was a conventional landing except for the last few yards when the sand deteriorated into rocky bumps, and despite violent avoiding action the tail wheel hit some uneven feature so the poor Dakota lurched and heaved, as did the passengers.

After this curious experience the American pilot said that he would have landed after the first descent, but a camel train appeared, inconsiderately, in his path. When we left the aircraft and looked at the wheel tracks, we realised that the surface was really quite firm, the surface of a dried lake, in fact. Rain falls in brief spasms during the early part of the year and the lake is then wet for a while, but for the remainder of the year it is baked hard. We spent that morning investigating dozens of tombs, all neatly hewn out of the rocks which jut incongruously out of the sand. Our guide told us that these tombs were between four and five thousand years old and we accepted this information as feasible, but we could not believe that the bones we found on the floors of the tombs



Crossing T. E. Lawrence's Railway

could be that old as well. Far more likely that some woebegone goat might have passed away in the shelter of the caves. Anyhow, as a matter of interest we put a collection of these bones in a polythene bag and took them home. Later, we were astonished to hear that the Natural History Museum's verdict was that not only were these human relics, but also that they were approximately 5,700 years old !

The Hejaz railway of T. E. Lawrence fame passed through this remote village, and we were very glad to have the chance to see one of the railway engines (1906 model), several trucks and many twisted wrecks. British firms are now rebuilding the old railway, all part of the Saudi scheme to improve communications. Some of the original lines and sleepers are being used in this venture, but much of the old ironware can be found supporting villagers' huts and tents, as we saw when we had our refreshments of water-melon and dates under the shelter of colourful awning draped over an intricate framework, scavenged from the railway. Despite the excitements at Medain Salih, we were relieved when we were successfully airborne again ; the pilot himself had expressed concern when he contemplated the lake before take-off, and I am sure the passengers felt worse about the situation than he did.

One of the aims of the expedition had been to test a Mini-Moke in desert con-

ditions. B.M.C. had very kindly lent us this vehicle in Britain, and Smith's Instruments had generously equipped it with temperature gauges and a rev. counter. Before shipping it out to Jeddah in July we had packed the hollow sides of the Moke with all sorts of tinned food and equipment. Unfortunately, the Moke and its contents must have appeared an irresistible temptation to someone during its transit between London and Jeddah ; for when we took delivery of the vehicle, its sophisticated features had been

unconventionally modified, and the Moke we received had not only lost several instruments and much paint, but also nearly all the stowed equipment. Luckily it was still usable, for once we had plugged the tube which had led to the oil gauge and sorted out the electrics which had been confused when the dashboard was wrenched out, we had no more trouble with it.

When we drove the Moke in the desert we found that four-wheeled drive was the feature we missed most. Whenever we drove in Land Rovers their power through all four wheels was enough to retrieve them from almost any situation. With the Moke, however, we had to resort to manhandling as soon as it ran into soft sand. In England we had found that three stalwart cadets could easily lift the front of the Moke, but in the desert, where the operation had to be repeated dozens of times under a punishingly hot sun, it was grim. In situations where we had to cover fifty yards of soft sand, the Moke would dig itself down to axle level within two yards of being lifted onto the surface, and even those two yards would only be covered with the help of hefty shoving from the rear. The rewards for our efforts were blistered hands, far more sweat than one imagines to be healthy, and eventual joy when we reached firm ground again. We were never out of walking range of civilisation, indeed two cadets once spent

an afternoon walking fifteen miles back to Jeddah, plodding wearily over the sand dunes, becoming parched and baked while their goal persisted in remaining tantalisingly distant.

It was while we were driving the Moke among some mountains at the edge of the desert that we came across some derelict old Bedford trucks. We had no idea what business they once had in such God-forsaken territory. Our interest quickened when to our surprise we saw 'R.A.F.' painted on their sides. Further investigation revealed that July 1948 was the latest date we could find on any of the trucks. A solitary Arab joined us during our investigations and tried to communicate with us in rapid Arabic. We could only understand that he would like a ride in the Moke and could take us to his well, but he might also have been trying to tell us the history of the R.A.F. trucks.

He was like so many other Arabs that we met, very eager, friendly and helpful. General Shaibe himself, spent a lot of time on our behalf, either communicating with the customs officials at Jeddah about the Moke, on which we were supposed to pay one hundred pound deposit before bringing it into the country, or making arrangements for our travel and accommodation with the army. He even found time to come over and see us while we were in Jeddah and we would discuss the expedition with him.

Further advice and help came from the Air Attache in Jeddah, Colonel Fitzpatrick. Apart from inviting us to a party at the British Embassy, one of the few corners of Saudi Arabia where alcohol is allowed, he also served as a most useful link between us and the authorities. One of his first warnings to us was that in the event of a road accident we would automatically be considered guilty and put in gaol where we would remain until the British Embassy could

prove our innocence. This could take anything from a week to three months !

The whole Saudi Arabian system of justice is very brutal. All punishments are carried out on Friday mornings in the market square. Adulteresses are stoned to death, murderers are shot, and thieves have a hand cut off. A sword was formerly the instrument used to remove a thief's hand but recently they have become more humane and now allow a doctor to administer an anaesthetic before removing the hand at the joint. These methods seem crude, but Saudi Arabian lives are governed by the Koran and however progressive the king may be, his decisions can only be made within the terms of the Muslim Law.

It might have helped us to get to know ourselves better if we had watched these punishments being carried out, but we were never at the right place at the right time, so we missed the ordeal. However, in the course of our journeys we learnt so much about the Saudi Arabians and the country that even if we did not see the more unattractive rituals, the expedition was still of inestimable value. There is more to Saudi Arabia than camels, sand, and oil ; we were very fortunate to have the opportunity to see a little beyond this popular, but superficial, impression.

P. A. A. Woods



NORPED

The air terminal was slowly filling up with military personnel dressed in climbing gear and carrying large rucksacks, crampons and ice-axes. This was the start of Norped 66 attended this year by three flight cadets from the College.

The party flew to Norway by B.E.A. Comet on the evening of 3rd August and after a very interesting bus and ferry journey arrived at Oystölen where the base camp was to be set up.

No time was wasted and we were ready to start the serious work the next day. The three of us found ourselves in different teams along with cadets from Sandhurst and Dartmouth and officers from the Royal Marine Depot at Lympstone. The idea was

for each of us to get used to working with members of the other two forces.

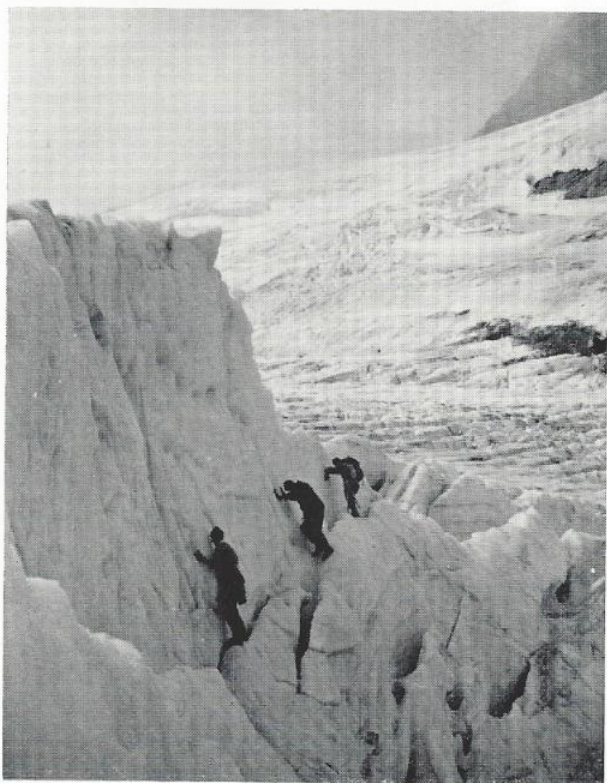
On the first day each of the four teams was given a glacier to tackle as a route on to the Jostedalsglaciar, the biggest ice-cap in Europe. By doing this we would immediately find out the best and easiest way to the top.

My team, led by Chief Petty Officer Langdon spent the day on a glacier called the Fabergstølsbreen. We practised crevasse rescue and some snow and ice climbing on the snout of the glacier and then attempted to get to the top but were forced in the end to traverse off the glacier and descend by the rock sides of the glaciated valley.

Apart from the leader of the team we were all fairly inexperienced in snow and ice climbing. It was thus decided that we would spend a day packing and then set off, equipped with skis and climbing gear, to establish a camp on the ice cap.

Everyone found the trek up the ice cap very tiring indeed. We were carrying nearly eighty pounds of equipment and climbed to over four thousand feet. This was, however, at the start of the expedition and after nearly four weeks of being in bed by 9 o'clock and doing something reasonably strenuous every day it soon became very easy.

Our first night was spent on the snow. It was freshly fallen snow and the next morning nearly all our kit was soaked. However the sun was soon out and we made our first attempt at ski-ing. Everything went well apart from the fact that the area we were ski-ing in was heavily crevassed. It was essential therefore, to be able to turn quickly or, in my case, sit down quickly every time you made the mistake of pushing off towards these rather large apertures in the snow.



The climb to Lodalskapa

On our second day on the ice-cap we made an early start and marched across the snow about ten miles to a peak called Brenibba. It was on this march that I had one of my more exciting moments.

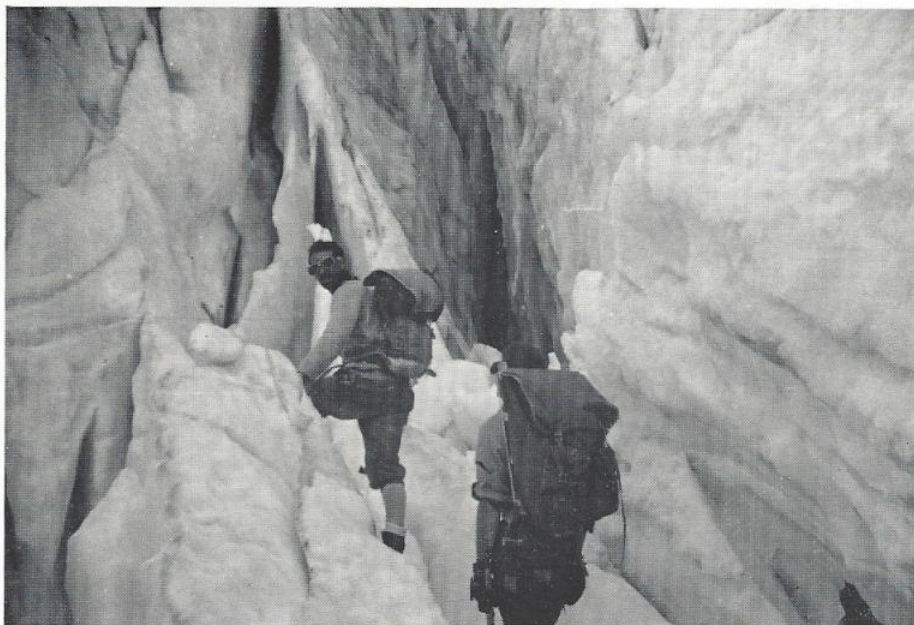
Whilst feeling our way across a rather soft snow bridge the leader of the party halted us as he decided we should jump the last piece. He crossed successfully and passing his ice-axe across to me I grasped the head. However as I jumped there was a sinking feeling, and a rather large hole appeared. A minute later all was well again and two of us were on one side of the crevasse and the other three of the team, who had immediately retraced their steps, on the other side. They had to follow the crevasse down for about a mile where they found a slightly firmer bridge.

Eventually we reached the peak and had a most exciting snow climb round a soft overhang. For a change we descended the quick way. We sat at the top of a steep slope and pushed off. This was a most exciting but wet method of descent, but we found it necessary to clear our ears on the way down.

A day later we came down from the ice-cap and, as it was nearing the end of our first week, we decided to have a rest day.

For the next week we spent our time trying anything that came along. My team attempted another route on to the cap by the Nigardsbreen. This was unsuccessful and we were forced to camp on the edge of the glacier beneath some rather large precariously balanced rocks. No one was allowed to shout or sing that night and I think everyone was happy to descend to the snout of the glacier the next day. The Nigardsbreen is a popular sight for tourists. However very few people actually go on the ice. It is worth mentioning that as we descended down the glacier around dusk singing, jumping about and, no doubt to anyone else, acting most unusually, a lone tourist was spotted walking quickly to a car and departing in rather a hurry.

Another four days were spent rock climbing and generally exploring the surrounding area. It was in this phase that we found a small shepherd's hut situated in a small corrie and overlooking one of Norway's most beautiful valleys. We spent two of our most enjoyable days at this camp site. It was a real experience to sit in our little hut after a strenuous day and watch the sun slowly sink behind the ice-cap. More coffee was drunk in this phase than any other and it was common practice to sit and talk, of all things, shop.



On the Fabergstolsbreen Glacier



The Author

The third week in Norway was the least strenuous of the four and was spent surveying the valley leading up to the snout of the Fabergstølsbreen glacier. All the team got practice in using the plane table and theodo-

lite. The survey was successful and our only uncomfortable moment was when we had to wade waist deep in an icy glacial stream carrying the equipment. This was of course done with our boots round our necks. One member of another team whilst doing something similar threw his boots across to a friend. They were last seen heading in a northerly direction and sinking fast. A rather complicated rescue procedure followed and a despondent Sandhurst cadet was stuck on the other side of the ice-cap for two days.

We moved to the Hurrungane mountain range in our fourth week and carried out some fairly severe rock and snow climbing. The weather slowly deteriorated after two days and we decided to spend the last two days of the expedition walking back to base camp which was about 45 miles away. The weather greatly improved and we regularly found ourselves taking half an hour to swim in one of the many mountain lakes. We walked on tracks most of the time and on the journey met only two people, an English schoolteacher and his son. The last three days of the expedition were kept free for striking camp, a very complicated business on an expedition such as this.

On the morning of Thursday, 1st September we were back on English soil after a most enjoyable and successful four weeks in what must surely be one of the most beautiful countries in the world.

A. McKay

A VISIT TO THE MOSELLE

Four flight cadets from 93 Entry A Squadron, in their first six months at College became very interested in the noble pastime of long-distance walking. They participated with true vigour in expeditions to conquer the Lyke Wake Walk across the bitter, bleak North Yorkshire Moors, to walk across parts of the cruel Derbyshire Hills and to undergo the tortures of the Fifty Mile Walk from South Ferraby to Cranwell.

Every one of these projects was executed with determination and zest, withstanding

and overcoming many physical discomforts, such as being knee-deep in icy mud in the dark and lost. They felt a mild satisfaction that they had overcome the natural tendency of the frail human structure to give up, and that, like true masochists, they had found the will to go on.

It was with these rosy memories of exhaustion, screaming lungs and cramp that the four planned to execute an endurance test of their own during their Summer leave, 1966. The basic project, to walk across

Sweden from Stockholm to Ceranna on the Vattern Lake in central Sweden, was moulded and shaped into being during the ghastly and fetid weeks before Christmas, 1965. This embryo grew into flourishing youth by the end of the Easter term and reached full bloom by the middle of the Summer term.

The Trenchard Award Committee accepted the idea and offered the party a suitable sum of money to help them to assess the effects of eight days' walking on stamina and morale.

It was very unfortunate that the announcement of the award came so late because when the party tried to book a passage to Sweden there was none. The ferries had been fully booked since January. However, unabashed (for such problems as these are sent to try us) the project, still in a flexible and malleable form, was re-moulded to create a new one, maintaining the original body-torturing aim, but offering certain advantages.

It thus happened that the party travelled by car to Dover, by ferry to Ostend and thence to Bonn on the Rhine by car again. The freshly formulated project was to walk one hundred and forty miles from Bonn to Trier on the Moselle. This not only provided a challenging walk but would also enable the cadets to see some gorgeous valley-scapes and visit some world-renowned wine towns. For, of course, the Moselle and Rhine valleys produce the total of Germany's white wine output.

The walk was completed in eight days during a period of very hot summer weather. The problems that faced the walkers here were, of course, different from those facing them on the Lyke Wake and Fifty Mile Walks. The former was a mere forty-five miles over rough, rugged and, most important, varied York Moorland. The fifty mile walk took place during a short period of between nine and fifteen hours over flat but interesting Lincolnshire rural landscape. The walkers knew that each step through Lincoln and then Waddington took them a yard nearer home and the end. The problem on the Moselle walk was that the scenery was

very much the same for the one hundred and forty miles. The river, its rising valley sides clothed in vineyards, was ever present. The only people seen spoke a foreign language and the road which was taken, following the river's course, was completely slopeless, and hence no stimulating variation.

Thus, the two weeks spent navigating the Moselle by foot was a real test of maintaining an intelligent interest and morale for the three walkers in the party. For the support driver and vehicle it was a problem of driving a suitable distance ahead of the party, pitching camp in one of the numerous sites on the river bank and then returning to provide a meal for the walkers at midday. This system functioned very efficiently and so the walkers found that, physically, maintaining an average of twenty miles or so a day was no problem at all.

Concerning the river valleys themselves the party came to several conclusions at the end of the project. Firstly, that the walk had not only been a real exercise in fighting boredom whilst walking continuously for seven days, but that it also provided the best possible opportunity to see the most attractive scenery. The party was amazed at the size of the vineyards there. They stretched from the head of the Moselle Valley at Koblenz to Trier near the Germany-Luxembourg border — a distance of over one hundred miles. The party suggests that the best possible way to appreciate the magnitude of the wine-producing effort and its effect on local industry is to attend a Wine Festival in one of the wine towns such as Winnique, Traben-Trarbach, Cochem or Bernkastel. When wine is flowing from the very fountain in the village square itself, a brass band is playing and the village is a fantasia of 'wurst and pomme-frites' stalls and bustling, jostling people, then this is truly magnificent.

The final conclusion was that the agonies of aches, sprains and blisters suffered whilst tramping through the many villages on the road that winds beside the Moselle were well and truly worth the effort.

T. I. Benford

A MOUNTAIN ADVENTURE

North to the Jotenheimen

Norway looked singularly forbidding when we woke on the morning of 22nd September on board SS Leda. It had been a calm crossing from Newcastle under a cloudless sky, but this morning the sea was leaden, the many islands that dotted the mouth of Hardanger fiord looked barren and forlorn, and grey clouds hung around the dark cliffs plunging into the fiord in the distance. On the way to Bergen the ship stopped at Stavanger, one hundred miles further south, for an hour. It was a small town, but by Norwegian standards, large, for Norway has a population of only three million. The streets were narrow and cobbled and smelt of sealskin. Fish, waiting to be killed and sold swam in open tanks in the fish market. Shops were selling quaint souvenirs. Seagulls filled the air with plaintive cries.

By the time we were under way for Bergen the sun was out, and the land took on a pleasanter aspect. The single bungalows perched on rock, that we saw as we threaded our way through the islands, looked almost cosy, while distant mountains held promises of things to come. To take advantage of any good weather — the roads close at the beginning of October — we did not wait to see Bergen on the outward journey, so, fill up the tank, pile into the bus and away to the mountains!

Now, although a minibus can become quite crowded with six cadets living in it, together with all the paraphernalia that

goes with an expedition, room was somehow found for two pleasant Australian girl hitch-hikers. Thus we passed the time till ten o'clock, when we dropped them at a hostel and decided to start looking for a place to spend our first night out though first it was agreed to stop at a cafe for a nightcap. Here at a small Norwegian rural cafe, the expedition almost stopped till it was time to go back! For no sooner had we sat down, than in walked the most splendid specimens of Norwegian girlhood one could ever possibly imagine. It was with difficulty that we dragged ourselves away, for the human body requires rest, and to partake in such an adventure as ours, the more basic emotions must be sublimated to make way for those of lofty endeavour.

The search for a camp site at dead of night was not made easier by the fact that a Norwegian 'A' road corresponds to the country lane that winds from my Cornish home to Lamoina Cove. Looking for a camp site consisted of the driver wrestling with the stiff steering, while the "copilot" leant forward peering through the fly-specked windscreen into the inky blackness, and shouting "There!" periodically. The individual in the back who shouted "There!" every time we happened to pass a hotel was quickly dealt with. However, the intuition of our leader led us to stop eventually, and pitch camp. By then, it was almost midnight, and we were tired. Half the fun of pitching camp at night is wondering exactly what your surroundings will be when viewed in the light of morning. Will it be a field of bulls, someone's front garden or maybe a village green? Next morning, the surroundings were fortunately quite ordinary, so, snatch a quick breakfast, roll up the sleeping bags, fold the tents, commune quickly with nature, and away, for we must catch the ferry across the fiord for the mountain road.

The rest of the journey, I will sketch briefly. The only thing of note was that on the ferry we met a mad Englishman. Quite mad. He had just come down from climbing in exactly the same region we were heading for. He said he had just romped around

mountains and glaciers that we had planned to make major expeditions — and solo too ! Yes, the views were magnificent, no, the weather was foul, take us at least another day and a half to get to Lom, the “big” town near which we proposed to camp. He also said we could recognise his footprints in the snow ; one foot was size nine, the other size four ! “Like a bloody Yeti,” he said. Well, they say travel broadens the mind ! Nevertheless, he was very useful to us. He pointed out an ideal camp site, it was in a valley between the two mountains we wished to tackle, and he showed us how to get there.

The view, as we crossed the fiord was wonderful. We were already a hundred miles up from the sea. Sombre cliffs plunged into the dark blue salty water, white waterfalls some two hundred feet high sparkled spray, and marching pylons, some thousand yards apart, carried cables that looked like thread across the channel.

And so we wound our way up into the mountains. Two American girls we had given lifts to, kept us company. By mid-afternoon, the labouring minibus had reached the top of the infamous Hella pass, and already it was snowing. The party seemed a little subdued, for it was cold, and the land seemed utterly bare and uninviting. We left the girls at Lom, refuelled and departed swiftly to be able to set up camp before dark. The road took us up a steep valley to a hamlet called Aptersteulen, which was at 4000 feet, 2000 feet below the snow line, and 4000 feet below the summit of “our” mountains. In rain, we pitched our tents by the light of the headlamps — two tents for three people, and one store tent, all with fly sheets. Spirits were getting a little low. The minibus had to be unloaded and kit sorted, to enable us to make an early start in the morning. Figures stumbled everywhere in the washy headlights, someone cursed as he trod on a sharp-pointed crampon, and everywhere was wet. Rain is the curse of all campers. It seeps in everywhere, in the tea, in the sleeping bags, makes the biscuits soggy and frays tempers. Anyway, by nine o'clock, the weaker amongst us were wondering why they had been born, and what they were doing up here in this god-forsaken place, when the Summer vacation should be re-

served for toasting oneself in the sun. But behind all the sodden activity, a candle had been shining from the store tent, accompanied by the hiss of a gas stove. The true worth and vocation of one of our members began to show itself, for out of packages and cold tins, he managed to produce a hot and nourishing meal. When limbs ache from a hard day's exertion, when rain beats down and cold gnaws the bones, someone must selflessly get down on his knees, light the stoves and provide the restorative. Immediately, stiffness goes, spirits soar. We were to appreciate this very much for the five consecutive nights there in camp, and we became indebted to our self-appointed cook. So with his hot soup settling warmly in our stomachs, we set about tidying the place and preparing for bed.

Rain lashed the tent all night, and it was very cold, but before we knew, it was morning and the “cook,” up half an hour earlier, thrust cups of steaming coffee into the tents. Soon, all were up, stamping about, changing, noisily sipping and gurgling over thick, hot, sweetened porridge. Our leader, who was not to climb that day, issued us with our kit : one rucksack, one shiny new ice-axe, a pair of crampons and laces, and snow goggles. Also, we had to carry our sleeping bags and extra pullovers in case we were stranded or lost, and had to sleep out. Someone had to carry a rope and someone else, lunch. Lunch had been carefully compiled from a dietician's book. It looked scanty, but in fact contained all the proteins and vitamins one needed. Included were a bar of chocolate, a slab of Kendal Mint Cake, nuts and raisins, two tubes of Horlicks tablets, a packet of Enerzades, and an apple or orange as a luxury. All very nourishing, but when we got back we were sure we had all lost a stone each ; and moreover, everyone swore they would never touch chocolate again. We ate chocolate for breakfast, it was the main course for lunch, and if we were not satisfied by the evening meal, we had chocolate then, too. It was coming out of our ears. The fate assigned in our minds to the Kendal Mint Cake, by the way, is unprintable.

So after another brief glance at the map, we set off. All I can seem to remember is endless walking. Only small details are fixed in the mind, such as the delicate colouring

of a flower sheltered underneath a boulder, the blood-red letter T on a cairn showing us the path, or the tear in the pants of a friend in front, and his red cape billowing in the high wind. Our objective was Glittertind, 8,047 feet, but this was clearly out of the question, as the cloud base was down to 7,000 feet. No sane mountaineer climbs unknown peaks in swirling cloud. Besides, what is the point in reaching the top, and being rewarded with only a grey void? Therefore we picked out a smaller mountain in the distance called Rygge, and stepped out for that. The memory is a haze of stepping across the uneven boulders of the once crevassed valley, and of capes flapping like sails in the wind. After lunch in the lee of a rock, we soon reached the summit, which was just on the snowline. The view was magnificent. The other side of the valley from Glittertind was free from cloud, and we could see jagged peaks black against the blue sky, and snowfields and glaciers sparkling in the sun. Ten miles away on the other side of the valley was Galdhøpiggen, 8,097 feet, the highest mountain in Norway.

Next morning dawned wonderfully clear and calm, with a hint of coming warmth in the air. The party set off gaily while the valley was still in shadow. The route up Galdhøpiggen snaked to the top of the valley, which was just on the snowline, and up a gentle gradient to the peak, or so we thought! At the top of the valleys the sun hit us, and even at 6,000 feet with only a shirt on, two hundred miles north of John O'Groats, it became very hot. We had lunch under-

The end of a day's climb



neath the peak, or what seemed the peak, and it was decided to leave our packs, hop up this peak, and come down, maybe to do something else. O foolish, unwary mountaineers! After struggling up to the top, to our dismay, there stretched the real peak above and far away from us, and in between was another miniature mountain to be scaled. Our goal was maybe another hour and a half away. But possessing stout British hearts, we carried on! An amusing thing — in retrospect as always — happened. Imagine our intrepid mountaineers, bristling with ice-axes and crampons, anoraks curled round their waists, ropes slung over shoulders, snow goggles clamped over the eyes against the dazzling sun, teeth clenched and beads of sweat running down the cheeks. One of them slowly turns round to admire the unfolding view and the crevassed glacier below. Suddenly, he gasps. There below, striding up behind us are two Norwegian girls, in fact a mother and her daughter, clad in ski-pants and bras. They catch us up and tell us that they are on a day out. We console ourselves that, as natives, they must do this every day of their lives.

At the summit, the panorama was breathtaking. Mountains stretched into the distance, undulating into foothills, snow sparkled, and cornices glistened like icing on a wedding cake. Cloud crept lazily up a few valleys to the west, while far away, a lone mountain seemed to leap up out of the layer of clouds with a defiant mien. Every sense was awed by the new experience.

It had taken us five hours to reach the summit, but by glissading down the snow; sitting down, sliding, and using the ice-axe as a break, we descended in half the time.

The next three days passed very quickly; the weather was closing in. The fifth evening was bitterly cold and we built a huge log fire. There is something about a fire. It unites a party. You gather round it, you gaze into the darting flames, and sipping hot coffee, you may be encouraged to sing a song or two.

Next day was very overcast, so it was decided to go up the valley to examine a

glacier. Glaciers look harmless enough in the distance, but when we got close up to this one's "snout," as the mouth of a glacier is called, it had a very sinister air. It spills down the valley like dead lava, and the ice glints with a dull blue light. Crampons were fastened, rope put on, and very tentatively, we ventured up our first glacier. When the colour of the ice seems to change from grey to light blue, this is a hole or crevasse, which may be as small as a bath or as huge as a cathedral. Nevertheless, our confidence increased after a mile or two ; and this was helped by the presence of a jet-black cocker spaniel that had followed us all the way up from Spitersteulen. It now stood boldly on the ice, occasionally scampering off after an imprudent lemming which had wandered on to the ice.

Heavy snow greeted us on the following morning ; winter had come. We were torn by the problem of deciding whether to leave at this early stage to get over the pass, or maybe wait for an improvement and then do some more climbing. Our leader chose the latter course. But on this day, we obviously could not move. So we kept warm in the minibus, reading or telling jokes, and collected logs for the fire. It was very cold. One of us went down to the river to wash and came back a few minutes later with his hair frozen solid. All good stuff, character forming. No comments invited.

The weather did improve next day. Three of us climbed right up the glacier and scaled a mountain at the top. The other three walked up to the head of the valley to examine Kyrkge, a magnificent mountain, almost a replica of the Matterhorn, but smaller of course. We had heard much of this mountain, but it was beyond the scope of our experience.

Little shall be said of the return journey next day. It was snowing hard again. Camp was swiftly broken, the minibus loaded and chains put on the tyres. With some difficulty, we negotiated the Hella pass ; the minibus,



Descending from Heillstuggutindein

even with chains, could not be taken over ten to fifteen miles an hour in second gear. Dog-tired, we arrived in Bergen at two o'clock at night in driving rain. We merely unrolled some sleeping bags and slept in the bus.

The next one and a half days were spent looking round Bergen, and eating. It was a gay town, with much to see and buy, and many girls to be ogled. Bergen did not seem to exude any Norwegian atmosphere as I might have imagined ; not like German neatness, "lederhausen" or beer, or like France with tanned skins, wooden shutters, croissants, berets and garlic. Maybe this is because the English are so much like the Norwegian in character and mentality. The town smelt of fish, and the food was simple.

Regretfully, we boarded the Leda, the regret enhanced by the fact that on the morrow, we would be back at work. Leaning over the side of the ship that evening, memories of the expedition come flooding back ; of magnificent mountains, snow sifting through the fire, a Norwegian girl singing a Scots song on the roof of Norway, a black spaniel slithering over the ice, clean, sweet glacier water, and fine blonde Norwegian hair. Some of us might return to Norway some day — perhaps.

A. M. Roberts



HELICOPTERS AND THE FAR EAST

It is only recently that cadets leaving the College have been posted to Tern Hill to learn to fly helicopters. With this fact in mind, a party of six flight cadets was invited to the Far East to observe these aircraft in one of their natural habitats. On the morning of 5th September, 1966, six cadets boarded a Comet IV at R.A.F. Lyneham, all set for Singapore and other considerably warmer climes. The twenty four hour journey was uneventful, except for being greeted at Gan by the sole Regiment officer on the station, who thought we were Regiment cadets. It was with some sympathy that we admitted we were only General Duties Branch. We arrived at Changi at dusk, where we boarded R.A.F. transport for Seletar. The twelve mile journey served as a very fair introduction to the heat and smells of Singapore Island, and also to the nightmare of driving amidst what must be the most suicidal group of taxi drivers in the world. Duly impressed, we arrived at Seletar, met our hosts and, much later, collapsed into bed.

The next few days were spent at Seletar with the three helicopter squadrons based there. Two cadets were detached to each of Nos 66, 103 and 110 Squadrons, the latter two with Whirlwinds, and the former having the privilege of being the only squadron in the R.A.F. to fly Belvederes (some people didn't put it so nicely). Each of us received instruction from a Q.H.I., including our one navigator who revealed nothing of his profession until he took to the air and the controls We were also intro-

duced to the art of water-skiing, to the art of bargaining (including one fifty minute marathon) for all our shopping, to the metropolis of Singapore, and to various other interesting facets of life in that part of the world.

The next Monday we flew to Kuching. The R.A.F. has virtually taken over the civil airport there, with permanent buildings and servicing facilities. Operations in Borneo had come to a very rapid halt following the end of confrontation, and virtually all of the army units had already stopped operational flying, but we still managed plenty of trips around the area of Sarawak served by the R.A.F. helicopters.

Navigation by map was virtually non-existent, the pilots had to rely on their own experience of the area, and their own memory of the local landmarks — and there are few landmarks in this kind of country. When each trip is flown at tree-top height along valleys and depressions over mile after mile of jungle, one begins to realise the difficulties facing a helicopter pilot. A typical operational sortie would consist of flying from base to one of the hundreds of landing zones in the area (usually just a jungle clearing), picking up and ferrying a bunch of soldiers to another landing zone, and returning to base. At all times the pilot is in charge of the flight. He must decide how to balance the amount of fuel carried against the number of persons carried and number of trips made. There is no conferring with base

or discussing with others; it is the pilot's responsibility and his alone. This was the factor which impressed us most, especially when one realises — without wishing to sound like a recruiting advertisement — that one could be there within nine months of leaving the College.

While in Borneo we were fortunate enough to obtain a first hand look at the "Hearts and Minds" policy in action. We flew by Belvedere to a New Zealand Army unit, close to the Indonesian border, and were taken from there to a Dyak settlement to take part in a grand farewell celebration for the New Zealanders who were shortly to leave the area. We were introduced to the chief of the Kampong, and then invited to play football against what seemed to be the total population of young males of the village. Cranwell's illustrious record was maintained, but only just. But this was merely a preliminary, and at eight o'clock, in our best flying suits and each clutching two hundred cigarettes and a bottle, we entered the "long-house" in which the dance was being held. We were soon relieved of the drinks and cigarettes and not much later the festivities started. It seems that the main object was to tire us out, and this object was achieved. It would be unfair to go into details, so may it suffice to say that flight cadets look odd doing native dances with bells on their feet and wearing sarongs, that one cadet was nearly married off to a Dyak maiden, and that we saw the sun rise before going to sleep. It was a day that will always stay in our memory, and we were all left in no doubt as to whose side the Dyaks were on.

Kuching may have been less novel on return, but was none less interesting, especially the meals in the open restaurant in the town centre. The party then split in half, three returning to Singapore to go on exercise in Malaya, and three journeying to Labuan in North Borneo to look at operations there.



The Cranwell Party

The former three, after flying back by Bristol Freighter (an adventure in itself) collected some jungle equipment and left two days later for Malaya. An exercise had been organised on the East coast to represent a Vietnam type of situation, and the helicopters were used in their normal role of troop and equipment movement. We were able to see the functioning of a forward air strip, complete with Forward Air Controller, Ground Liaison Officer and Brigade Air Support Officer; all characters straight from the War Studies room whose existence we had had some doubts about until then. We all flew on many sorties, including one to a perfect desert island in the South China Sea which was used as a radio relay station. The night spent in the jungle at a simulated fortified village, waiting to be attacked the next day, will be remembered by at least one cadet who was attacked by the largest mosquito ever and had the bites to prove it. The journey back to Singapore was very pleasant, with a two day drive along the palm-lined coast road, and stops for swims from the endless beaches which line Malaya's east coast. Little is known of the activities of the other three who went to Labuan, but they returned chuckling merrily about the market place and other things.

These visits took us to the end of our third week, and after a day shopping and a night out on Singapore town, it was time to

say goodbyes and leave by Britannia for London airport. We left behind memories too numerous to mention, and all learnt a great deal of helicopter operations and the Far East in general. We had all enjoyed ourselves immensely, and had been most impressed by the welcome given us, and interest shown in the visit. We had just

become accustomed to the heat, were getting a tan and beginning to know the area ; and then we found ourselves in London in rain and fog and a temperature of 54°F. It had been very nice while it lasted.

T. I. Jenner

Per Ardua Ad Amphora

Last Summer the swimming pool was the scene of serious training by the Sub-Aqua Club in preparation for an expedition to Libya. Members of both the College and the Station Sub-Aqua Clubs were to take part in an R.A.F. Expedition, whose purpose was to locate and map a former Greek settlement, long since submerged, off the coast of Libya.

The party, consisting of four officers, three cadets and four airmen, left the U.K. from R.A.F. Abingdon on Sunday 11th September. Travelling by Beverley we stayed overnight at R.A.F. Luqa, Malta, and moved on to Cyprus the following day. The Beverley was delayed at R.A.F. Akrotiri for 24 hours, so it was not until Wednesday that we reached R.A.F. El Adem in Libya. This was to be the base of the expedition, and we drew all the necessary stores from here and from the garrison in Tobruk.

Although the trip out had had its moments we were glad to get down to some serious diving. On Thursday, 15th, we moved out to the site, which was some 40 miles from Tobruk along the coast road towards Derna. We camped on a salt marsh a few yards from the sea. While setting up camp we unearthed the tops of walls and various foundations, which we left alone as the Libyan Government had given us permission to dive but not to excavate on the land.

As we arrived we met the advance party from R.A.F. Wyton, who were just ready to leave. They pointed out the area they had already surveyed before they left for El Adem. One of their party, Corporal Scoones, stayed with us, as he was the expedition photographer. The diving was started in earnest with everyone initially getting two dives per day.

The subsequent disintegration of one of the dinghies on the high seas, whilst highly entertaining at the time, left us with only one serviceable boat, but did not interfere too much once the diving programme had been adjusted. After the murky waters of the U.K., the diving there was a revelation. The water was so warm that wet suits were shrugged off as unnecessary. In fact we still had to wear shirts at first, to ward off the effects of too much sun. The visibility was over 80 feet, absolutely incredible in contrast with nil visibility in the British Isles.

The diving, whilst interesting in itself, still had a definite purpose. For the most part the ruins were not very well defined and the chief indication of habitation was the occasional cache of broken amphorae. After such a pile had been found the divers were concentrated on a particular area. A set procedure developed, whereby divers gathered the pieces, and others equipped with snorkel gear retrieved them and put them into the boat. The two sets changed round after lunch, so that everyone had his fair share of diving.

While digging up the sea-bed in the search for amphorae we attracted incredible numbers of fish which were only too eager to take advantage of the source of food. In fact they occasionally became so bold that we were interrupted and tried to chase them away. The only one who really appreciated this was the photographer, who worked happily for hours at a time.

Encouraged by the numbers and apparent docility of the fish several divers equipped themselves with spearguns. The use of these weapons when wearing an aqualung is

strongly discouraged, and it turned out to be quite a demanding sport with only normal snorkel gear to aid the hunter. There were numerous types of fish, but the only ones of a respectable size were groupers, up to 3-4 feet long, and rays, anything from 18 inches to 6 feet from wingtip to wingtip. Groupers were the main target, being very good to eat, and in fact several large ones were caught. A favourite pastime was chasing rays, which were impossible to catch, but which were a sight worth seeing when they took off at high speed.

As the area we covered gradually increased it became evident that two main sections were most rewarding ; one just 100 yards or so off an island a mile from the shore, in 30-40 feet of water, and the other 200 yards offshore of the mainland in 15-20 feet. The expedition archaeologist, Flt. Lt. Howard, drew up a large scale map of the area and marked all the locations of our finds. He also identified the pottery as having both Greek and Roman origins. All the pottery was thoroughly photographed en masse, and selected pieces received special attention.

Everyone had a final dive on Friday 23rd September, and that evening all the lungs were packed. The following morning all but two of the party, Wing Commander Wallace and Flight Cadet Wrigley who stayed behind to keep an eye on the camp, drove to Derna. Here we sought out two local divers, and snorkel-dived on a comparatively recent wreck (4 years old). For many it was the first time they had had the opportunity of examining such a well-preserved wreck in good visibility. We also had a stroke of luck in that one of the local divers equipped with an aqualung, found a complete amphora. Unfortunately he had to break it to free it as it was embedded in the rocks. In the evening we moved on to Cyrene, the site of both Greek and Roman settlements. Having arrived after dark we found a lay-by of sorts, which later turned out to be on a hillside which was terraced with ancient tombs, and slept in and under the 3-tonner.

On Sunday we took the map which Flt. Lt. Howard had drawn, together with the best examples of the pottery which we had found, to the Director of Antiquities. From these he established that the settlement was in fact Aziris, the second Greek settlement

in Africa. The Director was impressed, and, before allowing us to leave, insisted on having us shown round the museum and the ancient city, of which he was justly proud.

We returned to En Gazala that night. En route we were asked to carry King Idris' personal mail across a stretch of road which had been flooded by recent heavy rain, stopping nearly all the traffic. The guard escorting the mail was extremely grateful, and we felt that Anglo-Libyan relations were now much stronger.

On Monday 26th we packed the remainder of the equipment, and then the Libyan Minister of the Interior arrived and was shown the results of the expedition. He was impressed that we had achieved so much, and was enthusiastic that a similar expedition be organised in the near future.

After he left we cleared up the camp site and went back to El Adem. We started returning the borrowed equipment, and on Tuesday prepared the rest for return to the United Kingdom. We then waited for an aircraft to take us back.

Unfortunately the first one with any spare seats was a Hastings going as far as Malta on Thursday 29th September. From there individuals were sent off as a vacancy on an aircraft became available. After hard and lengthy negotiations Flt. Lt. Thomas, Officer i/c Expedition, secured seats for UO Gruner on Saturday, Long the following Monday, Pollard on Tuesday, and eventually for the remainder of the party on Wednesday 5th October.

The expedition was an unqualified success. It revealed a completely new archaeological site, both in the sea and on the land. On a smaller scale it considerably broadened the experience of the newcomers to the club, and all those who went out with very few dives to their credit reached at least 3rd Class Diver Standard of the B.S.A.C.

With the knowledge gained from this year it will be possible to set out next year with a nucleus of divers well-qualified in this type of work.

C. J. Long

“ Sir Winston Churchill ”

The ‘Sir Winston Churchill’ is a topsail schooner 135ft. long with a beam of 25ft. and a draught of 15ft. 6ins. She was built for the Sail Training Association to “provide the opportunities for young men to develop those qualities of a seaman, such as a spirit of adventure, a sense of responsibility, resourcefulness, and above all the ability to work as one of a team, all of which will be of value to them throughout their lives.” To this end she sails on fortnightly cruises with 36 trainees on board, three watch-leaders, three watch mates and a permanent crew of five.

I joined her on 27th August, at Dartmouth, to be the watch leader of the mizzen watch. The Sunday was spent taking the trainees on board and showing them how everything worked. The cruise proper started on Monday morning when we left our moorings and set sail for the first time.

That first day out the mizzen watch was sent forward to bend the jibs. After a certain amount of initial confusion we found the correct ropes and started to haul. As the sails slowly went up the ship heeled gently over and many of the trainees had their first experience of sailing. After the throbbing of the engines the silence seemed a bit strange but the creaking of the rigging and the cries of ‘two-six heave’ soon replaced it. When the staysail and two of the three jibs were up we had time to look around and see that the other watches had hoisted the mizzen and were busy on the fore and mainsails. By the time this was all done we were the watch on deck and so moved to the bridge to take up our positions for the next four hours.

The first two days were spent close to the shore, anchoring each night, as the rigging had to be checked to see what strain it was taking, but on the Wednesday we left for Brest. It was blowing force 6 for the next two days and so, although we had to beat into the wind, we kept up a reasonable speed. Under these conditions the ship was heeled

over at about 20° and so movement about the ship was a little difficult, not only because one had to continually hold on to something, but also because of the quiet figures solemnly lining the rail.

At midnight on Thursday night we came on watch and saw the lights of France on the far horizon. After two hours we were close enough to start handing some of the sail and this we did clad in our heavy oilskins as we started to negotiate the narrow channel. We were a little apprehensive as we worked on the foredeck watching the buoys pass close by, especially after the trainee on the helm gave a perfect demonstration of what happens when one confuses port and starboard; but all went well and by the time the fore watch came up at 4 o’clock most of the work was done and we were ready to drop anchor. This was soon done and then all that remained was to tidy up the ship. We finally got to bed at about five only to be woken at six-thirty for breakfast and another day.

As soon as we had a pilot we went into the port of Brest, the whole crew lining the decks for the French. The day was spent cleaning the ship, taking on supplies and a brief run ashore.

After a one day stay in Brest we left, heading now for Dublin. The two days sailing which followed were the best that I had during the time I was on board, as a long promised south westerly gale finally materialised. When my watch went below at 8 o’clock that evening we estimated that we would be half way to the Scilly Isles when we were next on duty. The wind really came up during the night, however, and when we were called at 4 the next morning we were told that we had already rounded Lands End and we could in fact see the lights on the North Cornish coast. The chaos down in the half deck was indescribable with bedding, clothes and even bodies sliding everywhere but as we were to average 11 knots for nearly 10 hours that night, this was hardly surprising.



"Sir Winston Churchill" (by kind permission of the Daily Mail)

When we first arrived on deck there was little to do apart from the usual tidying up but as it became lighter and the wind stronger it became apparent that we would have to hand some sails. The first sails to come down were the topsails. To do this one has to work in the confined space on the deckhouse, and so we were soon sliding about up there holding on as best we could. At first all went well but when the sails were halfway down they jammed so after a few moments consultation it was decided that they would have to be cut free. While the bosun and first officer went up aloft to do this the rest of us, hanging grimly on to the down-haul, were being thrown about all over the place. The wind was so strong now that, despite the combined weight of the watch, at one stage a trainee was dragged clear of the deck.

Eventually, however, we managed to get both the sails down and push them below to be stopped up later.

The next job to be done was to hand the jib topsail and outer jib. This involved going out on the bowsprit to make them fast, so after quickly putting on safety harnesses, four of us went forward to do this. It was very exhilarating sitting on the end of the bowsprit as it dipped to within a foot of the sea. In fact we kept dryer than those working on the foredeck as the spray was continually blowing over it.

By the time this was finished the ship was much more manageable and we were able to get some rest. The wind slowly went down during the day but just before lunch it was still



Some of the crew aboard "Sir Winston Churchill"

strong enough to heel the ship over to 50° which was a new record for the ship and was accompanied by crashing crockery and cursing trainees.

The following morning we were on the 12 till 4 watch when we arrived off Dun Laoghaire to anchor and wait for daylight before sailing into the harbour, so we had exactly the same experience as we had in Brest of handling all the sail and going through the anchor routine. That day was spent in Dun Laoghaire harbour and the next in Dublin itself. The time was spent cleaning and painting the ship, the latter necessitating holystoning the decks the next day. The weather now was turning hot so everyone was glad of runs ashore to sample the Guinness.

As far as the sailing was concerned the trip more or less finished at Dublin as the weather was very calm on the return to Cardiff. Thus the last few days on board were spent idling on the deck and on instruction in navigation, in particular the Decca Navigator, and seamanship.

We arrived at Cardiff on Friday afternoon and were very well entertained that evening at the yacht club. It was really rather amusing to watch the transformation from the rather

battered looking trainees of the past fortnight to a bunch of tidy lads as they took advantage of the ship's showers in preparation for the evening out.

That night should have been my last on board, but a joke at the party was followed up and after a hectic weekend making the necessary arrangements I found myself signing on again on the Sunday evening as the Lamp Trimmer. This rather glorious title meant that I was in charge of all the ships stores but most days during the next fortnight were spent helping the bosun in the everyday routine work ranging from varnishing the yards to organising the daily deck scrub: a job done every morning before breakfast by a team of trainees.

The second cruise despite the poor sailing was very well worth while, however, as I learnt a great deal about the smaller jobs which have to be done to keep the ship running smoothly. One of the jobs successfully tackled was the painting of the whole ship; although hard work, it was well worth while to see her looking really smart and even more so when we were complimented on her fine turn out when she finally docked at Liverpool.

When I left the 'Sir Winston Churchill' late on Saturday 24th September it was with the hope of returning to sail on her again one day and certain that the job she is doing is well worth while. Each fortnight she takes on 36 trainees from all walks of life, in my watch they varied from a Harrow schoolboy to a plumber from Hull, many of whom have never been to sea before. They find themselves in strange surroundings and rapidly learn how to work as a team and at the same time stand up for themselves. Many of the jobs they do, particularly up aloft, are not easy but even when not feeling well they still pull their weight. Their self confidence improves visibly during the trip and one can only hope that the words 'I can not' will not figure in their vocabulary so much after one of the cruises.

C. A. Hooper

FIGHTERS IN NORWAY

As we went over the Arctic Circle at five o'clock on a clear, sharp and bitter morning, I began to regret having come. The cold had woken me up and I searched feverishly for another sweater. Around us was bleak tundra. We were driving at a height of five thousand feet above sea level and in the distance were the white chilly peaks above the snow line. We were on a latitude north of Iceland, about a quarter of the way up Greenland and almost north of Alaska. I started wondering why we had come ; the yearning to do something different, the spirit of adventure, had now faded. Still we drove on in the sturdy College Land Rover, no longer in its first youth. We knew before we started that it had a cracked cylinder head, and among the spares we had a bottle of medicine that was supposed to seal the crack if we thought it had opened up again. To add to our troubles the clutch had started slipping almost as soon as we had arrived in Norway, and two hundred and fifty miles later the brakes went spongy and we realised that somewhere we had a hydraulic leak. We just refused to imagine or talk about what could happen if it broke down at the most northern point to which we were going, Bardufoss, about one thousand two hundred miles from Bergen.

We had come to Norway to do something different in our last year, and to make use of the opportunities that the Trenchard Memorial Fund offered us. This fund is available to provide a proportion of the money required to carry out any worthwhile scheme or project planned by members of the Royal Air Force.

We had read about the Norwegian Campaign and that the Royal Air Force had initially sent No 263 Squadron of Gladiators, commanded by Squadron Leader J. W. Donaldson, to give air cover to the Allied troops in Southern Norway. As the Germans had captured all the airfields in Southern Norway, the squadron operated from a frozen lake by the name of Lake Leskajog. As a result of the German air superiority, the lack of supplies and trained personnel, the melting of the ice and no

significant ground defences, the squadron was eventually shot to pieces and bombed off the lake, but was lucky to escape with most of the pilots. The second phase of the campaign centred around the port of Narvik which had been captured by the Germans. Wing Commander R. L. Atcherley (now Air Marshal Sir Richard Atcherley) had built an airfield at Bardufoss with the help of local Norwegian volunteers, about eight miles north of Narvik. No 263 Squadron, with more Gladiators and still under the command of Squadron Leader Donaldson, flew off an aircraft carrier and started operating from Bardufoss. Later they were joined by a Hurricane Squadron, No 46 Squadron, commanded by Squadron Leader K. B. Cross (now Air Chief Marshal Sir Kenneth Cross). These two squadrons achieved air superiority which enabled the Allies to recapture Narvik, and maintained it until the Allies had to evacuate from Norway after the fall of France. The two squadrons landed on the aircraft carrier *Glorious*, no mean feat when the *Boscombe Down* experts said it could not be done with the Hurricane. Unfortunately the *Glorious* ran into two German pocket battleships and was sunk with only three survivors, among them Squadron Leader Cross.

It was to find any relics of this expedition that we went to Norway. We hoped to go to Lake Leskajog, and Bardufoss, and also to see if we could find any crashed aircraft. Also we hoped to visit the Norwegian Air Academy at Trondheim on our return south. We estimated our proposed mileage at two and a half thousand and we borrowed the College Land Rover and set out hopefully on August 19th.

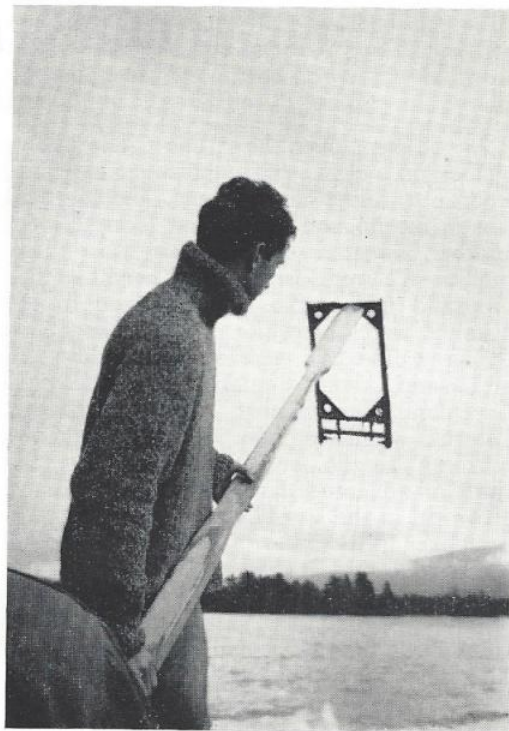
After a smooth trip to Norway we arrived at Hangesund and started driving north to Bardufoss. We had about one thousand two hundred miles to drive in two and a half days and opinion was divided as to whether we could do it or not ; but everyone agreed to make the attempt. The reason for this lack of time was that two members of the party were going to America, which only gave us eighteen days for the whole trip. We

had to work a tight programme, and as we wanted to visit some Norwegian Air Force bases, we had to give the Air Attache in Oslo firm dates and keep to them. We planned to drive in shifts through day and night.

This system worked well. Initially everyone was keen to drive four hours or more, but after one night and the second day the keenness waned a little, and the discomfort of the back of the Land Rover was preferred after a few hours' driving. We drove over mountain passes, alongside deep blue fjords, parallel to sparkling silvery streams, through fir green forests, over mud tracks, stony rough roads, round treacherous hairpins, and even the occasional stretch of highway. Every ten hours or so we would stop for a rest and some coffee, and then over more rough roads, over bleak tundra, through dark tunnels and then onto ferries which would take us to the next stretch of the Arctic Highway. We managed to do the whole trip over some appalling roads in fifty hours including stops. When we arrived at Bardufoss we found that the Norwegians were preparing for a N.A.T.O. exercise but we managed to get some beds.

The next day we were shown around the airfield, which had been completely rebuilt by the Germans after being used by the R.A.F. There was little of the old airfield left, apart from one old hangar and several bunkers, but it was now a first class airfield. We had hoped that there might be some easily accessible crashed aircraft in the nearby mountains, but unfortunately all the aircraft they knew about were above the snow line, and would have needed equipment and mountaineering experience, neither of which we had. We were now as far north as we intended to go, about four hundred miles north of the Arctic Circle and eighty miles north of Narvik. The next day, after two nights of well-earned rest, we went south again to Narvik.

We spent two hours in Narvik, a town about the size of Grantham, and then drove south to catch a ferry to a small village called Lodingen, on an island off the straits of Narvik, where we had been told by an officer who served in the Missing Research and Enquiry Service at the end of the war, that there were two crashed aircraft. We



Fishing in Lake Leskajog

arrived in Lodingen late in the evening and set up our camp site. The next morning we began our search.

We started by going to the Telegraph Office, it looked like the only public building in the village and we had to start somewhere. Here we met a schoolboy who showed us on our map where to look, and then he offered to come with us. He said that the aircraft were Norwegian and this did not help us a lot. Then he met a friend of his father's who was also a wartime resistance worker. He remembered that there were two British aircraft that crashed in the area in 1940 and he showed us on our map where they were to be found. One was in the hills behind Lodingen and the other was across the estuary on an island called Kierstad. We set off immediately to find the aircraft in the hills behind Lodingen and after some hard walking and climbing we came across the remains of a Hurricane. It seemed that the locals had appropriated most of the metal, but there were the two propellor blades erected in a mound of stones. One of them, outside a

summer house, was a local attraction for all the lovers to scratch their names on, and the other was outside another summer house half a mile away, but a little less accessible than the first one. Both blades had cannon shell marks down the side of them, and the tip of one was badly twisted, probably as a result of the impact.

We asked if we could take the lesser known blade back to England, and the owners were very willing to let us have it. There were also one or two other bits and pieces such as the undercarriage and flap selector, and a gyro casing. Our next task was to get a boat and go across to the island of Kierstad. We met another boy who had been there, and it seemed that this aircraft was in the mountains at the end of a fjord. We would have to choose the right time to go across, because high tides were necessary before a boat could get into the fjord. Our guide persuaded his father to take us across to Kierstad on the next day, in his twelve foot motor launch, at high tide at five o'clock. We set out across the estuary, eight of us in all and it took half an hour to reach the mouth of the fjord. Here there was a strong current which together with the tide race caused whirlpools at the entrance, and made the steering of the launch quite tricky. The fjord itself was about three quarters of a mile long and along the sides were impressive overhangs, stark bare cliffs and imposing rock faces. At the end of the fjord was the mountain we had to climb with a wooded gulley running up one side to the plateau where we hoped to find the aircraft. We started climbing and after an hour we came onto the plateau and there we saw wreckage strewn about over a thousand square yards. The complete engine block was there and the tailplane, both in one piece. We searched for suitable souvenirs but apart from the instrument panel casing little of note was found, not even the aircraft number.

After we had taken photographs we staggered down the mountain. A fine drizzle had begun to fall and by the time we had reached the launch we were all soaked to the skin. The trip back down the fjord and across the estuary was made in the dark, and the tide race had made the navigation of the entrance to the fjord into the estuary much more difficult. The sea had begun to cut up a little rough and the trip back to Lodingen

could not take place quickly enough. When we finally reached Lodingen, our guide's father refused to be paid for the use of his launch and his time. We staggered back to change and then went to the local village dance, which went on until half past one in the morning. We were more than glad to get to bed.

The next day we left Lodingen after saying goodbye to all our friends, and set on south to the Norwegian Air Force Base at Bodo, which had been used as a landing ground by a section of Gladiators. But there was a full scale N.A.T.O. alert on when we arrived and they did not want to know us at all. The station had been completely rebuilt and we were told that there was nothing of the 1940 landing ground left. After a night there we went on south to Trondheim, but before we crossed the Arctic Circle we came across an old Lapp woman who was selling uncured reindeer hides. We each bought one, fondly imagining them cured and on the beds of our rooms in the College. As we went further the condition of our reindeer skins became more and more important. As they had begun to smell they had to be strapped on the top of the Land Rover. Soon we started asking every Norwegian we met if they knew anything about curing skins. When we arrived at the Air Academy, the smell was overpowering, and we were just waiting for someone to ask us to remove them when one of us realised that it was the paper mills making the foul smell.

We stayed at the Air Academy at Trondheim for a day, where we were given excellent hospitality and shown around Trondheim. We were shown the submarine pens the Germans built there and the factory to service them. We were told how the R.A.F. arrived one lunchtime when the workers had gone home to lunch, and just as a group of high ranking Germans were having a party to celebrate the completion of the factory. As a result of the raid several high-ranking German officers were killed and the factory had to be built again. We were then taken to the Cemetery where the gravestones of allied sailors, soldiers and airmen commemorated the various actions fought at and around Trondheim.

The next day we set out on the final leg of our journey to Lake Lesjakog and then

to Bergen. We camped for two nights alongside the lake and talked to various locals who remembered the Gladiators flying off the frozen lake. We were told that one morning the Heinkels came over and caught the Gladiators parked at a headland and they destroyed a large number. The following day we went to this headland and we could see the remains of the Gladiators in the shallows. We hired a boat and fished around but we could see nothing of interest. We went to the village and found two English grave-stones. We spent two very pleasant days at the lakeside, with most of our driving done and the trip almost completed. We were quite sorry to pack up and leave for Bergen, but we had a boat to catch.

The drive to Bergen was through some of the most beautiful countryside that we had seen in Norway. We travelled down valleys flanked by hills and cliffs. The trees were

turning a pastel shade of yellow and the tint of Autumn contrasted with the lush green of the meadows and the sparkling waterfalls cascading from the gulleys in the cliffs. There were marvellous views from the tops of passes to the deep blue fjord in the valleys beneath. In the evening the circles of the rising fish could be seen on the sunset water.

Two days later we were back in Bergen and then the crossing to England, but this time there was a Force 8 gale. Every so often the screws would be lifted out of the water and begin to race madly. The attendance at the evening meal was small, but by the next morning the sea had calmed and we were greeted by the looming chimney stacks and factories of Newcastle and the Shields. Our trip to Norway was over.

A. R. de Wilde



A ferry-landing on the road north

WAYFARERS IN THE PYRENEES

The Sunday Telegraph of 12th September, 1965, contained an article called "Bewitched in the Pyrenees." It was by Mr J. M. Scott who attempted to walk the length of the Pyrenees from the Mediterranean to the Atlantic and only managed to cover two-thirds of the distance. It was this article which set us thinking of the possibility of completing such a walk ourselves. Thus, in February, plans were made for what turned out to be a most eventful and arduous journey.

One would think that our journey was bewitched before it started since two members of the team were still in Singapore on the day of departure, leaving a party of four. Other strange happenings throughout the journey began to convince us even more that someone or something didn't want us to succeed.

We sailed to Cherbourg on the evening of Wednesday the 7th September. Arriving there, next morning we set out on our long drive to Biarritz on the Bay of Biscay where we were to start walking.

Then it happened. The Dormobile gave up two hundred and fifty miles from our destination. After much trouble getting the vehicle to a garage and being told it would

take one week to repair, the three walkers decided immediately to set out for Biarritz, carrying a week's food, and arranged to meet the support driver, Crombie, one third of the way along the Pyrenees at a Spanish town called Jaca.

We had a very eventful journey down to Biarritz which included one member of the party falling out of an old Ford convertible driven by a French student wearing orange trousers. He fortunately managed to secure himself to the door and gave a great display as he executed an amazingly agile piece of artificial climbing up the door and back into the car.

All three of us eventually arrived at Biarritz and it was in this fine resort that our French expert in the party showed his true form. An astonished French postman will never forget the night he was approached by two unshaven characters carrying large packs who enquired "Ou est la guerre." It was pointed out later to our interpreter that the French for the railway station is "La gare."

On the afternoon of Saturday, 10th September, 1966 we set out from the Atlantic in an easterly direction for the Mediterranean. The fact that we were carrying heavy packs and that we were not yet acclimatised to the blistering heat made going very slow on this first day and only fifteen miles were covered. The next day, however, we covered some 25 miles to St. Jean Pied de Pont where we spent a most comfortable night sleeping on fern leaves by the side of the River Nive. It was obvious that to reach Jaca by the Wednesday evening we would have to walk for almost twelve hours a day.

On the third day of walking Horton fell ill at the frontier post at Arneguy. We decided that the party would have to split up yet again. The sick team



member decided to go by local transport to Jaca and meet up with the support driver and ourselves there. So it was that only two of us left the frontier post and set out for the village of Arive.

It was on this day that we realised how cruel and frightening the Pyrenees could be. Torrential rain, and lightning which lit up the surrounding sky and silhouetted the Abodi range, welcomed us at our destination. Arive was a small strange village where you could feel eyes behind shuttered windows. Fortunately we found an empty hut to sleep in and by morning we were fairly dry again.

The fourth day was the longest day of the expedition. We walked from 6.30 a.m. to 10.15 p.m. That night, we camped at an altitude of over 5,000 and once again lightning filled the skies. In the morning on awakening, rather wet, for we had no tent, we didn't know whether to laugh or cry when we saw, only twenty yards away, a small hut full of straw and looking most inviting. From that moment on our motto was "Never pick your camp site in the dark."

Wednesday was our fifth day walking and marked the completion of one third of our journey. It was with great luck and moreover great relief that we all met up in Jaca in the evening. At last things were beginning to go right but how long would it last ?

In the next three days we covered just over eighty five miles as a team of three again. The effect of walking without packs and the presence of our support member at regular intervals made going much easier. Spirits were very high and for once we were confident that we were going to beat this cruel range of mountains.

On Sunday 18th September we set off at 7 a.m. for the village of Las Villas. Here we met an old Spanish gentleman, seventy four years old, who spoke very good English. He invited us to drink from a spring, whose water, he said, cured all ailments. He also told us tales of his younger days when he spent all his spare time wandering over the mountains. About an hour after meeting this Spaniard we said our goodbyes on a mountain slope where he had climbed with us to direct us on our way across the mountain to the village of Espres.

It took us nearly six hours to cover approximately six miles and it was on this journey we had our first touch of danger. Having lost our track we were attempting to follow a fairly fast flowing stream. Whilst working our way through a steep sided gorge Squadron Leader Williams slipped and fell into a deep rock pool. The heavy boots he was wearing and the strong current made it almost impossible for him to stay on the surface and the undercurrents were pulling him under the rock ledge. I fortunately got my hand out and grasped his but as I had no holds was slowly being pulled in myself. Just then, he managed to get a foothold and when the third member of the party, Horton, appeared, he was most surprised to see one unfortunate colleague standing waist deep in water. About half an hour later we set off and, having regained our track, walked for another five hours before reaching our camp site for the night.

The next two days were spent walking through some breath-taking Spanish valleys. The ridge walks and over-the-pass walks were through villages with names such as Senterida Moncortes and Gerri de la Sal. On this journey we met many people. We were invited to eat and drink with one family and several times we visited houses to drink lemonade. Although none of us spoke Spanish it was fairly easy to make ourselves understood. When we told people what we were doing most of them thought we were mad, but very courageous. This, of course, pleased us immensely.

On the evening of Tuesday, 20th September, we arrived at what we regarded as our two thirds of the way point. We were just short of Seo de Urgel and only just over one hundred miles from the Mediterranean near Perpignan. We imagined we could feel sea breezes and smell sea air as we walked over the frontier at Puigcerda and eventually over the pass at Mt. Louis.

We followed the valley of the River Tête for the next three days. This valley was very different from the valleys on the Spanish side, being a rich fruit-growing area unlike the dry Spanish terrain. We feasted on fruit, growing by the river side, and developed a great taste for French grapes.

We arrived at a point just over five miles

from the Mediterranean at 21.00 hrs. on Friday, 23rd September. Now the air most definitely had a salty tang, and we camped on the seaward side of Perpignan feeling very good indeed.

The next morning at 08.00 hrs. we were on our way to the sea. It was a great temptation to run and although it was only a ten kilometre stretch they were the longest kilometres we had ever walked.

Two hours later we set foot on sand — Mediterranean sand. It was the most beautiful sight we had seen for a long time. Fourteen days after leaving the Atlantic we were standing gazing out at the Mediterranean. As the crow flies the distance between the two is 270 miles. We had to walk 440 miles to complete our task and we all felt very proud as we stood and shook hands on "Canet Plage."

A. McKay.

N.A.T.O.

The ground crew at Le Bourget were a little perturbed by the sight of a Britannia taxiing in reverse, and by the sight of eighty uniformed flight cadets disembarking from it. If we had told them we were visiting the N.A.T.O. headquarters in Paris they would have been more perturbed, for the Frenchman in-the-street seemed to think that N.A.T.O. was finished, and not simply that La France had withdrawn from it. Indeed, there may have been some flight cadets who also subscribed to this view at the start of the visit, but so forcefully were the views and objectives of N.A.T.O. expressed in the next few days, it seems unlikely that this was so at the end of our week's tour.

It was Sunday, 21st August, 1966, and the R.A.F. College was once again about to hit Paris. The rest of the afternoon was spent sightseeing either around the city, or back in the hotel where some fellow, female travellers had been discovered on a trip from America.

On Monday morning we visited N.A.T.O. Headquarters, were given a history of the Organisation, and an interesting talk by Mr Guy Millard on the problems facing the members at present. Lunch and the afternoon's lectures were both provided by S.H.A.P.E., the latter giving a working background for the rest of the visit, as well as a somewhat eye-opening insight into N.A.T.O.'s plans in the event of any aggression.

In the evening Marshal of the Royal Air Force Sir Thomas and Lady Pike gave us a

very pleasant cocktail party at Ville de Marnes to enable us to meet them and some of the younger generation, female of course.

Tuesday saw an early start for the journey to Fontainebleau and the AIRCENT establishment. The air aspect of N.A.T.O.'s plans was explained more fully here, once again in a series of lectures by officers of different nationalities.

Most of the party took full advantage of their final evening in Paris, and it was a bleary eyed group found assembling at Le Bourget the next day for the Britannia flight to Wildenrath.

Immediately after landing there, we were given a briefing on the role of R.A.F. Germany, and especially of the three stations of Bruggen, Laarbruch and Wildenrath, for these were the three stations to be visited by the group, which split up. The rest of the visit consisted of briefings on the work of the individual stations, and about half of the party managed a trip on Canberra aircraft. Dusseldorf received its fair share of cadet visitors, as did the smaller German towns in the vicinity. But it was soon Saturday and those waiting to see another Britannia for our return trip were somewhat taken aback as a Hastings landed and taxied in. But it was true, and the easy living of the past week was shattered, along with our ears, on the return trip. We had learnt about N.A.T.O., and we had enjoyed the visit ; it was all well worthwhile.

T. I. Jenner

Cranwell Races "Dambuster"

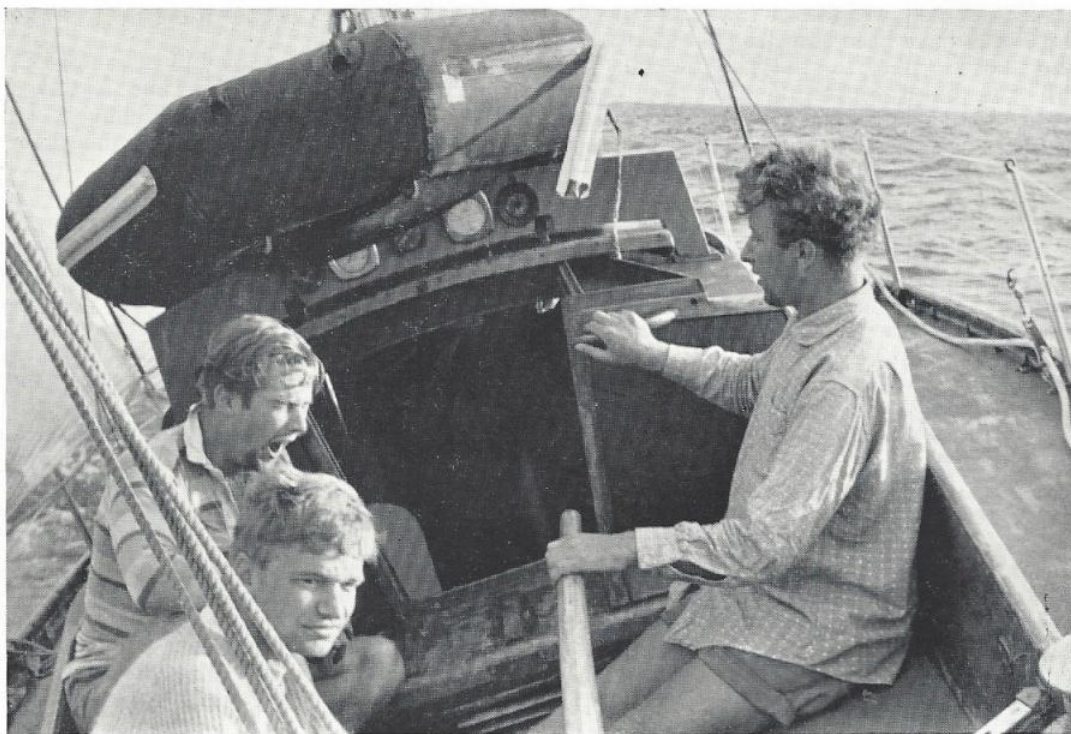
On the morning of 8th September, 1966 five flight cadets and two N.C.O.'s met at Hamble in Hampshire. Their object was to race the yacht "Dambuster" from Hamble to Alderney and then spend twelve days cruising off N.W. France. Unfortunately, because of further race commitments, the boat had to be returned four days earlier than planned.

At 6 p.m. on the evening of Friday, 9th September, after a couple of hours' general handling practice, the race was started in near calm conditions. We carried the tide down to the Needles but even with light spinnaker and full main we were unable to make more than 2 knots. Apart from nearly being swept onto the Needles the race was uneventful and very slow. We finished at 3.35 the following afternoon feeling frustrated at the lack of wind. Saturday and Sunday were spent relaxing, during which time a dinghy race was arranged between us

and the sailing club on Alderney. We were notably more successful in this race than the previous one.

About mid-day on Monday, with a wind of about force 4, we sailed out of Alderney bound for Cherbourg. The skipper left us completely alone to navigate the treacherous course to Cherbourg. Although no serious mishaps occurred, owing to some slight inaccuracies as to the position of Cherbourg we eventually hardened up from the original broad reach and only just made the opening of the break-water in time to avoid being swept down by the tide. This day we saw just how "D.B." sails in a good wind and were very impressed. The term "put the tiller in your ear" was also derived from the tremendous amount of weather helm this boat has on a fine reach.

After stocking up the ship's stores from "Henri Ryst's" duty free store, we left



Buften, Fordham and Chilvers in the cockpit



Cherbourg in time for a night passage back to Alderney. This was just as impressive as the trip to Cherbourg, with the stem pounding into every wave and the bows disappearing under every crest.

Wednesday and Thursday we were storm-bound in Alderney in the only gales which affect it, north-easterlies. The waves blown into the normally calm harbour were such as to make rowing ashore in our rubber dinghy dangerous and wet. Because of the pitching the boat began snatching the anchor, making it necessary for us to lay a kedge. Our precautions paid off eventually when we saw what was happening to other boats that were dragging their anchors.

On Friday morning we managed to get out of Braye harbour when the wind eased. We

went west around the island, through "The Swinge," towards Guernsey. It was calm with little wind, so most of the time, between trying many different rigs of sails, was spent sunbathing. When we arrived in St. Peterport the harbour-master tried to put us in a place which, because of the equinoctial-spring tide would dry out to 2 feet at low water. As we drew 7ft. 6ins. this was not very desirable so we eventually moored alongside the survey boat "Water Witch."

On the Saturday we took the boat to Saint's Bay on the south coast of Guernsey.

On Sunday it was notably Fordham's 21st birthday. We left Guernsey just after 6 o'clock in the morning, bound for Alderney again. On nearing Alderney the wind came up to force 5 to 6 and as a special treat Fordham was put on the tiller for the first time. We were in Braye harbour in plenty of time for Fordham's birthday lunch complete with birthday cake, (and candles). That night the north-easterly gale struck again almost to the extent of stopping us going ashore to celebrate Fordham's birthday.

Monday was spent resting and saying farewell to all the people we met on Alderney. At 8 o'clock that evening, still with a north east wind blowing we motored out of Braye with the genoa in stops and the anchor on deck ready for immediate use. It was not necessary and the crossing was able to start. There was a fair wind and we were able to make 6 knots. About 10 miles from the Isle of Wight thick fog came down, making navigation very difficult. In fact at one stage one of us had to sit in the pulpit and direct whilst listening to the Needles fog horn. Once through the Needles channel the fog cleared. As opposed to last year, a certain member of the crew managed to miss every buoy in the Hamble river and approaches, and we were all too soon alongside the "Ditty Box." After meeting our friend the Customs Officer again, we cleared up the boat and went on leave.

T. Bufton

KING ROCK

The first party of cadets from Nos 90 and 94 Entries, who had left Waddington in the cold grey light of dawn, arrived at the base camp in the hills of the Brilon Wald to be greeted by rain . . . Rain, father of some of the most vivid memories of the fortnight, stayed with us for almost the whole of the first week. Everything got wet, our clothes, our boots, our socks, our tents, ourselves ; but, while walking one tends to forget the incessant drizzle, especially if there is a nagging blister to take your mind off it. The field training phase was one of those things best seen in retrospect, as it could hardly be enjoyed whilst it was being done. The first four days were spent on preliminary walking and initiative exercises : the first day we had to find and treat an injured man, carry him three miles on a stretcher built on the spot, cross a river, and be lifted out by helicopter. The river crossings were performed before an audience of local villagers, to their great amusement, and the helicopter attracted hordes of small boys.

The next two days' exercises were in a similar vein, requiring a certain amount of initiative and a lot of walking. The cumulative lack of sleep really began to tell on the eight mile nav-ex race, but fortunately we

had the best part of a day to rest before setting out on the escape and evasion phase. This exercise started on the Friday night, and from then on it was hills, forests, and ferret cars until Sunday afternoon. This was probably the most memorable phase of the whole fortnight ; ducking at the sight of the helicopter or the sound of a ferret car, ages spent scanning the bushes down in a valley where a 3-ton army truck could be seen, and above all the endless grind of walking, walking, up hills, through pine forests, over fields . . . And incidents to be remembered for a life time, such as sleeping in a dank pine forest in the pouring rain, gaining cold comfort chewing Mark 5 ration chocolate ; finding a warm, dry hay barn just as night fell

The jolting landrover ride back to base camp was pure relief, everyone content in anticipation of food (compo rations) and shelter (pup-tents), and the realisation that all the walking had been finished with.

Monday was a very definite break in between the two "halves" of the camp. It started with the campsite and cooking competitions, and these provided a variety of entertainment (for the judges). Guards presented spades for them at one campsite, and at another the meal was accompanied by soft music and pictures of pretty girls. After lunch, everyone visited the Army mobile bath, which we all enjoyed ; and then the whole mass of us descended on Brilon, mainly on a quest for food and drink. In the evening there was the camp concert, held in Petersborn village hall, and many were the songs sang, jokes cracked, and beer bottles emptied

The canoeing was universally acclaimed the best part of the camp ; the weather was good, the surroundings pleasant, and



no walking was involved (bar the pre-breakfast run and swim) Canoeing was new to most of us when we started, and this gave rise to many spills and a lot of laughter, but the lake water was warm and no-one suffered. The first two days of canoeing were spent learning techniques, culminating in singles and doubles races and an expedition for a few miles up the Edersee. This expedition occupied a whole afternoon, and was extremely pleasant in the sunshine (albeit a little tiring). Some of the villages on the lakeside were more in the nature of seaside resorts, with pleasure boating, small beaches, and so-on.



The canoeing phase was rounded off with a day spent up river, on a stretch of "white water," and those who tried capsizing here found that the water was colder and there was a likelihood of bashing your head on the bottom, although the thought of this did not stop some going in.

The final phase of the camp was rock-climbing, and this was quite popular despite the fact that one or two people were never really happy about abseiling, and these were a minority when compared with the number who burnt their combat jackets descending

too fast. Most people seemed to find the basic techniques of rock-climbing easy to master and after initial misgivings found themselves enjoying it. The weather was generally good, and this added up to make a pleasant three days.

As a whole, King Rock was one of those things best enjoyed in retrospect, although it leaves one with the satisfaction of having completed it. Everyone however, was glad to be able to return to England and to finish off their leave in a more relaxing manner.

M. W. Johnson

1966 F.E.A.F. VISIT

On the evening of Sunday, 21st August, 1966 twelve flight cadets and two officers of the Equipment and Secretarial Wing assembled at Lyneham in preparation for the morrow's flight to Changi. Unfortunately the next morning a 24 hour delay was announced. The cause of this was a malfunction in the Comet 4 aircraft necessitating an engine change. The delay was not a complete waste of time however, since the cadets were able to watch the engine being changed, and had everything explained in great detail by the Senior Technical Officer.

We took off, eventually, at 11 o'clock on 23rd August and soon we were flying over France towards the Mediterranean. After a short stop at Akrotiri and a midnight call at Muharraq we landed to refuel at Gan in time for breakfast the next morning. Here we were most hospitably received, and after breakfast had a quick dip in the warm, clear water of the Indian Ocean. When we arrived at Changi it was early evening and after a short reception cocktail party at "Fairy Point Officers' Mess we were taken to our accommodation at Temple Hill Mess.

We spent twelve days in and around Singapore and visited each of the three R.A.F. bases in turn as well as the headquarters organisation of F.E.A.F. We visited Seletar and in two days we were shown every aspect of the station. As well as being the source of most medium and short range transport support operations within the theatre, Seletar houses two large Maintenance Units which support all the operations in the Command. The equipment cadets spent two days at the M.U.'s but the secretarial cadets had one. On the second day, after having a comprehensive look at the Headquarters F.E.A.F. organisation at Changi in the morning, they visited the R.A.F. Police Headquarters and the School of Jungle Survival in the afternoon. The evening was for the secretarial cadets one of the most memorable of the visit, when they were taken on a guided tour of some of the seedier spots of Singapore by two members of the R.A.F. Police. They were able to appreciate from this more than anything else the unusual problems the police face there.

Saturday the 27th, the final day at Seletar, we visited 224 Group and were given a most

interesting tour of the short and medium transport squadrons and shown how they tackle their load and dropping zone problems. A noticeable feature of the organisation here was the Army units working alongside the R.A.F. with their combined efforts producing answers to problems. Our return to Changi in time for lunch was by R.A.F. marine-craft.

The rest of the weekend was spent swimming at the Officers' Club, basking in the sun, fishing, and watching the traditional Sunday-night film in Temple Hill Mess. Moreover no-one wasted the chance of strolling round Changi Village and it was little wonder that ten watches, one cine-camera and several pairs of sandals and articles of clothing were purchased at the ridiculously low prices.

On Monday morning we were on the other side of Singapore island at the base of the strike and interceptor forces — R.A.F. Tengah. We toured the operational side of the station visiting the Air Operations Centre, Air Traffic Control, a Canberra Squadron and a Javelin Squadron in turn.



Visiting No 81 Squadron

The next day we were to visit R.A.F. Kuching in Borneo, but with the relative chaos of the run-down of our forces there, the trip was cancelled. Instead we visited the Shell Oil refinery Pulau Lumbang.

Our final day in Singapore was equally interesting. We began by visiting the Supply Squadron at Changi. Later we went to the Joint Services Port Unit in Singapore harbour, run mainly by the Army, and looked over "Sir Lancelot" a modern Landing ship (Headquarters) which was about to sail for Borneo with a Malaysian Army contingent.

Hong Kong. The magic words made up for the fact that we had to rise at 3 o'clock on Thursday morning in order to emplane for R.A.F. Kai Tak for the second phase of our visit. But we had just learned that we would probably have an extra week in the Far East and this compensated for the fact that we faced a seven hour flight in a Hastings. In fact the flight was comfortable and we landed at Kai Tak at 2.30 on a hot, cloudless afternoon. We were soon in the mess overlooking the magnificent harbour and settled in to our new surroundings.

Considering its size Kai Tak had a full and interesting programme for us. On Friday we were shown the station and the Hong Kong Aircraft Engineering Corporation. This is a remarkable concern, which carries out major repairs and servicing of R.A.F. aircraft from bases in the Far East ; it also services most civil airliners which use Hong Kong and has contracts with various South East Asian air forces. The aircraft we saw ranged from Boeing 707's to T-28 trainers of the Burmese Air Force.

In the afternoon we went within 400 yards of the Chinese border at the Headquarters of 29 (Pack Mule) Squadron, Royal Corps of Transport, which is largely made up of local recruits. They convinced us that, on the Chinese border at least, the mule is most certainly not out-dated.

The following day was spent again in the hilly country of the New Territories, at the ingenious and faultlessly hygienic Kadoorie Experimental Farm, where, apart from

developing new and practical farming methods for the colony, assistance is given in setting up refugees from Communist China. On returning from this delightful spot, we had until Tuesday morning free. No corner of the cities of Hong Kong and Kowloon was left unvisited either by day or night, and the old world of "Suzie Wong" and the new world epitomised by the modern palace of the Ocean Terminal provided an interesting and colourful contrast.

We had a trip around the colony and Hong Kong island by one of the R.A.F. marine craft, on the Monday afternoon. The "voyage" took three and a half hours and included a visit to the famous Aberdeen Harbour with its floating restaurants and thousands of junks and sampans. Later a cadet took over as helmsman for a while and managed to scatter one or two innocent fishing vessels during some original maritime manoeuvres.

Tuesday was regrettably our last day in the colony and we went by ferry to the Air Headquarters on Hong Kong Island. Here with officers of the Army and Royal Navy, we attended a lecture on the political and military situation in S.E. Asia. After meeting the Air Officer Commanding and visiting the Air Headquarters we returned to Kai Tak yet again by R.A.F. marine craft.

The following morning at 10.30 we left by Hastings for Changi. The journey was a little more lively than the flight up as we flew through a tropical thunderstorm, to the fascinated delight of some Chinese sailors who were on board.

Finally on Sunday 11th the party reluctantly left Singapore International Airport by a Britannia of British Eagle and, travelling via Colombo, Bahrein and Istanbul, arrived at London Airport at 7.30 on the Monday morning.

The visit to the Far East Air Force was both enjoyable and informative and our hosts obviously took great pains to ensure that our visit was interesting and worthwhile. It will certainly be remembered in the long winter evenings ahead.

A. T. Ford

AMERICA VISIT 1966

It was with relief that the 91 flight cadets boarded the Britannia for America on 7th September, since there had been the underlying fear that this visit would follow the fate of the previous one and be cancelled at the last moment.

The aircraft took off from Waddington early on the Wednesday morning complete, except for one flight cadet who was left sleeping peacefully at Cranwell. His luggage however enjoyed the visit with the rest of the party. The trip across the Atlantic was a little arduous, but was relieved by the endless cups of coffee and five meals which we received during the course of the day. We finally arrived at Andrews AFB, Washington, after a brief stop at Gander, and were given the itinerary of our stay in Washington.

A coach tour of the city took place the next morning, during which all the important sights were seen, including President Kennedy's grave in the Arlington cemetery. The afternoon we were once more on a coach, this time bound for the Goddard Space Centre. Here we were shown the Centre, and how it was used for the designing, testing and tracking of unmanned satellites including the two sponsored by the United Kingdom. We came away with a very favourable impression of N.A.S.A.

The whole of Friday was spent at or near Langley AFB, Virginia, the H.Q. of T.A.C. During the morning we were given a briefing on the Command accompanied by the ever popular weapons effects film. After lunch and a short coach ride we arrived at Williamsburg to look at the town, which has been completely reconstructed at the cost so far of \$80,000,000 to appear as it did in 1770. Accompanying this was a short, well-presented film on the stages leading up to the American Revolution.

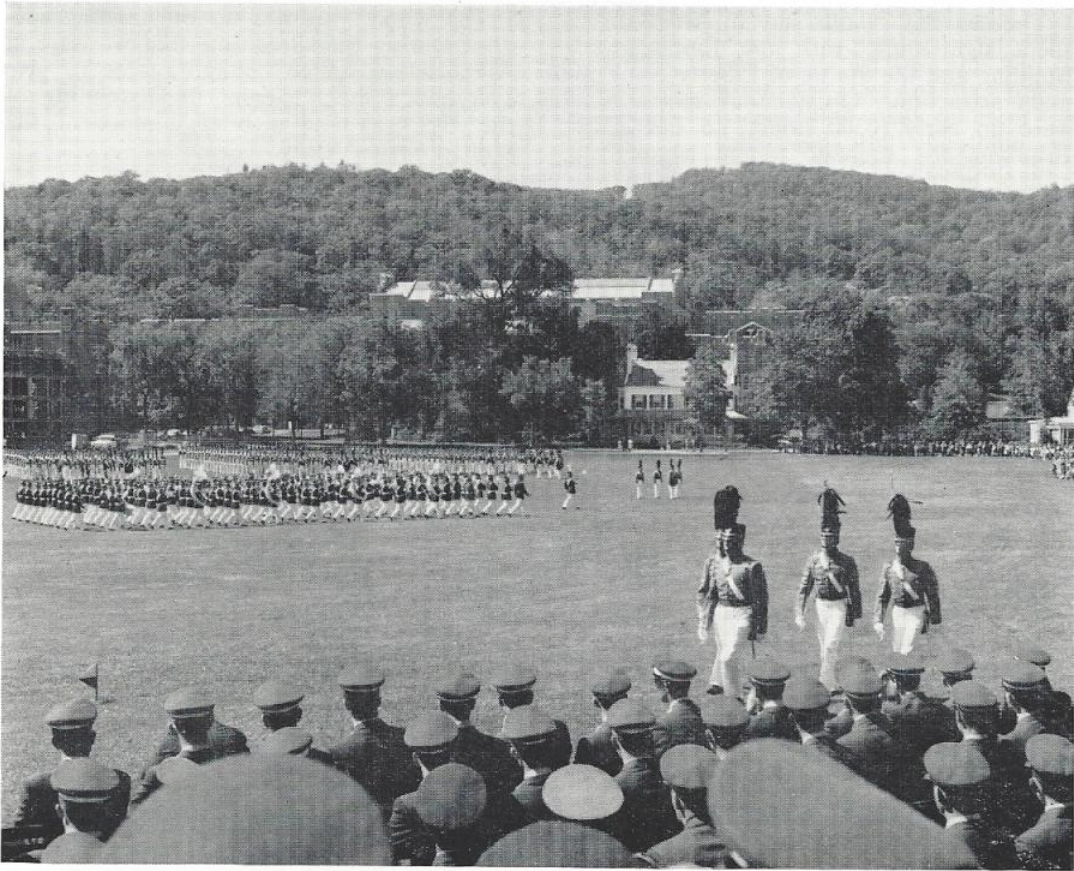
On the Saturday we departed for Colorado Springs and our visit to the United States Air Force Academy. Our stay there lasted for four days during which time we obtained an insight into the workings of the Academy. All the off-duty hours were spent with our

hosts and we were given a sample of the night life of Colorado Springs, a small town with a population of a mere 100,000, and in many cases a visit to Cheyenne; the Academy lies at the foot of the Rockies. On the Monday we attended classes with our hosts, and it was quickly appreciated that our American counterparts experienced the same difficulty as ourselves in attempting to stay awake during the period immediately after lunch.

While we were actually based at the Academy there was a visit to the 5th Infantry Division at Fort Carson where we were given a spectacular drill display, a demonstration of the role of F.A.C., with the aid of two National Guard F-100s which swept over our heads at 100 feet engaging re-heat as they did so, and finally all 91 of us were allowed to fire the weapons of our choice out of a selection of the hand arms used by the U.S. Army. Also during our stay we were briefed on N.O.R.A.D. which included a special presentation on the Command's new Headquarters inside Cheyenne Mountain.

Our visit to Colorado Springs was revealing. The life of a dooly is far stricter than that of the junior entry at Cranwell. American Air Force drill is very different to our own; the lack of arm swinging alone would have horrified the drill instructors here. On this, however, I think they would have been pleased with the two short displays of R.A.F. drill which we gave to the Academy. Judging from the reception, the Warrant Officer may well find himself in Colorado Springs very shortly.

The much vaunted Honour Code was not nearly as important as one might have expected. Its purposes could more readily be appreciated having visited the Academy, and much of the criticism which is levelled at it seems in the main unfounded. During a cadet's four years at Colorado he undergoes no flying training, but he does obtain an honours degree (one of the best in America) at the end of it. While the cadets could not wait to graduate and start flying, they nevertheless saw the importance of the



The Cranwell party watching a parade at West Point

degree, and this gave them a sense of purpose in their studies.

Our stay at the Academy all too quickly came to an end, and on Thursday morning we departed from Peterson Airfield, for the Strategic Air Command Headquarters at Offut, Omaha. After lunch we had two briefings on the Command's mission and a visit to the war room from where the nuclear deterrent is, in the main, controlled. We took off for New York in the afternoon, arriving at our hotel in the evening.

The next day we visited the United Nations Organisation where we were given three short lectures on the Organisation. The last of these was given by Lord Caradon. His talk was extremely informative, since his lifetime of experience with underdeveloped

countries gave meaning to his opinions on the future of the Organisation. We were privileged to have been given the opportunity to ask questions afterwards.

The whole of Saturday was spent at the United States Army Academy at West Point. During the morning we received a briefing and a guided tour of the Academy given by the cadets themselves, and watched a parade in which all 3,300 cadets took part. After lunch most of us stayed to watch an American Football match between West Point and Kansas State; the first of the season. Although a little bewildering at the start it soon became more interesting as the reasons for the large number of players constantly running on and off the pitch were appreciated. After 2½ hours the final whistle went with a win for West Point. A happy ending to an enjoyable day.

The last day of our stay in America was spent sightseeing, with the Empire State Building and the Statue of Liberty being the main attractions. On Monday morning we were up early (0300 hours) to board our Britannia for England where we arrived, after a brief stop at Gander, at 1130 p.m. The Customs Officers were eagerly awaiting to confront us with our numerous purchases.

The whole visit was an outstanding success. During the short time that we were in America we visited enough places to give everyone a much clearer understanding of the U.S.A.F. and a brief glimpse of the United States Army.

K. D. R. Mans

H.M.S. PALLISER

Four cadets travelled to Dundee to spend the first week of Summer leave on board H.M.S. Palliser, which is an anti-submarine frigate with an operating complement of 110 ratings and eight officers.

Within minutes of arriving the First Officer, Lieutenant Jones, had thrust drinks in our hands and told us to get into training because the week was going to be rather hectic on the social side. He explained that we would take part in all the social life on the forthcoming visit to north Germany as guests of their Navy. Then the Captain, Lieutenant Commander Low, gave us a short talk before we went on a brief tour of the ship. Immediately after this came the first of several cocktail parties and it was amusing to see flight cadets explaining the technicalities of a ship to visitors when they had only been on board two hours!

The following day, Thursday 18th August, Her Majesty the Queen Mother, opened the Tay Road Bridge and we joined in the "Cheer Ship," for Her Majesty as she crossed the bridge. Palliser sailed for Wilhelmshaven that evening with cadets doing watches, two in the boiler room and two on the bridge. In the boiler room plenty was learnt about steam systems and also how to boil socks and make tea on the low pressure steam system.

Palliser heralded her arrival in Germany with the sound of bagpipes, and a large number of people came to see the ship. The Germans replied to our piper with a band playing such favourites as "Colonel Bogey" which the crew enjoyed and joined in.

Apart from one day each on duty the remainder of the stay was a social "run-ashore." There were parties at least once a day. The Germans were guests on board and the following day we were their guests. The German liaison officer was very good and arranged plenty of young ladies for the less formal gatherings. One of the parties was in a penthouse decorated suitably for the occasion. Anglo-German relations reached a very high point.

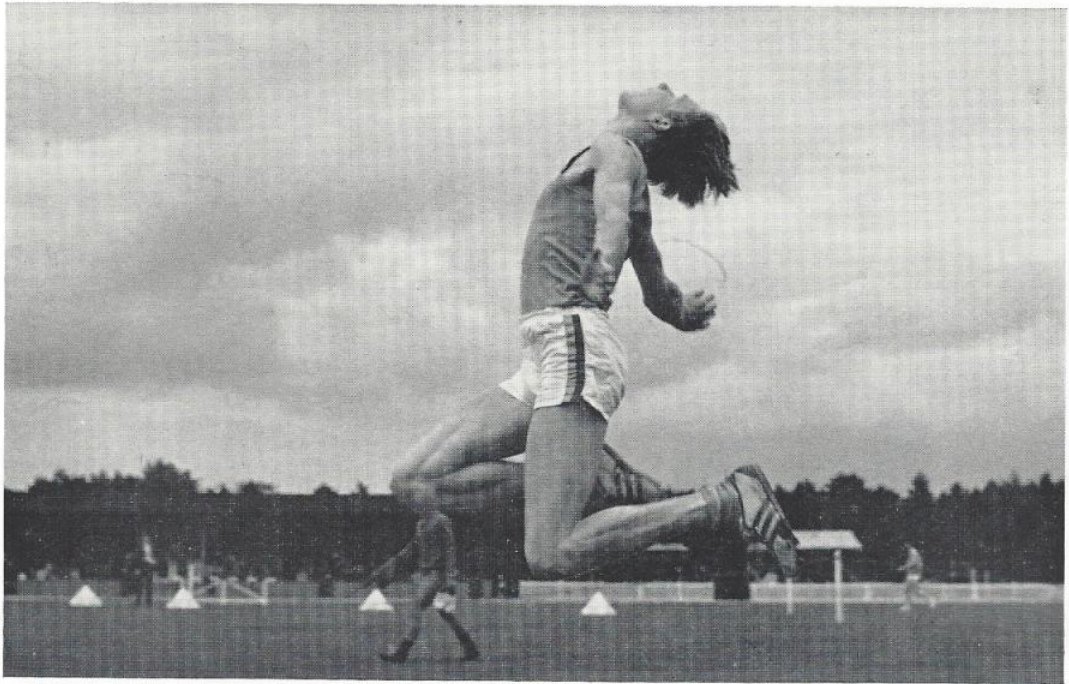
The sleeping quarters on board were limited and one cadet finally ended up sleeping in a hammock, preferring this to sleeping in four inches of water, which was the case when a pump failed. The ship's doctor, who spends a period of time with each vessel of the Fisheries Protection Squadron, helped keep people alive, the morning after, with his various hangover cures.

Palliser left Wilhelmshaven on Thursday 25th August with cadets again filling posts on the bridge and in the Engine Room. Those on the bridge learnt a little about modern seamanship. Once the Captain wanted to see how alert the helmsman was so he rendered the steering gear useless by pulling out a link. It was a surprised cadet, helming at the time, who suddenly lost faith in Naval equipment.

We did not see much of the action side of the Royal Navy on this visit, only two days out of nine were spent at sea, but it was a wonderful trip enjoyed by everyone. The trip finished as it began with a party at which we "crabs" said farewell.

P. Wray





SPORTS AND ACTIVITIES

The College has had a very successful Summer on the sports field, in particular the members of the Athletics team, ten of whom represented Flying Training Command. In addition, Gaskin was selected for Great Britain against Belgium and Holland in the Decathlon, and later in the year for England for the Commonwealth Games in Kingston, Jamaica.

The Rowing Club has competed in civilian as well as service regattas, finding good form at the Henley Royal Regatta and the Royal Air Force Rowing Club Regatta. Five cadets were nominated to represent the

Royal Air Force in the Inter-Service Swimming Championships, a fact which reflects in full the strength of the College's Swimming and Water Polo teams.

On the Activities side there has been no less a show of enthusiasm. Long Distance Walking proved to be the most spectacular of the outdoor activities. This section achieved commendable results in the Ten Tors race, and appeals to more and more masochistic cadets. On the quieter side, the Dramatic and Choral Sections maintained last term's popularity, and have full programmes planned for next term.



ATHLETICS

The Summer of 1966 brought our most successful season since the war, and probably the best ever in the history of the College. Not only are standards rising all the time, but we are also fortunate at the moment in having two or three outstanding athletes; the real test will come when they leave Cranwell.

In a total of 18 matches, 34 teams were encountered and 29 defeated. The only teams to emerge victorious over the College were Loughborough, Leicester, Nottingham and Sheffield Universities, and a group of officers from the Federal German Air Force.

The greatest triumph obviously lies in the fact that the names of Sandhurst and Dart-

mouth belong among the 29 teams defeated. This is, in fact, only the second time since the war that we have beaten Sandhurst. It was sweet revenge for last season's 'cliff-hanger' when the R.M.A. overtook us in the last event, the relay. This time there was no mistake and the College won the contest with 126 points to Sandhurst's 112 and Dartmouth's 99. Outstanding winning performances were turned in by P. Glover (100 yds. and 220 yds.), R. F. Sandford (880 yds. and 1 mile) and G. J. Pilgrim-Morris (Triple Jump).

But basically this was a great team effort and every member of the team played his part. There can be little doubt that the winter coaching sessions by Wilf Paish, the

Midland Area National Coach, and the week spent at the Crystal Palace with the Flying Training Command side, both played a great part in the production of this team spirit. It is to be hoped that something along similar lines can be organised for 1967.

The College was also very successful in competitions at Command and Service level. The Flying Training Command side for the Royal Air Force Championships contained 10 cadets — almost half the team !

R.A.F. Championships — Individual results :—

| | | | |
|----------------------|-------------|-----|--------------|
| P. Glover | 220 yds. | 1st | 22.4 secs. |
| | 100 yds. | 3rd | 10.2 secs. |
| R. F. Sandford | | | |
| | 880 yds. | 2nd | 1 min. |
| | | | 55.5 secs. |
| D. M. Gaskin | | | |
| | Long Jump | 1st | 23ft. 0½ins. |
| | Discus | 4th | 135ft. 3in. |
| | Pole Vault | 3rd | 11ft. 0in. |
| G. J. Pilgrim-Morris | | | |
| | Triple Jump | 5th | 43ft. 10¼in. |
| M. J. Cooper | | | |
| | Shot Putt | 4th | 43ft. 3in. |

In the Inter-Services Championships at Portsmouth, Gaskin repeated his Long

Jump success with a leap of 21ft 2¾in. and came 4th in the Pole Vault with 12ft. 6in. Sandford came 2nd in the 880 yds. in 1.54.6. Gaskin again was rewarded for his performances in the Decathlon with selection for Great Britain against Belgium and Holland, and for England in the Commonwealth Games in Kingston, Jamaica. Although disappointed with his showing in the latter, he has had a splendid season and without doubt inspired lesser members of the team to greater efforts.

At the end of this most successful season colours were awarded to C. Abram, R. J. Stewart, A. Haynes, and P. Glover. And, in addition, 10 records were broken.

| | | |
|----------------------|------------------|---------------|
| R. F. Sandford | 880 yds. | 1 min. 53.3 |
| | 1 mile | 4 mins. 22.7 |
| | 2 miles | 9 mins. 31.2 |
| D. M. Gaskin | High Jump | 6ft. 2in. |
| | Long Jump | 23ft. 10in. |
| | Pole Vault | 12ft. 6½in. |
| | 440 yds. Hurdles | 56.8 secs. |
| P. Glover | 100 yds. | 9.7 secs. |
| | 220 yds. | 21.9 secs. |
| G. J. Pilgrim-Morris | Triple Jump | 45ft. 8in. |
| R. J. Stewart | Javelin | 177ft. 11½in. |

CRICKET

The College was also very successful the 1st XI. The weather proved to be the strongest enemy, for out of thirteen games on the fixture list two were abandoned and two others completely washed out.

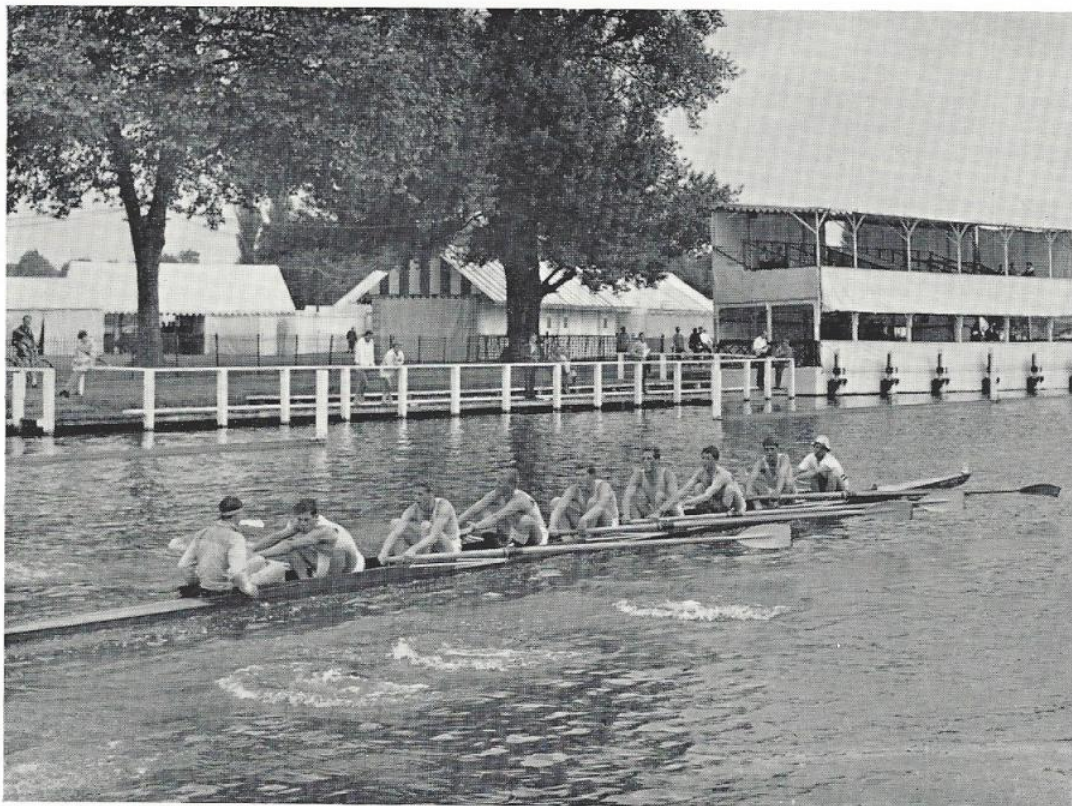
In the five major games the College defeated B.R.N.C. Dartmouth and the M.C.C., lost to the Old Cranwellians, and drew with R.M.A. Sandhurst and the Adastrians.

Despite a good win over a weakened Loughborough team, the team found it difficult to find and maintain true form. However, consistency and hard training throughout the season eventually paid dividends. When the bowling seemed to have hit a slack period, Thompson's sly, right-arm "in-duckers" came to the rescue. In thirteen

games he took 42 wickets at a cost of only 10.5 runs each.

On the batting side, Patrick was prominent. Although not a stylish performer his quick eye earned him 399 runs during the season, including a 106 not out against the Adastrians. Senior Under Officer Robertson also had a good season.

A word of praise is due to Senior Flight Cadet Squire, who has competently kept wicket for the past three seasons. A good team man, his spirit and constancy have been an example to the rest of the XI. Also to be congratulated is Under Officer Yates who captained the team throughout the season. His determination helped to overcome many a formidable opponent.



The VIII at Henley : Snell, Sargent, Spiller, Stevens, Seymour, Sollitt, Brown, Peggall, Moss

ROWING

During the Summer season of 1966 the club has had unprecedented success in civilian regattas as well as those organised by the Royal Air Force Rowing Club. At the Royal Air Force Rowing Club trials at Henley on 20th April, 1966 the newly formed College VIII was put on show and received valuable coaching from Squadron Leader L. Barry, R.A.F. (Ret'd). After weekend training on the Thames with the Tideway Scullers and Squadron Leader Barry the VIII was entered in Thames Ditton, Twickenham, Walton, Reading and York regattas. The crew won the new junior-senior eights event at York by beating Tyne A.R.C. in the final by half length.

The VIII was entered for the Ladies Plate at Henley Royal Regatta this year and spent pre-regatta week training on the course. George Bishop, the Wallingford coach, very

kindly coached the crew during this period and together with Squadron Leader R. Beecham improved the performance of the crew a great deal. The crew was beaten in the elimination races by Queen's College, Cambridge, by $4\frac{1}{2}$ lengths but had a losing time of 7 minutes 45 seconds which was comparable with some of the winning times that day.

In the Inter Service College regatta, held at Pangbourne on July 3rd, 1966 the College VIII had quite easy races with B.R.N.C. Dartmouth, who they beat by $1\frac{3}{4}$ lengths, and R.N.E.C. Manadon who they beat by 2 lengths. In the final race versus R.M.A. Sandhurst the College VIII was beaten by $\frac{2}{3}$ length in the closest and most exciting race of the competition.

The Royal Air Force Rowing Club Annual Regatta on May 21st was something of a

field day for the club. There were two VIII's six IV's, three scullers and two cox'less pairs crews entered which meant the club was in every event except the Senior Sculls event and of these nine events College crews reached the finals of six of them. The club won the open VIII's, junior IV's, novice 'B' IV's events and Flight Sergeant R. Boxell won the Veteran Sculls event. The Scott Payne trophy for the inter-station championship was won by Royal Air Force College Cranwell with a clear lead of 54 points.

In the Inter-Command championships held on the following day, representing Flying Training Command, the College "A" crew reached the semi-final where they were beaten by the College "B" crew who were themselves beaten by Bomber Command by 2 lengths in the final.

In the Royal Air Force Rowing Club Bumps Races held on 27th July, 1966 four College crews were entered. The "B" and "C" crews tied for the most bumps of the competition and the final placings put College crews 2nd, 3rd, 5th and 9th in the competition.

Novice crews were entered in Huntingdon, Loughborough and St. Ives regattas during the season.

Flying Training Command Rowing Colours were awarded to Flight Cadets Brown, Seymour, Pegnall, Sollitt, Spiller, Moss, Sargent, Marlow, Snell and Meehan. College Rowing Colours were awarded to Flight Cadets, Brown Seymour, Pegnall, Sollitt, Spiller, Snell, Moss, Sargent, Stevens and Marlow.

For the first time the season's rowing was built up on a foundation of Winter training. This combination of weight training and rowing, when the level of the Trent permitted rowing, proved its worth beyond doubt. The club was also fortunate this year in having a great number of experienced oarsmen and now has many experienced novices for next season.

The club would like to take this opportunity of expressing its gratitude to Squadron Leader J. G. Hill for his very hard work and excellent guidance during the last two years which resulted in an exceptionally successful season in 1966. Our best wishes go to Squadron Leader and Mrs. Hill and we hope we will see them at future Royal Air Force Rowing Club fixtures. We welcome Flight Lieutenant A. Bashaarat as guiding officer and know that with his and Flight Sergeant R. Boxell's valuable help and a thriving club of over 35 members we are very well prepared for an even more successful season in 1967.

SWIMMING AND WATER POLO

College swimming and water polo went from strength to strength in 1966. Only two swimming matches were lost out of 14 swum and every College record except one was broken at least once during the season. The water polo team won eight out of twelve matches, scoring 70 goals against 35.

A month of intensive training, seven days a week and twice a day at weekends, produced a superbly fit team for the Triangular match with Sandhurst and Dartmouth at Sandhurst. The College took first place in all but one of the swimming events and the water polo team beat Dartmouth 10-0 and Sandhurst 14-2.

The season finished with a short contest

with L'Ecole de L'Air ; College swimmers took the first two places in every event.

Members of the squad did extremely well in Command and R.A.F. swimming. Under Officer Reed and Flight Cadets Cuthill, Dow, Hall, Norris and Webster swam for Flying Training Command whilst Pyle and Bennee played water polo and Tester dived for the Command. The cadet contribution was the decisive factor in Flying Training Command's victory in the Royal Air Force Championships.

Subsequently Reed, Cuthill, Dow, Norris and Webster were included in the R.A.F. team for the 1966 Inter-Service Championships.



RIDING

The start of the Summer term brought about our usual exchange of members, with the cricketers leaving us and the refugees from the rugby and hockey fields joining us.

The warm weather early in the term encouraged members to make more use of the horses for the purpose of admiring the local countryside. An effort was made to encourage early morning hacks throughout the term. The results were not at all encouraging as it is extremely difficult to convince a flight cadet (or anyone for that matter), that the countryside from horse back takes on a new beauty at 6 o'clock on Sunday morning.

During the latter part of April and early May the members of the first team practised

hard in the hope that they might make their mark at three major events, namely Finningley Hunter Trials, Wittering one day event, and the R.A.F. Equitation Championships at Cranwell.

The Finningley Hunter Trials proved fruitful when Cranwell's first team won the team Cross-Country event with great ease. The one day event at Wittering started off very much in our favour. After the Prix Caprilli results we were well in the lead, but our efforts were lost when two of our riders were eliminated in the Cross-Country jumping phase. As a result the team was not placed but we had secured second and fourth individual placings.

On the 22nd May the R.A.F. Equitation Championships were held at Cranwell. As usual the College team was placed high as a result of the Prix Caprilli phase of the competition, but had three eliminations in the Cross-Country phase. Senior Flight Cadet I. M. Robertson was the sole survivor of this difficult course and won third R.A.F. individual place. He was riding 'Pirate' our show-jumper.

The British Horse Society No. 4 Area (East Midlands and South Yorkshire) Prix Caprilli competition was won by a team from Cranwell. The team was captained by Flight

Lieutenant G. N. Martin and was composed of Flight Cadet P. J. Robbie and two other Station riders. This team is to go forward to the Zone Final at Catterick on the 21st August. The annual inter-Squadron Competition for the Jorrocks Trophy was held on the 7th August. As riding has been accepted as a Summer Chimay sport this competition should assume a new importance.

Our achievements this term have been most satisfactory. We hope next term will prove as successful especially as we have two new horses in the stables.

DINGHY SAILING

The College Sailing Team met with varying degrees of success during the Summer. On several occasions the team demonstrated its

potential with the three very experienced pairs combining well under the captaincy of Pengelly. An example of this was the victory over Sandhurst during the Inter-Colleges match held at Bembridge, I.O.W. On other occasions the team failed to produce its form; perhaps the most dismal being the defeat on home waters by an almost identical Sandhurst team.



The lack of local opposition meant that too few fixtures were sailed and the subsequent lack of practice prevented the team from doing well. To improve this situation it is hoped to extend the fixture list to include more inter-service sailing and more individual entries in National Regattas.

Sailing took place every Wednesday and Saturday at the R.A.F.S.A. Midland Sailing Centre, Tamdon, and as anticipated, there were not enough boats available; we look forward to the arrival of several new dinghies to augment our fleet for next season.

The emphasis in our afternoon sailing this term has been on qualifying for the award of the R.A.F. Sailing Association helmsman certificates and this we have achieved with many of our members.

The possession of one of these certificates is ample evidence of ability to handle a dinghy under all conditions and enables the holder to use any of the three Services' dinghies.

The departure of No 91 Entry next Spring means that only one of the 1966 team will be left but it is hoped that the Graduation will be held after the Bembridge Inter Service

Colleges fixture so that the team of Chilvers, Berryman and Miskelly will still be at the College to avenge their defeat by the Royal Marines in the '66 match.

LONG DISTANCE WALKING

The members of the Long Distance Walking section have been called 'nutcases' more times than they have had blisters in the last year. If they are indeed mentally unstable, then the College must be in a very poor state, since more than eighty different people have been engaged on some activity to do with the section in that time.

The season really began the weekend following the Devizes-Westminster canoe race when two recent water-loving creatures joined three of their walking colleagues on the road to Louth. Despite the fact that this was 0500 on a Sunday morning, they felt fully prepared for the worst after having eaten enormously of what the early rising Cranwell kitchen staff had provided; for once, the staff received genuine thanks! The party had left Louth, with about 350 other hopefuls on the way to Skegness and back — 50 miles. The blue tracksuited College team, soon christened the 'fancy boys in blue,' were well supported and the team seemed to have some cheering effect on all of the walkers. Unfortunately, the initial spring and bounce in the team was fleeting, and after an hour or two, turned to a steady slog along the monotonous road. Eventually, Louth reappeared, and, although the team did not win, times of 9 hrs. 8 mins. by McKay (Secretary) and 10 hrs. 18 mins. for the Mazurk (Captain), Smith and Turnbull group were very satisfying.

Seven days later the scene had changed to rain-sodden Derbyshire, where eight cadets found themselves trudging over the northern part of the Peak District. This was an unpleasant weekend, and in complete contrast to the following weekend when 20 cadets went to Hathersage. Here, they had a glorious time in superb weather and inspiring scenery, and so the 25 mile walk in five hours was pure pleasure. This pleasure was further increased when, on arrival at the rendezvous

point, there was a prepared meal and completed camp site awaiting the walkers: the idea of a support party had been a rewarding innovation. With this as a basis, the following weekend, on the Lyke Wake Walk, Yorkshire, saw a more refined support party for the 24 walkers. The supporters were busy dashing between rendezvous to be kept with the two main parties as they crossed the moors, and seemed incessantly to be serving soups and salads.

The culinary skills of the support party truly amazed the walkers, and their morale was kept high by the high standards of service given in the face of the North York Moors, which were step by step becoming more and more cursed. Eventually all the participants completed the walk in about 16 hours, stopping only for snacks and a fleeting glance at Fylingdales' famous domes. Now, well in excess of 50 people wear the black tie, with the coffin shaped motif, which is the 'prize' for completing the 45 mile walk in less than 24 hours.

To change the scenery somewhat, the following Thursday 18 cadets were southward bound for Dartmoor. Unfortunately, Dartmoor was unreceptive: one of the famous fogs had descended and reduced visibility to ten feet or so. The party, therefore, had to content itself with a brisk road walk. This, however, was sufficient to show that both Mazurk and Dillon would not be walking the following weekend, which was Whit weekend, on the Ten Tors Walk. They had succumbed to 'water on the knee.'

Whit weekend arrived, and despite initial difficulties as regards recruiting, two teams of six walkers also arrived — at the Army Camp, Denbury, feeling superfit and awaiting the challenge of the moors. Our support organisation, in the capable hands of Mazurk, began by providing a splendid meal at table

(no less !) on the camp site. The only drawback to being so organised was that many other campers with less foresight came to us to borrow or beg : generally we were able to oblige them.

The people were more impressed, however, when the two smartly blue-tracksuited Cranwell teams began the walk next morning. The first team, led by McKay (and consisting of Hubbard, Diprose, Rees, Funnell-Bailey and P. Withers), began at a very fast pace along the road to their moor entry point. They were first onto the moor and kept up a good average speed till nightfall, when they were at their sixth tor. The team settled down in sleeping bags wrapped in polythene, unaware that over 1,000 people back at the Denbury Camp believed that they had walked so fast that they were already at the finish ! The team reached the finish, in fact, at 1500 hours on the Monday, when they found out that they were 3rd of 72 starting teams on the senior course. More important, however, was the fact that they were the first

ever Cranwell team to succeed in completing the senior course.

The second team, led by Lawrence, and comprising Woodley, Dobbs, Spink, Sambrook and the late John Capes, did equally well. Despite very sore feet at the time, they managed to march to the finish in line abreast in perfect dressing ! They were the 7th home in the 10 finishing teams, which was a very creditable performance indeed. Both teams had done very well, and credit was due to the individuals, and to the drive and leadership of McKay and Lawrence.

During this year the long distance walking section has worked extremely hard on the older die-hard walks, and has branched out and been successful in some newer ventures. The culmination of the season was undoubtedly the success on Dartmoor, where a towering challenge for the future was built. Perhaps succeeding entries will have some 'nutcases' who will be willing to accept the challenge ! We hope so.

WATER SKI-ING

Other than indoor preparations before the advent of warmer weather, the section did not begin its activities until the beginning of the Summer term.

At first the water was bitterly cold with the weather reasonable. Later in the year the water became warmer but the weather turned against us. Despite such drawbacks the section has done some useful ski-ing. In the beginning there was but one cadet left from last year's membership. After rapid promotion to captain, he recruited several cadets who had not ski-ed before and one or two cadets who had some previous experience. As we near the end of the season most of the members can ski competently on two skis and at least four have reached a reasonable standard on single skis.

Most of the ski-ing has been done on the River Trent where local bye-laws have limited ski-ing on weekends to late afternoons and evenings.

At half-term the boat was taken down to Eastbourne to enable the members to do

some ski-ing on the sea, the waves making a pleasant change from the still waters of the Trent. Although the sun shone, the on-shore winds whipped the sea into large waves and prevented us from ski-ing on two days of the holiday.

Having learned by our trip to Eastbourne, our first trip during the Summer term period was to Salcombe, Devon, where we hoped the bay would afford us some protection from sea-breezes. The second trip of the leave period was to St. Malo on the west coast of France where we expect to find, at the very least, warm weather.

During May, Mr Oliver of Swineshead visited the College and very kindly brought us some interesting films on boat handling and trick ski-ing. He added some very useful advice on causes of engine trouble and their respective remedies.

The Winter term will afford some rest to our tired legs and aching backs while we work on the boats and prepare for warmer weather.

RAF BUYS DECCA LORAN C/A

A contract has been signed by the Ministry of Aviation for the supply of Loran C/A navigational equipment to the Royal Air Force. The contract, which is estimated to be worth approximately one million pounds, represents not only a saving of over two million pounds to the British taxpayer but also a saving in dollar expenditure. This contract was won in the face of stiff American competition. The Decca Navigator Company Limited will supply approximately 200 sets of equipment at less than one third of the price which would have been charged by their American competitors. Delivery of the equipment will commence in January 1967—less than one year from the initial discussions on the project and will be used for long range navigation by Royal Air Force C-130K, VC.10, HS.801 and Belfast aircraft.

The equipment has been designed by The Decca Navigator Company Limited, acknowledged world leaders in hyperbolic navigation systems, who not only hold basic patents on the Loran system, but have already supplied Loran equipment to the U.S. Navy.

DECCA - world leaders in hyperbolic navigation systems

The Decca Navigator Company Limited. London



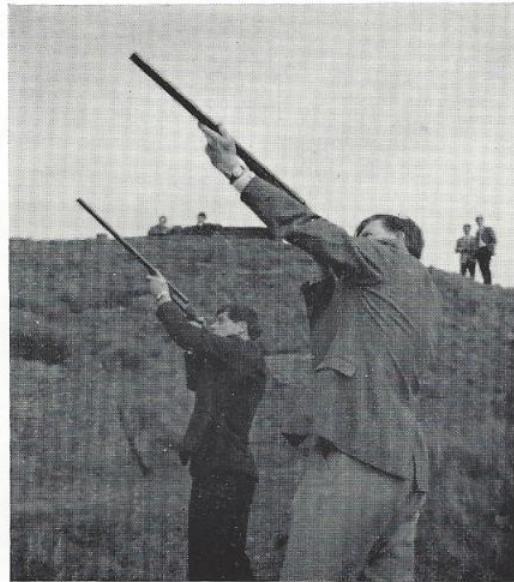
FIELD SHOOTING

Although it was the close season the section has been unusually active for the Summer term, with clay pigeon shooting taking most of our members' energy.

One afternoon in particular was spent at Barkston, camouflage netting over faces, and cadets deep in the bushes waiting for pigeons to be attracted by the decoys. After three hours of skulking in the undergrowth, the bag consisted of eight pigeons, and of course all those that got away.

The annual clay pigeon match against the officers had several tense moments, especially when the officers found out that they had been beaten by two points. In all fairness they had to have a cadet in their team, as they were one short, and his score did not help them a great deal. We hope next year to have a match against the local farmers who are the real experts, with a first class clay pigeon range of their own.

Seven cadets and two officers also visited the Skeet Range at Alconbury where the hospitality of the Americans was overwhelming. After one and a half hours on their range, we adjourned to the Rod and Gun Clubhouse where we were faced by American-sized steaks and other delights.



Next term the section is planning clay pigeon matches against Dartmouth and Sandhurst, but we will have to do some more training before the meeting. The officers have kindly allowed us to send cadets to their some shoots at Cranwell. With this and the Inter-what more sophisticated Collegiate matches we should be busy, and we hope for more members from the junior half of the College.

GOLF

There have been several changes in the golfing scene at College during the Summer term. Flight Lieutenant J. Price has taken over the task of guiding officer from Flight Lieutenant J. Currie, and also the College took part for the first time in the Golf Foundation Scheme which gave invaluable experience to all those who received instruction. If there is enough support for the Scheme in the future it will become a regular feature of the golf season.

We had a very varied fixture list, the most interesting matches being the traditional battles against Dartmouth and Sandhurst.

We were heavily defeated both times and unfortunately this trend continued through the term. The main reason for this was that most of the team lacked experience of match play. Many of this year's team will be playing again next season and the results should consequently improve.

A lot of effort is going into arranging matches for the coming season in order to produce a balanced fixture list. The idea is that people who regarded golf in the past as something for their spare time only will be attracted to it as a major sport, for the mutual benefit of the players themselves and College golf.

FENCING

This term was devoted to training for the Royal Tournament held at Earl's Court on the 22nd July. The College team was slightly handicapped by the fact that it proved impossible to arrange any matches in the 'off' season. Thus, the team arrived at Earl's Court feeling a little apprehensive, but determined to do well.

The first competition, the Epee Championship, swung in our favour when all four members of our épée team won places in the final six. After an exciting and enjoyable contest, Flight Cadet T. Locke won first place, Flight Cadet T. W. Kirkland, Flight Cadet C. Leuchars and a Sandhurst cadet tied for 2nd place. These last three fought again to decide their positions, Flight Cadet Kirkland coming 3rd overall and Flight Cadet Leuchars 4th.

The Foil Championship was very exciting and produced a high standard of fencing, especially from Cranwell and the Naval School, Pangbourne. Flight Cadets Wylie and Faisal won their places in the final six, and after a long and hard fought competition, came second and third respectively.

The Sabre Competition started at 1900 hours and was the least successful of the three championships for the College. However, Flight Cadet J. Wildman fought very

well, won a place in the final, rose to the occasion, and won second place.

Overall, the College team managed to take 5 out of 9 major prizes. This is the best performance by a College team for the last 5 years. For this success, we thank Sergeant A. Williams, our Fencing Master. He spent many long hours coaching the team and everyone was very sorry to see him retire at the end of July.

His leaving was marked by a small ceremony after the Athletics match between L'Ecole de L'Air and Cranwell at the end of the Semaine Francaise. The Commandant presented Sergeant Williams with a silver salver in recognition of his service to the College. He has trained the fencing team for the last 7 years. Himself, a skilled and well-known R.A.F. fencer, his experience and coaching were invaluable to many cadets throughout the years. The Commandant also paid tribute to Sergeant Williams' other activities, such as canoeing and athletics and, not least, his ability as a fluent French and Italian Linguist. However, it is for his fencing that he will be remembered and it is fitting that the salver was inscribed :

'To Sergeant André Williams
Maitre d'Armes
Royal Air Force College, 1957-1966'

TENNIS

At the beginning of the season tennis had a very big following and it was unfortunate that numbers had to be reduced owing to the shortage of courts.

For the first team, the first half of the season appeared to be a continuation of the run of bad luck they suffered last season, winning only two of their first seven matches. After this, however, they won four games in succession, including their match against the Royal Military Academy, Sandhurst.

The second team enjoyed a much better season than last, winning five of their ten matches. Many of these players will still be here next season and show good promise for the future.

The inter-Squadron competition produced some closely fought contests with a high standard of tennis. 'B' and 'C' Squadrons are to be congratulated on sharing the trophy and Senior Under Officer E. T. M. Danks and Flight Cadet D. Williams are to be congratulated on being awarded colours.

MOUNTAINEERING

The rock-climbing section has once again been very well supported by over sixty cadets from all the entries. The 20 week Summer term saw only five weekends when an expedition was not organised to some part of the country.

During the Easter leave period a successful expedition to Gibraltar was undertaken by eight flight cadets. Still boasting many virgin rocks the island provides climbs which are magnificent in length and exposure.

The sea-cliffs of Swanage were the less awe-inspiring but more educational surroundings for a Whitsun expedition. Very much more experienced cadets returned after the four days of sunshine, climbing and swimming.

The weather has also been fine for the Pennine trips to Laddow and Stanage. Laddow is a relatively unfrequented ledge and consequently the routes are littered somewhat and much less obvious than is usually expected. Stanage however provides the opposite extreme of clean pitches in many grades. Though many tend to scorn their length the climbs do demand friction techniques impossible on rocks other than gritstone.

The use of the R.A.F. Mountain Rescue hut in Bethesda has meant that North Wales has become less of a masochist's paradise. No longer does it demand that climbers be capable of erecting tents at three o'clock in the morning with a howling blizzard and suspected frost-bite, but the party live in comparative luxury and can make the best use of the time available.

For the first time in several years an expedition was organised to the Lake District and the crags around Scafell. The weather was not very kind but the climbing was entirely new and hence return trips are planned.

During the Summer leave period an expedition of six cadets travelled to the Jotenheimen mountains in Norway, and a further party of four cadets visited the mountains of Saudi Arabia.

At present, ability within the section varies between the novice and climbers capable of leading Hard Severes. The plans for this term are to generally improve standards and give novices a good grounding in rope techniques.

SUB-AQUA

Our activities last term were various, but mainly centred in giving the new members of the section experience in open water diving. This was to prepare for the combined expedition to Libya during the Summer recess. Unfortunately many members were involved in King Rock 66 and could not attend the Libya trip.

During the mid-term break a party spent the week in Cornwall, staying at Royal Air Force, St Mawgan. For many it was the first opportunity of open water work and proved very successful. Trips have also been made to Stoney Cove, Leicester, where it is possible to dive to a depth of about one hundred feet.

During last term our services were called upon by a boat owner from Newark who asked us to search for a lost outboard motor engine. Unfortunately the conditions for diving in River Trent are very poor and we were unsuccessful, although much valuable experience was gained.

The expedition to Libya this Summer was very similar to that made in 1964. However this time we moved along the coast to excavate an ancient town west of Tobruk. The diving and also the way of life provided a very interesting time and the expedition lived under canvas completely away from civilisation.

POTHOLING

Three weekend expeditions were mounted during the Summer term. These were to the well worn Carlswork Cavern for the benefit of beginners in the junior entries, and one visit to Giant's Hole for the more experienced. The lack of serviceable minibuses and numerous college parades prevented a larger number of expeditions from being undertaken.

The wet-suits constructed by members of the section have proved very successful, and it is hoped more members may be able to afford the luxury in the future. The section has now purchased four NiFe electric lamps. These provide a far brighter and more reliable source of light than the old "stinkies."

This Summer an expedition left for Belgium on a Trenchard Award Scheme. They visited the Belgian caves, some of which are the deepest in the world, renowned for the size and beauty of their formations and caverns.

The section will miss the support of many active members of 89 Entry who graduated in August. There are many budding spelologists, however, in the junior entries to replace those lost veterans of the senior entry.

KARTING

The Karting Club's members consisted mainly of cadets in their senior year at the beginning of term. As the term progressed however, an interest was shown in the club by members of the Junior Mess.

Activities in the past term have been confined to the repair and maintenance of the karts and testing them on the South Airfield. One new kart has been purchased and this together with another kart which is at present being built by members of the club will enable us to enter races with confidence.

In the Winter term the club hopes to practice at the Lincoln Kart Club's track at Fulbeck and give the inexperienced although enthusiastic Junior Mess members of the club some idea of what will be expected of them in competitive racing.

BEAGLING

Most people assume that beagling enthusiasts have little to do during the Summer months, when there are no meets to attend and no-one need have any worries about turning out a good pack for the next day. However, particularly from the point of view of the kennel staff, the Summer is by no means a quiet time. This is the season when the pack is getting new recruits and these have to be looked after very carefully. Sometimes a pack is paraded at a show and this is far more than turning them out for a meet.

Naturally the kennel staff welcome the opening of the new season which means that by going to meets the monotony is broken twice a week for the hounds. Also the pack receives far more beneficial exercise during the sport of one afternoon than they would in a week of early morning walks.

By the time this *Journal* is in print the new season will be in full swing and we hope it will be even more successful than the last one.

.303 SHOOTING

The team has had a very successful term's shooting under the captaincy of S.F.C. D. E. North and the guidance of Flt. Lt. M. C. Turner. The standard of shooting has been high and there has been fierce competition for places in the team. The College has shot against such teams as Oundle, Westminster Hospital and United Hospitals and has been undefeated all term.

The highlight of the season came when the team was entered in the R.A.F. Championships at Bisley, a competition which the College has neglected for a number of years. The team met with a fair degree of success, finishing 15th out of 45 in the inter-unit .303 Competition, and also winning 6 pints of beer from the station team by beating them! Power and Bryan distinguished themselves by winning individual range prizes. The team would like to express its gratitude to Flt. Lt. Turner for all his help and enthusiasm and wish him "Good shooting" at his next posting.

Colours were awarded to J. G. Davies, C. B. P. Power and A. K. Bryan.

CHORAL

After the all-out effort made in the production of the "Pirates of Penzance" last March, it was inevitable that the first few weeks of the Summer term should be a period of inactivity. However, since the mid-term break we have been meeting regularly, and rehearsing for the October concert.

Our numbers have been swollen by members of the Cranwell Little Theatre who are satisfying their musical, as well as their dramatic ambitions. This, however, is likely to be offset by the departure of No 89 Entry which contained many enthusiastic members, especially S.U.O. Slogrove to whom much of our past success must be credited.

The Winter term, with its dark evenings and fewer distractions should be the scene of much activity, with a concert, carol service, and a full-scale musical production to prepare for.

CHESS

The last season of Chess at the College has been highly successful but also put us in our place. We ended last season at the head of the South Lincolnshire second division, having played all of the smaller towns in South Lincolnshire and beating them all.

Obviously we needed more opposition and therefore we started this season in the first division. The difference in standard of play was much more than we had imagined and we found ourselves playing masters such as N. Littlewood and Van Gemergen, international players with great reputations.

Nevertheless, we ended up with almost as many matches won as lost and this showed how high a standard of Chess was being played at the College. It taught us that there was great room for improvement, as the matches we lost were only marginal defeats and could easily have gone the other way. For this reason friendly matches were arranged during the Summer close season to increase the interest and improve our standard of play.

MUSIC

Three visits were made this term : two to Sheffield and one to Grantham. At Sheffield City Hall cadets enjoyed concerts devoted completely to Wagner and Beethoven, and at Grantham Parish Church a party thoroughly approved a programme of popular classical music given by the Royal Philharmonic Orchestra, conductor Charles Groves.

The College guest room is still the music room, and even during the long Summer evenings music could often be heard filtering into the corridors. The records are now housed in three modern style cabinets bought by the Mess. It is hoped that a stereophonic record player will be installed next term so that full advantage can be taken of our collection of stereophonic records.

FINE ARTS

The section has continued holding sessions every week. A potter's wheel has been obtained and some very creditable work is being completed in this field.

During the term a visit was paid to the Pierre Bonnard exhibition at the Royal Academy. Two members also attended a figure painting course held at Brant Broughton under the auspices of the Kesteven Education Committee. It is hoped to attend the continuation course held during the Summer leave. The standard of work is improving and it is hoped that under its new secretary and in the facilities of its new accommodation the section will raise its standard even higher.

NATURAL HISTORY

The scope of the Natural History Section was considerably widened during May of this year when a group of members visited a coalmine near Doncaster. There were no birds or bees down there, only dust and grime, but strangely enough everyone seemed to enjoy it.

On the last weekend of term some members of the section went to explore the Norfolk Broads. It was decided that the best

way to start this was by a visit to the Natural History Museum in Norwich. We found this fascinating, giving us an account of the history of the wild-life of the Broads down through the years. The following day we tried to make use of this information in our explorations and certainly saw that the area lived up to its reputation as a leading wild-life centre of the British Isles. We hope to visit the Broads again in the near future.

Other recent activities of the section include the starting of a lepidoptery collection (butterflies, moths and similar insects) and an attempt is being made to assist the Nature Conservancy in its National Badger Census.

MOTOR CLUB

Activities in the Summer term have been seriously curtailed by the new Ministry of Transport regulations for rallies. The term is usually a less active one, in any case, for the Motor Club, since most rallies take place in the winter months.

The combined result of these two factors was but one rally held towards the end of term. This, however, was judged a success by all competing.

Next term should see much more happening in the Motor Club with two rallies already planned, and one series of driving tests.

GERMAN CIRCLE

The College German Circle had five major meetings during the Summer term. Although not one of the largest sections, it is supported by a "hard-core" of cadets who study German as their humanities subject. In addition a surprisingly large number of civilians from the district attend our meetings, which, naturally, are conducted in German.

The Section provides a "painless" method of learning German by viewing film and cartoon, play reading, lectures and discussion. Films shown included "Ich denke oft an Piroshka," "Das Lied von Kaprun." A lecture by the former German lecturer from Nottingham University entitled "German Today," was most popular and many inter-

esting Germans appeared at the meeting. It is hoped to repeat the success of our "gemütliche Abende" during the Winter. Kommen Sie mit ?

FRENCH CIRCLE

The Section was not very active last term apart from the French week. However in the Summer some Cadets went to France to stay with French families.

During the French week the French Circle supplied helpers for the wine and cheese tasting. Apart from moving furniture in preparation for the tasting, members had to wear dinner jackets and, having acquired a rapid knowledge of French wines from the French assistant, give a connoisseur's opinion on the various wines to those tasting.

As stated, this year we sent cadets to stay with French families during the Summer vacation. This gives the cadets practical experience of French which will be useful in the linguist and interpreter exams. In addition two cadets attended a French course at Annecy, sponsored by the French Government.

GLIDING

During the leave a lot of enthusiastic gliding was undertaken by cadets throughout the country and abroad. Firstly Pilot Officer D. A. Donnelly took part in the R.A.F. Championships at Bicester and succeeded in putting our club on the map as far as Bicester and the other competitors are concerned. He managed very well in this his first competition and we can see that in the future many more will follow his footsteps. Also during the first week two cadets managed to glide in Germany at R.A.F. Bruggen and a lot of friends were made in the hope that camps abroad might be possible in the future.

In the second week of leave a group of cadets attended a soaring week at R.A.F. Bicester with the G.S.A. centre there. A varied assortment of aircraft are being flown by cadets attending these camps in the hope that future gliders at the College may be of this higher performance.

The next two weeks were already covered by other College activities but the fifth week was singled out for a week's ridge soaring at Halesland in the Mendip Hills. The weather for this week was rather unfortunate, there was mist in the mornings though the afternoons were fine but it was the wind that let us down. It was very far from the required direction, South-West, and so we contented ourselves with seeing the landscape and making use of the occasional thermals. Other new glider types added these to our repertoire were the Swallow and Prefect.

The last week found three cadets on an instructor's course at Spitalgate, two of them starting from scratch and one doing a refresher. This brings us up to the beginning of the new term in which we plan many excursions to other parts of the country bringing different gliding techniques within the capability of our members.

JUDO

During the Summer term, the Judo section has concentrated on training for the winter, when more fixtures are available. Despite the lure of the great outdoors, with its attendant joys of sun, gentle summer breezes and fresh cooling showers, the attendance at the meetings has been very promising. The section has been awarded a sufficient grant to purchase a new mat. It is thicker and softer than the old one and we hope this will encourage more people to join.

During the term, the section entered the Midland Area Championships at Birmingham. Flight Cadet Bealer reached the third round of the high grades championship, and was also a member of the Lincoln team which was second in the team event. Flight Cadet Coville reached the quarter final of the lower grades championship.

For the coming term, fixtures have been arranged with Sandhurst and with Liverpool University, and several other universities and colleges have been challenged. The section can look forward in hope to the future, and anticipates the recognition of Judo as a major sport in the College.

ENGINEERING

Hovercraft Group : During the Summer term CH-1 was again extensively modified, and this craft was taken to a rally, held by Lord Brassey at Apethorpe near Peterborough. Three hovercraft from Cardington were operated by Cranwell cadets alongside CH-1, and our participation was quite successful.

Now that new facilities for work are available to us in Building 109 we propose to carry on with the construction of CH-2, which will be powered by a 60 HP gas turbine lent to us by the Rover Car Company. In addition it is proposed that we build a light-weight single-seat craft for racing. This craft will be powered by two 200 cc motorcycle engines. It seems that in the future amateur hovercraft meetings will include races, and there are at present several small racing hovercraft in existence.

Interest in hovercraft amongst cadets is growing and we are attempting to master the rather complicated theory that governs hovercraft operations, so that we may be able to build craft that are as advanced in design as possible. CH-2 should carry a 1000 lb. payload at 50 kts for one hour, and the projected propulsion system of two independently throttled piston engines coupled to propellers should give a high degree of directional control.

Other Activities : A Formula Four racing car is to be built by members of the section, and although metal has not yet been cut, parts are being ordered and design has been finalised. An autogyro project is under study at the moment and commercial constructors of this type of aircraft have been approached for advice in the selection of the design.

The section's workshop is also available for use by cadets doing small engineering jobs of their own.

PHOTOGRAPHIC

The section has a following of some sixty cadets ranging from the very competent to absolute beginners. The darkroom is well

equipped and has provided a useful facility for the majority of its users. There is also a small core of keen competent amateur photographers. There are plans for a competition in the near future to encourage a display of talents.

The section's main activities have been the instruction of new enthusiasts, and providing the *Journal* with photographic records of College events and activities. It is hoped this coverage will extend, and that future *Journals* will benefit increasingly from the efforts of the section.

CANOEING

During the Summer term the College Canoe section has had about twenty active members who have taken part in a number of races. Four crews went to Hereford and raced on the River Wye. One of the canoes was upside-down for some time but all the crews completed the course. Four crews were also entered for races at Bath and Lincoln.

In July two crews entered for the Poole Harbour race but unfortunately found themselves in rough conditions. Both came to grief after completing more than half of the course when one canoe capsized and the other sank. The four crew-members crossed the finishing line in the rescue craft and found themselves in distinguished company, as the winners of the 1966 Devizes-Westminster race were also aboard.

Towards the end of the term the inter-squadron canoe race was held on the River Trent. This was won by 'B' Squadron.

During the next term the section will once again be preparing to take part in the Devizes to Westminster race at Easter.

DRAMATIC

The section has had a busy and rewarding term. The start of the term found members of the section rehearsing with Cranwell Little Theatre for the joint production of "The Devil's General" by Carl Zuckmayer. This play, which was performed on April 26th and 27th, was Cranwell's entry in the 1966 Kesteven Drama Festival. The Adjudicator, Alan Vaughan-Williams, awarded first place to the Cranwell production.

The section's next production was Jean Anouilh's "The Lark" which was performed on July 14th as part of Cranwell's "French Week." No less than 50 cadets were involved in the production, both on and off stage.

During the term the section made two successful play visits to Nottingham Playhouse to see "Dr. Faustus" and "Moll Flanders."

Cadets were further involved in supporting the Lincoln Theatre Royal's production of "The Knack" in the Whittle Hall, by providing backstage help and running front of house arrangements.

In the future, the cadets hope to perform "The Long and the Short and the Tall," in December, with a cadet producer.

ANGLING

Unlike many other sections anglers can fish on their own and often prefer to do so. It is not necessary for a large group of people to participate at the same time and so regimentation and organised activities are not needed.

From the opening of the coarse fishing season on 16th June cadets have been making regular visits to the Trent and Witham and have on occasions been well rewarded for their efforts. These outings were numerous and carried out in spare time by small groups of cadets. The College has also entered several organised matches, with mixed results. The best fishing was normally experienced by cadets on leave.

Intimate knowledge of the waters and the fish they hold is essential and this lures cadets to the waters they fished in their schooldays. A weekend's fishing on the River Thames by the section led to several good hauls and set a precedent for future occasions. Many more of these visits are planned for the future, to places regularly fished by cadets who have detailed knowledge of the rivers and their moods.

A good reflection of the fishing that we have had this season can be seen from the fish caught which include 2½lb. perch, 5½lb. barbel, 3lb. eel, and 3lb. tench.

16 October 1916



16 October 1966

**For 50 years
we have served those who serve**

Stanley Robinson

Cranwell Store

OLD CRANWELLIAN NOTES

HONOURS AND AWARDS

In the Queen's Birthday Honours List Air Marshal D. F. Spotswood (Commandant of the College 1958-61) was made a Knight Commander of the Order of the Bath, and Air Marshal R. H. E. Emson (30-31C) was made a Knight Commander of the Order of the British Empire, Air Vice-Marshal J. H. Lapsley (36-37B) was made a Companion of the Order of the Bath, Air Commodore P. A. Hughes (37-39A) was made a Commander of the Order of the British Empire, Wing Commander P. V. Pledger (46C) was made an Officer of the Order of the British Empire and Squadron Leader N. K. Hopkins (52D) was made a Member of the Order of the British Empire. The Air Force Cross was awarded to Squadron Leader I. R. Martin (61C), whilst Queen's Commendations for Valuable Service in the Air were given to Squadron Leaders J. A. Robinson (57A) and J. R. Walker (68B) and to Flight Lieutenant D. J. McL. Edmondston (65A).

To them all the *Journal* offers its congratulations.

PROMOTIONS

To the following Old Cranwellians who were promoted on the 1st July the *Journal* would like to add its congratulations :

Air Marshal Sir Denis Spotswood ; Air Vice-Marshal M. D. Lyne (37-39B) ; Wing Commanders M. J. Armitage (58C), D. F. Bates (49D), D. R. K. Blucke (56C), D. J. Edwards (57A), R. MacA. Furze (47A), D. Harcourt-Smith (56A), J. M. Henderson (59B), J. M. Pack (58A), C. F. Pickard (48A) and J. L. Price (51B), and Squadron Leaders N. O. Bacon (70A), M. E. Bee (73C), J. R. Bradshaw (57D), C. W. Bruce (67C), P. Carter (66B), W. E. Close (60B), D. J. McL. Edmondston (65A), S. A. Edwards (69A), D. P. English (53C), N. J. Glass (54C), R. Green (61C), T. J. Greenhill-Hooper (60B), J. D. Heron (71B), R. S. Hutchinson (57D), R. G. Kerr (71C), J. G. Kerrigan (62B), R. P. Kharegat (68A), B. C. Letchford (61A), D. G. Lucas (74C), P. S. Martin (71A), P. McLeod (61C), E. J. Nance (71B), T. J.

Nelson (70C), R. F. Robertson (70B), R. M. Salt (58B), J. R. Sandle (61B), M. G. Simmons (73C), W. I. C. Stoker (71B), and D. J. Wyborn (58A).

AWARD OF THE D.F.C. TO FLIGHT LIEUTENANT P. S. MARTIN

The supplement to the London Gazette of 20th May 1966 announced the award of the Distinguished Flying Cross to Flight Lieutenant P. S. Martin (71A). The citation stated :

" Flight Lieutenant Martin was posted to No 20 Squadron in March 1963 and assumed command of 'A' Flight in the following November. During his tour of duty, which ended in November 1965, he flew 164 hours on operations in the Borneo territories and commanded five Hunter detachments. The operational Hunter sorties which he flew in Borneo were of a most demanding nature. They included the tactical cover of forward troops, the armed support of transport and helicopter operational deployment and long range air patrols seeking Indonesian air incursions on an ill defined border in the presence of well armed and aggressive enemy positions. Throughout his tour, this officer has demonstrated exceptional keenness and devotion to duty both in the air and on the ground. His aggressive and fearless approach was an inspiration to all the pilots on his squadron. Operating in extremely difficult terrain, often in marginal weather conditions, he carried out many important sorties where only his personal courage and determination made success possible. His qualities of leadership and exceptional flying skill were an example to all those who flew with him. Throughout his tour with the squadron he strove tirelessly to ensure that the maximum value was obtained from every operational flight. Working hours far beyond the normal call of duty, he carried out frequent visits to forward army units to improve the Forward Air Control system, to explain the capabilities of his squadron and to learn more of the problems of the units who required air support. The standards of co-operation and ground control of air strikes which obtain in Borneo are very

largely due to his efforts. Throughout his flying in Borneo, Flight Lieutenant Martin showed outstanding tenacity and complete disregard for his personal safety. His resourcefulness and drive were an inspiration to all who served with him. He showed courage and intelligence of a high order and contributed materially to the tactical efficiency of formations in Borneo."

The *Journal* offers its congratulations to Flight Lieutenant Martin.

ANNUAL REUNION

The Reunion was held on the weekend of the 18th/19th June. This was the 40th anniversary of the Association, which was formed on the 14th July 1926. 141 members attended the Reunion Dinner and many others wrote regretting that they could not attend and sending their good wishes. Among these was Flight Lieutenant R. E. Gorwood — the original Sergeant Major of the Cadet College — who mentioned that he would be 82 on the 19th June. A telegram of congratulations was sent to him on behalf of the Association. He asks that his thanks be conveyed to all concerned.

Group Captain Douglas Bader made a literal flying visit to the College and brought with him his uncle — Squadron Leader C. G. Burge, who was the first Adjutant of the Cadet College and made one of the first Honorary Members of the Association in 1926.

The sporting programme benefitted from the splendid weather which lasted the whole weekend. The cricket match ended in a victory for the Old Cranwellians by 5 wickets (the first win since 1960) but the tennis, squash and sailing were all won by the cadets, who proved too lithe and active for their opponents. The golf match unfortunately had to be cancelled.

The Annual General Meeting — chaired by the Commandant, Air Vice Marshal I. D. N. Lawson — produced one important decision affecting all serving Old Cranwellians. This is that, in future, the *College Journal* and relevant correspondence will be forwarded to the banks of serving members for redirection. At present much Associ-

ation correspondence is returned to the College from Service addresses from which members have since been posted. Retired officers will have the *Journal* and correspondence sent to their home addresses.

After the A.G.M. the President, Air Chief Marshal Lord Bandon, made a short speech and unveiled the portrait of Marshal of the Royal Air Force Sir Thomas Pike, which was painted by Mr H. Holt and presented to the College by the Association. After Sir Thomas Pike had thanked the Association for honouring him in this way, the portrait was hung in the Dining Room with the portraits of other distinguished Old Cranwellians.

The Chief of the Air Staff, Air Chief Marshal Sir Charles Elworthy, was the guest of honour at the Reunion Dinner. Following the traditional speech made by the Commandant, the C.A.S. gave a masterly talk about the current problems facing the R.A.F. He was made an Honorary Member of the Association and presented with the Old Cranwellian tie by Lord Bandon. Marshal of the R.A.F. Sir Dermot Boyle, after expressing the thanks of everyone to the C.A.S., told some relevant and amusing stories in his inimitable and witty style.

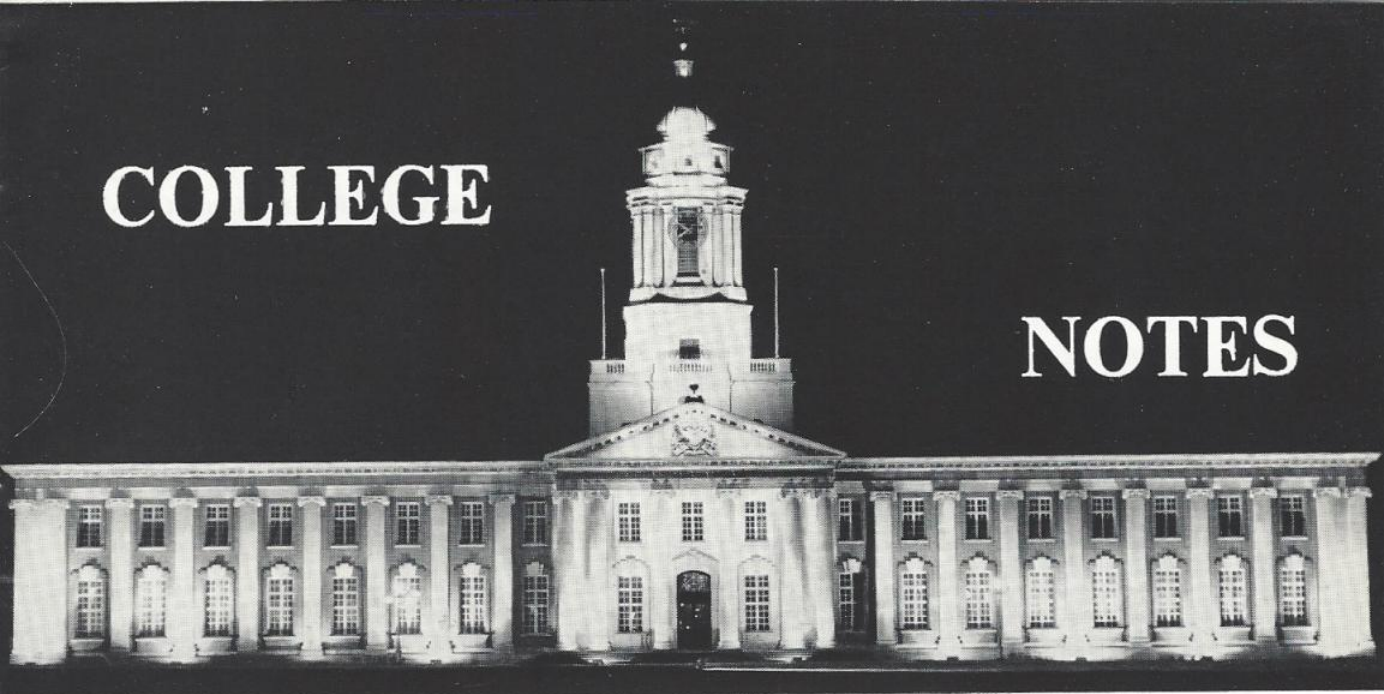
A large number of Old Cranwellians attended the Church Parade on the Sunday. The sermon was given by the Reverend Canon F. W. Cocks, a past Chaplain-in-Chief of the R.A.F. and an Honorary Old Cranwellian. He is now Rector of Wolverhampton.

After sherry and a rather late lunch Old Cranwellians made their various departures. One C-in-C was nearly separated from his luggage, but this deficiency was noticed just prior to his aircraft departing by an alert A.D.C. and a somewhat embarrassed host disgorged it from the boot of his car. So ended a very pleasant Reunion weekend, which, as ever, was made more enjoyable by the excellent and willing service of the College civilian staff.

It has been agreed by the President and Chairman of the Old Cranwellian Association that the Annual Reunion will, in future, be held in the R.A.F. College on the third Saturday in June. The Reunion in 1967 will therefore be on the 17th/18th June.

COLLEGE

NOTES



Just before the beginning of the Winter term, Air Commodore Neil Cameron, D.S.O., D.F.C., ended a regrettably short tour as Assistant Commandant (Cadets). The first to hold the post under the recent re-organization of the College, he saw probably the greatest changes in its history, and much of the success of the merger, with the complicated planning it entailed, must be credited to him. His forcefulness and zestful approach made an impact on all who had contact with him — and not the least on cadets, who will, moreover, miss his wit and warmth in after-dinner speeches at guest nights in College Hall. At his dining-out, he was presented by the Commandant, Air Vice-Marshal I. D. N. Lawson, with a very fine silver model of a crane to mark his association with Cranwell. He has gone to an appointment at the Ministry of Defence as Royal Air Force representative on a high-level joint service advisory committee. Our best wishes go with Air Commodore Cameron, his charming wife and their two children.

Dr. George Tolley, M.Sc., Ph.D., F.R.I.C., relinquished his post as Director of Studies at the end of the Summer term. With his background of scholarship and of experience in the field of technical education, he brought an authoritative influence and breadth of view to bear on all aspects of academic training at the College. This was particularly valuable during the vital last months of the merger's gestation and the first months of the new organisation. He kept a discerning eye on educational standards and methods in cadet and technical officer training and did much to promote closer contacts with the universities and civilian educational bodies. Dr. Tolley has gone to take up his appointment as Principal of the Sheffield College of Technology. We send best wishes to him and his family. They will be missed by the many friends they made at Cranwell, including the members of the Christian Union who frequently met at their house.

The new Assistant Commandant (Cadets) at the College is Air Commodore Richard Gordon Wakeford, M.V.O., O.B.E., A.F.C., who was a flight commander at the Royal Air Force College, Cranwell for 2½ years from November, 1947.

Born at Torquay, and educated at Kelly College, Tavistock, Air Commodore Wakeford joined the R.A.F.V.R. in March, 1941, and was commissioned a year later. After learning to fly at the Naval Air School at Pensacola, Florida, he joined No 212 Squadron of Catalina flying-boats in India, later returning home to become a flying instructor at No 131 Operational Training Unit. Subsequently he flew with No 210 Squadron of Catalinas based at Sullom Voe in the Shetlands.

In June, 1945 he was posted to Transport Command and flew with Nos 86, 246 and 511 Squadrons on the Singapore routes before taking the course at the Central Flying School in 1947. He then went to Cranwell as a flight commander, returning to the C.F.S. three years later to join the Examining Wing. In 1952 he was appointed



Personal Staff Officer to the Air Officer Commanding-in-Chief, R.A.F. Home Command, and in 1955 went to Air Headquarters, Malaya, being seconded in 1957 to the Malayan Government as Director of Operations.

In August, 1959, Air Commodore Wakeford took command of the Queen's Flight at Benson, Oxon., leaving in 1961 to join the directing staff of the R.A.F. Staff College, Bracknell. He was appointed to command the V-bomber base, R.A.F. Scampton, Lincs., in June, 1964, and since October, 1965 has been Senior Air Staff Officer, No 3 (Bomber) Group.

The *Journal* extends a warm welcome to Air Commodore Wakeford, Mrs Wakeford and their family.



Group Captain C. E. P. Suttle, O.B.E., B.Sc.(Eng.), M.I.E.E., M.I.E.R.E., has become the new Director of Studies. Group Captain R. Duckett, O.B.E., B.Sc., has moved across into the post of Assistant Director of Studies (Engineering) and Group Captain E. B. Haslam, M.A., has become the new Assistant Director of Studies (Science and Humanities).



Group Captain E. B. Haslam is a former Exhibitioner of St. Catherine's College, Cambridge. He graduated in 1937 with 1st Class Honours in English and Geography. After two years schoolmastering he was commissioned in the 2nd Battalion Sherwood Foresters. He subsequently served in the North African and Italian campaigns and ended the war as G.S.O. 3 (Intelligence) to the 1st Infantry Division.

He was English master at Boston Grammar School from 1946-49 and also commanded C Company 4th Royal Lincolns (TA). He joined the R.A.F. Education Branch in 1949 and, after serving at the Initial Training School, O.C.T.U. and Air Ministry, attended the Staff College course at Bracknell in 1954. Following this he served in Hong Kong and then completed a second tour at Air Ministry.

Group Captain Haslam was Command Education Officer, R.A.F. Germany, from 1961-63 and from 1963-65 he served on the Directing Staff of the R.A.F. Staff College, Bracknell. From 1965 until coming to Cranwell he was Command Education Officer, Fighter Command.

We welcome Group Captain and Mrs Haslam to Cranwell.



The pattern of training has now been altered so that all cadets will be commissioned after two and a half years. Engineering cadets will remain a further two years at Cranwell as student officers before completing their course.

There have also been two major changes in the flying training at the College. No 2 Jet Provost Squadron has moved from Barkston Heath to Cranwell and the role of Barkston Heath has now changed from that of a satellite to that of a relief landing ground. In addition, the Chipmunk Flight, whose departure was recorded in the Winter 1965 *Journal*, has returned to Cranwell to provide an initial course for pilots.



The following promotions were made in No 90 Entry in August 1966 :

'A' Squadron : Flight Cadet Senior Under Officer A. I. Saggi, Flight Cadet Under Officers K. B. Patrick, K. H. Minton and P. J. Robbie.

'B' Squadron : Flight Cadet Senior Under Officer R. M. Joy, Flight Cadet Under Officers T. W. Kirkland, S. C. Gruner and C. A. Humphrey.

'C' Squadron : Flight Cadet Senior Under Officer E. T. M. Danks, Flight Cadet Under Officers A. J. Stables, C. Heithus and J. M. Dixon.

'D' Squadron : Flight Cadet Senior Under Officer G. S. Pyle, Flight Cadet Under Officers R. A. Bealer, E. J. Stapleton and A. D. Denison.



The competition for the Prince of Wales Trophy and for the title of Sovereign's Squadron was won by 'C' Squadron, who won the Chimay Cup and the Knocker Cup and came last in the Ferris Drill Competition.

In the University of London examination held this summer five candidates who entered from the College were successful and were awarded the Bachelor of Arts degree. They were Pilot Officer A. N. Wise (No 88 Entry) and Pilot Officers C. A. Gardiner, A. R. Macdonald, H. K. W. Middleton and R. P. Slogrove (No 89 Entry).



Honours and commendations have been awarded to the following personnel of the College :

In the Queen's Birthday Honours List the British Empire Medal was awarded to Flight Sergeant R. Boxell and Chief Technician O. A. Kirk.

The Air Officer Commanding-in-Chief, Flying Training Command, commended Warrant Officer J. G. Date, Flight Sergeant J. P. Casey and Sergeant R. G. Reed.

The Air Officer Commanding-in-Chief, Technical Training Command, commended Flight Lieutenant D. McLean.

The Air Officer Commanding commended Flight Sergeants H. E. Hodgkinson and E. F. James, Chief Technicians A. V. B. Crawford, W. Green and A. W. Stewart, Sergeants J. McGlade and C. C. Prior, and Corporals D. L. Baker and T. J. Horne.



In April, 1966 Mr W. F. Simpson left the College after seventeen years as the elder statesman of College cricket and soccer. Before coming to the College Fred Simpson had been a member of the M.C.C. staff at Lords, an Amateur Cup finalist and an England amateur trialist. This invaluable experience he put to good use during his period at the College. He never missed a match or practice. His patience was inexhaustible and his knowledge utterly professional. Many a College victory and improved individual performance have resulted from a chat with Fred in the quiet of his sports store.

Our loss is M.C.C.'s gain because Fred Simpson has returned to cricket's inner circle as a first class umpire, carrying with him the gratitude and good wishes of us all.

During the last year the College Library has received a number of valuable donations, including the following :

From Air Commodore D. W. F. Bonham-Carter, C.B., D.F.C., R.A.F. (Retd.), a collection of aeronautical magazines, mainly "Flight" and "The Aeroplane" for the period 1909-1918.

From Squadron Leader C. G. Burge, O.B.E., R.A.F. (Retd.), adjutant at the College from 1920 to 1922, a set of the "Royal Air Force Quarterly" from 1930 to 1938, together with a varied selection of books and pamphlets relating to the Royal Air Force.

From Squadron Leader R. C. Pee, R.A.F. (Retd.), a collection of World War 1 publications, including a complete set of the periodical "The Great War."

From Mr J. O. H. Norris, an R.N.A.S. Warrant Officer at Cranwell from 1916 to 1918, and now 87, an album containing photographs and copies of the camp magazine, "The Piloteer."

These and other generous gifts in recent years have enabled the College Library to fill several important gaps in its holdings of magazines. Other gaps, however, still remain to be filled. In particular, the College Librarian would be pleased to hear from anyone who might be willing to present copies of "Flight" for any part of the period 1920-1950 or of the "Aeroplane" for the period 1941-1945.



Imperial Service Medals were presented by the Commandant to the following College servants during the Summer term 1966 :

In April, Mr Alfred Bristow, for his 34 years service at the College.

In May, Mr Harold Doughty, on his retirement after 36 years service in the College Hall.

In August, Mr John Dunn, for his 26 years service in the College Hall.

The first ever Semaine Francaise was held at Cranwell from the 10th — 16th July. The week began with the screening of the French film "Diary of a Chambermaid." Reactions to this were mixed but not so those on the next day to the superb aerobatic display given by Patrouille de France.

On the Tuesday the College Band gave a fine concert of French music and music about France, which featured the harp playing of Mademoiselle Giselle Herbert. The next day a very popular "Tasting of Wines and Cheeses of France" took place in No 2 Officers' Mess. The wines and cheeses were provided by the Comité National des Vins de France and SOPEXA.

On the 14th July, itself, the cadets produced "The Lark" in the Whittle Hall. As at the concert, ladies present were given free samples of perfume provided by leading French manufacturers. A formal supper was held on the Friday to welcome the party of officers and cadets from L'Ecole de l'Air, while the final day's programme included athletics and swimming contests between cadets of the two Colleges (both won by Cranwell), and 'Bastille' dances in No 2 Officers' Mess and College Hall. Throughout the week the College Library housed an exhibition of French lithographs and water-colours. This, like many other activities during the week, was open to the public.



The R.A.F. College Unit had a very successful Summer sports season. The additional help for the first time from the students of the Department of Engineering gave the representative teams strength in depth.

Swimming and Water Polo : The Station swimming and water polo teams take pride of place having won every event entered. They won the following competitions : R.A.F. Inter-Station Team Relay Cup ; R.A.F. Inter-Station Water Polo Championships ; F.T.C. Swimming Champions ; F.T.C. Water Polo Cup ; Lincs. County Team Swimming Champions ; Lincs. County Water-Polo League ; Water Polo results : played 24, won 24. R.A.F. representatives : Sqn. Ldr. G. A. W. Worsell (captain), Sgt. T. Eyre, Cpl. S. Clarke, Cpl. D. Damey,

Cpl. K. S. McNeillie, Jnr. Tech. D. Cole,
S.A.C. M. Leask.

All swimmers on the station gained 1, 2 or 4 points towards the total of 2,933 points for the Mounsey Trophy, 1966 which means that Cranwell, winners in 1965, retain the trophy for another year.

Cricket. The Station Cricket team completed a large programme of weekend, Wednesday and weekday evening matches. The season reached a climax with victory by 66 runs over R.A.F. Ternhill in the Flying Training Command Cricket Cup Final. Sqn. Ldr. G. A. W. Worsell and Fg. Off. G. Gibson were members of the R.A.F. XI.

Golf. The Cranwell Golf Society has a large membership with handicaps ranging from 4 to 24. It won the Whitworth Trophy, the Queen's Birthday team event and the the East Midlands Golf League. Sqn. Ldr. S. P. Smith represented the Royal Air Force in a match at Woodhall Spa Golf Club.

Angling. The Angling Club was out in force throughout the Summer and Cranwell finished second in the East Midlands Angling League, being beaten only by R.A.F. Finningley, the ultimate winners.

Sailing. F.S. Leeman was a regular member of the R.A.F. Offshore racing team. Cranwell won the Directly Administered Units Cup at the Welsh Harp.

Athletics. Cranwell Unit came second to Cranwell College in the Command Inter-Station Area 3 match at Syerston on 25th May, and was, therefore, eliminated. Many of the Unit team went to the Flying Training Command Championships as individuals, however, and four of these qualified for the Flying Training Command team by winning or coming second in their events :
Plt. Off. Leach — 440 hurdles ; Plt. Off. Purser — 2 miles walk ; Plt. Off. Symonds — 440 hurdles ; Sgt. Vaughan — triple jump. In the R.A.F. Athletics Championships, only Plt. Off. Purser of the Cranwell representatives reached the finals, he came fifth in the 2 mile walk.

Cranwell Unit was eliminated in the 2nd Round of the R.A.F. Inter-Station Competition, but the Unit relay team (Plt. Off. Leach, Plt. Off. Symonds, Plt. Off. McCandless and Sgt. Vaughan) qualified for the final of the R.A.F. Inter-Station Relay competition (senior division), where it came third with a time of 44.8 seconds.

Through the valiant efforts of the entire station Cranwell won the senior division of the standards competition with 87.5% participation.

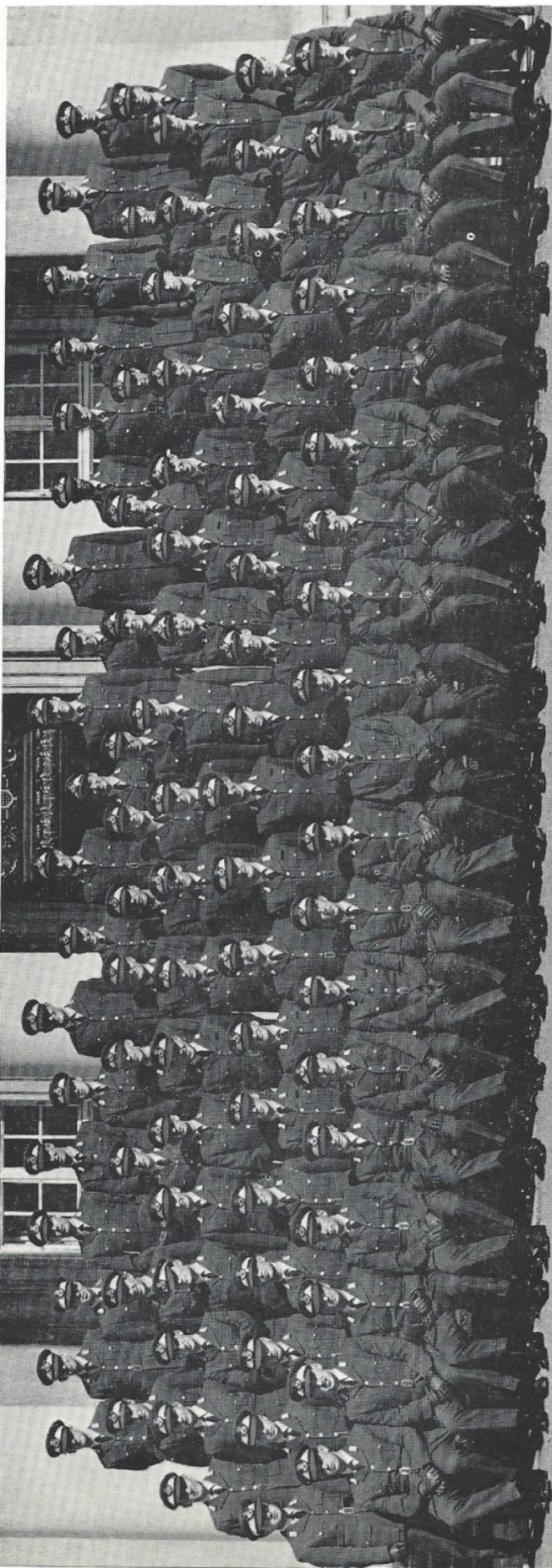
We regret to have to report the deaths, in a climbing accident on 22nd June, 1966, of Flight Cadets C. J. L. Capes and G. D. G. Matthews of No 93 Entry 'A' Squadron.

Colin John Longfield Capes joined the College in 1965 from Soham Grammar School. He played an active part in the life of the College, his main interests being canoeing—he took part in the Devizes to Westminster Canoe Race—shooting, long-distance walking, climbing, motor-cycle racing and debating.

Geoffrey David Gilbert Matthews was educated at Cranbrook in Kent. He too took an active interest in many aspects of life at the College, and was a member of the mountaineering, motor, music and chess sections of the College Society. He played basketball for the College second team. In the last Malaya Cup competition he was judged the smartest cadet of the winning Squadron.

Both these cadets were lively, robust young men who put a lot of energy into all they did and they were obviously well-suited to life at the College.

We extend our sympathy to their parents and families in their great loss.



Fifth Row :

Senior Flight Cadets P. J. Harrison, J. C. Newland, N. R. Ledsham, R. G. Nailer, D. A. Donnelly, C. J. Hibbert, A. R. Thomas, G. Howard, R. W. Shimmons, F. Whitehouse, M. L. Thompson, M. J. Richardson, M. J. Laundry, N. Gunaratnam, M. S. Dean, S. McAndrew, A. J. P. Styles, P. J. Clough, D. A. Foulger.

Fourth Row :

Senior Flight Cadets C. A. Gardiner, F. D. A. Harlow, P. G. Robinson, A. J. Steel, J. Pyper, A. Ware, R. J. Kennett, R. Pengelly, R. D. Johnston, J. K. Newton, W. H. C. Hoare, D. C. Denham, C. J. Maskell.

Third Row :

Senior Flight Cadets K. B. Chalkley, M. W. Pyle, A. J. Griffin, H. K. W. Middleton, N. M. Griffiths, A. J. Kent, W. S. Walton, P. A. Cooper, P. F. Thompson, J. Green, D. A. Kendrick, C. D. Hinds, G. T. Taylor, R. A. Forder, W. S. Waugh, B. D. Longman, B. P. Synnott, P. G. Norris.

Second Row :

Senior Flight Cadets J. E. Mazurk, P. Crispin, R. C. Shuster, D. Diamondopoulos, R. J. Wood, D. Hayward, R. Northcote, A. R. Macdonald, M. R. Coe, P. G. Buckland, I. M. Robertson, N. B. Smith, G. N. Dryland, D. A. Archbold, T. W. Parkinson, J. B. Coates, D. Fowler, D. E. North, I. F. Clark.

First Row :

Senior Flight Cadet S. A. Wrigley, Under Officers S. J. Coy, J. J. Pook, D. J. Earle, K. W. Cartledge, P. T. Squire, C. F. Lovegrove, Senior Under Officers I. M. Johnson, G. A. Robertson, R. P. Slogrove, R. K. Jackson, Under Officers J. D. Revell, P. A. Loveridge, T. A. Reed, C. C. Saunby, M. G. Cooper, V. W. Yates, Senior Flight Cadets G. J. Oughton, R. F. Cresswell.

COMMISSIONING LIST — No 89 ENTRY

- R. K. JACKSON, Senior Under Officer (Pilot) : Athletics ; Badminton ; Sub-Aqua ; Canoeing ; Dramatics.
- I. M. JOHNSON, Senior Under Officer (Pilot) : Rugby (Captain, Colours) ; Cricket ; Dramatics ; Choral ; Potholing.
- G. A. ROBERTSON, Senior Under Officer (Pilot) : The Philip Sassoon Memorial Prize ; Hockey (Captain, Colours) ; Cricket (Colours) ; Bridge.
- R. P. SLOGROVE, Senior Under Officer (Equipment) : B.A. ; The Sword of Honour ; The R. S. May Memorial Prize ; The Queen's Medal ; The Royal New Zealand Air Force Trophy and Ministry of Defence Prize for War Studies and Humanities ; The Alastair Black Memorial Award ; Athletics ; Cross-Country ; Parachuting ; *Journal* (Editor) ; Choral Society (Secretary).
- K. W. CARTLIDGE, Under Officer (Pilot) : Athletics ; Cross-Country (Colours) ; Mountaineering ; Potholing ; Fine Arts ; Choral ; Trenchard Award Prize.
- M. G. COOPER, Under Officer (Navigator) : Soccer (Captain, Colours) ; Athletics (Captain, Colours) ; Cricket ; Gliding.
- S. J. COY, Under Officer (Pilot) : Rowing (Captain) ; Hovercraft ; Motor.
- D. J. EARLE, Under Officer (Technical) : Rugby (Colours) ; Cricket (Colours) ; Hockey ; Bridge.
- C. F. LOVEGROVE, Under Officer (Pilot) : Rugby ; Cricket ; Choral ; Photographic ; Skiing ; Dramatic.
- P. A. LOVERIDGE, Under Officer (Technical) : The Ministry of Defence Prize for H.N.D. Studies ; Basketball (Captain) ; Tennis (Colours) ; Swimming ; Bridge.
- J. J. POOK, Under Officer (Pilot) : The R.M. Groves Memorial Prize and Kinkead Trophy ; Squash (Secretary) ; Hockey ; Swimming (Colours) ; Sub-Aqua ; Field-Shooting.
- T. A. REED, Under Officer (Technical) : Swimming ; Equitation ; Water Polo ; Cross-Country ; Photographic.
- J. D. REVELL, Under Officer (Technical) : Judo ; Hockey ; Canoeing ; Trenchard Award Prize.
- C. C. SAUNBY, Under Officer (Pilot) : Rugby ; Sailing ; Motor ; Sub-Aqua ; Field-Shooting.
- P. T. SQUIRE, Under Officer (Pilot) : Rugby ; Golf ; Cricket (Colours) ; Dramatic ; Potholing.
- V. W. YATES, Under Officer (Pilot) : Soccer (Colours) ; Cricket (Captain, Colours) ; Dramatic.
- D. A. ARCHBOLD, Senior Flight Cadet (Pilot) : Badminton ; Canoeing ; Squash ; Photographic ; Radio ; Chess ; Printing ; Dramatic.
- P. G. BUCKLAND, Senior Flight Cadet (Pilot) : Basketball ; Tennis ; Choral ; Music ; Woodwork.
- K. B. CHALKLEY, Senior Flight Cadet (Navigator) : Riding (Captain, Colours) ; Soccer.
- I. F. CLARK, Senior Flight Cadet (Pilot) : Soccer ; Chess (Captain) ; Photographic ; Motor.
- P. J. CLOUGH, Senior Flight Cadet (Technical) : Rugby ; Squash ; Sailing ; Fencing ; Bridge.
- J. B. COATES, Senior Flight Cadet (Technical) : Cricket ; Swimming ; Beagling ; Gliding ; Sub-Aqua ; Bridge.
- M. R. COE, Senior Flight Cadet (Pilot) : Cross-Country (Captain, Colours) ; Athletics ; Tetrathlon ; Choral ; Jazz ; Mountaineering.
- P. A. COOPER, Senior Flight Cadet (Pilot) : Soccer (Colours) ; Cricket ; Athletics ; Bridge ; Fine Arts ; Hovercraft.
- R. F. CRESSWELL, Senior Flight Cadet (Equipment) : Rowing (Secretary) ; Equitation ; Choral ; Folk-Singing.
- P. CRISPIN, Senior Flight Cadet (Navigator) : The Institute of Navigation Trophy and the Ministry of Defence Prize for Navigators ; Sailing ; Equitation ; Dramatic ; Motor.
- M. S. DEAN, Senior Flight Cadet (Technical) : Gliding ; Sub-Aqua.
- D. C. DENHAM, Senior Flight Cadet (Technical) : Soccer ; Basketball ; Photographic.
- D. DIAMANDOPOULOS, Senior Flight Cadet (Technical) : Rugby ; Gliding ; Photographic.
- D. A. DONELLY, Senior Flight Cadet (Navigator) : Basketball ; Athletics ; Gliding (Captain).
- G. N. DRYLAND, Senior Flight Cadet (Pilot) : Soccer ; Skiing ; Fine Arts.
- R. A. FORDER, Senior Flight Cadet (Navigator) : Soccer (Colours) ; Cricket.
- D. A. FOULGER, Senior Flight Cadet (Pilot) : Cricket ; Badminton ; Gliding.
- D. FOWLER, Senior Flight Cadet (Technical) : Soccer (Colours) ; Swimming ; Fencing ; Bridge ; Music.
- C. A. GARDINER, Senior Flight Cadet (Equipment) : B.A. ; Rugby ; Choral ; Fine Arts ; *Journal* ; Music.
- J. GREEN, Senior Flight Cadet (Technical) : Cross-Country ; Engineering.
- A. J. GRIFFIN, Senior Flight Cadet (Pilot) : Fencing ; Hovercraft ; Choral ; Motor ; Film.
- N. M. GRIFFITHS, Senior Flight Cadet (Equipment) : Field-Shooting (Captain) ; Rugby ; Tennis ; Skiing ; Ocean Sailing ; Dramatics ; *Journal*.
- N. GUNARATNAM, Senior Flight Cadet (Technical) : The Chicksands Cup ; The Abdy Gerrard Fellowes Memorial Prize ; Cricket ; Hockey ; Music.
- F. D. A. HARLOW, Senior Flight Cadet (Pilot) : Rugby ; Swimming ; Water Polo ; Motor (Secretary) ; French.
- P. J. HARRISON, Senior Flight Cadet (Technical) : Sailing ; Riding ; Photographic ; Gliding ; Skiing.
- D. HAYWARD, Senior Flight Cadet (Pilot) : Rugby ; Shooting ; Dramatic ; Potholing.
- C. J. HIBBERT, Senior Flight Cadet (Pilot) : Canoeing ; Sailing ; Potholing ; Skiing ; Sky-Diving.

- C. D. HINDS, Senior Flight Cadet (Technical) : Soccer (Colours) ; Cricket ; Equitation ; Skiing ; Gliding ; R.Ae.S.
- W. H. C. HOARE, Senior Flight Cadet (Technical) : Sailing ; Fencing ; Cross-Country ; Sub-Aqua.
- G. HOWARD, Senior Flight Cadet (Pilot) : Cricket ; Squash ; Skiing ; Potholing.
- R. D. JOHNSTON, Senior Flight Cadet (Technical) : Rugby ; Cricket.
- D. A. KENDRICK, Senior Flight Cadet (Technical) : Rowing ; Cross-Country ; Photographic ; Gliding ; Radio ; R.Ae.S.
- R. J. KENNETT, Senior Flight Cadet (Equipment) : The Ministry of Defence Prize for Equipment Studies ; Hockey ; Radio ; Golf.
- A. J. KENT, Senior Flight Cadet (Technical) : Equitation.
- M. J. LAUNDY, Senior Flight Cadet (Pilot) : Cross-Country ; Sailing ; Skiing ; Photographic ; Motor ; Gliding ; Aeromodelling.
- N. R. LEDSHAM, Senior Flight Cadet (Technical) : Rugby ; Sub-Aqua ; Cricket ; Music ; R.Ae.S.
- B. D. LONGMAN, Senior Flight Cadet (Technical) : Rugby ; Athletics ; Field-Shooting.
- A. R. MACDONALD, Senior Flight Cadet (Equipment) : B.A. ; Soccer ; Choral.
- C. J. MASKELL, Senior Flight Cadet (Technical) : Rugby (Colours) ; Hockey ; Golf ; Film.
- J. E. MAZURK, Senior Flight Cadet (Pilot) : Rugby ; Canoeing (Captain) ; Long-Distance Walking (Captain) ; Debating (Secretary).
- S. McANDREW, Senior Flight Cadet (Technical) : Soccer ; Rowing ; Mountaineering ; Music ; Photographic ; Radio.
- H. K. W. MIDDLETON, Senior Flight Cadet (Secretarial) ; B.A. ; Hockey (Colours) ; Skiing ; Sailing ; Squash ; *Journal*.
- R. G. NAILER, Senior Flight Cadet (Technical) : Rugby (Colours) ; Cricket ; R.Ae.S. ; Photographic ; Music ; Equitation ; Skiing.
- J. C. NEWLAND, Senior Flight Cadet (Secretarial) : Cricket ; Beagling (Captain) ; Fine Arts.
- J. K. NEWTON, Senior Flight Cadet (Technical) : Rugby (Colours) ; Swimming ; Cricket (Colours) ; Sky-Diving.
- P. G. NORRIS, Senior Flight Cadet (Technical) : Rowing ; Cross-Country ; Walking ; Mountaineering.
- D. E. NORTH, Senior Flight Cadet (Pilot) : Rugby (Colours) ; Shooting (Captain, Colours) ; Sub-Aqua ; French.
- R. NORTHCOTE, Senior Flight Cadet (Pilot) : Rugby ; Golf ; Choral ; Potholing ; Mountaineering ; French.
- G. J. OUGHTON, Senior Flight Cadet (Technical) : The De Havilland Trophy ; Rugby ; Shooting.
- T. W. PARKINSON, Senior Flight Cadet (Technical) : Equitation ; Soccer (Colours) ; Canoeing ; Trenchard Award Prize.
- R. PENGELLY, Senior Flight Cadet (Pilot) : The Hicks Memorial Trophy ; Fencing ; Sailing (Captain, Colours) ; Potholing ; Mountaineering ; Skiing ; Fine Arts ; Trenchard Award Prize.
- M. W. PYLE, Senior Flight Cadet (Navigator) : Rugby ; Canoeing ; Badminton ; *Journal*.
- J. PYPHER, Senior Flight Cadet (Pilot) : Rugby ; Water Polo ; Swimming (Captain, Colours) ; Mountaineering ; Gliding ; Trenchard Award Prize.
- M. J. RICHARDSON, Senior Flight Cadet (Pilot) : The Dickson Trophy and Michael Hill Memorial Prize ; Skiing (Captain) ; Squash ; Soccer ; Sailing ; Parachuting ; Photographic ; German.
- I. M. ROBERTSON, Senior Flight Cadet (Pilot) : Riding (Colours) ; Rugby ; Bridge ; Aeromodelling.
- P. G. ROBINSON, Senior Flight Cadet (Technical) : Sailing ; Photographic ; Radio.
- R. W. SHIMMONS, Senior Flight Cadet (Pilot) : Rugby (Colours) ; Cricket ; Skiing ; Mountaineering ; Film.
- R. C. SHUSTER, Senior Flight Cadet (Pilot) : Hockey (Colours) ; Golf (Captain) ; Natural History (Secretary).
- N. B. SMITH, Senior Flight Cadet (Pilot) : The Director of Studies Essay Prize ; Hockey ; Sailing ; Dramatic ; Film (Secretary).
- A. J. STEEL, Senior Flight Cadet (Pilot) : Skiing (Secretary) ; Sailing ; Badminton ; Shooting ; Photographic.
- A. J. P. STYLES, Senior Flight Cadet (Technical) : Soccer ; Tennis ; Photographic.
- B. P. SYNNOTT, Senior Flight Cadet (Pilot) : Rugby (Colours) ; Athletics ; Bridge ; Aeromodelling.
- G. T. TAYLOR, Senior Flight Cadet (Pilot) : The Battle of Britain Trophy ; Shooting ; Pentathlon ; Radio.
- A. R. THOMAS, Senior Flight Cadet (Pilot) : Rugby (Colours) ; Golf ; Potholing (Captain) ; Field-Shooting ; Radio.
- M. L. THOMPSON, Senior Flight Cadet (Pilot) : Hockey (R.A.F. Colours) ; Soccer ; Cricket ; Squash ; Sub-Aqua (Secretary).
- P. F. THOMPSON, Senior Flight Cadet (Pilot) : Rugby (Colours) ; Cricket (Colours) ; Cross-Country ; Athletics ; Golf ; Angling (Captain).
- W. S. WALTON, Senior Flight Cadet (Pilot) : Rugby ; Dramatic ; Music ; Fencing.
- A. WARE, Senior Flight Cadet (Pilot) : Rugby ; Athletics ; Hovercraft ; Folk Music ; Sailing ; Swimming.
- W. S. WAUGH, Senior Flight Cadet (Secretarial) ; The Ministry of Defence Prize for Secretarial Studies ; Fencing ; Rugby ; Dramatic (Secretary) ; Equitation ; Debating (Secretary) ; Choral.
- F. WHITEHOUSE, Senior Flight Cadet (Pilot) : Potholing ; Sky-Diving ; Rugby ; Squash ; Film ; Debating.
- S. A. WRIGLEY, Senior Flight Cadet (Pilot) : L'Ecole de l'Air Trophy for French Studies ; Water Polo ; Music ; German ; French ; Film.
- R. J. WOOD, Senior Flight Cadet (Technical) : Soccer ; Tennis ; Bridge ; Skiing.

COLLEGE DIARY

(A record of some of the activities of the College during the Summer term and Summer vacation, 1966)

MARCH.

The number on roll at the College at the beginning of the Summer term was : Flight Cadets — 462 (259 pilots, 39 navigators, 26 equipment, 13 secretarial, 8 regiment and 117 technical). Student Officers — 220.

27th — 6th April. Early Training Programme for the new Cadet entry, No 94 Entry, which consists of 38 Pilots, 16 Technical, 6 Navigators, 3 Equipment, 3 Secretarial and 3 Regiment.

28th. Summer Term began. No 2 T.O. (Supplementary List) Course commenced its year's training.

29th. The Assistant Commandant (Technical) and a party from Systems Engineering and Management Wing (S.E.M.W.) visited the R.A.F. Staff College, Bracknell.

29th — 30th. Air Vice-Marshal E. Knowles, C.B., C.B.E., B.Sc., F.R.Ae.S. (Director of Educational Services), Mr C. R. English (Department of Education and Science) and Professor M. Howard, M.C., M.A., (University of London) visited the College and made a preliminary study with a view to reporting to the M.O.D. Committee on Service Colleges.

30th — 3rd April. The Commandant and Assistant Commandant (Technical) attended the formal opening of a new wing of the Hohere Technische Schule der Luftwaffe, Neubiberg, Germany.

APRIL.

1st. A ceremonial parade was held to mark the anniversary of the formation of the R.A.F. During the parade the ceremony of handing over the Queen's Colour from 'C' to 'B' Squadron took place. The Reviewing Officer was the Commandant.

Professor R. H. Beurle of the University of Nottingham visited the College to see and discuss the project work of the Dip. Tech./Hons. B.Sc. students of No 10 T.O. (Ex-Cadet) (Elec.) Course.

2nd — 6th. Flight cadets of No 91 Entry took part in a four day expedition training exercise (canoeing, rock climbing and mountain walking) as part of the Physical Education Syllabus.

4th. Air Marshal Sir Richard Atcherley, K.B.E., C.B., A.F.C., R.A.F. (Retd.) accompanied by two fourteen year old godsons (the Baldwin twins) made an informal tour of the College.

5th. No 8 Advanced Weapons Course gave a presentation on "A Counter Insurgency Aircraft System" to an invited audience of officers from the three Services, officers from the U.S.A.F. and representatives from British and U.S. industry. A short flying display by Beagle and Mohawk (U.S. Army) aircraft formed part of the presentation.

6th. Air Vice-Marshal Sir Thomas Shirley, K.B.E., C.B., M.I.E.E., F.R.Ae.S., C-in-C Signals Command, paid an informal visit to the Department of Engineering.

9th. No 8 Advanced Weapons Course completed training. The lead-in phase to this course started at Henlow on 1st September 1964. Successful students qualify for the symbol G.W. and for exemption from Parts I and II of the Associate Fellowship Examination of the Royal Aeronautical Society.

14th. Group Captain R. H. Petchey, O.B.E., the Inspector of Recruiting, accompanied by two I. of R. officers and approximately 28 Schools Liaison Officers visited the College to familiarise all Schools Liaison Officers with the task, functions and facilities of the R.A.F. College.

15th. A painting by David Shepherd was presented to the College in commemoration of No 5004 A.C. (L) Squadron which was disbanded in late 1965. The presentation was made by Squadron Leader A. R. Young, the last C.O. of the Squadron, and among the visiting party were Group Captain E. Earnshaw, O.B.E., A.M.Inst.Mun.E., Officer Commanding R.A.F. Waterbeach, and four officers from the Squadron.

16th — 17th. Flight cadets of No 90 Entry took part in an exercise in Derbyshire under the code name Hopalong VII.

18th — No 12 T.O. (Branch) Orientation Course of three weeks duration started training.

18th — 27th. 36 officers from the Empire Test Pilot School Farnborough, visited the College for a short specialist training period for students on the current Test Pilots Course.

20th. Professor J. A. J. Bennett and Professor A. H. Lefebvre from the College of Aeronautics Cranfield visited the College to see project work of the Dip. Tech./Hons. B.Sc. students of No 10 T.O. (Ex-Cadet) (Mech.) course and discuss it with them.

21st. Ten members of the Merseyside Society of Aviation Enthusiasts toured Technical Wing and Flying Support Wing.

Mr S. L. Parsonson, M.A. visited the College for a discussion on a School Mathematics project.

21st — 25th. The Commandant visited the Italian Air Academy at Pozzuoli near Naples.

22nd. No 10 Technical Officer (Ex-Cadet) Entry completed the course after 4 years and 8 months of training. Successful students qualified either for a B.Sc. degree, a Diploma in Technology or a Higher National Diploma.

No 30 Technical Officer (Graduate) Course completed training.

25th. No 32 Technical Officer (Graduate) Entry started the main part of its course, following the lead-in phase.

No 44 Non-R.A.F. Engineer Course started training.

27th. The Cranwell Little Theatre won the Kes-
teven Drama Festival with the performance of
"The Devil's General."

28th — 29th. Headmasters and Youth Employment
Officers visited the College for a discussion and tour
of the College facilities.

The following visits were made during the month :
By Flight Cadets : To R.A.F. Stations — 3
By Student Officers : To R.A.F. Stations — 7
To Civilian Firms — 13.

MAY.

1st. The visiting preacher in St Michael and All
Angels Church was The Reverend R. J. Richards,
B.A., Assistant Chaplain-in-Chief, Flying and Tech-
nical Training Commands.

2nd — 3rd. The R.A.F. College Cranwell Advisory
Board visited the College.

6th. No 12 Technical Officer (Branch) Orientation
Course completed training.

7th — 8th. No 94 Entry took part in a weekend
exercise (code name Hopalong VIII) in Derbyshire
under the direction of No 90 Entry. Officers attended
in the capacity of Evaluating Officers and Directing
Staff.

9th. No 7 Short Weapons System and Space Course
started training.

No 5 Technical Officer (Standard) Preparatory
Course started training.

No 33 Technical Officer (Graduate) Preparatory
Course started training.

6 A.T.C. Cadets and 2 Officers from No 578 Squad-
ron (Beckenham Grammar School) A.T.C. held a
Field Day at the College.

11th. 25 Librarians of the Lincolnshire Library
Club visited the College.

11th — 12th. The Deputy Director, Captain A. H.
Barton, and 58 Directing Staff and students of the
Royal Naval Staff College, Greenwich, visited the
College.

13th. 43 flight cadets travelled to Osmotherly to
participate in a 45 mile walk over the North York-
shire Moors.

The Rt. Hon. Joseph Godber, M.P. for Grantham
and Kesteven, toured the College.

14th — 18th. Cadets of No 91 Entry took part in
4 days expedition training (canoeing, rock climbing
and mountain walking).

17th. The Rt. Hon. Viscount Trenchard of Wolfeton
M.C., accompanied by Viscountess Trenchard and
the Hon. Hugh Trenchard, visited the College to
perform the official opening of Trenchard Hall and
to unveil a plaque commemorating the occasion.

19th — 20th. Mr A. D. Collop, B.Sc. (Eng.),
M.I.E.E., and Mr F. Caunce, M.A., B.Sc. (Eng.),
A.M.I.Mech.E., Her Majesty's Inspectors represent-
ing the Institutes of Electrical and Mechanical En-
gineers, visited the College to report to the Joint
Committee on the facilities for laboratory work at
Cranwell for H.N.D. students.

20th — 22nd. 5 officers and 27 flight cadets visited
the Britannia Royal Naval College, Dartmouth, for
the annual cricket (won by Cranwell), tennis and golf
matches (won by Dartmouth).

20th. Mr J. T. Hayden and Squadron Leader I. A.
Robertson, D.F.C., R.A.F. (Retd.) from the College
of Aeronautics, Cranfield, visited the Electrical
Engineering Squadron.

No 7 Short Weapons System and Space Course
completed training.

23rd. 1 master and 25 boys from Oakham School
Air Scout Troop made a general interest tour of the
College.

24th. The Assistant Commandant (Tech.) and C.I.
S.E.M.W. attended a meeting at the Ministry of
Defence to discuss the inauguration of the Advanced
Maintenance Engineering Course and the Aerospace
Systems Course.

The move of the Airframe Technology and Serv-
icing Instruction Flights from Henlow to Cranwell
was completed.

26th. A party of 8 M.P.'s made a tour of the College.

28th — 29th. A party of 17 flight cadets split into
2 teams, took part in the Ten Tors Expedition —
Dartmoor. Both teams completed the course and
finished in 4th and 7th place out of 35.

31st — 5th June. The Department of Engineering
provided some scientific demonstrations for an ex-
hibition by the North Lincolnshire Scientific and
Technical Society at Scunthorpe.

The Following visits were made during the month :
By Flight Cadets : To R.A.F. Stations — 6
To Civilian Firms — 4.
By Student Officers : To R.A.F. Stations — 4
To Civilian Firms — 9.

JUNE.

1st — 4th. Lieutenant Colonel L. W. Hanson, of the
Royal Netherlands Military Academy, visited the
College to discuss cadet training methods.

2nd. Dr J. Boyes, the Director of Education and
Training of the British Institute of Management, and
Mr L. G. S. Mason, Chairman of the Membership
Committee of the B.I.M., accompanied by Air
Commodore T. Wharton, C.B.E., A.F.R.Ae.S.,
visited the College to become informed on present

and future management training at the College with a view to considering R.A.F. personnel for membership of the British Institute of Management.

4th — 12th. Mid-term break.

13th. No 20 Short Data Handling Course started training.

13th — 16th. Professor M. Howard, M.C., M.A. (University of London) and Mr C. R. English (Department of Education and Science) visited the College to conduct part of their inquiry into the Service Colleges for the Minister of Defence.

13th — 18th. 18 officer students and 2 members of the Directing Staff of the Federal German Air Force Technical College, Neubiberg, visited the College.

14th. Quarrington Young Wives' Club visited the College on a general interest visit.

15th. A Ceremonial Parade was held at 0800 hours on the College Parade Ground when the Queen's Colour was trooped by Sovereign's Squadron, The Reviewing Officer was the Commandant.

16th — 17th. Mr Michel Bouvier — Director, Europe and Mid-East, Grumman International — visited the College for a briefing on No 8 Advanced Weapons Course Syndicate Exercise.

17th. No 20 Short Data Handling Course completed training.

18th — 19th. The annual reunion of the Old Cranwellian Association was held at the College. At the Church parade on 19th June to honour the reunion the Queen's Colour was on parade. The Salute was taken by the Chief of the Air Staff. The preacher was the Reverend Canon F. W. Cocks, C.B., M.A., Rector of Wolverhampton, formerly Chaplain-in-Chief.

20th — 21st. A party of high ranking officers of the Central Treaty Organisation (consisting of 12 Iranian, 11 Turkish and 2 Pakistani officers) visited the College.

21st. Group Captain J. H. Nancarrow — S.E.S.O., H.Q., F.T.C. and Group Captain R. R. Goodbody, O.B.E. — S.E.S.O., H.Q., T.T.C. visited the College and made an inspection of Supply Squadron and the Department of Engineering.

21st — 22nd. A party of 12 Headmasters and Youth Employment officers visited the College to see and discuss the types of courses provided at the College for entrants from schools.

23rd. A party of 9 students and 3 members of the Directing Staff from the R.A.F. School of Education, Upwood visited the College.

23rd — 24th. Colonel Nansen, R.Nor.A.F. (Retd.) and Squadron Leader R. de V. Boulton — H.Q. Air Cadets made an informal tour of the College.

24th. Major General E. J. H. Bates, C.B., O.B.E., M.C., M.A. (Commandant R.M.C.S. Shrivenham)

and Sir Donald Bailey, Kt., O.B.E., D.Eng., M.I., Struct.E., A.M.I.C.E., J.P. (Dean of R.M.C.S. Shrivenham) visited the College.

24th — 25th. 4 officers, 2 N.C.O.'s and 22 cadets visited the Royal Military Academy, Sandhurst to take part in an inter-College (triangular) Athletics match, which was won by the College.

24th — 26th. 6 officers and 32 cadets from the Royal Military Academy Sandhurst visited the College for the annual inter-College cricket, tennis, golf and sailing matches. Sandhurst won the golf and sailing, the R.A.F. College won the tennis, and the cricket match was drawn.

27th. No 13 Technical Officer (Branch) Orientation Course started training.

28th — 29th. General Cerutti, Commander of the Italian Air Force Training Command, and the Italian Air Attache (Brigadier General Chiantia) toured the College.

29th — 1st July. Wing Commander R. W. Leggett, Wing Commander C. A. Rennie, D.F.M., and Mr R. S. Thompson of the Cranwell Board of the Officers' and Aircrew Selection Centre, Biggin Hill visited the College.

The following visits were made during the month :

| | |
|-----------------------|------------------------|
| By Flight Cadets : | To R.A.F. Stations — 3 |
| | To Civilian Firms — 1. |
| By Student Officers : | To R.A.F. Stations — 5 |
| | To Civilian Firms — 3. |

JULY.

1st — 3rd. Three staff and 25 students of a Youth Coaching Course arranged by the Lincolnshire Football Association visited the College to attend a Residential Youth Coaching Course.

2nd. Three officers, 1 N.C.O. and 21 flight cadets visited the Royal Military Academy Sandhurst for the triangular Inter-College swimming and water polo matches. Cranwell won both events.

4th — 6th. Colonel Guiseppe Ferazzani, Colonel Fernando Peroni and Captain Enrico de Angelis, officers of the Italian Academia Aeronautica Pozzuoli visited the College.

5th. A portrait of Lord Templewood (Sir Samuel Hoare) was unveiled in the College Hall by Air Marshal Sir Patrick Dunn, K.B.E., C.B., D.F.C., A.O.C.-in-C. Flying Training Command. The ceremony was attended by Mr Paul Paget (nephew of Lord Templewood), the Right Reverend Gerard W. Tickle, Bishop in Ordinary to H.M. Forces, Mr Patrick Phillips (artist), the Commandant and senior officers of the College.

The Right Reverend Gerard W. Tickle, Bishop in Ordinary to H.M. Forces, visited the College to administer Confirmation in St. Peter's Church and to meet Roman Catholic personnel and their wives.

Six Lecturers of Lincoln Technical College visited the College to see all aspects of technical training.

Mr George Bruce, Secretary, London University and Schools Examination Council, visited the College to discuss the American College Board Scholastic Aptitude Tests.

6th. Professor J. A. J. Bennett, Cranfield, and four other representatives attended a meeting of external examiners at the College.

6th — 7th. Midlands Mathematical Project Director, Mr C. Hope, B.Sc., City of Worcester Training College, and the Secretary, Mr R. H. Collins, B.Sc., Harold Malley School, Solihull, visited the College for a presentation of the aims of the Project and its impact on the teaching of mathematics in universities and Colleges.

6th — 8th. Seven members of the College Cadetship Awards Board visited the College to award cadetships.

7th. Thirty members of Newark Engineering Society made a tour of the Department of Engineering.

Twenty-five members of the Sleaford Urban District Council made a general interest tour of the College.

8th — 10th. Thirteen civilians from the top levels of management in industry and education and eight senior officers from M.O.D., Technical Training Command and R.A.F. training establishments attended a seminar on "Training for leadership" held at the College.

11th — 12th. Group Captain J. D. Robins, Air Liaison Officer on the staff of New Zealand Defence Liaison Staff, and Wing Commander G. E. Gudsell, Director of Educational Services R.N.Z.A.F., visited the College.

12th — 13th. A party of 14 Headmasters and Youth Employment Officers visited the R.A.F. College to see and discuss the College facilities.

13th — 15th. A party of 30 R.A.F. Scholars visited the College and toured the Department of Engineering.

14th. Thirty members of the East Kesteven Rural District Council made a general interest tour of the College.

15th. No 13 Technical Officer (Branch) Course completed training.

16th — 29th. Fifteen University Air Squadron students visited the College for annual continuation training.

18th. No 21 Short Data Handling Course started training.

19th. Lieutenant Colonel Lucci, 4 staff officers and 75 cadets from the Italian Air Force Academy visited the College.

Group Captain I. J. de la Plain, A.F.R.Ae.S., D.D. Tech. Plans M.O.D. (R.A.F.), visited the Department of Engineering and gave an informal talk to the staff and No 21 Data Handling Course.

20th — 22nd. A party of 30 R.A.F. scholars visited the College and toured the Department of Engineering.

21st — 24th. One officer and 5 flight cadets made a liaison visit to L'Ecole de L'Air, Salon, and attended a graduation parade.

21st — 22nd. Four potential officer recruits visited the Department of Engineering.

22nd. Two flight cadets of No 92 Entry left to take part in an expedition to Ethiopia undertaken by the Royal Military Academy Sandhurst, to collect zoological specimens and to carry out an archaeological survey.

No 21 Short Data Handling Course completed training.

23rd. The Ferris Drill Competition was held on the College Parade Ground. The Board of Judges was from the Parachute Regiment Depot headed by Lieutenant Colonel M. A. J. Tugwell. 'D' Squadron won the Competition, Sovereign's Squadron was second, 'A' Squadron third, and 'C' Squadron fourth.

Two officers and 23 flight cadets visited Nijmegen to take part in the Royal Netherlands League for Physical Culture International 4 day marches.

23rd — 30th. The annual C.C.F. Summer Camp was held at the College. Twenty-one officers and 216 cadets attended.

24th. The visiting Church of England preacher was the Venerable Martin Sullivan, M.A., Archdeacon of London.

26th. Lieutenant Colonel I. Sela, Assistant Defence Attache, Israeli Air Force, visited the College.

29th — 30th. The Assistant Commandant (Major T. B. Jorgensen) 7 staff officers, 2 civilian instructors and 14 cadets of the Royal Norwegian Air Force War Academy visited the College.

The following visits were made during the month :
By Flight Cadets : To R.A.F. Stations — 3
To Civilian Firms — 1.
By Student Officers : To R.A.F. Stations — 9
To Civilian Firms — 8.

AUGUST.

2nd. 12 C.C.F. cadets and 1 R.A.F. V.R. (T) officer were conducted round the Department of Engineering.

3rd. 20 members of the Newark Branch Young Conservatives made a general interest tour of the College.

8th. The new Commandant of the O.C.T.U., R.A.F. Henlow, Group Captain N. F. Curtis, O.B.E., visited the College.

9th. A party of 25 Canadian Air Cadets, 2 R.C.A.F. officers and 2 R.A.F. V.R. (T) officers visited the College.

11th. A party of 50 officers, N.C.O.'s and cadets of the Middlesex Army Cadet Force visited the College.

12th. The Annual Inspection of the College Band, the Sir Felix Casel Trophy Competition and the Sims Cup Competition took place.

No 31 Technical Officer (Graduate) Course completed training.

17th. The Commandant presented Wings and Prizes to No 89 Entry in Whittle Hall. This was followed by the ceremony of Beating Retreat on the College Parade Ground.

18th. Services of Dedication for No 89 Entry were held at 0945 hours.

The Graduation Parade of No 89 Entry took place. The Reviewing Officer was General Sir A. James H. Cassels, G.C.B., K.B.E., D.S.O., Chief of the General Staff.

19th. The Summer Term ended.

No 33 Technical Officer (Graduate) Preparatory Course completed training.

No 5 Technical Officer (Standard) Preparatory Course completed training.

Air Commodore E. B. Harvey, M.R.C.S., L.R.C.P., D.T.M. & H. (Principal Medical Officer, H.Q., F.T.C.) made a staff visit to the College.

Professor W. L. Hindman, Professor of Management at the University of South California, visited the Department of Engineering. Professor Hindman described the methods used in his department at the University of South California and his experience of running a management training programme for the U.S.A.F. at overseas bases.

The following visits were made during the month :
By Student Officers : To R.A.F. Stations — 2
To Civilian Firms — 6.

SEPTEMBER.

12th. The student officers commenced their Winter Term's training.

No 33 Technical Officer (Graduate) Course started training.

No 5 Technical Officer (Standard) Course started training.

No 12 Technical Officer (ex. No 89 Entry) Course started training.

15th. No 10 Advanced Weapons Course started training.

No 34 Technical Officer (Graduate) Preparatory Course started training.

No 3 Technical Officer (Supplementary List) Course started training.

19th. Air Marshal Sir Patrick Dunn, K.B.E., C.B., D.F.C., visited the College for his farewell lunch.

20th — 21st. 15 members of the Council for National Academic Awards visited the College to review the training of students on B.Sc. (Hons.) Courses and to consider the award of B.Sc. (Ord.) degrees to other students.

26th. The C-in-C, S.A.S.O. and A.O.A. from Headquarters Flying Training Command visited the College.

Change of Command — Air Commodore R. G. Wakeford, M.V.O., O.B.E., A.F.C., assumed the duties of Assistant Commandant (Cadets) vice Air Commodore N. Cameron, D.S.O., D.F.C.

28th — 30th. A Technical Symposium was held at the College to demonstrate the work of the Technical Branch and the responsibilities of those who man it, with the object of stimulating recruiting. The Symposium was attended by the Rt. Hon. the Lord Shackleton, O.B.E., Minister of Defence for the Royal Air Force, and about 190 Service officers and civilians of note.

The following visits were made during the month :
By Student Officers : To R.A.F. Stations — 2
To Civilian Firms — 4.

A. W. BLANCHARD Ltd

M.G.I.

The Winery !

Sleaford

DELICATESSEN ! GOOD FOOD SPECIALISTS !

*Known by many of our R.A.F. patrons
as the local Fortnum & Mason.*

YOGHOURT AND FRESH CREAM

DAILY.

CHEESE AND WINE PARTIES ESPECIALLY
CATERED FOR

OVER 30 VARIETIES OF CHEESE

FRIDAY DELIVERIES

Telephone : 146

THE
ROYAL AIR FORCE
COLLEGE



JOURNAL

CRANWELL

SUMMER, 1967

VOL XXXIX No 1

THE ROYAL AIR FORCE COLLEGE JOURNAL

JULY, 1967

VOL XXXIX

No 1

| | |
|---|--|
| Managing Editor | Wing Commander D. D. W. Nabarro |
| Editor | Flight Lieutenant P. T. Robinson |
| Assistant Editor, Cranwell '67 | Squadron Leader D. F. Bunce |
| Assistant Editor, College Notes | Flight Lieutenant A. C. Rogerson |
| Advertisement and Business Manager | Squadron Leader J. T. G. Richards |
| Cadet Editor | Senior Flight Cadet T. St. G. Coldicott |
| Cadet Sub Editors | |
| Articles | Flight Cadet P. C. Butt |
| Vacation Activities | Under Officer A. T. Ford |
| Sports and Activities | Senior Flight Cadet K. D. R. Mans |
| Photographic Editor | Senior Flight Cadet P. G. Summers |
| Art Editor | Senior Flight Cadet B. T. J. Pearce |
| Layout Staff | Senior Flight Cadet T. I. Jenner Flight Cadets B. G. Handyside, and I. J. Wood. |
| Editorial Assistants | Senior Flight Cadet C. C. C. Coville, Flight Cadets A. F. Jones, A. M. Roberts, M. W. Johnson, J. A. Ball, D. Brosting, W. A. Buckland, J. M. Doggatt, E. W. Draper, B. A. Glassup, D. S. Peckett, and A. G. B. Vallance. |

*Edited and Published at the Royal Air Force College, Cranwell, Lincolnshire,
and Printed by Dolby Brothers, Limited,
West Street, Stamford, Lincolnshire*

CONTENTS

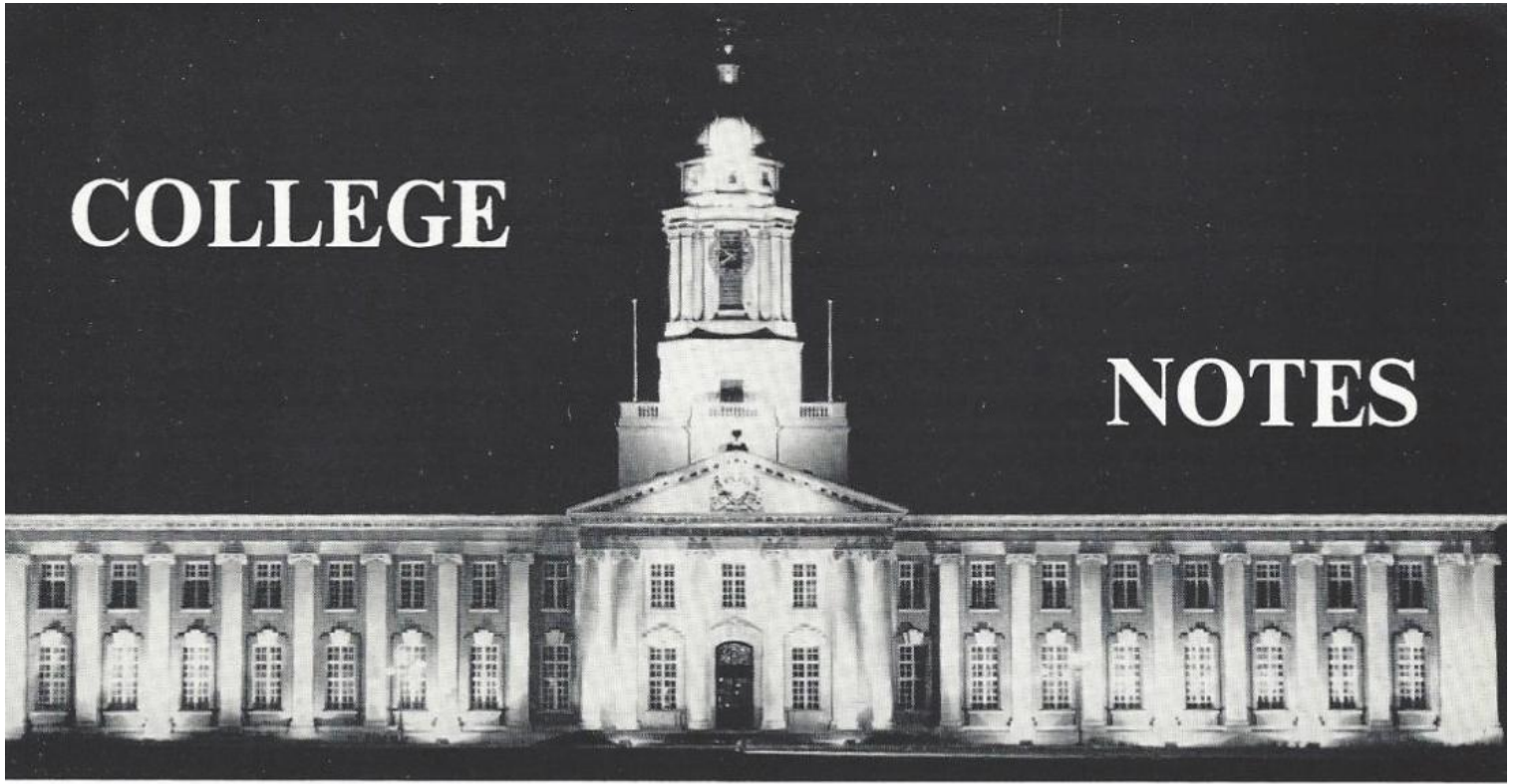
| | |
|---|----|
| College Notes | 13 |
| The Wings and Prizes Ceremony | 17 |
| The Graduation of No 90 Entry | 19 |
| Any Old Iron | 22 |
| Road to Morocco | 24 |
| Man in Flight | 28 |
| Expedition to Norway | 30 |
| HMS Daedalus | 34 |
| Sports and Activities | 37 |
| A Short Poem for October | 59 |
| Time Flies | 59 |
| Correspondence | 61 |
| Old Cranwellian Notes | 63 |
| Minerva Society Notes | 65 |
| College Diary | 67 |
| Commissioning List | 75 |
| The Gondoliers | 78 |
| Billy Liar | 81 |
| The Wizard | 83 |
| BAOR | 85 |
| Cranwell '67 | 89 |



Air Vice Marshal T. N. Stack, C.V.O., C.B.E., A.F.C.

COLLEGE

NOTES



Air Vice-Marshal Thomas Neville Stack, C.V.O., C.B.E., A.F.C., was appointed Air Officer Commanding and Commandant of the Royal Air Force College on 1st February 1967.

Air Marshal Stack entered the Royal Air Force College, Cranwell as a flight cadet in 1937, joining 'C' Squadron. He graduated in 1939 and was awarded the Sword of Honour. Between 1939 and 1945 he served in Coastal Command with Nos 204 and 201 Squadrons flying Sunderland Flying Boats on anti-submarine and anti-shipping operations, and between tours served as an instructor at the School of General Reconnaissance.

After the war he served on the Air Staff, Headquarters Coastal Command ; as Commanding Officer of the School of General Reconnaissance ; and as Chief Instructor at the Joint Anti-Submarine School. He took courses at the Royal Air Force Staff College, Bracknell in 1950 and at the R.A.F. Flying College, Manby in 1953.

Between 1954 and 1956 he commanded the Far East Transport Wing during the Malayan

Emergency operations, for which he was awarded the A.F.C.

From 1957 to 1959 he was Group Captain Operations (Transport Support) at Headquarters Transport Command, working with the Parachute Brigade and the Air Transported Brigade on mobile operations in the United Kingdom, West and North Africa and the Middle East. He commanded the transport forces in Cyprus which flew the Parachute Brigade into Amman in 1958 during the Jordanian crisis.

He was Deputy Captain of The Queen's Flight from 1960 to 1962 and during his appointment accompanied a number of Royal tours abroad.

In 1963 and 1964 he was Senior Air Staff Officer Headquarters No 224 Group during the Malayan and Borneo confrontation operations ; he was also involved in SEATO. For his work in the Far East he was made C.B.E.

Air Vice-Marshal Stack was Senior Air Staff Officer at Headquarters Flying Training Command from May 1965 to January 1967.

The Journal warmly welcomes the new Commandant, Mrs Stack and their family.

Air Vice-Marshal I. D. N. Lawson, C.B., C.B.E., D.F.C., left Cranwell for the Ministry of Defence at the end of January, after a tour which was bisected by one of the greatest events in Cranwell's history, the merger of the Royal Air Force Technical College with the Royal Air Force College. He was appointed Commandant just a year before the merger, and had a further crucial year in which to command and direct the new establishment.

With the College's growth and development, and with his concern for Cranwell as a community and the intricate relationships and management problems involved, all his flair for human relations was brought into play. All staff, student officers and cadets have an appreciation of the lively interest he took in their affairs, and he seemed to know the names of even the most junior. In the midst of pressures of work he made a point of finding time to visit the sports fields regularly, and maintained a wide-ranging interest in the sporting activities of the College. He was probably especially gratified that last year the College was for the first time represented by an eight at Henley. One regret he had as he left was that he had been unable to stay until he had seen one cadet entry through from arrival to graduation.

He placed particular stress on the need for Royal Air Force Officers to apply themselves in a professional way. "The day of the amateur, airy-fairy approach is over. This may be a pity but it is a hard professional world," was his advice to the graduating entry in August, 1965.

The sixteenth commandant, he was the first post-war commandant to hold the rank of air vice-marshal. He has gone to a newly created post, Assistant Chief Adviser (Personnel and Logistics). We send best wishes to him, Mrs Lawson and their son and daughter in their new surrounds.



The new pattern of cadet training, which was announced in College Notes in the last edition of the *Journal* became effective at the beginning of the Winter Term (1966-67).

The non-engineer cadet course is now two and a half years (5 terms). In Term 1 all cadets

undergo officer training and basic academic training, and pilot cadets also do half a term's Chipmunk flying. In Terms 2 and 3 all cadets undergo academic training with a continuing thread of officer training. In the final year (Terms 4 and 5) pilots undergo Jet Provost flying training and officer training on a continuous basis, while non-pilot cadets do their specialist training and officer training on a termly basis.

Engineer cadets are also commissioned after two and a half years but remain at the College for a further two years to complete their degree courses.



The following promotions were made in No 91 Entry in March 1967 :

'A' Squadron : Flight Cadet Senior Under Officer A. J. C. Bagnall ; Flight Cadet Under Officers J. T. Baker, L. A. Davison, R. Pilley.

'B' Squadron : Flight Cadet Senior Under Officer M. P. Horton ; Flight Cadet Under Officers B. M. Cottam, C. W. D. Watson, J. Lillis.

'C' Squadron : Flight Cadet Senior Under Officer R. M. Bonney-James ; Flight Cadet Under Officers A. G. Sollitt, P. A. Kelly, D. W. Brown.

'D' Squadron : Flight Cadet Senior Under Officer M. D. C. Fonfe ; Flight Cadet Under Officers A. McKay, W. Lynch, A. T. Ford.



The competition for the Prince of Wales Trophy and for the title of Sovereign's Squadron was won by 'B' Squadron, who won the Klocker Cup and came second in the Chimay Cup and the Ferris Drill Competition.



On 16th February 1967 Mr John Gordon was presented with the Imperial Service Medal by the Commandant. Apart from a break during the 2nd World War, Mr Gordon had served in the College Hall since 1932.

Pilot Officer K. B. Patrick (90 Entry) was successful in the examination of the Royal Aeronautical Society and is now a graduate member. In addition he won the under-26 class of the Society's N. E. Rowe Medal Competition. This is a national competition for junior members of the Society who prepare and read a technical paper. Patrick's winning paper was on thunderstorm prediction.



Commendations have been awarded to the following personnel of the College :

The Air Officer Commanding-in-Chief has commended the under-mentioned personnel for meritorious service :

Flight Lieutenant R. C. Malings, Warrant Officer A. H. Eastwood, Warrant Officer R. Russell, Chief Technician E. G. Ray and Mr W. Knowles.

The Air Officer Commanding has commended the undermentioned personnel for meritorious service :

Flight Sergeant B. G. Leamon, Acting Corporal D. E. J. Philpotts, Junior Technician D. L. Edmond and Mr E. Barry.



CORRECTION — In the last edition of the *Journal* Mr John Dunn was reported as having received his Imperial Service Medal for 26 years service in the College Hall. In fact, Mr Dunn joined the College in 1926 and had served for 39 years.



The Winter season 1966-67 was the most active ever on the sports field at Cranwell.

On a Wednesday afternoon during February 1967, 31 sports teams were actually participating in fixtures against R.A.F. and civilian opponents. This explosion in fixtures and activities has come about through the full integration of the officers of Trenchard Hall into the Station's Sports Scheme.

The squash team retained the R.A.F. Inter-Station Squash Championships in a most convincing manner, winning the final by 5 matches to nil. This was the score by which they won most of their matches during the

season. Sgt M. Fogarty was a regular member of the R.A.F. team.

The badminton team won the R.A.F. Inter-Station Championship in a breathtaking final against R.A.F. Waddington by 5 matches to 4 after a 9-9 score in the final game in the third set. The team also won the F.T.C. championships. Flt Lt J. Gearing played for the R.A.F.

All six soccer teams played well throughout the season and the results gave the Station high hopes in the major competitions. However the 1st XI were pipped at the post in both the R.A.F. and F.T.C. cups, losing in the semi-final and final of these competitions. SAC Leishman played in goal for the R.A.F. throughout the season.

The Rugby teams produced good results against local service and civilian sides but ran into difficulties against the 'harder sides' in the final stages of both the R.A.F. and F.T.C. competitions. Flt Lt Stevens and Fg Off Straughton played in the R.A.F. team.

The veterans of our cross-country team won the Lincs. Services League in very convincing style. But now some young blood is needed to strengthen the team.

The hockey team fulfilled a large number of Wednesday and weekend fixtures and reached the area final in the R.A.F. cup competition. During the season the 1st XI played 44 games won 18, lost 15, and drew 11.

The basketball teams had a very successful season, winning the F.T.C. Cup, the R.A.F. Plate Competition, the Lincs. County Cup and the Lincs County League Competition. The coaching of the team by Flt Sgt Boxall has much to do with the excellent results. The Department of Engineering team played weekly matches against local colleges and won more matches than were lost. Sgt V. Probert and Cpl S. Clarke represented the R.A.F.

The boxers of the station are few in number but good in quality. The station gained 3rd place in the Cochrane cup. LAC Endall boxed at light-welter weight for the R.A.F.

The table tennis team won the Grantham and District League Competition, and the Grantham Knockout Cup. Sqn Ldr Bunce was outstanding in this competition, winning 95% of his games. The team reached the semi-final of the R.A.F. B Cup.

Three training weekends were conducted at Aviemore to prepare the station and cadet teams for the R.A.F. Skiing championships.

This preparation produced good results when the cadet team won the Inter-Station Championships and the Station team finished ninth.

The Winter season finished with the keenly fought Topley Trophy 5-a-side competition for service and civilian soccer clubs and this time Cranwell Workshops team ensured that the Trophy remained at Cranwell by beating the civilian and service opposition. In the final they beat Handling Flight (Cranwell) by 7 goals to 5.



During the days of the R.A.F. Technical College at Henlow an Officers' Soccer Club

was formed and functioned successfully for many years. The idea was carried on at Cranwell following the merger and the club, under the presidency of Air Commodore J. S. Rowlands, G.C., O.B.E., B.Sc., decided in September 1966 to adopt the name Crusaders.

Fixtures are arranged with Universities, Colleges, Schools and Police sides and two, and sometimes three, elevens are fielded each week. The players are drawn from both students and staff members of the College and besides having a high standard of Soccer the fixtures are noted for their enjoyable social side.

The 1966-67 season was again an enjoyable one and reasonably successful.



Under Officer C. A. Humphrey, winner of the Institute of Navigation Trophy and Ministry of Defence Prize for Navigators, receiving his awards from the Commandant

THE WINGS AND PRIZES CEREMONY

Presentations of Wings and Prizes to No 90 Entry were made by the Commandant, Air Vice-Marshal T. N. Stack, C.V.O., C.B.E., A.F.C., in the Whittle Hall on 2nd March 1967. Details of the prize winners are given in the Commissioning List.

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

I am very happy to welcome the parents and friends of No 90 Entry and to say how much we value the efforts you have made to be here, thus making the occasion for us. This evening I have presented flight cadets with their wings and also most of the course prizes. Tomorrow morning, Air Chief Marshal Sir Wallace Kyle, C-in-C of Bomber Command, an Old Cranwellian and a past Assistant Commandant, will be presenting the three major prizes at the Graduation Parade and I am sure you will all wish to join me in congratulating the winners now :—

Senior Under Officer Joy, who has won the Sword of Honour,

Under Officer Patrick, who has won the Queen's Medal, and

Under Officer Gruner, who has won the R. M. Groves Memorial Prize and Kinkead Trophy for Flying.

As some of you may know, this is my first prizegiving as Commandant. It is some years since I was in the position of the flight cadets here and yet I can still remember the sense of satisfaction which I felt at successfully finishing this course. Much has changed both in the world and the Royal Air Force since those days, but Cranwell is still a test of character and endurance, and tonight in 90 Entry you see the latest graduates from the College going out into the Service.

Before going on to tell you a few things about No 90 Entry, I want to thank the Cranwell staffs, past and present, who have had a hand in getting them to the finishing post. In my short time here I have been greatly impressed by the devotion to their task that is shown by a large number of people from the most junior technician, through the instructors and administrative

staff, to those directly in charge of our 460-odd flight cadets. These people work hard and their reward is such an occasion as this evening and tomorrow.

No 90 Entry have had more than the usual vicissitudes during their training. When they arrived at Cranwell in April 1964 they little realised that subsequent entries would complete a course some six months shorter than their own, nor that No 91 Entry, their immediate juniors, would, because of the changed pattern of training, start flying before they did. Furthermore, they have served under three Commandants and have witnessed the amalgamation of the R.A.F. Technical College with the R.A.F. College a year ago. I know that morale sometimes faltered under this succession of changes, but I am happy to report that it is back at a high level. Tomorrow 52 flight cadets, one of whom is an overseas cadet from Pakistan, will be graduating. 64 started, and of these, 16 dropped by the wayside, but these losses were offset to some extent by 4 who came in from other entries.

I would not like it to be thought that the changes which I have referred to had only a negative effect on No 90 Entry's training. I am sure that the flight cadets have gained, from their experiences, some of that resilience and adaptability which will be so necessary to them in the world beyond the Cranwell scene. The rapid advance of science and military technology is not only changing our aircraft and weapons, but it is also from time to time subjecting our basic organisation to searching reappraisals ; and we must always be ready to accept changes if they can be shown to be needed.

While on the subject of change and No 90 Entry, I came across a reference to them made in December 1964 by the first of the com-

mandants under whom they have served. He was speaking at a Wings and Prizes evening such as this, and was referring to the fact that for their training camp in Germany, canoeing and rock-climbing had been added to the programme. He said :

“ I must express my gratitude to No 90 Entry for being such game guinea pigs. It was typical of their toughness that even when one fell off a rock he was not nearly as badly hurt as he ought to have been and on coming out of hospital completed his continental holiday. Their discipline impressed the Germans and indeed amazed me, particularly their restraint when the Assistant Commandant's canoe capsized before their eyes.”

I trust the man who fell off the rock is here with us this evening — and some of you may remember the incident of the canoe although perhaps not as vividly as the Assistant Commandant concerned.

The remarks made then about the embryo No 90 entry were not a bad augury of things to come, but now for some facts and figures about how they actually fared. Academically the results have been a mixture of good and bad. In general the standard has been somewhat lower than we expect but some flight cadets have made good progress. In particular, Patrick has become a graduate of the Royal Aeronautical Society ; Kearney and Minton are well on the way to taking their B.Sc. (Economics) finals in June ; Elliot gained an Interpretership in French, and reached colloquial standard in Russian, and several other results are pending from Civil Service Examinations at Linguist or Interpreter level.

The Entry has done well in College sports and activities. I think it can be said that there are a good many “ characters ” whose leadership potential is high, but who must apply themselves more if they are to develop to the full. In fact No 90 Entry were the first to be used as instructors of more junior entries at training camps ; they have supplied 10 sports captains, 3 vice-captains and 34 have played for College first teams — 5 playing for Flying Training Command and one for the R.A.F.

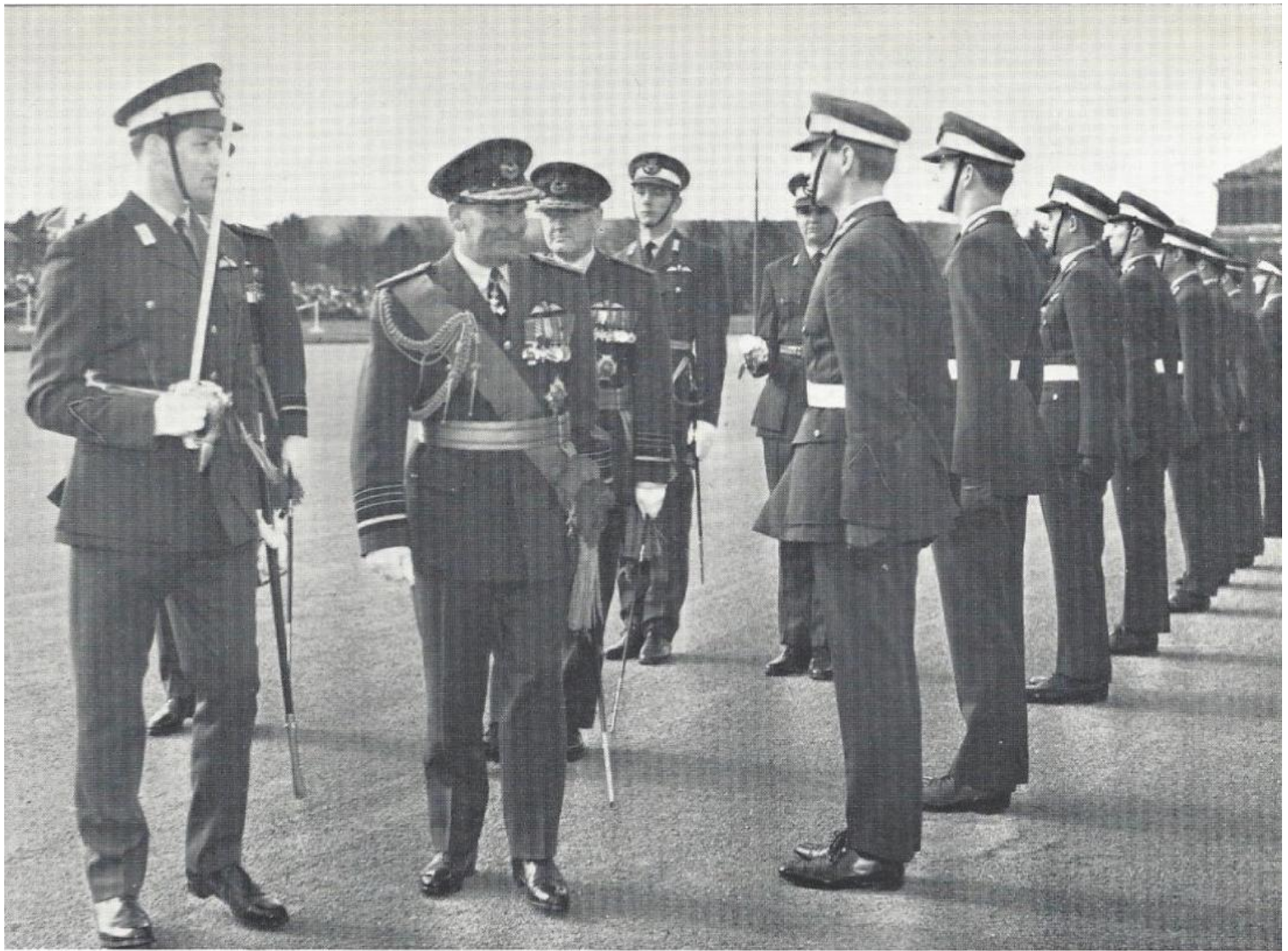
In Fencing, Kirkland has been captain of the team which beat L'Ecole de l'Air on

their home ground for the second time — and indeed only the third time that we have ever beaten the French. Stables captained the very successful Basketball team which contained several other members of the Entry. Amongst many other wins, their team beat both Sandhurst and Dartmouth this season, and Stables played for the Royal Air Force. Hutton and Dixon were in the College ski team which this season, for the first time in 15 years, beat the other two Services' Cadet Colleges.

The flying achievements of the Entry were varied, some excellent and some not so good. However, they have set new standards in their flying wing ground examinations and for the first time results were better than those of current Basic Flying Training School students. In addition, the Central Flying School standardisation team in a recent visit gave a good report on the Entry's flying. This is particularly creditable in view of the frustration felt by the flight cadets in their early flying training days. On the navigation side Humphrey achieved the highest overall result on record for any of his specialisation.

Perhaps I might say a word on the recent White Paper on the future of cadet training in the Services. It is still far too early to be able to give any detailed idea of the likely outcome of the plans for the formation of a Royal Defence College in so far as they will affect us here. I can say, however, that basically Cranwell as we know it will remain. Service Training will continue here as will the flying and other specialist training. What will change will be the amount of the academic content in the syllabus. When the plans materialise all cadets from all three Services will train together academically at a Royal Defence College and will be able to gain degrees — if they are considered able enough and wish to do so.

And now a valedictory word to the Entry. I wish our acquaintance had been longer but would not dream of asking you to stay here another few months on that account. What I do ask is that you remember the standard that you have been set in your time here and that you apply it in your future lives. Good luck to you, and I wish you every happiness and success in your service to the Air Force and to the Country.



Sir Wallace Kyle inspecting 'D' Squadron

THE GRADUATION OF No 90 ENTRY

The Graduation Parade of No 90 Entry was held on the morning of 3rd March 1967 in very windy conditions. The Reviewing Officer was Air Chief Marshal Sir Wallace Kyle, G.C.B., C.B.E., D.S.O., D.F.C., A.D.C., Air Officer Commanding-in-Chief, Bomber Command. The parade was commanded by Senior Under Officer R. M. Joy and the Parade Adjutant was Under Officer K. B. Patrick. The Sovereign's Squadron was commanded by Senior Under Officer E. T. M. Danks, and 'A', 'B' and 'D' Squadrons were commanded by Senior Under Officer A. I. Saggi, Under Officer T. W. Kirkland and Senior Under Officer G. S. Pyle respectively.

As the Reviewing Officer approached the dais a formation fly-past of nine Jet Provosts took place. After the Advance in Review Order the Reviewing Officer presented the Sword of Honour to Senior Under Officer R. M. Joy, the Queen's Medal to Under Officer K. B. Patrick and the Kinkead Trophy to Under Officer S. C. Gruner, and then gave the following address :

Gentlemen :

I'm sure everyone will join with me in congratulating the prize winners, and indeed all who are graduating today. I believe I know how you're feeling and I'm very glad to share that feeling with you.

I'm no stranger here at Cranwell. 36 years ago I stood as you are, hoping incidentally that the reviewing officer wouldn't go on too long ; and I've served as flying instructor, college officer, squadron commander and more recently as Assistant Commandant.

So I know something about these occasions and the preparation that goes into them. In my experience they've always been very good, they've always been stimulating, not only for friends and relations but also for your instructors and yourselves—although I don't suppose you'd be prepared to admit it.

And so it is this time. You have pulled out the extra stop which makes all the difference between a rehearsal and the real thing ; and I can congratulate you sincerely on a first class parade, very well handled and very well executed in very difficult weather conditions.

And this allows me to make my first point. All of us have got that extra stop we can pull out when faced with a special occasion or emergency. And you will find that the Service will judge harshly those who are unwilling to give that extra bit when it's necessary. But it will be generous to those who are willing to give more than they expect to get.

Traditionally your reviewing officer is expected to pass on some message based on his own experience. I will be no exception, but I propose to be rather more parochial than has been fashionable lately.

In the past two or three years at about this time, when Defence matters are debated in public and discussed in the National Press, much emphasis has been put on the need to bring the three Services closer together, for them to understand each other, to be inter-dependent and so on.

Now I wouldn't disagree with that but I don't think there need be all that song and dance about it. I believe that healthy rivalry

between our three Services is a very important and a very good thing, and that we must be careful not to stifle it. Quite frankly I don't remember any occasion, certainly in the field which is what concerns you, when the three Services haven't got on very well.

So I think it is much more important to look through this smoke screen and remind you that the efficiency and well being of your own Service, the Royal Air Force, is your primary concern and responsibility. That you must constantly remind yourselves that it is dependent on the professional ability and proficiency of its own members, particularly its young officers — You.

The only difference now is that in this fast moving, highly technical environment, it's more important and more difficult to keep abreast of developments — and this we must do if we are to maintain our reputation and our high standards. In a nutshell you have got to be better than we were and keep up a faster pace.

So let there be no doubt where your loyalties must lie. Firstly, of course, to your Queen and Country. But then to your own Service.

And you will have enough on your plates for quite a while at any rate, to practise your own expertise — flying, technical, organisational ; and don't let us forget that valuable contribution which the R.A.F. Regiment makes — and weld all these specialisations into an efficient whole.

Because the only reason that the Royal Air Force holds its proud position today is because it is good, because it is professionally highly efficient. And it's up to you to maintain it.

Never forget that our Service has found greatness by its youthful vigour of outlook, its adaptability to the ever-accelerating progress of aviation, and above all by its refusal to be hide-bound by the methods and forms of its earlier successes.

Keep it so.

And my final point is to commend to you the pleasure which pride in achievement can

give you. I'm not advocating blowing your own trumpet. I mean the sort of pride that spurs you on to even better things.

We are in the process of bringing into service ten new types of aircraft. A major undertaking by any standards. And I hope and believe you will play a full part in completing this task and at the same time in improving our capability and our efficiency.

This, Gentlemen, is your exciting prospect. I envy you. And I hope you will enjoy the pride that an enthusiastic contribution to it will surely give you ; and I hope too that you will make no secret of that pride.

I shall always be grateful that the Royal Air Force accepted me into its midst ;

because I've had fun, I've had the satisfaction of being part of a forward looking organisation, and taken great pride in making some contribution to it.

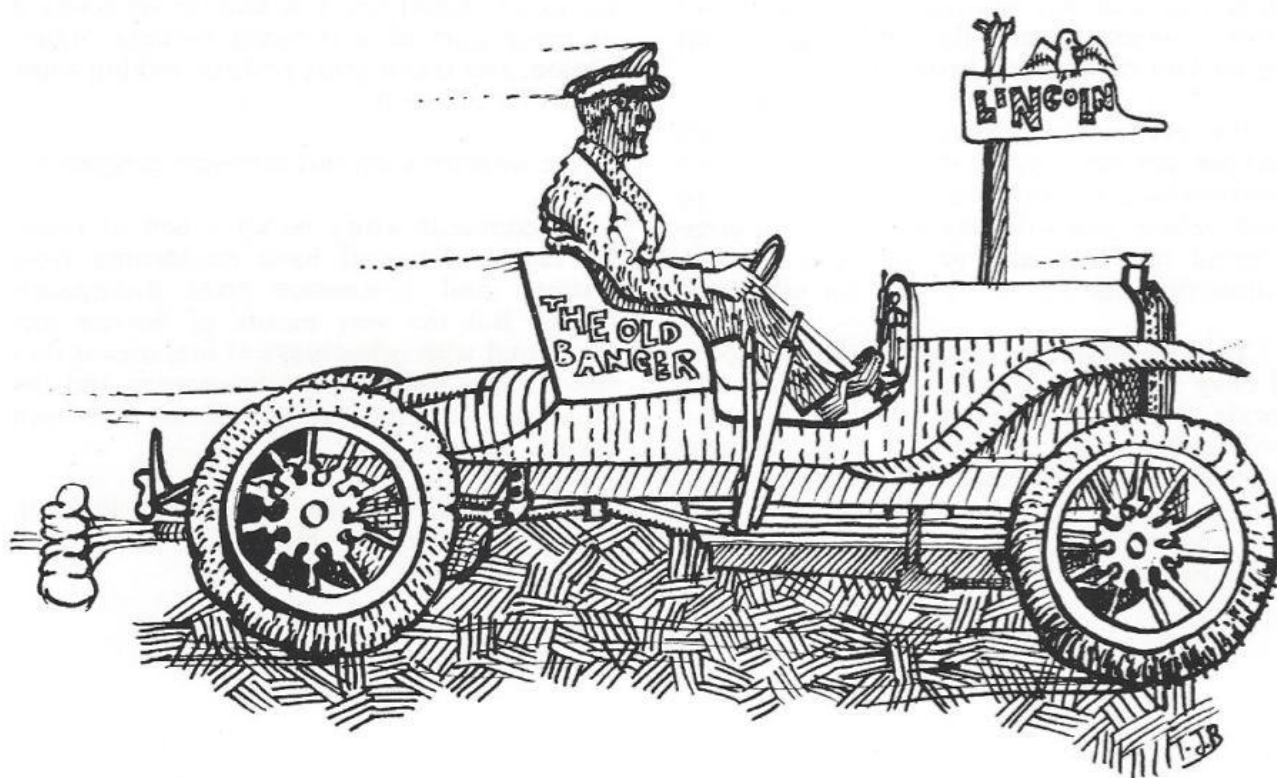
But we must keep this in proper perspective.

Of course it won't be all a bed of roses. Of course you will have maddening frustrations and sometimes great disappointments. But the very nature of Service life, compared with other ways of life, means that these things will be very temporary and the good and exciting things will far outweigh them.

Gentlemen, the best of luck to you all, and my best wishes for a full, happy and successful career.

*The Reviewing Officer
presenting the Sword of Honour
to Senior Under Officer R. M. Joy*





ANY OLD IRON

The fascinating and evocative article on the cadets' garage in the summer 1965 issue of the *Journal* set me thinking nostalgically about the cars I had when I was a cadet. This is the result and if you find it boring, blame the writer of "Abstract in Oils" for provoking it (and, of course, the Editor for printing it).

Next to flying and girls, cars are probably the main preoccupation of most flight cadets and — many years ago — I was no exception.

Flight Cadets weren't allowed cars during their first term at Cranwell so this period was spent scheming, dreaming and counting cash to see how closely the car desired and the cash available could be made to converge. Of course they never met. In my case the result was a 1929 Austin 7 "Chummy," open 4 seater. It cost £25 and I loved every line and every nut and bolt of it. I took delivery on the last day of my first term and,

with the exertions of the passing out parade and graduation ball behind us, another cadet and I set off at about 6 p.m. to drive to Devon — about 250 miles. We wore Sidcot suits, flying helmets and goggles and, at a steady cruising speed of 28-30 knots we sped through the night. It was exhilarating and, except for a short halt for a beer and a sandwich, we drove without stopping and arrived at Tiverton at 4 a.m. That was the first of many journeys and much fun, sweat and tears in that car. I particularly recall two occasions. One was trying to put the engine together again after decarbonising it. My friend John G. was helping me and we were in a bit of a hurry on this Saturday afternoon because we each had a very important date in Nottingham at about 8 p.m. I had a rugger match and left my assistant to it, confidently expecting to set off after the game and a nice hot bath. After the latter I went down to the cadets' garage to find John still messing about — he had lost some

“split collets.” By 6 p.m. the light was failing, the air was blue and, what was worse, I saw my date receding rapidly. However in the nick of time the situation was saved by John finding the collets in some obscure pocket. We threw the remaining bits together, screwed them up as tightly as possible, had a quick wash, and sped off to Nottingham. We just made it. The other occasion was a night out with two young ladies we had met at a fair at Grantham. In the course of taking them home to Boston we ran out of petrol at 2 a.m. I'm not sure whether the “birds” were more frightened when we ran out of petrol or when we pushed them both on to a lorry, bound for Boston, which we stopped. Anyway, the girls went but the car wouldn't and, such was our enthusiasm to get on to church parade (or was it anxiety to avoid yet more jankers ?) we started pushing. It was 5 miles to the top of the hill by Spitalgate airfield and we were exhausted and very bad tempered when we got there. We coasted down the hill into Grantham and the night porter of the George kindly sold us some petrol, so all was well. Apart from transporting young ladies, another of this car's characteristics was its ability to career round the snow-covered north airfield in the winter towing a sheet of corrugated iron on which was balanced a cadet — a sort of mixture of skiing, tobogganing, water skiing and all the fun of the fair.

In the end I did 10,000 miles in the car at a cost of $\frac{1}{2}$ d. a mile before selling it to my brother for £10. I would never have sold it then if I hadn't been in London one day and visited a second hand car place almost by accident. There I saw an Austin 7, the same model as mine but “hotted up.” The back had been cut away in a slope, cycle type mudguards had been fitted, it was finished in scarlet and silver and the whole thing, at £24, was quite irresistible. After some lengthy negotiations I paid a deposit, climbed in and roared away with the feeling that none of my female acquaintances would be able to resist a ride in such a splendid monster.

Fortunately for me I had an escort on the return journey to Cranwell. We left London well after dark and I was bowling along towards the Comet at Hatfield when one mudguard fell off. I stopped, put it on the

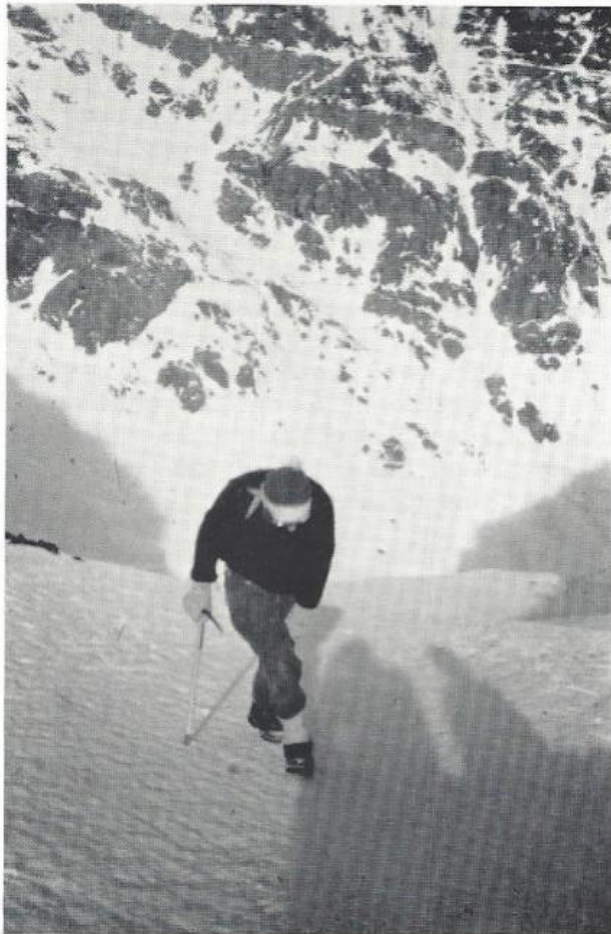
front seat beside me and pressed on. Around Biggleswade the other one joined it and a few miles further on the sidelights failed. However, these troubles were quite minor, and did nothing to dampen my enthusiasm for the car. In Stamford at about 3 a.m. things took a turn for the worse when the engine stopped for no apparent reason. Nothing in the way of petrol, fiddling with distributor or pushing could make it roar back into life. The starting handle turned out to be useless, as the dog with which it should have engaged was so worn that the handle just rotated uselessly. Eventually there was nothing for it but to abandon the car or have it towed back. We chose the latter and, not having a tow rope, I used my scarf. Peter and his car towed me 35 miles and I still have the scarf to this day ; it is 10 feet long and is regularly used by my children. Still, it got us back in time for church parade. My escort on that occasion is now a Commander-in-Chief and in my opinion the baton was already in his pocket all those years ago.

Despite its splendid appearance that car caused me nothing but trouble and expense which I couldn't afford, and it was with relief that it went as part exchange for £8, for a Morris Minor 2 seater. Commonplace, unglamorous and with an unexciting performance, the Morris was nevertheless a treasure of a car. Nothing ever broke, the engine never stopped involuntarily and it must have been the most economical car I ever had. In retrospect I remember only two things about it. Firstly a hill climb held in Belton Park ; I see from the programme that the Organising Committee consisted of Flight Cadets Wykeham, Barnes and Craig-Mooney and the Clerk of the Course was Flight Cadet Pike.

My only other worthwhile recollection of this car is that in it I learnt to get up speed approaching Daedalus House from Byards Leap, switch off and coast into the cadets' garage (in those days in a hangar adjacent to the new church and since removed), stopping without having to use any brake. I tried this many years later but found I had lost the touch. “Minnie,” as she was known saw out my time at Cranwell. Since then I have written off a Wolseley Hornet and a Morris 10, owned 12 other cars and my ambition is a Bull-nosed Morris — but all that's another story.

ROAD TO MOROCCO

Our objective was Toubkal (13,660ft.) in the high Atlas, in fact the highest mountain in the Atlas range. Low cost dictated a combination of thumb and rail to get us there ; so at nine o'clock on the morning of the fourth we were at Victoria Station. Within eight hours we were in Paris. French Railways speeded us through the night and we arrived only two hours late at the Spanish border. Hitching in Spain, although not illegal as in France, proved to be just as difficult, and we covered only 100 miles (in the pouring rain) by nightfall. The night was spent in the shelter of a hut by the roadside and next morning we were up early, hopefully



Not far to go

expecting our first really long lift, as on the previous day unobtainable. So once more we had recourse to the train, this time Spanish variety, and by 8.30 that night we were in Madrid, a capital of tremendous activity but little productivity. After a hair-raising journey across the city by bus — we are still not sure whether they drive on the left or the right — we were faced with a 22 hour journey to Algeciras in the most spartan of Spanish trains, the third-class omnibus. Like all nightmares, the train journey eventually came to an end, and with two French Canadians, on their way to Pakistan, we staggered into Algeciras stiff and hungry. A quick brew up on the beach, then we turned in for the night, waking next morning at dawn to see “the Rock” silhouetted against the sky by the rising sun. A policeman then appeared, viewed our passports at great length and asked if we were going to stay ; we decided it was time to go and find breakfast. At Gibraltar, having failed to connect with the ferry for Tangier, tickets were obtained for the journey by hydrofoil to Morocco.

Our first contact with the Arab population was a rather greasy gentleman at the dockside who managed to get us V.I.P. treatment through the customs, a reasonably cheap hotel — he insisted the camp site was 15 miles away — and then wished to show us the night life of Tangier. We declined the offer deciding to sample it ourselves at a cheaper rate. Censorship follows and next morning we started out to Marrakech.

On leaving Tangier our first slice of luck proved forthcoming. We unwittingly accepted a lift in a mini driven by a middle-aged American accompanied by an Arab boy. Harmless though he at first seemed, later experience destroyed this image.

Within an hour the car ground to a halt with a faulty generator, and after diagnosing the trouble, we left the car in the hands of an

Arab mechanic of dubious capabilities. Whilst the car was being repaired we enjoyed a good lunch with wine flowing free and easy. It was undoubtedly the wine which brought to light one aspect of our friend's character hitherto only suspected. His conversation turned from vague and lengthy discourses on Sartre to a slightly more passionate appreciation of his own sex, and, finally sweeping away the final veneer of respectability and dropping all essence of tact launched on a vivid description of living with his Arab boy, Mohammed — "I'm simply mad about Mohammed." His second bottle of Chateaubriand '61 brought his attentions more in our direction and it was with a vast relief that we finally got back on the road.

Not wishing to look our gift horse of a lift too long in the mouth, we arrived in Marrakech six and a half hours later with the American still drinking and burbling fervent assurance of his confirmed neo-platonism. He introduced us to more of his friends with similar inclinations, including the local police commissioner, and lunch was arranged for next day. Also present in the bar was an

Englishman who finally brought some sanity into the situation. He owned a house hidden away in the back street which appeared from the outside to be little better than a hovel, but on entering turned into a mansion large enough to house an army. We stayed at his house for the night, and next morning wandered around Marakech. We decided to miss the lunch offered by our American "friend" and early that afternoon set out for the mountains.

Unfortunately there was little traffic on the road south and we had to walk about 25 miles before we finally got a lift. It is interesting to note that lifts were only forthcoming from the European or semi-European element of the population, and we were greeted only with incoherent gesticulations from all Arabs and lorry drivers indicating we should take second place. However after many long hot hours on the road we eventually reached, by the evening of the 11th, a group of mud huts in the foothills of the high Atlas, called Imlil, where we hired a guide for the climb. Our guide, Omar by name, proved to be the local Trade Union executive of the area and kept most of the



Travelling Salesman, Marrakech

provisions for the village. He seemed very security minded and had locks on everything and innumerable bundles of keys which he guarded jealously in a leather bag. To prove his worth as a guide he showed us references written by English people who had used him as a guide before. These were most complimentary, especially about his mint tea but warned us about his enthusiasm for money, other people's mainly. Imlil was over 5,000ft. and so, when we set off early the next morning we were soon climbing in deep snow and by early afternoon the sun had melted the surface layers sufficiently to make climbing very laborious, and we frequently sank up to our waists. After about three hours we met a party of 4 French climbers with 4 Arab guides on the way down. We were amazed to see the guides climbing in Wellington boots and shoes but it is always an Arab's greatest asset to compromise. Even at 8-9,000ft. the sun was very warm and unbearably bright without snow goggles. After nearly six hours climbing we reached a hut, at the height of 10,500ft. owned by the French Club des Alps. The hut was barely recognisable, as only part of its roof was visible above the snow and the entrance was a good 10ft. below the surface.

We spent a very cold night with precious little food and set off early next morning for Toubkal, as yet still out of sight. It was very necessary in many places to spend time laboriously cutting steps in the snow and on more than one occasion our ice axes helped in some anxious moments. We at last reached the south col and could see the summit of Toubkal some 200ft. above us. We were thankful for a rest as the rarefied atmosphere at that altitude, thirteen and a half thousand

Towards the Sahara, 13,500 ft.



feet, was seriously affecting our lungs which only thirty six hours before had been at sea level. The views were spectacular and the outline of the Sahara Desert could be seen in the south west. Over the ridge to the north, but not visible, was the village of Oukmaiden which is becoming very popular as a winter holiday resort. Our guide himself was very keen on skiing. We did not linger long at that altitude, and by just after midday we started our descent, this time glissading with the help of our ice axes ; a most exhilarating and speedy method of descent. It took us approximately a fifth of the time to get down to the hut as it did to climb.

When we reached it we were surprised to see the warden of the hut there. He had apparently travelled from Imlil, about 5 hours and 5,000ft down the mountain, just to knock a few nails in the roof and thought nothing of doing this almost daily.

After a short rest during which the warden and our guide brewed up mint tea, we set off back to Imlil at a brisk rate but once again became buried in the deep snow which slowed up progress considerably. Imlil was reached by early evening and we stopped at the warden's house, if it could be called that, for more of the inevitable mint tea and a bowl of Kous Kous — a Moroccan dish made predominantly from maize.

We caught the local bus back to Marrakech the next afternoon.

It is an experience in itself to travel by this type of transport. The bus was three hours late leaving Imlil, not bad by local standards, and carried its own resident mechanic. Anything can be carried, and it was not uncommon to herd a few sheep into the back or lash a few goats on top. The drivers are specially selected for nerves of steel and the unerring knack of running every other vehicle off the road. However, after sharing the bus with twice its normal capacity of Arabs, not to mention dogs, chickens, and goats, we eventually reached Marrakech and pitched camp outside the city on the road to Casablanca. Even at night it was quite warm and the tent was used simply as a ground sheet.

Next morning we were picked up by a Moroccan driving a Citroen 2 cv. Un-

fortunately the driver either underestimated the weight of our rucksacks or over estimated the power of his engine. Suffice it to say we reached Casablanca 150 miles and five hours later, much of the time in third gear on a flat road, he having irreparably damaged his ego if not his engine.

Casablanca we found large, noisy and dull and our stay was short indeed. We were again soon on the road, this time given a lift by a well to do Moroccan, in a Citroen of more modern vintage, who drove at a steady 85 m.p.h. with hand permanently on the horn to clear his path. Thankfully we alighted at Rabat ; and by evening we were past Kenitra and within 150 miles of Tangier. With the assistance of a French civil engineer who drove as was expected of a Frenchman, and yet another bus, we reached Tangier in the afternoon of the next day, to be greeted with such signs as "English tea, just the way mother makes it," and "Fish and Chips 2Dn." A cruise ship was obviously in port and sure enough there she was—large white and wealthy, a description admirably suited to most of her passengers. This was Tangier at her commercialised worst, the beggars were out in force and most tourist commodities had doubled in price. Undaunted we wandered through the Kasbah until we found suitable mementos to take away with us, and then haggled furiously until the price had reached the almost subterranean level of our finances. Mint tea was consumed, the bargain was struck, and we went in search of a camp site and food. We were up next morning in good time to catch the eight o'clock Ferry and two hours later were in Gibraltar.

Our first stop was the R.A.F. movements, where we were told there was no hope of getting a flight back that afternoon, although we had already been told there were fifty spare seats on board. Not stopping to argue and faced with the train journey back through Spain we retraced our steps to the town to cash our remaining traveller's cheque, and have the pint we promised ourselves on the top of Toubkal.

As we reached the airport, where we had left our rucksacks, we saw the Britannia loading. Hoping for the best we went into movements to try again ; the situation had



Mint Tea Time

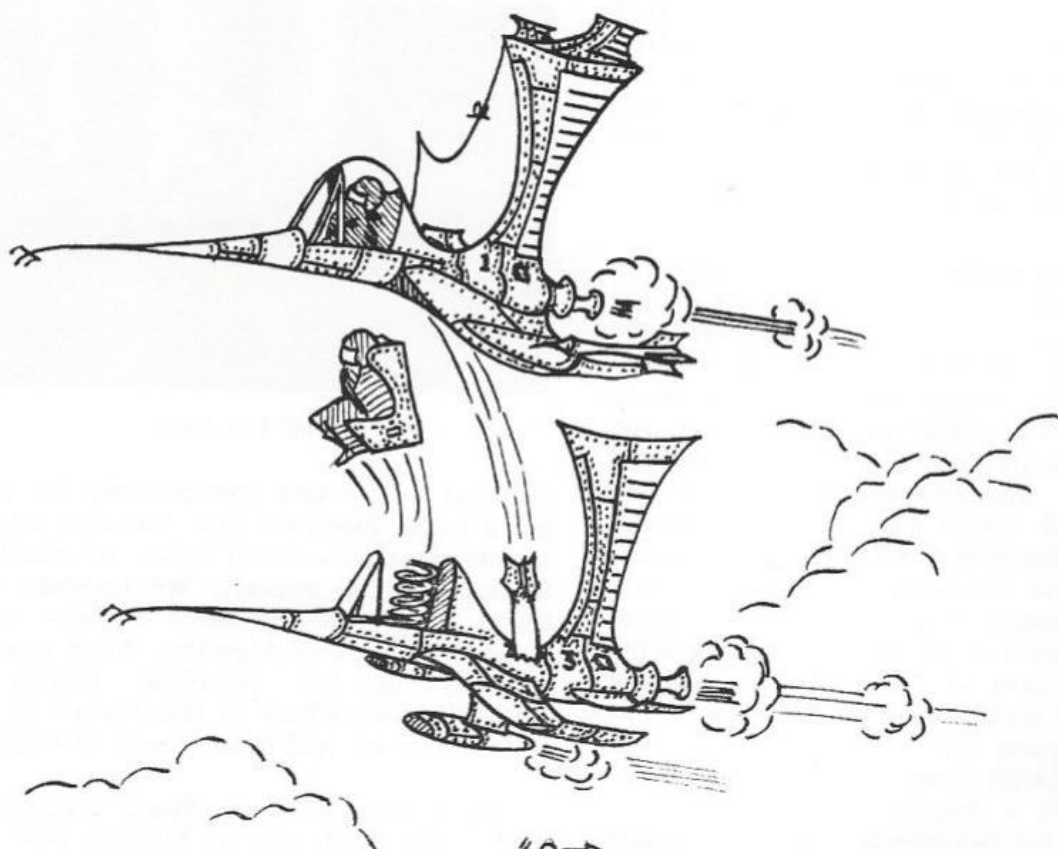
changed and it was now possible for us to get a flight. However time was now against us and the doors closed before we could get through to the aircraft. We resigned ourselves to our fate and made our way across the border back to Algeciras. After scraping together our last remaining pesetas we obtained two tickets to the French border from where we had tickets back to England.

The journey through Spain dragged on with a ten hour wait in Madrid, and only about five shillings for food. However we finally reached Hendaye two days later. We now had two francs fifty centimes to get us to Dunkirk as well as our tickets. However breakfast was provided by our fellow passengers and that evening we reached the Gare du Nord where we consumed our remaining food stocks, soup and coffee, much to the interest of the French railway staff, who did not seem to be used to people cooking on their platforms.

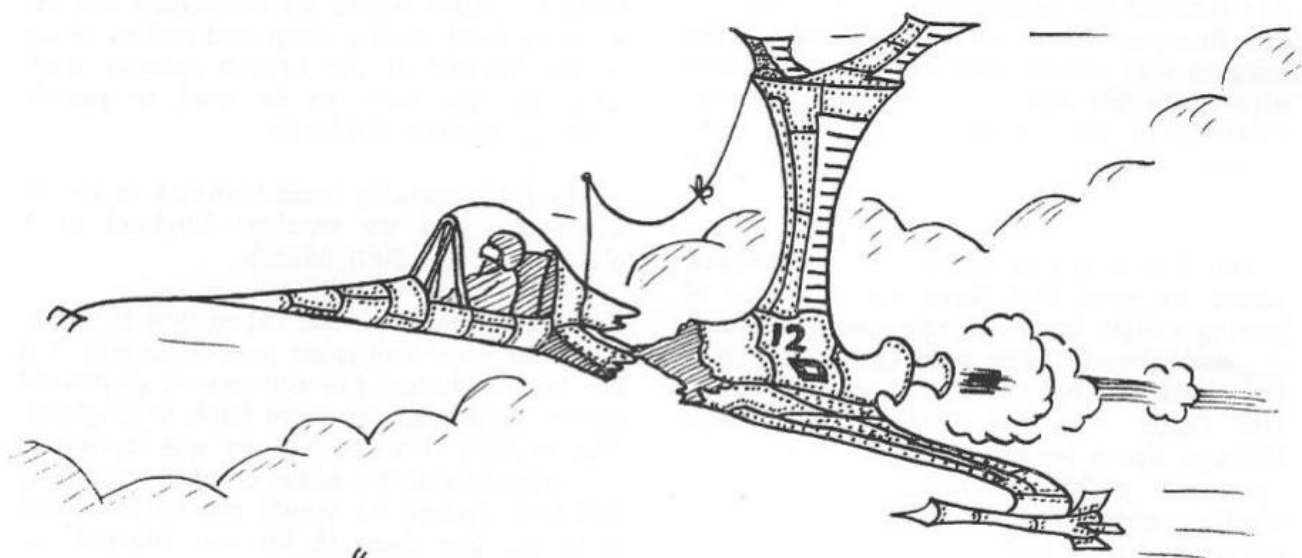
The ferry crossing from Dunkirk to Dover was calm and we reached England at 8 o'clock on the 20th March.

Looking back on the expedition is sometimes the most enjoyable part, especially if it has been arduous. For our part it all proved worth while once we were back in England. The journey through Europe was boring in the extreme and the actual climbing anything but easy, indeed we would not have wanted it to be, but these in no way marred the enjoyment of the expedition. It provided very valuable experience and left us with one thought : next time we take a car.

B. P. J. Pearce.
N. Semple.



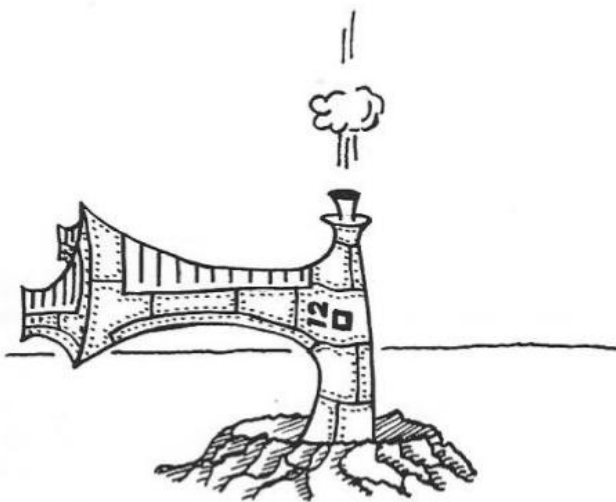
"RED ONE TO RED THREE ---
ER - SORRY "



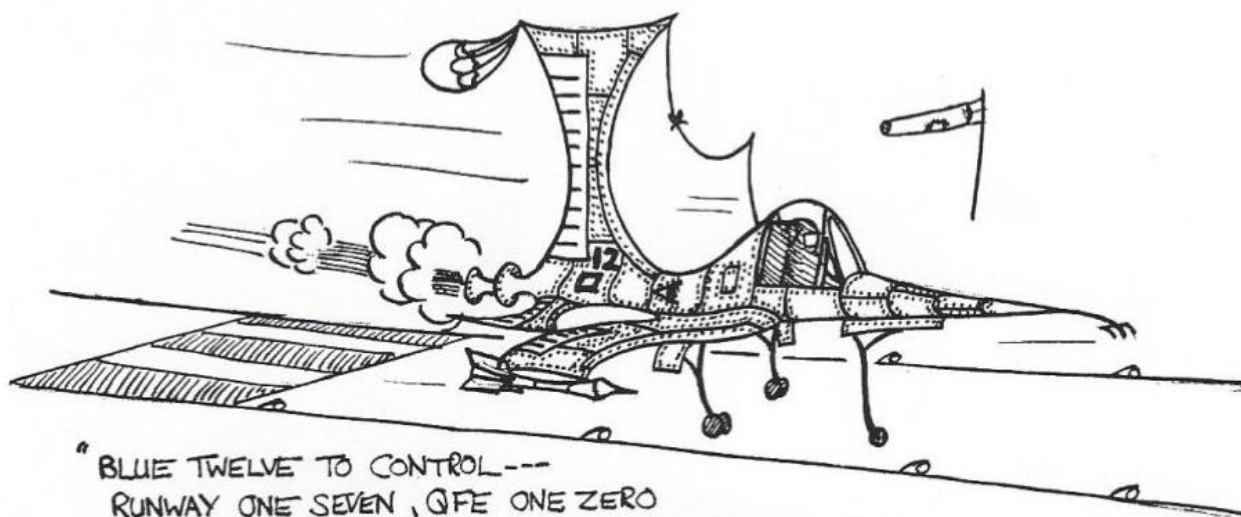
" RED TWELVE TO CONTROL ---
30,000 FEET , MACH 4.4
SLIGHT LOSS OF CONTROL OBSERVED "

MAN IN FLIGHT

.....
by
Barry



" PINK TWELVE TO CONTROL ----
NOW IN CONDITION OF CL MIN



" BLUE TWELVE TO CONTROL ---
RUNWAY ONE SEVEN , QFE ONE ZERO
ZERO NINE , RIGHT HAND CIRCUIT , THREE KNOT
CROSSWIND , DOWNWIND THREE GRE ----
AW SHIP IT I'VE LANDED "

EXPEDITION TO NORWAY

(An account of a station Trenchard Award project)

Five officers and four airmen from R.A.F. Cranwell and one airman from R.A.F. Waddington carried out a ski towing and dog sleigh expedition in South Norway from 6th March to 19th March 1967.

The group travelled by train to Newcastle upon Tyne where they boarded the SS Leda for Bergen, an 18 hour voyage, and then proceeded by the Norwegian State Railways to Finse which is situated at a height of 1,200 metres above sea level and was to act as the base for the expedition.

The train arrived at Finse at 1738 hours

on Tuesday 7th March and we disembarked to find ourselves in a small settlement well above the tree line and situated on the edge of the Glacier plateau Hardangerjokulen, the 'roof of Norway,' which covers an area of about 120 square miles. The first impressions that struck us were of an immense snow covered, wind blown wilderness. As we trudged across to the Finse Hytte, our HQ, we were welcomed by the mournful howl of the husky teams staked in the snow by the hut.

The chalet was most impressive and was the only 'Hytte' apart from one other, in



which we would enjoy electric lighting and showers. After a good supper we met one of the guides who, although he was not to accompany us, was to brief us on the expedition routes. We were told of the difficulties of our proposed first day's trek. We learned that we were to depart the next morning on the first leg and listened all the more intently to our instructions. We were warned that weather and snow conditions can vary very suddenly and we were reminded of the vital rules such as *never* to ski alone, *never* leave the trail where marked, *never* leave a marker stick till the next is in sight and we were warned to take great care on the downhill stretches as a broken leg could be somewhat of an embarrassment. The mountain guide told us, jokingly, that, although he could not say the same for the Norwegians, he had never had a British casualty. Fatal last words? On a more sombre note the guide warned us of storm procedure, a warning we were to need at a later date.

Most of us remember the first day with memories of utter fatigue, aching blistered feet and the relentless wind and driven snow in our faces. We learnt to langlauf ski the hard way — purely through the need to reach our destination by nightfall — and towards the end of the day the long sliding steps were coming more naturally and we were all promising to wax our skis better the next day. Several members of the party were credited with walking the whole way with snow and ice clogged skis! Four members of the party, Sqn Ldr Lissett, J/T Cooper and SAC's Clerk and Hale who had no previous skiing experience sensibly decided to return to Finse before the optimum turning point was reached, to gain more experience. We planned to rejoin them on our return to Finse in three days' time. Skiing round the NE corner of the Hardangerjokulen we found time to admire the 'Blue Ice,' a spectacular and well known glacier that edges its way year by year from the Jokulen.

After an exciting downhill run, not without many amusing discoveries of method of descent, we crawled shattered into the hut at Instestollen on the Sysenvaty. Boots were wearily dragged off to reveal king size blisters, but after a hearty meal of reindeer steaks warmth returned and with it a sense

of happy achievement. Our only worry on retiring early to our bunks was ensuing stiffness.

The next day sunshine turned us into a happy party as we skied across a string of lakes, the snow glistening in a temperature of -5°C. The day's travel was once again rewarded by a downhill run to our night's destination. The Kroekkje hut, as the others, is situated on the edge of a lake, frozen now; is constructed entirely of wood and is extremely comfortable. These isolated huts' only connection with the outside world is the regular visit by Sno-Cat or Weasel when the weather permits. Water is drawn through a hole cut in the ice. Heating is achieved by large cast iron wood boilers one of which is always placed in the 'Torkerom,' a separate drying room.

On Friday we returned to base. There was no sun but high winds were luckily in our backs. One of the party was pleasantly startled to meet a lemming sitting outside the hut. Amusing little creatures that could well be described as 'cold wet weather hamsters.' We had overcome our slight doubt about our packed lunches by this time and could all be seen at lunchtime sitting hunched on packs backs to the wind, hungrily munching salami and goats milk, cheese, open sandwiches supplemented by chocolate and welcome warmth supplied by 'Saft,' tea or coffee. The Englishmen all caused amusement by ordering 'The ek myllke og sykkere.' The huskies would all show great interest in our packed lunches and would hungrily eat anything left over, being especially partial to salami sandwiches. Finse was reached lateish in the afternoon and we prepared to make the most of real comfort before heading into the mountains again.

At Finse we rejoined four members of our party who had put into good use their stay there. Luckily, they had made the acquaintance of Sqn Ldr Offiler and a party of cadets from Halton who had won cadetships to Cranwell and would be joining 96 Entry so basic skiing lessons were laid on during their enforced stay at Finse. Unfortunately we were still one member down as Pilot Officer Symonds departed in a hurry for the nearest dentist in Geilo, 48 miles away, with a suspected abscess, thanking his lucky stars

that the pain hadn't started on the Hardangerjokulen.

Once again a SSE gale and driving snow, temperature about -3°C . A long climb commenced the journey but we finally reached the Sankt Paal, a glacier 1697m. above sea level, followed by a downhill run to Geiteryggen. The weather cleared by midday and it was apparent that all members of the party could ski well enough by this time to thoroughly enjoy every minute. The dogs found the steep climbs difficult to negotiate and needed a helping hand from us from time to time.

Sunday was to be the longest day. The party left Geiteryggen at 0900 accompanied by high winds from the South, driving snow and a temperature of -4°C . Once again a long uphill climb, with the party making good speed through very impressive scenery, stark cliffs and mountain tops occasionally peering down through the whiteness. The group must have looked most insignificant ; a tiny winding line of black dots against the magnificent white backdrop of this snow



Husky

bound wilderness. Another amusing downhill section brought us to Iungsdalen sheltering under the impressive peak of Iungsdal-snuten, 1481m. The party separated distinctly into the cautious traverse descent type and those who favoured the old principle that the shortest way between two points is a straight line. All members of the group frequently made clinging acquaintance with deeply accommodating snow drifts — some most spectacularly.

Some of the party remained at Iungsdalen to enjoy a restful day on Monday ; the rest eager for more punishment began a trek up Fondalen (north) aiming for Halldarn 1765m. The cold really got through during the ascent in a 45 knot gusting wind, goggles froze to faces and traces of frostbite were apparent. The party reached 1680m. before the conditions forced us to turn back and virtually blew us back to Iungsdalen. As the ice forms on eyebrows and faces it is now apparent why most Norwegians are clean shaven. Sqn Ldr Lissett became well known during the trip for the cultivation of magnificent stalactites on his moustache !

We were all together again today as Pilot Officer Symonds, abscess duly treated, appeared from the direction of Geiteryggen, having joined a party of Norwegians for the trip over the mountains. At last, the Cranwell party was united more or less, none the worse for wear. Toasts were drunk in strong sweet tea, expertly obtained, and brewed by Flight Lieutenant Cole over a roaring stove.

We set off on Tuesday in pleasant weather skiing down the lake to skirt Grevskarkdnut 1561m. A long uphill climb followed towards the mountain ridge above the Strandafiord on which lies Raggsteindalen. Lunch was taken with our backs to a rising wind and consisted mainly of salami and ice crystals.

The view was very reasonable and at one stage Telemark was visible in the far distance. After cheerfully chasing a lemming (without catching it), we commenced the very steep descent to Strandafiord. Many of us discovered that the result of a faulty stem turn on a very steep hillside is a very fast, near vertical downhill dash. Flt Lt Armstrong demonstrated a sound knowledge of aerobatics in his endeavours to halt a suicidal downhill dash. All came cheerfully to grief

sooner or later but at length reached the lake. We experienced a short scare on the mountain when a large area of snow settled with a very tangible 'thunk' and visions of avalanches were not short in materialising. The dogs made a most spectacular descent after their long climb appearing over the brow of the mountain and dashing downwards in a wild snow flurry. This is when the large H shaped brake on the back of the sledge becomes most useful and the handler was using it to no mean purpose. It was mildly surprising to find electric lighting at Raggstein, good food and company and even wine for dinner.

The next day after battling for 1½ hours against impossible conditions and nil visibility it became obviously highly dangerous to proceed, as in really poor conditions it is too easy to become totally disorientated. A very battered party not unthankfully turned and retraced steps to Raggstein and shelter from the howling gale and stinging wind-hurled snow.

Although the storm lightened slightly the decision was made to stay and during the afternoon the party, keeping well in touch with the hut employed themselves variously. Sqn Ldr Lissett, Flt Lt Cole and Sgt Leighton practised the construction of snow holes which would be the only hope of survival if enforced to remain a night in the open. It is interesting to note that whatever the conditions are above ground the temperature in a sheltered snow hole will never drop appreciably below freezing point.

At this stage a word for the huskies. The team that accompanied our party consisted of five dogs. These animals live a decidedly spartan life, sleeping in the snow at night and living on a pound of cow's stomach and bread a day. These dogs, more friendly than one would assume, can be expected to pull 100 lbs. of weight each day and do so for long distances, coaxed and guided by the dog handler who guides the sleigh and manipulates the very necessary brake fitted to the rear of the sleigh.

Another evening was happily spent before a roaring log fire with not a little speculation as to our future programme if the morrow found us stormbound.

The morning dawned fairly fine and we set off for Geiteryggen. A glorious run up the valley in sunshine began the day, with the table-like mountain Syningshorda 1287m. towering across the valley. A fairly long climb followed in a rising wind up one of the steepest ascents so far. Blizzard conditions again prevailed by lunchtime and after a short, uncomfortable stop we battled on the Geiteryggen and were very glad to see the hut appearing out of the snow. Another very good meal, our last dinner in the mountains, followed by an early night as our start for the next morning was planned to be early to allow us to connect with the Oslo-Bergen train at Finse.

On Friday, 17th March we set off in poor weather with Finse by 1300 as our goal and a storm forecast. Progress from the start was painfully slow into the teeth of a vicious gale and driving snow with the visibility fast decreasing. The group kept very close as it would be too easy to lose someone in the swirling snow. Stops became more frequent in attempts to avoid losing the charted track and these delays invited frostbite which attacked several members of the party but luckily did not have a chance to do damage before the signs were spotted by the guide or other party members. At one stage forward progress stopped altogether and the party reluctantly turned for Geiteryggen only to encounter the dog sleigh coming through. A decision was made to try again, luckily as it turned out for the storm was to last for a week. The group battled on, faced by now sheets of ice in the 45 knot gusting gale and the cold really biting. At last, exhausted, we struggled thankfully down from the Sankt Paal to Finse, only just visible in the driving snow. The time was 1345.

A quick change followed, a bite of lunch and on to the train for Bergen and the journey home; and as the train sped towards Bergen we sadly said au revoir to the roof of Norway, where we had all formed a healthy respect for the mountains and witnessed first hand the terrifying power of the elements combined with this unharnessed snow and ice-bound area. I think we will return; at any rate the memories of a superb expedition and the certain feeling of achievement will always be ours.

Plt Off J. Symonds

H.M.S. DAEDALUS

H.M.S. Daedalus was the Royal Naval Air Service training ship. The fact that it was beached at Cranwell was a trifle ; it was still a ship. The little train which occasionally ran into Sleaford was the "Liberty Boat," things could be "lost overboard," and the Senior officers lived in the Ward Room. We fed on the mess deck, slept in cabins and the White Ensign was formally lowered every sunset.

I first went to Cranwell as a Wireless officer in 1917. At that time radio was still in its early spark-coil catswhisker stage ; there was, of course, no broadcasting ; knowledge of it was confined to engineers and physicists who had become interested in it. Wireless men were therefore in very short supply. I originally anticipated a short stay at Cranwell, but thanks to a quirk of fate I found myself on the staff, and second-in-command of a section. As Cranwell was therefore likely to be my permanent station, I began to take some notice of it.

At that time the station consisted entirely of single-storey huts, many of them made of wood. The only permanent building was the old manor house, where the Commodore lived. The officers' quarters consisted of one very large hut with the Ward Room on one side, the Gun Room (where the midshipmen lived) on the other, with the big mess, where everyone ate together, in the middle. The cabins were in several rows of long huts behind the main building, but senior officers had rather more substantial accommodation.

The boys and men slept in huts in various parts of the station.

The only things on the station which had good accommodation were the planes. There were, I think, five well-built hangars for the various flights, with good workshop facilities nearby. Each flight had a particular task ; the one with which I had most contact was the radio experimental flight, which, among other things, trained the boys in the use of aircraft transmitters and receivers. I was told that I must fly only with an extremely reliable pilot ; the trouble was that the pilots most capable of getting out of difficulties were the ones most likely to get into them, since they were most inclined to try out special stunts.

Once, when I had been out on experimental work I had left a big 12-volt battery in the plane, but when I went to collect it I could not find it. I asked the pilot if he knew anything about it, and he merely replied " Oh ! I've been up looping the loop ! "

The actual training of the boys was very interesting, if not orthodox. The commanding officer, Commander Talbot, was a man of liberal views, who seemed to appreciate that the whole-set up was something new, and might therefore have to use methods not hitherto accepted as standard practice. The boys were being trained as observers ; and since at that time there were only two-seater planes, they might have to act on their own, and not merely carry out instructions. Consequently they were encouraged to

develop their personalities, and not to become mere robots.

They came to us in batches of 20 or 30, and having been carefully selected, were in general a keen and bright crowd. But as their numbers were small, it was possible to get to know each one personally ; this was a great help in their development.

It was clear that off-duty the boys had rather a dull time ; there was little organised entertainment, and nowhere they could go. So I arranged that the Wireless School should be open on certain evenings for anyone who would like to go there. I emphasised that though I and some of the petty officers would generally be there, everything would be quite informal. It worked very well ; many turned up regularly, and it gave us a real opportunity of getting to know them. I remember one boy explaining to me that he always sent his socks home for his mother to wash !

This method had two immediate advantages ; very little disciplinary trouble occurred, since the boys regarded us as friends rather than masters. Again, Headquarters sometimes telephoned from London saying that they wanted a boy for a special job. With our personal knowledge of them, we were frequently able to select just the right one, and we often heard that our selection had proved extremely satisfactory.

The following story illustrates the freedom we used. One of the boys, who was posted to the "lighter than air" section, was taken out by the officer in charge, for morse practice. Being a sailor, the officer sent the standard Naval signal, "Report composition of the enemy's fleet." This was too much for the boy, in the middle of Lincolnshire, and he promptly signalled back "One tug, two barges and three canoes."

Possibly he deserved to be severely reprimanded ; but it went round the Ward Room as a delightful story, and we appreciated the boy was one on whom it was worth keeping an eye. In fact, only a few weeks later his alertness saved a Blimp from catching fire.

At this time there was a fear that the recent amalgamation of the R.N.A.S. and R.F.C. would bring about a drop in engineering

standards, since the Royal Engineers were Civils and the Navy had a strong mechanical bent. Engineering standards had always been very high at Cranwell, which prided itself on the fact that no aircraft had been lost through poor workmanship. But when a batch of R.F.C. boys were sent for use in the workshops, the officer in charge said to me rather sadly, "They can salute beautifully, but they don't know one end of a screwdriver from the other."

Another incident raised a more serious problem caused by the Army/Navy amalgamation. For minor faults the boys were given "penal drill" for an hour in the afternoon. The Commander once made the mistake of putting an Army sergeant in charge. Naturally he expressed himself very forcibly on the way Navy boys drilled, so some of them collected round the parade ground and made fun of him. This infuriated the sergeant, and he called out the military police, who arrested one of the boys.

Now the use of Army police against Navy personnel was an extremely sore point, so the boys rescued their pal and tipped a bag of cement over the sergeant. There was, of course, an official inquiry, but the Commander told the sergeant to remember that they were on a Naval station, and that while the Army had it in their feet the Navy had it in their heads.

The coming of the R.A.F. involved considerable re-organisation ; the boys' training was to go to Winchester, and research to Biggin Hill. Now all the friends I had made were in the research section, and while the boys' training was interesting my position there was a bit difficult. The trouble was that, though I got on with the head of the section very well, the boys and petty officers disliked him and liked me. In a way this was nice, but it made my position very difficult, so on consideration I asked the research section if they could do with me. They said they certainly could, so I went with them to Biggin Hill for the rest of the war. This, of course, terminated my rather short period at Cranwell, but I shall always remember with great pleasure the happy time I spent at that good, comfortable and highly efficient station.

Mr J. Hollingworth



SPORTS AND ACTIVITIES

WINTER 1966 - 67

During last Winter, College Sports Teams have had a varied amount of success. Sandhurst definitely got the better of us, but this was avenged by our almost clean sweep of Dartmouth. Undoubtedly the outstanding individual success of the season was Glover representing England at Rugby, when they played the Australians. It was only through injury that he did not represent England on a number of other occasions.

On the activities side our skiing success needs mentioning. During December the

Inter College Skiing Championships took place, and for the first time since the contest was started, it was won by a team from Cranwell. This is perhaps a good omen for the future.

Overall the many and varied activities which take place at the College have flourished. This has mainly been the result of the larger number of Cadets at the College. It seems fair to assume that these larger numbers will mean that next season will be a highly successful one.

RUGBY

The College team began their season with a short tour of Germany where three matches were played. These were against Royal Air Force Germany, BAOR (Northern Area) and a combined Wildenrath and Bruggen team. All three matches were lost by narrow margins but the team gave some promising displays against strong opposition.

On returning to Cranwell the team opened their British season by beating Welbeck College on a wet, windy afternoon. Fixtures followed against Harlequin Wanderers, Oundle School, Market Rasen, Sheffield University, London Scottish 'A', the R.A.F. Officers' XV and Stonegate. Only Oundle were beaten, but the College team gave a fair account of itself in every game and the scores did not always reflect the pattern and closeness of play.

Wisbech were convincingly beaten before the Sandhurst match and the team set off for Camberley in an optimistic mood having at last managed to turn their attractive play into a satisfactory result. The match against Sandhurst was hard and fairly even, the lead changing hands four times before Sandhurst eventually won by 11 points to 9. It was unfortunate that the Cranwell team, having played well to score 9 hard earned points, were guilty of two lapses which were snapped up by good opposition to account for eight of their points.

Two matches were played between the Sandhurst and Dartmouth fixtures. The first one against Oxford University Greyhounds showed a reaction from the previous Saturday's efforts and the team lost, and did not play well. Against Lincolnshire Constabulary the Cranwell team played attractive, attacking, open rugby and won convincingly.

The game against Dartmouth was played on a blustery afternoon after heavy rain. Neither side allowed the other any quarter, but in the second half Cranwell managed to establish a slight superiority, especially in the loose forward play, with the result that Cranwell won 6-0.

After Dartmouth, two more fixtures were played before Christmas — against Loughborough University and Boston. Both were narrowly lost. Glover was now released for top-class and eventually international rugby and Elder took over as Captain.

No rugby was played during the first week of 1967 because of frost. Fixtures were cancelled against R.A.F. Cranwell and the Air Electronics Officers' XV. The season was resumed with fixtures against Loughborough University, Northampton Wanderers, Flying Training Command and Bedford Wanderers. All these Clubs provided stronger opposition than is usually met by a College team in any sport and they included many first class and ex-international rugby players. Although defeated the College team played with great spirit and determination and in winning the following match against Leicester University showed that against opponents nearer their own age group they were a formidable team.

The climax of the latter half of the season was undoubtedly the visit to Salon to play the French Air Academy. The conditions were ideal for attacking rugby. Both sides began to play with plenty of drive, but the French proved to be nervous under pressure at half-back and were soon forced on the defensive. As the game progressed the Cranwell forwards were distributing the ball as and how they liked, giving the three-quarters opportunities to mount attack after attack. Both wingers scored three tries apiece from excellent passing movements by the backs. The final score of 30-0 was only two points short of the record for this fixture.

The 2nd XV has been fairly successful throughout the season. Most of the team took part in the tour of Germany and with hard training at the beginning of the season showed an improved standard. This resulted in some members being chosen for the 1st XV and there was a consequent turnover of players in the 2nd XV.

The season started well with wins over Welbeck College and the Apprentices from

Halton. The team, however, suffered some narrow defeats notably against Lincoln Hall, Nottingham University, when through handling mistakes in the closing minutes the undergraduates narrowly won. A similar mistake produced a win for Denstone College 1st XV towards the end of the season by 12 points to 11.

The main criticism that can be levied against the 2nd XV has been their inability to produce hard, tough rugby for the whole game. Extra effort in the closing stages of many games would have made the difference between victory and defeat.

There were many comings and goings of 3rd XV players to the 2nd XV and the 4th XV throughout the season so it is all the more satisfying to report that the team spirit was excellent whether the team won or lost.

It would be wrong to single out individuals for special praise, except perhaps the Captain who was mainly responsible for welding a workmanlike team together. The team's

cheerful, sportsmanlike play gave much pleasure to spectators and to the players, who clearly played for the fun of it. Eight of the 20 games played were lost and in only two of these was the margin greater than 5 points !

The 4th XV played coarse rugby with determination and enjoyment and won exactly half of the number of games played. This record is creditable when we remember that the team had several changes of captaincy, and often ten or more new faces in the team.

Most of the players were from the Junior Mess and a number of them have shown that they will develop into worthy members of more senior teams before they leave the College.

We are indebted to Squadron Leader Williams for his help, advice and sacrifice of many hours of his own time in the coaching, encouraging and general management of the rugby club. We wish him success in his new post in Bahrein and hope one day to entertain his Arab rugby team.

SOCCKER

The season started disastrously with a 5-2 defeat from Lincolnshire police. However with the introduction of a 4-3-3 system the team settled very quickly and in the very next game soundly beat Sheffield Falcons 5-0.

Continuing with the new system the team played with remarkable consistency letting in only three goals in the next eight matches. The only fault in this period was the lack of a competent goal scorer.

For twelve consecutive weeks a group of 15 players travelled to Rotherham to train under the guidance of the Rotherham manager Mr Jack Mansell. The training though very beneficial for individual situations did not succeed in improving the game of the team as a unit. But nevertheless they were very grateful for having the experience of professional coaching.

On the 12th November the College team travelled to Sandhurst for the annual Inter-College fixture. In the first half the Cranwell side played fast-moving football and took such a commanding position that the Sandhurst side were bound to pull back their forwards to defend their goal. Only weak finishing prevented the Cranwell team from taking the lead. The second half was a repeat of the first and the game ended in a 0-0 draw.

In the Dartmouth game the naval cadets played with great determination and achieved a 2-1 victory over an 'out of form' Cranwell side.

The College 1st XI received a bye in the first round of the Argonaut Trophy. In the second round they were drawn away to the Royal Agricultural College, Cirencester. This game provided little opposition to the

Cranwell side who won convincingly 3-0. In the quarter-finals the College faced much harder opposition in the form of the Stock Exchange. The game was played on the Bank of England pitch in London. The Stock Exchange though containing many Southern League players found the College side no pushover. The cadets played with fighting spirit but had to succumb to their superior skilled opponents and lost 2-0.

At the end of the first half term three technical cadets, who were all regular members of the 1st XI, were detached away from the College. Whilst one could continue playing in all games the other two found the transport problem far too great and could not return to play. Their departure disrupted the system of the team and as a result the performance fell. An orthodox style was adopted but brought little success.

Two of the 1st XI's greatest defeats were inflicted in this period, both by the same team, Lincoln City F.C. The scores were 6-0 and 7-0. However the fact that the Lincoln side contained nine of the regular 1st XI must be considered before criticising the College team.

One of the most attractive fixtures of the season was the visit to Leicester City F.C. The game provided very good entertainment with eight goals being shared, the Leicester side taking five, the College three. Wakely, the 1st XI winger, put in a very good performance in which he scored two goals and 'made' the third.

Looking back through the season and excluding individual games the College 1st XI gave a better performance than the team of the previous season.

The second XI took advantage of the increased numbers of better skilled players and returned some excellent scores, the most notable being 14-0 against Laxton and 6-1 against Carres G.S. Most of the 2nd XI had the ability to command a place in the 1st XI and many were given the chance. Throughout the season the 2nd XI was ably led by the captain, Coldicott.

The football club provided enough players to enable a strong 3rd XI to be chosen to represent the College. This team maintained



a very good standard of football and by the end of the season had a better record than both the 1st XI and the 2nd XI. The fixture list for the thirds was not full but due to hard work by the soccer secretary, R. W. King, they can look forward to a full list next season.

The captain of the Soccer Club was R. J. Stewart who was ably backed up by Gibbs as vice-captain. These two achieved a fair measure of success in their respective roles and Stewart should do the job particularly well next season. The club is grateful to King who has put in good work as secretary. It is not always a good thing to single out individuals but C. Burns the goalkeeper was brilliant throughout the season.

Colours were awarded to Stewart, Burns, Norbury, Johnston, Goodall and Wray.

HOCKEY

The appointments at the start of the season under the guidance of Squadron Leader G. S. W. Goy were : Captain, K. B. Patrick ; Vice-Captain, M. S. Dyer-Ball and Secretary, S. D. Wakely.

The incentive in all the matches before Christmas is that they are a build up for the games against Sandhurst and Dartmouth, and this season the hard training of the first eleven squad paid dividends. Although only drawing against Sandhurst 0-0 away, a result which fairly reflected the balance of the sides, the College beat Dartmouth 1-0 at home. This is the first time that the College has beaten a Dartmouth hockey side in all the years that the two Colleges have met and the result made up in part for some disappointing results in the build up matches where there had been no consistency.

These two games and those against Maintenance and Flying Training Commands were the highlights of the season. Maintenance Command were beaten 5-1 in an excellent, open game of hockey and the College were rather unlucky in losing to Flying Training Command by a penalty flick towards the end of the game. The College also had a very enjoyable game against the full Royal Air Force side and did well to hold them to four goals.

A four day Hockey tour of Germany was arranged as an end of season 'perk.' Although losing to both the BAOR and R.A.F. Germany teams, both very strong sides, the College team made its presence felt both on and off the field.

Despite having the unenviable task of filling vacant slots in the first eleven, the seconds, under the captaincy of L. A. Davison, enjoyed a very successful season winning 14 out of 19 games, mainly due to good and consistent teamwork.

A third eleven was fielded for the first time this season and under G. J. Pilgrim-Morris attained some good results, winning four and losing only one of the six games played.

A high standard of play was achieved by hockey sides this season and this was even more remarkable considering that the College started the season with only three regular first eleven players from the previous season and only one first eleven player was gained from the new entries. The fact that the College had such a good season was mainly due to the large number of players who successfully bridged the wide gap between schoolboy and men's hockey and the enthusiastic approach of all.

ANGLING

Anglers are a curious breed, who seem to thrive on disorganisation and makeshift tackle. For College anglers, however, such carefree days are over ! New tackle is expected to arrive soon and the club's organisation has been considerably "shaken up."

The past policy of the club seems to have been, "live and let live" allowing odd individuals to wander away to local waters when they "felt the itch." It is now planned to arrange weekend trips to various parts of the country in order to gain experience of as many different waters as possible.

This idea sprang from the visit, made by four cadets, to Hickling Broad in Norfolk, at the end of last January. Although the

fishing was not outstanding — the only fish landed was a nine pound pike, taken by spinning with a sea trout fly rod — it was felt that such a trip could be repeated with considerable benefit to the participants.

As the close season for coarse fishing is nearly upon us, the next three months will be spent game fishing, renovating tackle and planning for the summer. In the immediate future, the Section is to show a number of films on fishing in Ireland and it is hoped that these will assist us with our plans for a proposed visit to Ireland later in the year. If the number of catches we make is commensurate with the amount of preparatory work which has been done we shall be very happy !

CROSS COUNTRY

This season has been extremely successful. Most of the first team were in their final year at the College and had run together the previous season. While this helped to achieve the good performances of the season, it does mean that next season the team will have to be almost completely reformed.

During the first half of the season, matches were selected with the inter-college fixtures in mind. Both Nottingham and Loughborough beat the College team, but these universities are acknowledged to have very powerful running teams.

Also, as previously, a training weekend was arranged at R.A.F. Halton. After chasing each other over the hills there, five times in two days, the College team travelled to R.M.A. Sandhurst with confidence.

The team was very disappointed to lose to R.M.A. Sandhurst, especially by the narrow

margin of four points. At least the College had the satisfaction of seeing fear in the enemies' eyes, and the consolation that this result was the best achieved by the College for a great many years.

The confidence was replaced by determination when the College hosted B.R.N.C. Dartmouth a fortnight later and the College attained its best result of the season, filling four of the first five positions. Sandford won both races.

During the second half of the season the team has been hit by illness but even so firm wins were obtained against the Milocarians and Signals Command.

The second team has existed throughout the season, thanks mainly to those who run for pleasure, rather than gruelling competition, and many enjoyable matches have been run against school and college teams.

RIDING

Winter is the season when the keenness of a horseman is severely tested. The lazy ride of a Summer afternoon is a far cry from a prix caprilli in the freezing rain. Most of our members seem to have survived, however, and the club is thriving, especially with the Junior Cadets.

We hope, by the end of next term, to be in possession of a new indoor school costing £4,000. This will be a great help in instructing besides making winter riding more comfortable. Because of the indoor school and the promise that a new stable complex will soon be started at West Site, Cranwell is to become the Equitation Centre for the R.A.F.

Of the five matches this winter the College Team won two and lost three, beating Leicester and London Universities but losing to Sandhurst, Nottingham University and then, in the replay, to Leicester University. We also sent a team to the area Pentathlon

Finals in Yorkshire where we gained second place.

We now have three cadet instructors who went on the R.A.F. Equitation Association Instructors' Course in September and another two cadets went on a similar course in March. The seven horses, which the club now has, make it impossible to take a large number of cadets every Wednesday.

The club suffered greatly this term in the loss of our guiding officer Squadron Leader P. G. Gibson. His responsibilities have now been taken over by Flight Lieutenant Weddle and Sergeant Rogerson.

Next term we will have our eyes on the R.A.F. Championships in May. Unfortunately only one member of this term's team will be at the College next term, but though we may lack experience we do not lack enthusiasm, and so our hopes are high.

SKIING

This skiing season has been the most successful yet, in both achievement and number of activities participated in. Not only have there been at least six separate activities but the College team at St. Moritz managed to win the Inter-College Championships which have previously always been won by the Sandhurst team.

The season began on the 10th December when five potential members of the College team flew up to Scotland in a Navigation Squadron Varsity with the object of preparing themselves for the approaching championships. After this pre-St. Moritz skiing and indoor ski training the team left for St. Moritz at the beginning of the Christmas break. The College gained first two places in both the Downhill and Slalom competitions and gained first place overall.

Also during the Christmas break nine cadets spent ten days skiing in Norway through the courtesy of Colonel Nausen. This holiday was more of an expedition according to some of those who went but they all seem much better off for their experience. During these ten days those who had not skied before were taught to ski and those who had were introduced to the Norwegian way of skiing. Equipment and in-

struction were provided by the Royal Norwegian Air Force.

A further expedition to Scotland took place on the 25th February to give those cadets likely to form next year's team experience. At the beginning of March we will be well represented at the inter-station championships in Scotland and it is hoped that two of our best skiers will compete in the University Championships, also in Scotland.

The most significant activity in the near future is, however, the Ancelle trip. This year the cadet party of 30 is the biggest ever and will be spending two weeks in the French Alps with the Armee de l'Air providing the accommodation, equipment and instruction. All in all, a fine way for anyone to learn to ski.

This has therefore been a very active season. The only factor that limits the range of activities is numbers. For every cut price holiday there are hundreds of applicants; it is hoped that more can be arranged next year. Skiing with the Swedish Air Force might provide yet another opportunity for Cranwell cadets to learn to ski or improve their style.

SQUASH

This has been a successful term for the 1st team and the 2nd's have won more of their matches than in the last few years.

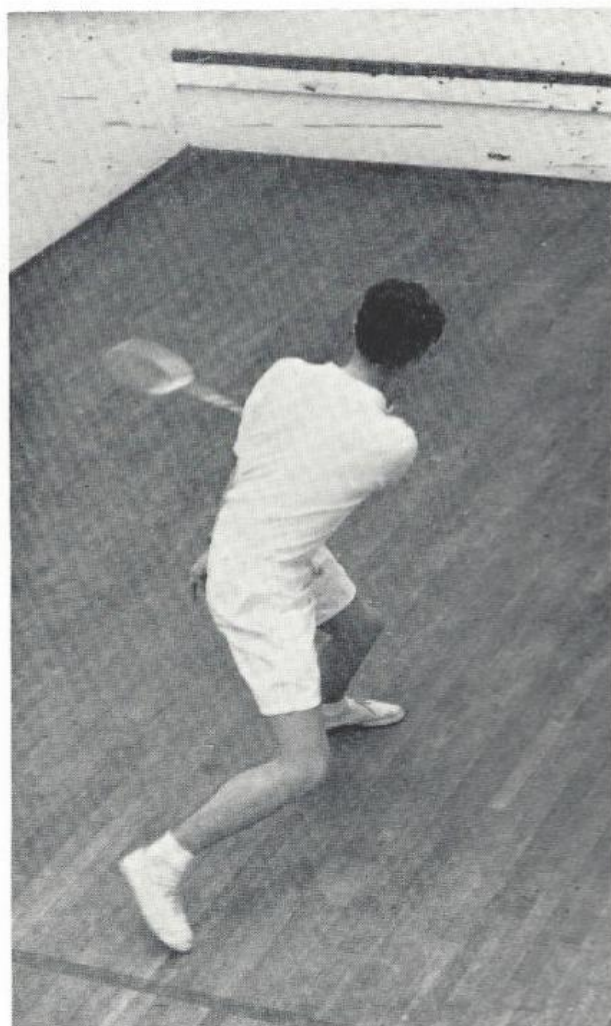
The 1st V has been quite strong, with several of last season's team still available, and some very interesting and worthwhile matches were played. The team consisted of

Stokes, Elliot, Kelly, Woods and Pillely earlier on, with Melville-Jackson and G. P. Smith contesting the fifth place later in the term. The College were unlucky to lose 3-2 to Sandhurst, four of the matches going to 5 games. Dartmouth, on the other hand, were little match for us and we won 5-0. In February a fixture was arranged with R.A.F.

Germany at Rheindalen ; we lost 4-1 in a good match, Stokes succeeding in winning against the R.A.F. Germany No 1.

Throughout the term, team training has been intense with organized training periods twice a week providing team members with opportunities to play more experienced players such as members of the Station team, at least once a week. Sergeant Fogarty again helped with training a great deal, and the standard of play has improved all round. Three cadets played in the R.A.F. Championships at the Lansdowne Club in London. Stokes was at his best and played well in reaching the last eight. Stokes also played many representative matches externally and seems to be near to obtaining a regular place in the R.A.F. team.

Sergeant Fogarty again ran coaching courses for beginners and an encouraging number showed enthusiasm for taking up the game. This was particularly welcome since none of the four regular members of this term's 1st V will be here next season. However, there is sufficient enthusiasm to allow a gradual build-up with training — G. P. Smith's splendid progress in only two years of squash is worth a mention and he and Melville-Jackson promise to form a sound core around which to build next year's team.



BASKETBALL

A very successful season was enjoyed by the College 1st Basketball team which won 17 games and lost only 5.

We welcomed our new guiding officer Lieutenant Colonel Coville by losing our first match against Cranwell Station team but followed this defeat by nine wins in a row, including revenge for our initial defeat of the season. Captaincy, in the lean form of A. J. Stables, was the deciding factor in our seasonal clash with R.M.A. Sandhurst and the team was one of only two Cranwell teams to beat a Sandhurst team in a rather rough match in which the 61-44 result is indicative of the clear Cranwell win. Our Dartmouth rivals also suffered a defeat which was very convincing, so a long standing

record of successes against our two rival colleges was maintained and the unnecessary defeat of our team by Sandhurst last year avenged.

Our captain and A. Mardi both represented Flying Training Command this season and are congratulated for this achievement for the second year running. It was probably the loss of Mardi through injury and another player through suspension that enabled Hull University to beat us in the return match at Hull, although the usual sparkle did not seem to be present in our play. Our other defeats of the season were suffered at the hands of Flying Training Command for which we offer no excuse and Stanford University (a group of Americans from

Stanford University U.S.A. living temporarily outside Grantham) who fielded a team much stronger than the last team which we played and outclassed us by playing basketball the "American way."

Generally the College team played excellent flexible basketball throughout the season and many spectators were delighted with a view of a good crisp, fast game. Basketball is a very good spectator sport and the College team play much better with plenty of support, a fact which was brought home when the final game of the season was played. About 30 spectators were treated to a sparkling exhibition of ball handling and shooting when the 1st team beat Bulmershe Training College by 54 points to 31 and again discovered the taste of revenge for an earlier one point defeat.

A very full initial programme of matches was rapidly reduced by cancellations of many of our home games. It would seem that a lot of University and College teams who have

been our regular opponents have had their cash grants reduced and are unable to travel any distance over 50 miles for a match. With this in view it may be necessary to consider more away fixtures for next season.

Last season there was a lack of talent and enthusiasm from the junior entries but this season several potentially good players and one already accomplished player emerged from 94 Entry. It is vital that their interest be maintained as the change-over from a 3 year to a 2½ year course at the College will bring about the graduation of all but one of the present 1st team members before the start of next season.

Both teams wish Flight Lieutenant Williams the best of luck in his new posting ; he has been the guiding officer responsible for the recent promotion of a good College 2nd team and it will be from his team list that the new 1st team will be formed for what is hoped to be a new and again successful season.

FIELD SHOOTING

The Field Shooting Section has enjoyed a very active season, seven major shoots having been held, four at Barkston Heath and three at Cranwell. The 'bag' at Barkston totalled about ten brace of pheasant, five of partridge and innumerable hare and pigeon, whilst at Cranwell the game was even more plentiful. One Officers' Shoot at Cranwell took over ninety head of game and with only two of our cadet shooters accompanying them.

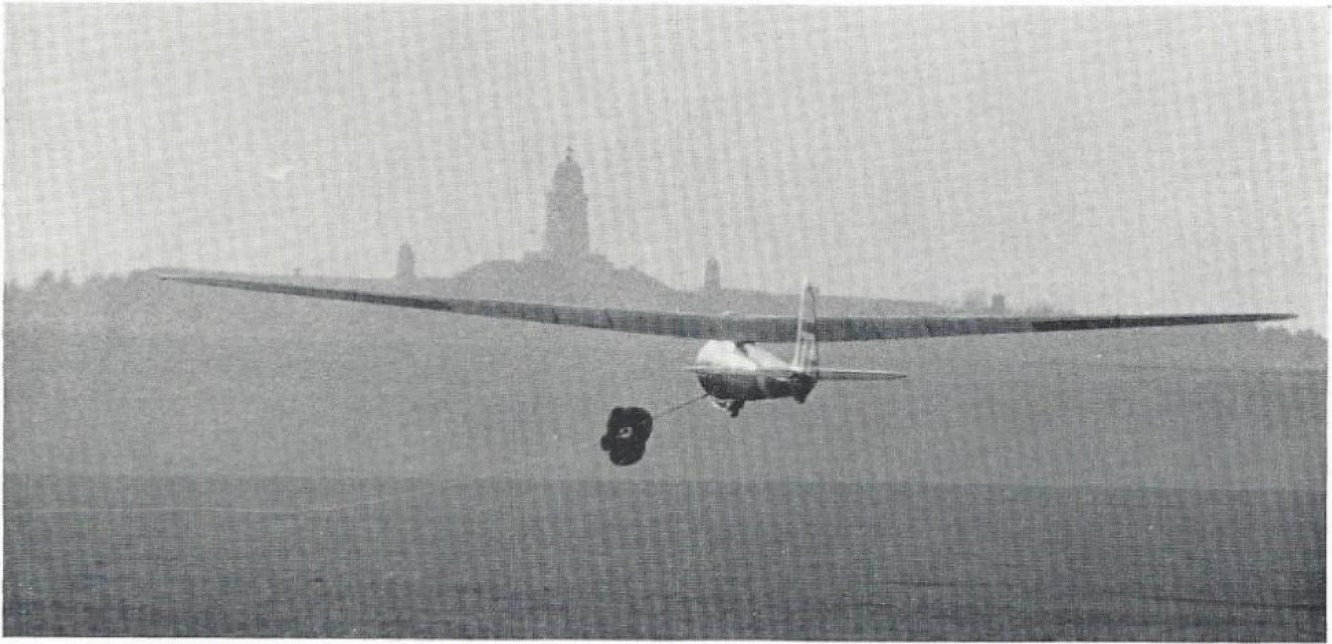
A party of Field Shooters recently ventured into new territory, that of Scotland where they were admirably rewarded with a fine bag of pheasant, partridge, woodcock and one capercaillie bird (a sort of airborne turkey which bites the tops off fir trees). The four Wednesday afternoon expeditions to Holbeach did not fare quite so well but provided memorable experiences of the marshes in winter for many of our members.

Since the recognition of Field Shooting as a sport as well as an activity we have been able to spend Wednesday afternoons shooting duck and geese at Holbeach, pheasant and pigeon at Barkston and clay pigeons here at

Cranwell. Considerable attention has also been given to feeding this season and indeed the improved season's bag seems to suggest that the game, especially pheasants, enjoy coming to Barkston for their meals.

Unfortunately Sandhurst had to call off our proposed clay pigeon shoot against them: however, now that the game season is ended we are turning our attention to clay pigeon contests and look forward to fixtures against both rival colleges. Matches against the officers and Alconbury are also proposed. In order to make this sport more interesting it is intended that the officers and cadets combine equipment to form a skeet-shooting range using two or more traps to launch targets simultaneously. The purchase of tracer shot will assist in teaching new members the art of clay pigeon shooting and indeed field shooting.

Under the guidance of Squadron Leader P. J. Giddens and the captaincy of de Wilde the society has certainly gone 'great guns' and it is hoped that it will continue to do so in their absence during coming seasons.



GLIDING

The section has had a quiet winter owing to typical Lincolnshire weather and lack of instructors. With the help of three hard working instructors we have managed to introduce a number of the junior entry to the art of gliding and have sent a number solo. The expeditions planned to liven the winter were plagued by bad luck. An expedition to the Portmoak Wave Gliding Site in the Scottish Highlands under the Trenchard Scheme was not approved. The alternative camp to the Camphill Ridge Site in Derbyshire was cancelled at the last moment due to a forecast of high winds. An earlier weekend camp to Camphill was more successful with two Silver 'C' durations and one Silver 'C' height.

With this mild spring the outlook for the summer seems very bright. In the Easter break it is planned to have a camp at the Royal Air Force Gliding and Soaring Association Club at Swinderby. It is hoped to take about fifteen cadets, the T21 and the Chipmunk. Five of these cadets hope to spend a week in France on an exchange visit with five French cadets. With the high performance aircraft at Swinderby and the beautiful French weather all concerned should have a

pleasant week. It is also hoped that a few cadets on the American visit will be able to fly some high performance American gliders in the Lower Rockies.

On the aircraft side the section has a high performance single seat world class machine on temporary loan from the Royal Air Force Gliding and Soaring Association and hopes to borrow a Blanik all metal high performance two seater for a time. We may also have a Prefect and Swallow for a few weeks in the summer to provide solo soaring experience with a view to camps and competitions.

With the prospect of no drill on Saturday mornings the future of the flight appears bright. We should be able to manage a number of cross-country flights and have a good summer's soaring. All cadets and officers are welcome to the north airfield to glide and enjoy learning and participating in the exciting art of soaring. It seems a pity that on a flying station there is not more support for one of the true forms of flying, since soaring is an exacting and very satisfying achievement.



R.A.F. Transport Command were the first military force to investigate the possibilities of using airborne data recording to improve the day to day efficiency of their aircraft. The Royston Instruments Ltd. 'Midas' system was chosen for this investigation.



ROYSTON INSTRUMENTS LIMITED
Canada Road, Oyster Lane, Byfleet, Surrey, England. Tel: Byfleet 42211. Telex: 21407.



A Member of the Royston Industries Group

DRAMATICS

The Winter term was not an extremely busy period for the few members of the Section not involved in the College production "The Long and The Short and the Tall."

This play, produced by Andy Sollitt, was scheduled to appear on the stage on December 14th, 1966, but a fortnight before the deadline the guiding officer and the producer decided that it would be wiser to postpone the performance until January 30th-31st '67 when the actors and the production as a whole would have gained the polish necessary to maintain the standards expected from cadet productions nowadays. This decision was in fact justified when the audiences attending both nights expressed great enjoyment and appreciation of a good performance. Special credit goes to Mitchell for his presentation of Bamforth and to Stubington for his convincing portrayal of the veteran sergeant.

Hilton received numerous congratulations for an outstanding performance as the daydreaming, scheming, mixed up, Billy Liar — one wonders how he came to make the part so real. This was a good example of the excellent co-operation which is growing between Cranwell Little Theatre and the Cadets' Society. Another example was "The Wizard of Oz" which was put on in early January by the Little Theatre and in which Mike Dyer-Ball showed remarkable adaptability from his Dauphin role in the "Lark" to the tin-man of the Oz world.

No play visits were made because all theatres had pantomime seasons on. Play readings were started and are being continued in the future. The next production will be "Shock Tactics" in early May.

Finally a word of thanks from the Section for Hilton's work as secretary.

FENCING

This term was the main fencing season and the College teams returned to Cranwell after leave to face a fixture list that included many strong opponents. From the start it was clear that the College had a strong team. Peterborough F.C. with one R.A.F. and Inter-Service fencer and Nottingham University were both beaten. A week before the Sandhurst match Kirkland, Fishwick and Wylie all gained their Flying Training Command colours for fighting in the Inter-Command Championships. Unfortunately the Sandhurst match was lost 14-13, the result depending on the last hit of the last Sabre bout. Dartmouth, however, were not as strong as Sandhurst and the College had a resounding 21-6 victory which restored the team's confidence. The two main matches now over the team settled down to training for the climax of the season, the trip to Salon and the match against L'Ecole de L'Air.

In preparation matches against Magna Sword Club and the return against Nottingham University were both won. On reaching Salon the team found the French confident and with a strong team. On the day however the College proved superior and won convincingly 18-9. This was the first time the College has ever won all three weapons, the results being foil 8-1, sabre 5-4, Epee 5-4. Most of the praise for this victory and indeed the whole successful season is due to Sergeant J. Cooney who took over from Sergeant A. Williams as Fencing Master. Sergeant Cooney has spent many long hours training the team and giving valuable advice.

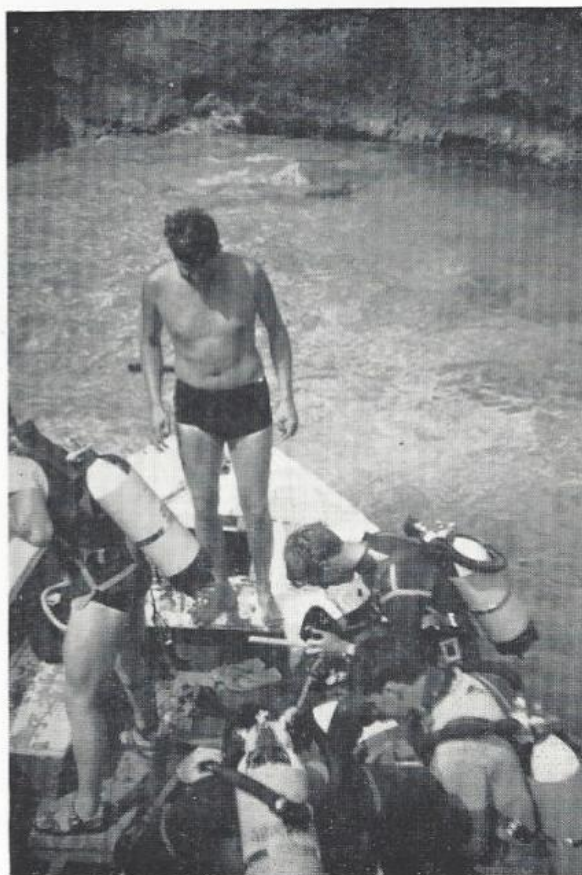
The College second team proved far superior to any of their opponents and very rarely lost more than two or three fights per match in the whole season.

SUB-AQUA

In spite of the enthusiasm of club members winter conditions have limited outdoor diving activities. Two weekend dives were organised, one to Cromer based at R.A.F. Coltishall and the other to Stoney Cove. Conditions prohibited diving at Cromer but the club was more successful at Stoney Cove.

Indoor pool training, carried out by novices and more experienced divers alike, led to the winning of a small, 6-station competition. This competition was a prelude to a much larger event in May. It is hoped that cadets will repeat their performance and win the newly presented Wallace Trophy.

During Easter vacation cadets will participate in two expeditions: one to Cyprus and the other to Guernsey. Both of these should be beneficial to divers frustrated by bad winter conditions.



POTHOLING

The Section organised two expeditions during the winter term. The novice members visited Carlswark Cavern in order to gain some experience of potholing. The other expedition was made by six of our older members, who explored Danyr Oxof and Curn Dur caverns in South Wales at the beginning of January. Although several other expeditions were planned, they had to be cancelled owing to the numerous ceremonial parades held during the term.

At the moment, the Section is in the process of reorganising itself and members

are being encouraged to construct their own "wet suits" so that more interesting ventures may be made into the "underworld." The Section has recently acquired more Nife-Iron electric lamps which have proved far superior to the old Carbide lamps.

It is also hoped to make weekend trips to Derbyshire, the Mendip Hills and possibly to Devon during the Whitsun leave. By such trips, we hope to maintain the interest of our members and also to encourage others to join our Section.

Skiing



ANCELLE

Imagine, dear readers, the consternation, the utter frustration. The plane leaves Waddington precisely five hours late with thirty flight cadets and five officers whose leg muscles have benefitted greatly through frustrated hopping from one leg to another.

After an uneventful trip in the Argosy we were transported to a desolate region somewhere in Southern France where a set of buildings not unlike those in 'Beau Geste' were outlined by the night sky. This was the French Air Academy, Salon, from where, after an exquisite meal and wonderful hospitality, we continued our journey to the outer reaches of the French Alps. Here at half past one in the morning, after a half mile climb up a mountain or two, we dragged our weary bodies into bed in the chalet which was to be our home for the next ten days.

The second morning was occupied primarily with waking up and admiring the beautiful scenery. In the afternoon we collected our ski equipment which was extremely comprehensive. We all received skis, sticks, boots, pants, gloves, anoraks, in fact every possible item of kit ; a great help to those who did not belong to the St. Moritz international jet set.

It was at this point that our hosts explained that there was not enough snow at Ancelle, where we were staying, to allow serious skiing. However drooping spirits recovered when we were informed that we could ski at La Merlette, a resort some forty minutes drive away. In a way this setback was lucky for La Merlette turned out to be a most attractive resort, with good runs, lifts and even a shopping centre. However the travel to and fro every day

presented problems. A pre-war bus and a lorry were available. If one travelled in the lorry one risked being severely shaken and covered in at least three inches of dust. The bus was very comfortable but for its annoying habits of having a wheel fall off, running out of petrol or breaking a fan belt. The French seemed to take this most philosophically exclaiming on one such occasion, "Oh the lorry will be here soon!" Sqn Ldr Le Brocq summed up the feelings of others with a subtle, "So will Christmas..." However no doubt some psychologist has written somewhere, that hardship makes one appreciate following pleasure better and this certainly turned out to be the case. Every day passed far too quickly.

There were two groups after we had been graded for instruction: Nigel "hips" Betts, who persisted in wedeln down the slope to the embarrassment of many, and the rest. The rest were subsequently divided into four more sub-groups. Our instructors were national service members of the French Air Force and, brilliant skiers though they were, the language barrier prevented any real instruction. However a French Dictionary provided most groups with those famous French words "Allons" and "Banzai" which usually precipitated a bunch of cadets flying down the mountain in the hinterland between control and disaster.

For the time of year the snow was very good but as afternoon came and one got nearer the bottom of the run, the snow became slushy and patches of mother earth appeared. This situation became progressively worse as the visit continued but only really affected those experts who could stand up on skis. This state of affairs is not unusual for Easter and was more than compensated for by the unbelievable weather. Skiing in sun so hot that sun cream application is necessary about three times a day, and so bright that sun glasses cannot be taken off, could not be a more idyllic way of taking exercise. It was the obvious pleasure of those fit members of the party that made those who had been forced to retire because of injury more than slightly envious. Luckily, however, there were only one or two who were kept from the wild abandon of the slopes for long by injury and none who suffered any serious accident. Nevertheless there were still some highly

aerobatic incidents that might have ended in disaster. One such was Paul Hutton's immaculate somersault when trying to negotiate a sixty degree slope in a straight line. After hitting a bump he landed safely on both skis only to slew round and land on his back, not a little shaken. Still it was another anecdote to relate to the bevy of girls who seemed to collect round him in a most uncanny way each lunch time.

As a special treat one day we were taken to a big resort about two hours travel away called Vars. The trip resulted in a mixed reception. While those who were proficient at skiing enjoyed the change of scenery very much, the humbler members of the party preferred the hot clime of La Merlette to the icy blast that persisted throughout the day at Vars. Besides, to a beginner, one hundred yard stretch of snow is very like another to practice on and some felt that two hours bone shaking ride in a lorry and the subsequent loss of good skiing time not worth the privilege of falling over on some different snow. However, despite the murmurings in the ranks, the visit was generally accepted as being both beneficial and enjoyable.

Since no skiing could be arranged for the days Saturday and Sunday a shopping trip was arranged for Saturday into the nearest big town, Gap. The town, about the size of Lincoln, provided all with a riotous afternoon ending in a Champagne party in the back of the lorry on the way home. It also provided all the financially conscious members of the party with an opportunity to obtain the various liqueurs and wines they wanted to take home. The more socially conscious members would take trips into the small village of Ancelle each evening ostensibly to promote Anglo-French relations. They appeared to have done very well if their high spirits were a measure of their success.

Here follows a general summing up of a wonderful holiday. The weather was exquisite. It could not have been better. Every day presented a picture-postcard deep blue sky outlining the grey and white mountains. Scenery was generally breathtaking. Food was entirely French and very refreshing. Breakfast would consist of French bread and jam and a cereal bowl of coffee. Lunch was

a more elaborate affair in a very colourful cafe on the ski slope. Chicken, cheese, fruit and bread formed the basis of a very fine meal. The vast quantities of wine also consumed, as well as washing down the food, did wonders to one's own opinion of one's skiing. Dinner formed the main meal of the day and, as such, was eagerly awaited. Never did the French fail to provide something different or original, and, although it was not always to everybody's fancy, those with less insular tastes appreciated it very much. All cooking was done by the national servicemen, who were also our instructors, which contributed to a very warm atmosphere in the chalet.

At last it was time to leave, and after the coach had broken down one more time we finally caught the long distance coach for Salon where we boarded an Argosy destined for Waddington. The customs proceedings here proved quite amusing, for the officers' party arrived with a crate filled to the brim with 'local produce.' Apparently it had all been very carefully calculated to fit into their respective duty-free allowances but nevertheless it caused the official some consternation.

So Ancelle 1967 finished with a flourish. All that remains is to express warm thanks to Sqn Ldr Edenbrow who engineered the visit and the French hosts who provided so much of their time and equipment. However this report must end on a sad note. Racial prejudice was found to be rife in the college after the bronzed party arrived back to start the new term.

B. G. Handyside.

ST. MORITZ

The skiing at St. Moritz is probably one of the finest in Switzerland and for those who can afford it, the après-ski is glittering and glamorous. But, although aspiring members of the 'International Jet Set,' we found that the former had to be our occupation. I shall therefore report on our skiing success as opposed to any other successes.

The train party, all six of them, considerably refreshed after a day's travel, was met by the two air travellers on 20th December, at St. Moritz. Once we had settled in, we proceeded to train hard for the next eight

days, even as far as using up valuable après-ski time on Christmas day. Our expert instructor was Oscar Kleger, who is not only a very good skier but also an excellent instructor. With this foundation and our training in Scotland we were able to enter the Inter-College Championships with a reasonable degree of assurance.

The results were extremely favourable with the College winning for the first time, Flight Cadets N. Betts and M. S. Dyer-Ball taking 1st and 2nd places respectively and Senior Flight Cadet P. Hutton and Under Officer J. Dixon taking 6th and 7th places respectively.

Two further points must be mentioned. First our thanks to Flight Lieutenant Smither, who acted as our manager and our non-racing representative at Committee meetings. The second is our intention to hold the

Championships elsewhere next year, perhaps Zermatt or Andermatt, where we hope for better co-operation from the local authorities.

AVIEMORE

Following the St. Moritz victory, the team also won the Inter-Station Championships. These were held at Aviemore, Scotland and they were a great success. With the addition of Flight Lieutenant Parker, Flight Cadet Cartlidge and two others we also helped to win the Inter-Command prize.

We achieved both our aims, which undoubtedly shows the importance of adequate training prior to racing and the need for depth in a team. I hope that this training time will increase over the next few years, despite the rigours of Scottish weather.

THE DEVIZES TO WESTMINSTER CANOE RACE

Last year the College entered eight crews for the 125 mile Devizes to Westminster canoe race and all eight successfully completed the course. This year the aim was to get as many crews home in as short a time as possible. Six crews were entered and four completed the course; the times for the first three crews being faster than the time for the first Cranwell crew last year.

The crew had operated from the R.A.F. Staff College Bracknell during its training sessions on the Thames and the Kennet and Avon Canal. This had included a night paddle on the Thames, marred unfortunately, by the passing of a warm front just after the crews had started.

The crews and their support drivers gathered at R.A.F. Rudloe Manor on the evening of Wednesday 22nd March and spent Thursday gathering all the equipment together and buying such food as was thought necessary.

The first two crews went down to Devizes at 8 a.m. on Good Friday morning and the

first away was Number 165, consisting of Flight Cadets Funnell-Bailey and Hubbard and a bottle of scotch. They left at 9.24 a.m. followed at 9.45 a.m. by crew Number 164 which comprised Flight Cadets Boyle and McBurney.

The remaining crews left Rudloe Manor a little later in the morning, and thus crew Number 166 — Flight Cadets Evans and Webb — started on the race at 11 a.m., followed by Under Officer Brown and Senior Flight Cadet Marsh — crew Number 168 — at midday. The last two crews — 167 consisting of Senior Flight Cadets Crombie and Sharman and crew 163 with Under Officer McKay and Senior Under Officer Horton — set off at five minutes past one and quarter respectively.

All the crews made good progress along the canal and as night fell the late starters had already made up a lot of ground, the six crews being spread along the stretch between Newbury and Thatcham. At Newbury Crombie and Sharman, hotly pursued by McKay and Horton, overtook Evans and Webb and then Boyle and McBurney, having

already caught Brown and Marsh in Newbury. This inspired the other crews to give chase and so all the crews cleared the canal at Reading by about 2 o'clock on the Saturday morning.

It was at Reading that Brown and Marsh were forced to retire through a pulled shoulder muscle. Horton was also suffering at this stage but decided to push on. The crews became a bit strung out on the Thames and all of them stopped for about half an hour's relaxation just after 5 a.m. Though Crombie and Sharman had not intended to stop they had no choice since both of them fell asleep in the canoe and nearly fell out.

During the Saturday morning the crews became even more dispersed. Crombie and Sharman reached Teddington at 1 o'clock, followed by Boyle and McBurney and Evans and Webb in the course of an hour. After waiting for the tide to start going out, Crombie and Sharman continued, passing Kew Bridge at 4 o'clock and reached the finish, Westminster Bridge, at twenty minutes to six. They completed the course in a time of 28 hours 30 minutes and were the first Cranwell crew to finish.

McKay and Horton retired after completing eighty miles of the course and two of the other crews were held up at Kew Bridge

KARTING

A continued interest was shown by members of the Junior Mess in the club this term and the number of active participants has increased accordingly. In spite of some bad weather, karts could be heard buzzing around the aircraft servicing pan on most weekends.

Throughout the winter term there has been an average of five serviceable karts. Problems have been met however with the availability of spares and lack of proper tools, although both are now forthcoming.

Four trips have been made to Fulbeck, the Lincoln Kart Club's track, where less experienced members and the more competent members have gained knowledge of racing techniques. Now that several members have R.A.F. racing licences, we are looking forward to the summer term when both men and machines will be put to the test.

until the Head of the River Race had finished at 9 p.m. They were Evans and Webb, in a time of 31 hours 5 minutes, and Boyle and McBurney in 32 hours. The fourth crew to finish was Hubbard and Funnell-Bailey who crept in on the last traces of the outgoing tide in a time of 36 hours, and although they were more or less physically intact their bottle of whisky had not alas been so fortunate.

Throughout the race we were very lucky with the weather and it did not rain once, although we were troubled by a gusty wind at times. The team was well supported by Flight Lieutenant Morris, the guiding officer, Flying Officer Parkinson and Flight Cadet Phillips, not to mention several other casual supporters. They did a grand job and without them our success would not have been possible.

We were the first Royal Air Force teams to finish and again took the cup from West Raynham. We also managed to beat Royal Air Force teams from Oakington, Catterick and Aden.

There is no doubt that the team can be well satisfied with its efforts in spite of the fact that not all of the crews finished.

G. J. Crombie.

FRENCH CIRCLE

The College French Circle received enthusiastic support last term and members attended a showing of some French films. Meetings are attended by members of the Circle and often also by other cadets who wish to brush up their rusting knowledge of French.

For the coming term a number of interesting activities are foreseen, including a French Song Night, with suitable refreshment, a lecture by Dr Jolivet, the French Lecturer at Nottingham University, a visit to the Paris Air Show, and visits to French plays and films in Nottingham and London.

A number of cadets have sat for the C.S.C. linguist and interpreter examinations and have derived great practical benefit from weekend courses given at Nottingham by the French staff of the University, and planned with these examinations in mind. It is hoped that next term will fulfil its promise to be exciting and informative.

Brown and gold and yellow
Leaves in Autumn mist,
Cold and bright the dew lies on the grass,
Chill and dank the path
I walk alone ;
Lonely as a grain of sand
Upon a sandy beach,
Midst a million other
Mindless, sightless grains
— people
Who hear my cry
For hope
Unheard

M. W. Johnson

A SHORT POEM FOR OCTOBER

TIME FLIES

Sun drowning in a sea of fog,
Passion drained away ;
World shaking thoughts fade along
The idle march of days ;
Voices with so much to say
Never think to talk,
Never think :
Meander on in apathy —
Not black nor white, just grey ;
Time ticks away.

Mist thickens, blackens,
Lowers softly to the ground,
A suffocating blanket
Silently destroying sight ;
Deforming sound :
Fog of time obliterates
Minds, spoon-fed ideas, decaying ;
Fossilising youth, its loves and hates
Forever.

M. W. Johnson

CORRESPONDENCE

British Limbless Ex-Service Men's Association,
185-187 High Road,
Chadwell Heath,
Essex.

2nd February, 1967

Dear Sir,

We believe that readers of the Royal Air Force College Journal could and would wish to help BLESMA in our search for limbless ex-Service men and women who can benefit from our specialised services ; which services are freely available to them whether or not they are members of BLESMA.

Our aim is that no limbless ex-Service man or woman should suffer undue or unnecessary hardship and we can today provide financial help where the need exists. We also help in the provision of aids and amenities within the home, and our three BLESMA Homes at Blackpool, Crieff and Portsmouth are available for rest, recuperation and permanent residence. We are constantly finding large numbers of limbless ex-Service men who are not in receipt of their full entitlements of pension and allowances, and many today are benefitting from the help and advice they have received from BLESMA in their individual cases. Our help, financial and otherwise, is also available to the widows of limbless ex-Service men.

There must be many of the surviving 24,000 limbless ex-Service men who are known to your readers but who are not yet in touch with BLESMA. Would you please help by bringing the Association's services to the attention of your readers and inviting them to inform the General Secretary, BLESMA, at the above address of any former members of the Royal Air Force College who are limbless but not in touch with BLESMA so that we can make our services available to them ?

With many thanks.

Yours faithfully,
Ancaster,
National President.

Officers' Mess,
RAF Lindholme,
Nr. Doncaster,
Yorks.

2nd February, 1967

Dear Sir,

I expect attention has already been drawn to the caption below the photograph on page 184 of the last issue of the College Journal. While I am aware that Javelin Squadrons have a habit of disappearing and reforming very rapidly, I would like to point out that unless there have been some drastic changes since I left RAF Tengah at the end of October 1966, the photograph shows five Javelin Mk9/9R's of No. 64 Squadron including the aircraft of the Commanding Officer at that time, Wg Cdr P. D. Wright.

Yours sincerely,
E. S. Gothard,
Flt Lt.

Officers' Mess,
Royal Air Force,
Geilenkirchen,
BFPO 42.

2nd February, 1967

Dear Sir,

The famous Royal Air Force College Journal, Vol XXXVIII No 2, issued January 1967, does include an interesting article about the play "The Devils General" by Zuckmayer and also it includes a picture showing a part of the play and of course the main person, General Harras, played by Bob Travis.

I learned that the person in charge of costumes etc has been Cecily Sandford and the producer of the article means that "the costumes were extremely good and C.S. has clearly paid a great deal of attention to detail in creating hair styles and dress"

I am very sorry, that I must reduce all compliments, but the uniform of the General is incorrect and shows so badly mistakes that only a person who never in its life has seen a German General or a picture of a General's uniform or any German officer's uniform could dress an actor like this. So it will be helpful — I hope — that I tell you what is so wrong and Cecily Sandford will then have the possibility to correct the details for the next play.

1. The "Deutsches Kreuz in Gold" (German Cross in Gold), must be worn on the *right-hand side only*.
2. A German officer, any rank, would wear German type officers boots and no "Texas-boys boots" like this General on the picture.
3. Officers trousers are closed on the sides and not on the front.
4. A General never wore "Fangschnüre" (Shoulder-lace) (?), adjutants will do so only.

I would be pleased if you could hand my "goodwill" information to the "Little Theatre," especially to the person named Cecily Sandford, to save the person for future laughter.

With all my compliments and thanks.

Yours sincerely,
Helmut Sanger,
Mess Manager.

All opinions expressed in 'The Royal Air Force College Journal' are those of the authors and do not necessarily represent official policy

OLD CRANWELLIAN NOTES

HONOURS AND AWARDS

In the New Year Honours List Air Marshal M. K. D. Porter (31-32B) was made a Knight Commander of the Order of the Bath, and Air Vice-Marshal H. N. G. Wheeler (35-37B) and Air Commodore A. H. W. Ball (39A) were made Companions of the Order of the Bath. Squadron Leader E. J. E. Smith (68B) was made an Officer of the Order of the British Empire, and Squadron Leader A. Breakes (49D), Squadron Leader J. E. Nevill (68C) and Squadron Leader T. H. Sheppard (62A) were made Members of the Order of the British Empire. The Air Force Cross was awarded to Squadron Leader E. D. Frith (62B) and Flight Lieutenant H. R. Ploszek (71B), and Flight Lieutenant R. P. O'Brien (81C) was awarded the Queen's Commendation for Valuable Service in the Air.

To them all the *Journal* offers its congratulations.

PROMOTIONS

To the following Old Cranwellians who were promoted on 1st January the *Journal* would like to add its congratulations.

Air Vice-Marshal P. de L. Le Cheminant (39A), Air Commodore T. P. Seymour (38-39B), Wing Commanders T. A. Bennett (47C), P. H. Champniss (61C), B. G. Cooper (51D), B. Hughes (52D), J. McLeod (61C), J. C. Newby (61B), D. C. Robinson (49D), S. H. D. Weigall (49D), and Squadron Leaders J. L. Blackford (68A), J. W. B. Blockey (71A), A. Bright (60A), T. W. G. Carlton (73B), J. R. Johnson (58A), B. H. Jones (63B), C. G. D. Jonklaas (54B), T. N. King (67B), M. T. N. Liddiard (65C), L. G. Ludgate (46C), A. MacGregor (62A), J. H. Martin (54D), J. I. Miller (62A), R. H. T. Overall (57D), G. F. Poyser (62C), J. Shearer (58D), T. W. Turnill (67B), A. L. Watson (66C) and D. J. Woods (60C).

The *Journal* apologises to Squadron Leader P. McLeod (61C) for inadvertently reducing his seniority by six months in the last

edition of the *Journal*. Squadron Leader McLeod was reported as having been promoted on 1st July 1966, whereas in fact his promotion took place on 1st January 1966.

Group Captain E. E. Vielle, O.B.E., A.F.R.Ae.S., writes to say that he has written another book, which is being published by Hodder and Stoughton in July. It is a novel based on his attempt with E. O. Link in 1963 to find the Rommel Treasure. It is "The Golden Oyster" by Donald Gordon (his pen name).

The Old Cranwellian Secretary wishes to point out that there is no need for serving Old Cranwellians to send him their changes of private or service addresses. As reported in the last edition of the *Journal* Old Cranwellian correspondence and Journals for serving members will be sent to members' banks for onward transmission. An addressograph has been purchased and plates cut for this purpose.

FAR EAST DINNER

On 30th September 1966 an Old Cranwellian dinner was held at the Fairy Point Officers' Mess under the arrangement of Flight Lieutenant C. S. Parkin of R.A.F. Tengah. 51 Old Cranwellians and 12 graduates of the Royal Air Force Technical College Henlow were present.

The guest of honour was Air Marshal S. W. R. Hughes, Commander Far East Air Force, and other guests included Air Commodore R. E. W. Harland, Air Commodore W. O. Davies and Reverend J. H. Wilson, all of HQ F.E.A.F., all of whom had served at Cranwell on the Staff. Padre Wilson, indeed, had only just arrived from the College a few days before.

Group Captain A. D. Preston, H.Q., F.E.A.F., as doyen of the Old Cranwellians, welcomed the guests and expressed his pleasure at the presence of the Henlow contingent which was due largely to the initiative of Sqn Ldr Murden of R.A.F. Seletar.

This was certainly the first combined dinner in the Far East since the merger, and perhaps elsewhere.

Replying on behalf of the guests, the Air Commander offered his congratulations on the merger and wished the College every success. He made some cogent observations about the College which were the subject of numerous conversations with him after dinner.

During dinner the F.E.A.F. band played the traditional Cranwell music, and the

Henlow graduates increased the table illuminations by igniting a technically unreliable pyrotechnic. They also enforced their minority view by singing at midnight, a ditty entitled "We are the Engineers" as a ceremonial farewell to the Technical Branch.

A notable contribution to the success of the evening was the attendance of Old Cranwellians from R.A.F. Kai Tak and R.A.F. Kuching.

MINERVA SOCIETY NOTES

The Society's Annual General Meeting and Reunion Dinner was held at R.A.F. Brampton on 26th November 1966. The president, Air Commodore J. R. Morgan; past chairman, Air Vice-Marshal E. M. T. Howell; one Associate Member, Wing Commander J. W. Price and 56 members attended the Dinner.

At the A.G.M. Squadron Leader B. Harris (I Entry) was elected Chairman. The meeting agreed to elect a chairman from amongst the members following the decision by the Assistant Commandant (Engineering) R.A.F. College Cranwell that it would not be appropriate for him to become chairman since he had never been associated with the Henlow Cadet scheme.

The Committee reported that it considered that there was unlikely to be enough support from officers of the Engineer Branch for the Society to develop into a professional society for the Engineer Branch. The meeting then agreed that the Society should continue with its main aim to enable ex-Henlow cadets to keep in touch with one another.

Since the meeting in November further changes in the pattern of officer-cadet training have been announced and the committee proposes to examine these to see whether they will affect the Society's future.

The new Secretary is Squadron Leader T. A. P. Hamilton, 24 Shenley Hill Road, Leighton Buzzard, Beds. Tel. Heath & Reach 387.

FRED SIMPSON

It is with great regret that we report the death of Fred Simpson in St George's Hospital, Tooting, on 18th April 1967.

Fred, College cricket and soccer coach from July 1950 to April 1966, will be remembered by a generation of cadets for his expert tuition and particularly for his kindly insight into the way in which sport should be played.

Fred collapsed whilst coaching cricket in London and died shortly afterwards.

Our sympathy is extended to his wife and daughter.

COLLEGE DIARY

(A record of some of the activities of the College during the Winter term, 1966-7)

OCTOBER 1966

The number on roll at the College at the beginning of the Winter term was : Flight Cadets — 472 (266 pilots, 116 engineering, 39 navigators, 28 equipment, 13 secretarial and 10 regiment). Student Officers — 273.

3rd. Start of the Flight Cadets' Winter Term. A revised pattern of cadet training was introduced with the advent of the 2½ year (5 term) course (further details are given in College Notes.) No 95 Flight Cadet Entry started training. No 95 Entry consists of 53 pilots, 37 engineering, 6 navigators, 5 equipment, 2 regiment and 1 secretarial.

4th. Mr J. K. L. Thompson, from the Ministry of Technology, made a tour of the College.

6th. Air Marshal Sir Edouard Grundy, K.C.B., C.B., Squadron Leader T. C. Downard and a representative of Royston Industries Ltd., visited the College and gave a lecture on airborne maintenance data recording.

7th. Lieutenant Colonel M. A. Rolin, Major J. R. Wilson and Captain S. B. Place from U.S.A.F. Systems Command, Space Systems Division, Los Angeles, gave a presentation to College Staff and members of No 9 Course on Space Systems Missions.

10th. Wing Commander G. R. D. Calder, D.C.Ae., C.Eng., A.M.I.Mech.E., assumed the duties of Chief Instructor, Mechanical Engineering Wing.

No 14 Engineering Officer (Branch) Orientation Course started training.

Wing Commander Jewell lectured to the Cranwell branch of the R.Ae.S. on "The Development of the Martin-Baker Ejection Seat."

11th — 13th. The Assistant Commandant and 50 directing staff and students of the R.A.F. Staff College Andover, visited the College.

11th — 23rd. One officer and four Regiment flight cadets (Nos 90-91 Entries) visited the Far East Air Force to study the operational activities of R.A.F. Regiment Units and personnel within the Command.

12th — 13th. Air Marshal Sir John Davis, K.C.B., O.B.E., M.A., A.O.C.-in-C. F.T.C., Lieutenant General A. B. Wolff, Chief of Staff Royal Netherlands Air Force, and Mevrouw Th. H. Wolff-de Lange visited the College.

16th. The Knocker Cup Competition (Cross country race) was won by 'B' Squadron. Group Captain G. M. Knocker, R.A.F. (Ret'd), who presented the trophy in 1927, started the race and made the presentation afterwards.

A Harvest Thanksgiving Service was held in St. Michael's Church. The preacher was the Reverend R. S. Meadows, B.A., Assistant Chaplain-in-Chief, Bomber and Transport Commands.

20th. 9 Headmasters and Youth Employment officers visited the College.

21st. A Guest Night was held in the Junior Cadets' Mess. This was the first one to be held there since February 1966, when the modernisation of the Mess was started.

22nd — 25th. Flight Cadets of No 92 Entry took part in a four days' expedition training exercise in Hereford. The exercise included advanced canoeing and canoe expeditions on the River Wye, and mountain walking.

24th. Group Captain E. B. Haslam, M.A., assumed the duties of Assistant Director of Studies (S. and H.)

24th — 25th. Air Vice-Marshal F. D. Hughes, C.B.E., D.S.O., D.F.C., A.F.C., A.D.C., M.A., A.O.A., H.Q.F.T.C., visited the College and College Unit.

Three lecturers from Dundee College of Technology made a visit to the College to discuss a Wind Tunnel Project.

25th. An Autumn Concert was given by the College Band in Whittle Hall.

27th. Dr Howard W. Barlow, Academic Director Air Force Institute of Technology, U.S.A.F., visited the College.

9 Flight Medical Officers and an escorting officer from the A.M.T.C. North Luffenham also visited the College.

28th. No 14 Engineer Officer (Branch) Orientation Course completed training.

29th — 30th. Flight cadets of No 91 Entry took part in a week-end exercise in Derbyshire.

The following visits were made during the month :
By Flight Cadets : To R.A.F. stations — 2.
By Student Officers : To R.A.F. stations — 10 ; to civilian firms — 8.

NOVEMBER

1st. Mr Morrison, Deputy Commandant, Bramshill Police College, and Mr Spence, P.P.O. Police Training, visited the College for discussions on Man Management.

3rd. 3 students and 2 members of the directing staff of the R.A.F. School of Education, Upwood, visited the College.

3rd — 4th. University staff and undergraduates of various universities visited the College.

7th. No 8 Short Weapons Systems and Space Course commenced Training.

Wing Commander D. R. Dudgeon, O.B.E., B.Sc.(Eng.), A.M.I.E.E., A.F.R.Ae.S. and 9 students of No 7 G.D. Weapons Course, R.A.F. College of Air Warfare, Manby, visited the College for lectures on digital computers.

8th. Commander Harold Smith, U.S. Navy, and 3 representatives of the McDonnell Company visited the College to give a presentation on Phantom Aircraft to students of No 8 S.W.S.S.C. and No 9 A.W.C.

Air Vice-Marshal G. R. C. Spencer, C.B., C.B.E., A.F.R.Ae.S., R.A.F. (Ret'd), and Dr C. D. T. Minton of Imperial Metals Industry (Kynoch) Ltd., visited the College to give a lecture on Titanium to College students and staff.

9th — 10th. Inst. Capt. B. J. Morgan, B.Sc., Dean of the Royal Naval Engineering College, Manadon, visited the College to see the training facilities in Whittle Hall and Trenchard Hall.

10th. 30 members of the Spalding and District Young Farmers' Club visited the College.

11th — 12th. The Commandant, Assistant Commandant (Cadets) and a large party of officers S.N.C.O.'s and flight cadets visited the R.M.A., Sandhurst for the annual inter-College sports fixtures.

13th. A Combined Church of England, Church of Scotland and Free Churches Service was held in St. Michael's to mark Remembrance Sunday. The Queen's Colour was paraded to and from the church. The visiting preacher was the Right Reverend S. Betts, M.A., Dean of Rochester Cathedral.

The R.A.F. College Unit provided a contingent of 2 officers, 1 S.N.C.O. and 30 airmen at the Remembrance Day Parade and Service held in Sleaford.

14th. Mr A. Greenwood, Director S.E.P.E.C.A.T., and Mr J. Teague, B.A.C., visited the College to give a presentation on Jaguar Project Management to students of No 8 S.W.S.S.C. and No 9 A.W.C.

16th — 17th. Air Commodore P. H. Roscoe, F.C.A. and Wing Commander G. F. Tisley, B.E.M. from the Air Secretary's Branch, M.O.D. (Air) visited the College for a discussion with the Commandant and Assistant Commandant (Engineering) on the training of Engineer Officers.

17th — 18th. Professor R. B. Dew, M.A., LL.B., F.C.A., F.B.I.M., M.I.W.M., Professor of Industrial administration] at the University of Manchester Institute of Science and Technology, visited the College.

17th — 19th. The R.A.F. Inter-Command Hockey Competition was held at the College, followed by the R.A.F. Trial Match.

Air Commodore E. A. Stockwell, M.A., F.R.Ae.S., Command Education Officer, Squadron Leader G. Fithen, B.Sc., and Squadron Leader R. E. Dart, B.Sc., of H.Q. Flying Training Command visited the College.

18th. A party of 9 Flight Medical Officers and an escorting officer from the A.M.T.C. North Luffenham visited the College.

No 8 Short Weapons Course and Space Course completed training.

19th — 20th. Exercise Hopalong X was held in the Peak District. Flight Cadets of No 95 Entry were introduced to moving over and living in rough terrain under the direction of selected members of No 91 Entry.

21st. No 90 Entry (Non-Engineer) flight cadets and two officers visited the Joint Warfare Establishment, Old Sarum.

21st — 22nd. Professor G. A. Tokaty, Head of Department of Aeronautics and Space Technology, City University, London, visited the College.

25th — 26th. Captain I. W. Jamieson, D.Sc., R.N., Captain, Britannia Royal Naval College, Dartmouth, visited the College.

26th. The annual inter-College sports fixtures against the B.R.N.C. Dartmouth took place at Cranwell. The R.A.F. College won all the matches with the exception of the Association Football match.

29th. Dr Terry, Ministry of Technology, Nottingham, visited the College to discuss inter-College project and research work.

29th — 30th. Mr A. Cassie, Ministry of Defence (Science 4) visited the College to observe the Scholastic Aptitude Tests on No 95 Entry.

30th. Dr W. Stewart, Assistant Director Project Time and Cost Analysis, Ministry of Aviation, visited the College to give a lecture on Cost Analysis to students of No 9 Advanced Weapons Course.

The following visits were made during the month :

By Student Officers : To R.A.F. stations — 11 ; to civilian firms — 10.

DECEMBER

1st. 1 Schools' Liaison Officer and 11 Headmasters and Youth Employment Officers visited the College for a discussion and a tour of College facilities.

Mr Start of the Training Branch, Ministry of Aviation, visited the College to lecture to No 9 A.W. Course on "Organisation and Functions of the Ministry of Aviation."

2nd. Mr I. Maddock, O.B.E., Deputy Controller at the Ministry of Technology visited the College to lecture to staff and students on the work and purpose of the Ministry of Technology.

6th. Mr M. A. Ifaturoti, Principal Designate, Igbodi Training College, United Africa Company, Nigeria, visited the College for discussions on leadership.

7th — 8th. 4 members of the Academic Staff of the City University, London, visited the College to see the facilities at Trenchard Hall.

7th — 9th. 4 members of the Cranwell Board, Biggin Hill, visited the College for liaison with Cranwell staff.

8th. Flying Officer D. J. Silk (attached to Cambridge University on postgraduate studies) visited the College to give a presentation on "Decision, Organisation and Survival."

9th. No 32 Applied Electrical Engineering Course and No 32 Applied Mechanical Engineering Course completed training.

Colonel F. H. Fahringer, U.S.A.F., Chief U.S.A.F./R.A.F. Exchange Programme, visited the College.

12th. Mr C. Johnson and Mr J. Sleight, Ministry of Defence, visited the College to lecture to No 9 A.W. Course, on "Functional Costing in the Ministry of Defence."

13th. Squadron Leader M. Brown, Defence Operational Analysis Establishment, visited the College to lecture to No 9 A.W. Course on "Operational Analysis."

13th — 14th. The President designate of the Cranwell Board, O.A.S.C., Biggin Hill — Group Captain P. C. Ellis, D.F.C. — visited the College.

14th — 15th. 3 lecturers from the University of Surrey visited the College to discuss and compare syllabuses in Systems Engineering and to see facilities for teaching this subject at the College.

15th. Mr Paul Nicholson, Manager Advanced Re-Entry Systems, Raytheon, U.S.A., visited the College to lecture on technical aspects of advanced re-entry systems.

16th. No 3 Standard Course in Mechanical Engineering and No 3 Standard Course in Electrical Engineering completed training.

No 34 Applied Engineering Preparatory Course completed training.

No 10 Advanced Weapons Lead-in Course completed training.

The Half Term Review by the Assistant Commandant (Cadets) of No 95 Entry was held on the Junior Parade Ground.

17th. The Commandant's Parade was held on the College Parade Ground. The Queen's Colour was on parade.

17th — 1st January, 1967. College mid-term break.

28th. 900th Anniversary, Westminster Abbey — Senior Under Officer G. S. Pyle and Under Officer A. J. Stables represented the R.A.F. at the closing service of the 900th Anniversary Year.

The following visits were made during the month :
By Student Officers : To R.A.F. stations — 2 ;
to civilian firms — 5.

JANUARY, 1967

2nd. The main and sub-committees of the Directorate of Organisation (Establishments) with supporting staff visited the College to carry out an establishment review of the College.

No 34 Applied Electrical/Mechanical Engineering Course started training.

No 35 Applied Engineering Preparatory Course started training.

No 10 Advanced Weapons Main Course started training.

No 31 Armament (Non-M.O.D. officers) Course and No 45 Engineering (Non-M.O.D. officers) Course started training

5th. Squadron Leader E. A. R. Humpston, Ministry of Defence (D.I. 55f) visited the College to lecture to No 9 A.W. Course.

10th. Mr R. A. McGregor, Ministry of Defence (Science 4) visited the College to lecture to No 9 A.W. Course.

Mr Hysao Ariyoshi — Defence Counsellor, Japanese Defence Agency, Mr Hiroshi Hasegawa — Staff Official, Japanese Defence Agency, and Captain G. Yoshimura — Japanese Defence Attache (Japanese Navy), visited the College.

16th. Colonel Ismail Ibrahim, Malaysian Service Advisor, Malaysian High Commission, London, visited the College.

Mr Paul Nicholson, Manager Advanced Re-Entry Systems, Raytheon, U.S.A. visited the College to lecture on managerial aspects of advanced re-entry systems.

17th. The Workshop Technology Building was almost completely destroyed by fire.

19th — 20th. The Inspector of Recruiting, accompanied by D.D.M.4 (R.A.F.), one staff officer, and 20 Schools' Liaison Officers, visited the College.

22nd. The Reverend T. R. Quin, M.A., Principal of Amport House, preached the sermon in St. Michael's Church.

23rd. Wing Commander R. Morris, M.A., A.M.I.E.E., A.M.I.E.R.E., Ministry of Defence (O.R. 38 (R.A.F.)) visited the College to lecture to No 9 Course on Reliability.

24th. Major General Piya Suwanpim — Superintendent, and Colonel Paiboon Sirayakom — Head of the Military Department, Thailand Armed Forces Preparatory School, visited the College.

26th — 27th. 12 Headmasters and Youth Employment officers visited the College.

27th. Mr M. R. Delf, Mr B. S. Batt and Mr C. W. A. Mitchell — R.C.A. (G.B.) paid a visit to the College to lecture to No 9 A. W. Course.

Professor L. W. Martin of the Department of International Politics, University College of Wales, gave a lecture on "Some Aspects of Current Strategic Thought."

27th — 28th. Ferris Drill Competition. The Inter-Squadron Competition for the Andrew Ferris Drill Trophy was held on the College Parade Ground. The Board of Judges from the Royal Military Academy, Sandhurst was : Major G. A. Allan, Irish Guards (Adjutant R.M.A.S.), A.S.M. C. H. Phillips, Welsh Guards (Academy Sgt. Maj. R.M.A.S.), and C.S.M. S. Rae, Scots Guards.

The result of the competition was 1st 'C' (Sovs.) Sqn., 2nd 'B' Sqn., 3rd 'A' Sqn., 4th 'D' Sqn.

30th. No 15 Short Maintenance Engineering (Branch Officers Orientation) Course started training. Group Captain S. W. Wilding, S.E.S.O., H.Q. Flying Training Command, visited the College.

30th — 31st. The Cadets' Dramatic Society presented "The Long and the Short and the Tall" by Willis Hall in the Whittle Hall.

Wing Commander J. A. Horrell, B.Sc., and Squadron Leader D. Simmons visited the College for discussions on Non-Specialist Officer Training.

31st — 1st Feb. Mr J. W. M. Mogford — Assistant Chief Training Officer, Distillers Chemicals and Plastics Ltd., visited the College to discuss leadership training.

FEBRUARY, 1967

1st. Change of Command. Air Vice-Marshal T. N. Stack, C.V.O., C.B.E., A.F.C., assumed command of the R.A.F. College vice Air Vice-Marshal I. D. N. Lawson, C.B., C.B.E., D.F.C.

As a result of the Establishment Review held in January 1967, an Engineering Management Wing within the Department of Engineering was established on 1st February 1967. The nucleus of the Engineering Management Wing was provided by the Engineering Management Squadron with Wing Commander D. Woods, A.F.R.Ae.S., as Chief Instructor.

2nd — 3rd. Mr F. Dodson, Training Officer, Bristol Siddeley Engines Ltd., Filton, Bristol, made a liaison visit to the College.

3rd. Group Captain D. J. Garland, B.Sc., M.I.E.E., A.M.I.E.R.E., visited the College.

3rd — 6th. The Assistant Commandant (Cadets), 12 Officers, 4 S.N.C.O.s and 28 Flight Cadets made a liaison visit to L'Ecole de l'Air, Salon. The College won the Fencing match 18-9 and the Rugby match 30-0.

5th. One officer, five Regiment flight cadets and one R.A.F. Regiment S.N.C.O. attended an inter-denominational service of Thanksgiving and Remembrance at St. Clement Danes to mark the 25th anniversary of the formation of the Royal Air Force Regiment.

To celebrate the 47th anniversary of the foundation of the Royal Air Force College a Church Parade was held. The Queen's Colour was borne into Church and following the Service, the Royal Air Force College marched past the Commandant. The visiting preacher at the combined service in St. Michael's Church was the Reverend H. M. Jamieson, M.A., B.D., Q.H.C., Principal Chaplain, Church of Scotland and Free Churches.

6th — 7th. Air Commodore R. E. W. Harland, M.A., M.I.E.E., A.M.I.Mech.E., A.F.R.Ae.S., visited the College to attend the Royal Aeronautical Society Lecture and to tour the Department of Engineering.

7th. Mr C. T. Butler, Head of Mechanical Engineering Department, Nottingham Regional College of Technology, and Air Commodore W. C. Cooper,

(R.A.F.) Ret'd, Industrial Liaison Officer, Regional Ministry of Technology, visited the College to see facilities offered to Engineering students at the College.

8th — 10th. The Chief, U.S.A.F./R.A.F. Exchange Programme, a lecture team of six U.S.A.F. officers from the Warfare Systems School, Air University, Maxwell Air Force Base, U.S.A., and twelve U.S.A.F. Exchange Officers visited the College to give presentations on U.S.A.F. Weapons Systems and Space activities.

10th. Colonel M. Kurdi, Naval, Military and Air Attache, Royal Hashemite Jordan Embassy, and Major B. Justus Rodrigo, C.A. Services Attache, Ceylon High Commission, visited the College to discuss the training progress of Jordanian and Ceylonese Cadets.

10th — 13th. Two officers and 18 flight cadets visited Royal Air Force Germany. The Royal Air Force College played R.A.F. Germany at Squash (lost 1-4) and B.A.O.R. and R.A.F. Germany at Hockey (lost both matches 1-3).

11th. Mid-Term Dance — The Flight Cadets' Mid-Term Dance was held in the College Hall.

11th — 12th. Thirty-six flight cadets attended a language course at the Department of Adult Education at the University of Nottingham.

13th. Thirty-two flight cadets attended the Civil Service Commission's Linguist and Interpretship Examinations in French, German and Russian in London.

Two flight cadets visited Royal Air Force, Alconbury to study the system of man-management used in the United States Air Force.

15th. Professor H. C. Wiltshire, M.A., Director, Department of Adult Education, University of Nottingham, visited the College.

17th. Mr A. G. McIntyre, Senior Military Liaison Officer, Service Department, Rolls Royce Ltd., visited the College.

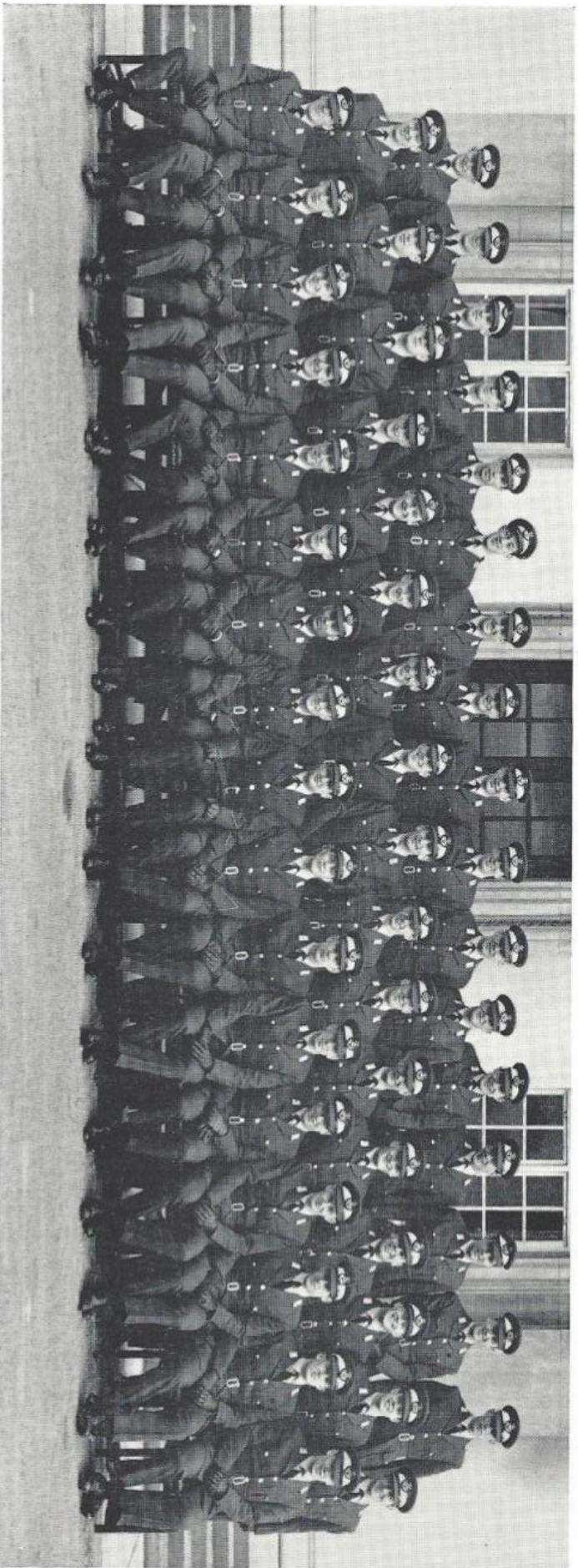
Lieutenant Colonel P. K. Nkegbe, Defence Adviser to the High Commissioner for Ghana, made a general interest visit to the College.

No 15 Maintenance Engineering (Branch Officer Orientation) Course completed training.

19th — 20th. Captain Malim, R.N. made a general interest visit to the College, prior to taking up the appointment of Captain in Charge, the Royal Naval Engineering College, Manadon.

23rd. One hundred and ten directing staff and students from the Royal Air Force Staff College, Bracknell, visited the College to introduce the current Bracknell Staff College course to the Cadet and Engineer Officer training facilities at the College.

24th. Mr F. H. Bond (Head of Systems Management), Mr L. A. Mitchell and Mr B. K. Hopkins of Elliott Automation Space and Advanced Military Systems, Camberley, visited the College to lecture on 'Project Management' to No 9 Advanced Weapons Course.



NO 90 ENTRY

Back Row : Senior Flight Cadets M. E. Tester, A. F. Legge, E. G. C. Rouse, C. J. E. T. Chubb, P. A. J. Hutton, A. B. Wight-Boycott, D. G. Cadwallader, K. Marshall, C. R. Seymour, I. W. P. McNeil, N. Campbell, M. H. Swinhoe, R. N. Coles, C. G. Harrison, B. E. A. Peggall, R. N. S. Sims, C. D. Feek.

Middle Row : Senior Flight Cadets M. W. Brown, C. J. Tidball, A. R. De Wilde, C. M. Rackham, M. N. Caygill, W. Fuller, A. J. Kearney, P. R. Morley, C. D. Elliot, P. E. Osborne, A. W. Semple, G. W. Noriage, J. L. Bishop, A. J. Lobercombe, M. Reid, G. Leney, M. R. W. Crook.

Front Row : Senior Flight Cadet R. G. Oxley, Under Officers C. A. Humphrey, T. W. Kirkland, C. Heithus, J. M. Dixon, P. J. Robbie, Senior Under Officers A. I. Saggau, E. T. M. Danks, R. M. Joy, G. S. Pyle, Under Officers K. B. Patrick, E. J. Stapleton, K. H. Minton, A. J. Stables, S. C. Gruner, Senior Flight Cadets R. A. Bealer, E. G. Norbury.

Absent : Under Officer A. D. Denison.

Dr D. T. Lewis, C.B., B.Sc., Ph.D., D.Sc., F.R.I.C., the Government Chemist, visited the College to deliver a lecture on "Research Work at the Laboratory of the Government Chemist."

24th — 25th. Wing Commander Waheed A. Butt, Air Adviser, Pakistan High Commission, visited the College for discussion on cadets' progress and to view Cranwell facilities.

24th. Group Officer A. M. Steinbach, A.R.R.C., R.S.C.N., S.C.M., P.M.R.A.F.N.S., Principal Matron (U.K. and W.E.), made a staff visit to the Station Medical Centre.

Prizewinners and Promotions Announcement — The Assistant Commandant (Cadets) announced the Prizewinners of No 90 Entry and Promotions No 91 Entry in Whittle Hall at 1900 hours.

The final Guest Night of Winter Term 1966-67 took place in the College Hall. Guests included Wing Commander W. A. Butt, Air Adviser, Pakistan High Commission, Squadron Leader J. E. N. Merry, Flight Commander 'A' Squadron, No 90 Entry.

28th. Mr D. A. Doel, Manager, and Mr A. Miller, Chief Project Engineer, of Industrial Products B.A.C. (Operating) Ltd., Stevenage, visited the College to

attend a Phase B Presentation by three student officers of No 12 B.Sc. (H.N.D.) Course.

The Reverend G. T. Brigg, M.A., Assistant Principal Chaplain Church of Scotland and Free Churches made a staff visit to the College.

The following visits were made during the month :

By Flight Cadets : To civilian firms — 2.

By Student Officers : To R.A.F. stations — 3 ; to civilian firms — 8.

MARCH

2nd. The presentation of Wings and Prizes by the Commandant took place in Whittle Hall.

3rd. Services of Dedication for No 90 Entry were held at 0945 hours.

The Graduation Parade of No 90 Entry took place. The Reviewing Officer was Air Chief Marshal Sir Wallace Kyle, G.C.B., C.B.E., D.S.O., D.F.C., A.D.C., Air Officer Commanding-in-Chief, Bomber Command.

4th. Flight Cadets' Winter Term ended.

10th. Student Officers' Winter Term ended.

No 2 Maintenance Engineering (Electrical and Mechanical) Course ended.

COMMISSIONING LIST — No 90 ENTRY

E. M. DANKS, Senior Under Officer (Pilot) : The Philip Sassoon Memorial Prize ; Cricket ; Tennis ; Cross Country.

R. M. JOY, Senior Under Officer (Pilot) : The Sword of Honour ; The R. S. May Memorial Prize ; Rugby ; Rowing ; Skiing ; Karting ; Bridge.

G. S. PYLE, Senior Under Officer (Pilot) : Water Polo (Captain, Colours) ; Swimming (Colours) ; Rugby (Colours).

A. I. SAGGU, Senior Under Officer (Pilot) : Tennis ; Hockey ; Badminton ; Squash ; Hovercraft ; Potholing ; Photography.

A. D. DENISON, Under Officer (Pilot) : Cricket ; Skiing ; Golf.

J. M. DIXON, Under Officer (Navigator) : Skiing ; Chess ; Swimming.

S. C. GRUNER, Under Officer (Pilot) : The R. M. Groves Memorial Prize and Kinkead Trophy ; Modern Pentathlon (Captain) ; Riding (Colours) ; Fencing ; Sub-Aqua ; Ocean Sailing ; Skiing ; Field Shooting ; French Circle ; *Journal*.

C. HEITHUS, Under Officer (Equipment) ; Karting (Captain) ; Shooting ; Basketball.

C. A. HUMPHREY, Under Officer (Navigator) : The Institute of Navigation Trophy and Ministry of Defence Prize for Navigators ; Rowing ; Photography ; Mountaineering ; Canoeing ; *Journal*.

T. W. KIRKLAND, Under Officer (R.A.F. Regiment) : Fencing (Captain, Colours, Flying Training Command) ; Water-Skiing ; Mountaineering ; Fine Arts ; *Journal*.

K. H. MINTON, Under Officer (Secretarial) : The Ministry of Defence Prize for Secretarial Cadets ; Cadet PMC ; Rugby ; Soccer ; Cricket ; *Journal* (Editor).

K. B. PATRICK, Under Officer (Pilot) : Graduate of the Royal Aeronautical Society ; The Queen's Medal ; The Abdy Gerard Fellowes Memorial Prize ; Hockey (Captain, Colours) ; Cricket (Colours) ; Squash ; Badminton ; Rugby ; Golf ; Skiing ; Bridge ; Choral ; Water-Skiing.

P. J. ROBBIE, Under Officer (Pilot) ; Riding (Captain, Colours) ; Fencing ; Shooting ; Radio.

A. J. STABLES, Under Officer (Pilot) : Basketball (Captain, Colours) ; Karting.

E. J. STAPLETON, Under Officer (Equipment) ; Hockey ; Golf ; Tennis ; Motor Club.

ASSURANCE

FOR OFFICER CADETS AND YOUNG OFFICERS

Shortly, even if not now, you will have the alternative of spending every penny you earn, or saving some of it. We think you will agree that some plan for modest and regular saving is wise.

You may not have thought of Life Assurance as a means of saving, but merely - as indeed it is - as a means of protecting future dependants.

It is NOT the quickest way of accumulating money for use in a very few years, but it IS the most reliable means of saving for the more distant future.

It is the only investment which is subsidised by the Government, and this is done by giving Income Tax relief on premiums. This relief is small whilst income is small, which is one reason why I recommend to young Officers and Officer Cadets a type of Policy with small initial premiums, which can be increased later.

There are sound reasons for starting Life Assurance very early in life. First, you institute a habit of regular payments, of money which can otherwise so easily slip from your fingers. Second, you establish Life Cover while there is no possibility of extra premiums for medical reasons or because of Service in a dangerous area, and all the Policies I recommend cover war risks and residence anywhere, without extra premium. Thirdly, premiums are lighter for any given type of Policy if you start young.

Our advice is without obligation, and we never accept fees. We consider our task is not complete when a Policy has been arranged. We expect to advise on its future use, as circumstances change.

If you would like this advice, please let us know your date of birth, expected date of commissioning, the gross amount of any private income, and roughly how much you are prepared to consider devoting to Life Assurance yearly or monthly.

All the information we receive is of course treated as confidential. We have 19 years specialised experience in Life Assurance, and we are NOT tied to any Company, but try to select the best for each individual case.

We do, of course, deal with other forms of insurance, such as kit and personal accident. We insure many cars, though old cars and young owners present difficulties.

Brigadier
R. T. Williams
F.C.I.B.

R. T. WILLIAMS LTD.

Major
T. F. Williams
F.C.I.B.

2, DUKE STREET, BRIGHTON

Telephone Brighton 28181 (2 lines).

Incorporated Insurance Brokers

Incorporated Life Assurance Brokers

Member of the Services Insurance Brokers Association.

- R. A. BEALER, Senior Flight Cadet ; Judo (Captain) ; Sub Aqua ; Rugby ; Field Shooting ; Water Skiing ; Athletics ; Mountaineering ; Potholing ; Motor Club.
- J. L. BISHOP, Senior Flight Cadet (Pilot) : Judo ; Squash ; Mountaineering.
- M. W. BROWN, Senior Flight Cadet (Navigator) : Rowing (Captain, Colours, Flying Training Command) ; Rugby ; Karting ; Rock Climbing ; Natural History.
- D. G. CADWALLADER, Senior Flight Cadet (Pilot) : Pentathlon ; Fencing ; Riding ; Athletics ; Woodwork ; Fine Arts ; Natural History.
- N. CAMPBELL, Senior Flight Cadet (Equipment) : Ministry of Defence Prize for Equipment Studies ; Judo ; Water Polo ; German Society ; Film ; Parachuting ; Radio ; Angling ; Natural History ; Photography.
- M. N. CAYGILL, Senior Flight Cadet (Navigator) : Rowing ; Basketball ; Ocean Sailing (Captain) ; Field Shooting ; Mountaineering ; Dramatic.
- C. J. E. T. CHUBB, Senior Flight Cadet (Pilot) : Cross Country (Captain) ; Natural History ; Sailing.
- R. N. COLES, Senior Flight Cadet (Pilot) : Mountaineering ; Squash.
- M. R. W. CROOK, Senior Flight Cadet (Pilot) : Sailing ; Hovercraft ; Judo.
- C. D. ELLIOT, Senior Flight Cadet (Pilot) : L'Ecole de l'Air Prize for French Studies ; Squash ; Tennis.
- C. D. FEEK, Senior Flight Cadet (R.A.F. Regiment) : Cricket ; Hockey ; Chess ; Dramatic ; Natural History.
- W. FULLER, Senior Flight Cadet (Pilot) : The Hicks Memorial Prize, The Dickson Trophy and Michael Hill Memorial Prize ; Beagling ; Mountaineering.
- C. G. HARRISON, Senior Flight Cadet (Pilot) : Badminton (Captain, Colours) ; Hockey (Colours) ; Soccer ; Athletics ; Karting ; Natural History.
- P. A. J. HUTTON, Senior Flight Cadet (Pilot) : Basketball (Colours) ; Debating ; Mountaineering.
- A. J. KEARNEY, Senior Flight Cadet (Pilot) : The Royal New Zealand Air Force Trophy and Ministry of Defence Prize for War Studies and Humanities ; *Journal* ; Mountaineering ; Soccer ; Golf.
- A. J. LABERCOMBE, Senior Flight Cadet (Pilot) : Cricket ; Rugby ; Table Tennis ; Karting.
- G. LEANEY, Senior Flight Cadet (Secretarial) : Cross Country ; Tennis ; Rugby ; Soccer ; Table Tennis (Captain) ; Choral ; Bridge ; Chess.
- A. F. LEGGE, Senior Flight Cadet (Pilot) : Shooting ; Golf ; Mountaineering.
- I. W. P. McNEIL, Senior Flight Cadet (R.A.F. Regiment) : Rugby ; Squash ; Mountaineering.
- K. MARSHALL, Senior Flight Cadet (Pilot) : Judo ; Mountaineering ; Tennis.
- P. R. MORLEY, Senior Flight Cadet (Pilot) : Badminton ; Tennis ; Squash ; Judo.
- E. G. NORBURY, Senior Flight Cadet (Pilot) : Soccer (Colours) ; Tennis ; Judo.
- G. W. NOTTAGE, Senior Flight Cadet (Pilot) : Golf ; Mountaineering ; Gymnastics.
- P. E. OSBORNE, Senior Flight Cadet (Pilot) : Soccer ; Parachuting ; Canoeing ; Bridge ; Judo.
- R. G. OXLEY, Senior Flight Cadet (Pilot) : Tennis ; Badminton ; Rugby.
- B. E. A. PEGNALL, Senior Flight Cadet (Pilot) : The Battle of Britain Trophy ; Rowing (Colours) ; Rugby ; Sailing ; Fine Arts.
- C. M. RACKHAM, Senior Flight Cadet (Pilot) : Riding (Colours) ; Dramatic ; Choral ; *Journal*.
- M. REID, Senior Flight Cadet (Equipment) : Shooting ; Rowing ; Skiing ; Canoeing ; Karting ; Badminton.
- E. G. C. ROUSE, Senior Flight Cadet (Pilot) : Rugby ; Cricket ; Squash ; Long Distance Walking.
- A. W. SEMPLE, Senior Flight Cadet (Pilot) : Basketball (Colours) ; Swimming ; Social Secretary ; Dramatic ; Fine Arts ; Golf.
- C. R. SEYMOUR, Senior Flight Cadet (Equipment) : Rugby (Colours) ; Rowing (Colours) ; Karting.
- R. N. S. SIMS, Senior Flight Cadet (Navigator) : Shooting (Captain, Colours) ; Ocean Sailing.
- M. H. SWINHOE, Senior Flight Cadet (Pilot) : Tennis ; Choral ; Athletics.
- M. E. TESTER, Senior Flight Cadet (Pilot) : Swimming (Colours) ; Hockey ; Mountaineering ; Sub Aqua ; Ocean Sailing.
- C. J. TIDBALL, Senior Flight Cadet (Pilot) : Golf ; Gymnastics ; Mountaineering.
- A. B. WIGHT-BOYCOTT, Senior Flight Cadet (Pilot) : Pentathlon ; Sailing ; Parachuting (Captain) ; Field Shooting.
- A. R. DE WILDE, Senior Flight Cadet (Pilot) : Rugby ; Field Shooting (Captain) ; Riding.

COLLEGE CHRISTIAN UNION

The interdenominational College Christian Union came into official existence at the beginning of the Winter term 1966. Its two-fold object is firstly to show that Christianity is a practical way of life today by presenting Christ as the answer to personal and world problems, and, secondly, to discuss various aspects of Christian life in the services. To this end a varied programme is planned on a termly basis, which it is hoped will be interesting and challenging to all members of the College irrespective of beliefs.

One practical activity in which members of the College Christian Union have been very much involved has been the regular visiting of Rauceby Hospital. In this we have been joined by several other members of the College and unit and their families.

THE GONDOLIERS

This year's production by the R.A.F. College Choral Society and Light Orchestra was 'The Gondoliers,' by Gilbert and Sullivan, which was performed to full houses in the Whittle Hall on the 20th and 21st of February.

Anyone approaching Gilbert and Sullivan, or indeed opera as a whole, for the first time, could do a lot worse than consult the celebrated Anglo-American comedienne, Anna Russell, whose explanations of works as varied as Wagner's 'Ring' and Berg's 'Woyzeck' make everything crystal clear to the uneducated masses. Among Miss Russell's gems is one called 'How to write your own Gilbert and Sullivan Opera,' in which she evolves a formula including all the basic elements (piercing 'British' soprano, babies swapped over at birth, tenor singing solo in three-four time, madrigal, patter songs, and so on) and claims that provided you stick to the formula, "you can put your opera where you like." In the case of 'The Gondoliers' it's Venice, but the rest of the details are so endearingly familiar, or so sickeningly trite (according to the point of view) that it might just as well be Japan, or Cornwall or Ruddigore Castle.

So what did the College Choral Society make of 'The Gondoliers'? Musically a more than adequate presentation, with the Light Orchestra, led by M. H. Thompson and conducted by Flight Lieutenant D. G. Robinson, in particularly fine tune. The woodwind section was noticeably strong, whilst the strings wove their way most skilfully through Sullivan's complicated score. The curtain rose on a handsome crowd of flower girls, brilliantly dressed, badly stricken with stage fright but bravely launching into their first chorus, 'List and learn, ye dainty roses.' No need for them to be nervous, really; they sang superbly throughout the



The Cachucha

evening and were recognised as one of the best features of the whole production. The men's chorus, though equally colourful, was less effective musically, but the mixed chorus numbers came over very well.

As Marco and Giuseppe, the two gondolier brothers, one of whom (though we don't know which) may be the rightful King of Barataria, David Baines and Tony Ford provided an interesting contrast in voices.

David Baines has a remarkably tuneful voice, but seldom seemed to reach full power (stage-fright again, perhaps ?) while Tony Ford proved a tower of strength, as usual, with his full baritone and reassuring stage presence. Everyone seemed to cheer up whenever he came on the stage, which I suppose is a good measure of stage success. The parts of Gianetta and Tessa, their chosen brides, were well handled by Rosamunde Handy and Pauline Stephens, whose clear voices and careful diction helped us to make some sense out of the complicated manoeuvres at the end of Act I.

David Priestley made a suitably flustered and irascible Duke of Plaza-Toro and produced an excellent singing voice for the part. Instead of the large, fat contralto we expect as the Duchess, we had a small, slim one, Kay Eburne, but her threatening appearance and commanding tone left us in no doubt as to who really ruled the Plaza-Toro household. Casilda, their daughter (Kathleen Gilbert) and Luiz, their 'suite' (Paul Turley) sang well in their secret love-duet, 'There was a time,' but their acting was too detached to be convincing. As the Grand Inquisitor John Symonds looked magnificently sinister, though his singing voice is perhaps too high

for this role. Finally, Dorn Churms slipped from the chorus into her second role as the King's aged foster-mother, to croak out the news that we had guessed, or deduced, a long while back, namely that Luiz was the rightful King and all was most emphatically well.

Dance a cachucha ! This is always an anxious moment in 'The Gondoliers' ; how can we expect amateur singers and actors to dance as well ? Happily, Mercedes Buckley was there to do it for us, so the rest of the cast could stand back and watch, apart from some enthusiastic crashing about at the end.

The costumes, arranged by Shirley Scoggins and Mike Stokes, were impressive throughout and absolutely stunning in Act II. The sets by Sue Royle, Tony Hurst and Chris McCairns were suited to the scale of the production, with a fine back-cloth of Venice in Act I. Tony Withers' lighting was unobtrusively used to bring out the colour of scenery and costumes.

Taken as a whole, this production had all the ingredients of success. Why, then, did it not quite come off ? Principally, I think, because, although the requirements of Sullivan



David Priestley and Kay Eburne, the Duke and Duchess of Plaza-Toro

were well served, those of Gilbert were not. The very fact that the plot is basically so feeble means that if a 'stage' rather than a 'concert' version is to be given, a great deal of attention must be paid to the details of production. In this performance, especially on the first night, it did not appear that Andy Sollitt had given his players sufficient direction where movement and dialogue were concerned. With few exceptions they seemed ill at ease and unsure of themselves. The dialogue proceeded at a leaden pace, and every song was heralded, even before the orchestra struck up, by a careful movement of the principals into a straight line facing

the front. Minor characters tended to creep on and off with hanging heads and sidelong glances, while even some of the principals occasionally appeared abstracted, even uninterested in what was going on. The answer to this, one feels, lies in more rehearsal, however difficult it may be to fit this into the crowded Cranwell Calendar.

Still, judging from the volume of applause, the audience at these two performances found little to complain of, and as a colourful musical, visually pleasing entertainment, the show proved to be yet another worth-while production by the Choral Society.

N.M.

BILLY LIAR

For their opening performance of a season which promises no less than four full-scale productions, the first three being entered for the Kesteven Drama Festival, the Cranwell Little Theatre presented 'Billy Liar,' the stage version of the well-known novel by Keith Waterhouse.

The play starts slowly — of necessity — with the rambling commentary on the family's various shortcomings which Billy's 'Gran' addresses, throughout the brief span of time still left to her, to an imaginary confidant diagonally to her left. For Gran, life stood still in '40 and the menace of gasmasks and rationing is with her yet; she is the epitome of the helpless, rheumatically octagenarian whom the family is prepared to put up with, out of loyalty and affection, in spite of her difficult ways. Joan Andrew made a very pleasing study of this part, with perhaps the one reservation that she looked a little too healthy to be taken from us as early as Act Two.

The arrival of the family for breakfast, which cuts across—but does not interrupt—Gran's monologue, is the signal for a clamorous sequence of domestic bickering, setting the tone, pace and theme for the whole play. John Ellingham's portrayal of the Father, beery, bullying, 'bloody' every other word,

was spoiled only by occasional lapses of accent and an unfortunate few moments in the final act when he lost his lines. Nevertheless, he played the part with gusto and some of his verbal battles with his son were masterly.

Marie Priestley's Mother was excellent: the raw, nasal nagging of the Northern 'Mum' interspersed with moments of warm-hearted concern for and belligerent support of her family, as the situation demanded, was totally convincing. Memorable, too, was Carol Ingle as Barbara — bovine, complaisant, puffed, a compulsive orange-eater. On her Billy's desperate attempt at aphrodisiac stimulation had patently as little effect as on a hibernating marmot. Rosemary Wheeldon played the strident, vulgar Rita, dolled up in tight sweater, plastic, and kinky boots. One felt that her projection, though otherwise magnificent, fell a little flat on her coy delivery of the word 'get' but it was a minor flaw in a good performance.

Henry Smith as Billy's friend Arthur looked the part but was very difficult to understand. Liz, the only girl whom Billy feels genuine affection for, is built up during the first two acts as an unwashed ragamuffin: the audience, therefore, was a little taken aback by Dommy Coleman's well-

groomed, pleasant-voiced version of the character. To your critic, it seemed completely out of place.

The title role is difficult for an amateur actor, perhaps because of the celebrated names who have played it on the screen and in the West End. We are probably meant to sympathise with the Mittyish daydreams of his frustrated intelligence: he personifies the problem of the fairly bright boy whom an enlightened society has provided with a reasonable education but no opportunity to exploit it. His revenge takes the form of superlatively petty theft (stamp money for his employer's calendars) but even here, as in practically everything he attempts, he is a dismal failure. His only refuge from the deadly monotony of life is to imagine himself in various heroic situations where he can be the boss instead of the underdog. Trying to inflict his dreams on the unreceptive world of reality he succeeds in convincing only himself that they are true. When finally Liz offers him the chance to break clean away from the old life and start afresh, he cannot take the step: environment has triumphed over ambition.

Frank Hilton's Billy was very good in many respects: the domestic squabbles, his flights of fancy (including a very funny mimed sequence of a general taking a parade), the ruthless selfishness of youth, his different attitudes to family, friends, girls, employers. The picture of the obnoxious young layabout with impracticable aspirations to higher things was well drawn. Unfortunately the other side of the character, the pathetic little boy who cannot adjust to adult life and whom nobody has the patience to understand was missing. This was a serious weakness in a play which depends on the development of character.

Thos. Whitby's production showed a great deal of imagination and hard work, but some scenes seemed to drag, particularly in the final act, where slickness is the key to success, and important moves were made in unfavourable areas of the set. The tripartite set was excellent, and support, both backstage and front of house, reached the high standard which one now takes for granted at a Cranwell Little Theatre performance.

M.H.

THE WIZARD

The producer of the Little Theatre's new year piece of gramarye "The Wizard of Oz" paid his audience, predominantly children, the compliment of challenging their imagination. What could have been cloying sentiment and whimsey was transmuted into a human comedy where make-believe figures came alive, felt pain and loss and tenderness. Though often bordering on the bizarre and sinister, the credibility of the piece was confirmed by the involuntary "Ohs" and "Ahs" of the young children whose identification with the Scarecrow, Tin Woodman, and Cowardly Lion was complete.

Verley Carrington as Dorothy carried the major part with charm and girlish verisimilitude, and Toto, her dog, was admirably played with bounding energy by Henry Smyth. It is invidious to single out others of a strong and enthusiastic cast but particular mention must be made of the buffoonery and gusto of Len Lane as the Scarecrow, the reverberating roar of the Cowardly Lion — Harry Bowen and the excellent mime of the Tin Woodman — Mike Dyer-Ball. Despite the late replacement of Gerald Smith by Derek Woodburn as the Wizard the dialogue very rarely needed the prompter's aid.

The storm scene at the beginning of the play was notable for its violent and sustained imitation of a cyclonic disturbance. However, the children did not seem to mind. They are less sensitive in these days of TV than their elders! Scenic effects, lighting and make-up, were of a very high standard. The costumes were startling and well contrived. Some pieces of theatre like the dissolution into an old hat of the Witch of the West were admirably acted and arranged.

If there was a weakness it was in the musical background. The choruses of the travellers to the Land of Oz particularly lacked the volume and encouragement of an accompaniment.

All in all a very successful piece of make-belief as pleasing to the grown ups as to the children; a genuine piece of imaginative creation under the production of Bob Travis.

E.B.H.

BAOR

This year's BAOR visit, in which over 170 officers and cadets took part, was two days shorter than usual, but the passing of time was hardly noticed as the programme was so packed with things to do.

On our first evening in Germany we all got to know the hosts in the bars of 15 regimental messes throughout the length and breadth of the country, and the following morning we started the visit proper.

All day Tuesday we saw tanks, guns and infantry, and all their associated equipment. Most of us were allowed to drive AV432 personnel carriers and various other vehicles, but the day soon came to an end and we were moved out to tank squadrons to start the most interesting phase of the visit. We split up, one or two to a tank, and set off on exercise. We observed with surprise the way a tank could blend into the background; the efficiency of the infra-red lights and gun-sights; and the speed with which a tank crew could brew up coffee.

We saw the hardships and comforts of life on a tank, felt the bruising of cross-country travel at speed, and after two and half hours sleep in twenty-four we were glad of a chance to lie down and rest while waiting to return to our messes.

We saw two of the greatest tragedies of recent times: Belsen and the Iron Curtain. We visited Belsen on the Wednesday afternoon on our way back from the tank squadrons. All there was to see was a building at the entrance, full of photographs and statistics: a large stone monument; and the mass graves — areas of turf about three feet above the surrounding ground, with stones set into the sides, announcing in German, here lie 1000 2000 30000 dead!

We saw our other reminder of man's inhumanity to man — the East German border — the following day. We were taken first to a West German border police headquarters, where we were shown small arms, mines and uniforms used by the East German Guards, and models and plans of the border and border installations.

We then went to see the actual border. At first it was unimpressive, just rusty barbed wire, a sign saying 'Minen' in the middle of a swamp where no mines could have been laid, but the rusty wire was backed up by watchtowers containing armed guards. At one point we saw a work party just about to depart, and we were being photographed as busily as we were photographing, but the East German guards seemed, on the whole, a scruffy and untidy bunch. At another point we saw the border running across a village — houses, then barbed wire, waste-land, rubble and grass, and then more houses, interspersed every so often with pill boxes. We saw children on the other side, and they were just like any other children, only a stone's throw and an eternity from us.

We were shown the border by a member of the British Frontier Service, a small force of fourteen civil servants who wear naval uniforms and know their own stretches of border as if it were their own back garden.

Thursday night was a guest night in honour of us in almost all the messes. Some of us were surprised at the Army's guest night activities. There has since been talk of attempting to introduce certain Army customs to College guest nights, but it is doubtful whether they would be well received!

As a cure for our hangovers on Friday morning we were taken out to see and hear some Abbots firing. This phase was not popular with cadets.

On Friday afternoon and evening cadets visited Hamburg, Hanover and other large towns. There would be no point in committing to paper exactly what happened — even if it were printable!

Saturday morning saw us doing last minute shopping and trying to pack duty-free goods into already bulging suitcases. England welcomed us once more in the evening and we went our several ways, each with the same intention of catching up on lost sleep. Throughout it had been a most interesting and enjoyable visit.

M. W. Johnson.

CRANWELL '67

| | |
|--|------------|
| <i>Decision, Organisation and Survival</i> | 90 |
| <i>Collective Security</i> | 95 |
| <i>Some Aspects of Lubrication</i> | 101 |
| <i>Arms Control</i> | 105 |
| <i>Lasers and Masers</i> | 111 |
| <i>Peace for our Time, Too</i> | 117 |
| <i>Conflict or Co-operation in Space</i> | 127 |
| <i>Notes on Contributors</i> | 132 |
| <i>Book Reviews</i> | 133 |

DECISION, ORGANISATION AND SURVIVAL

by FLYING OFFICER D. J. SILK

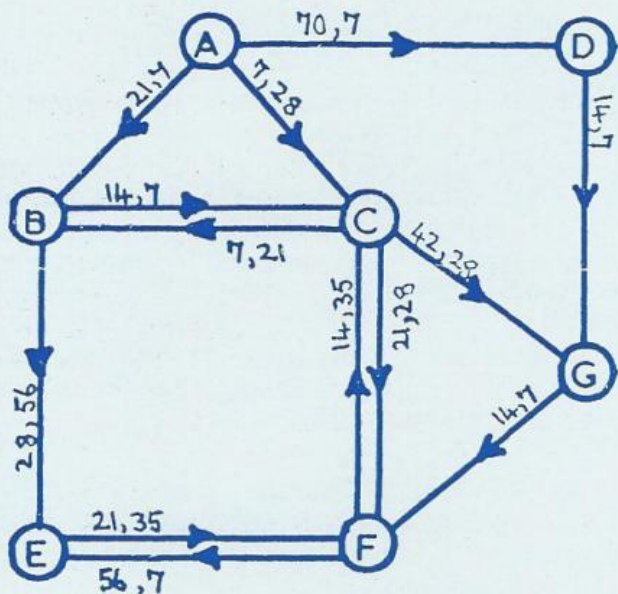
Communication is vital to all organized human systems. The very word organization implies a unity of aim and action which can be achieved only by the exchange of ideas, information and instructions. In an organization whose size is such that the natural communicative range of our senses is inadequate, the unity of the organization depends on the use of a telecommunication system which will accept a message from an originator and deliver it, quickly and uncorrupted, to its addressee. If the system fails to do this, the organization it serves will collapse, sooner or later, into its constituent parts, which are less effective. It is important

therefore to keep the communication network as effective as possible under the most adverse conditions likely to be encountered.

The purpose of this article is to outline some of the problems of controlling a network in a military environment, and to outline some research into the more fundamental aspects of the problem.

A communication network consists of a number of nodes, which are geographical locations, connected by links, which provide communication in one direction between two points. The links may take any physical

THE COMMUNICATION NETWORK (Fig. 1)



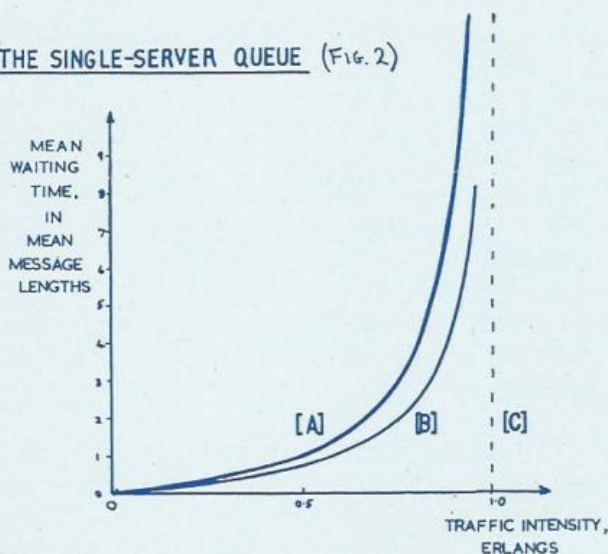
form : satellite, HF radio, carrier pigeon, etc. Each link may have a number of parameters such as speed, delay, error rate, etc. associated with it. Fig. 1 shows a network whose links each have two parameters. For any practical network, there is a limit to the amount of traffic which can be handled, and how near we are to that limit determines how we operate the system, and how long it takes to deliver a customer's message. In fact, the system is an interacting network of queues, and we can learn something of its general behaviour by considering the single-server queue.

Consider a number of people wishing to send messages from a single teleprinter, which can transmit only at a fixed maximum rate. If they arrive at a mean rate of one every five minutes, and they want to use the teleprinter, on an average, for two minutes each, we say that the traffic intensity is $2/5$. In general, traffic intensity is defined as mean service time divided by mean inter-arrival time, and is expressed in Erlangs. Fig. 2 shows the mean waiting time as the traffic intensity increases. Curve (C) corresponds to regular arrivals, each requiring a fixed time of service. Obviously, no delay occurs until the traffic intensity reaches unity and the teleprinter is being used continuously. Curve (B) refers to random arrivals, with the same mean rate as before, but still a fixed service time. Curve (A)

refers to random arrivals and random service times, both with the original mean rates. It is evident that when the same amount of traffic is offered to the system in a random manner, as it is by a human society, then queues will tend to build up. With this in mind, we can consider how to operate a communication network.

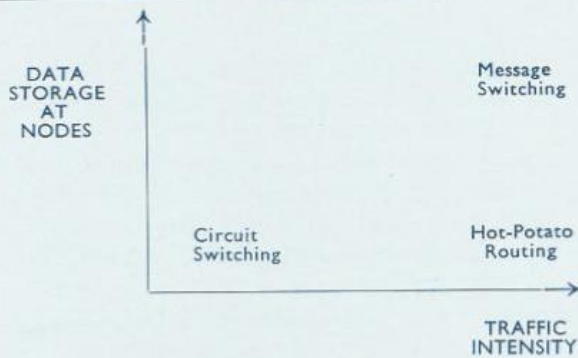
Let the network be initially quiescent, having no traffic in the system. Let us gradually increase the traffic intensity from zero. For very light traffic, it is quite likely that we will be able, as soon as the message is offered to us, to find a free path right the way across the network to the destination. The message can be transmitted from origin to destination at once. This technique is called Circuit Switching, and is used in telephone and telex networks. However, as the traffic increases, we find an increasing probability that an end-to-end route cannot be found as soon as the originator asks. We can either tell him to try later, which corresponds to storing the message at the origin without cost, or we can pass his message from node to node in the correct general direction, each node passing the message on like a hot potato. This technique is called Hot-Potato Routing, and is a last-ditch measure to avoid provision of message storage at intermediate nodes. For heavy intensities, there is no alternative to employing what is known as Message-Switching, or Store-and-Forward operation. In this mode, the message proceeds link by link through the network, waiting at each intermediate node until the appropriate outgoing link is free. The traffic intensities of

THE SINGLE-SERVER QUEUE (Fig. 2)



strategic communication networks necessitate the use of message-switching, and this is the technique of prime interest here. Fig. 3 classifies the three modes of operation.

THE OPERATION OF A NETWORK (Fig. 3)



In a message-switching system, each node must decide down which of its outgoing links it will send a given message. This decision is governed by what is known as the Routing Doctrine of the network.

The easiest way to make a decision is to choose at random between the possible courses of action. In a network, this results in what is known as a random walk. The 1-D random walk can be visualized as a man on a pavement who, at regular intervals of time, takes either one step backwards or one step forwards with equal probability. The 2-D random walk corresponds to a man on a square lattice who chooses with equal probability one of the four possible directions. In 3-D, the walk is on a cubic lattice, and the choice is one of six directions. An interesting fact is that in 1-D and 2-D all points on the line or lattice will be visited eventually. In 3-D, however, there is a probability less than one that a specified point will be visited, even after an infinite number of steps. A consequence is that persons moving at random over the surface of the earth are bound eventually to meet their true love; persons constrained to aircraft are unlikely to meet the aircraft containing their true love. This could be an advertisement for the Engineer Branch.

The consequence of this in our network is that random routing in a planar network will eventually get the messages through. Perhaps surprisingly, it may be better to remove some

of the links of the network altogether to make it planar. Obviously, random routing leads to very circuitous paths and is therefore inefficient. However, it is militarily very resilient, and in a modified form has been proposed for tactical communication systems.

To take any other than a random decision we need information, and the way in which we take the decision depends on the type and amount of information available. As we have seen, the choice of a route for a message through a network is a decision, and the classification of problems by the general theory of decision-making has relevant features to our problem:

Deterministic Problems. These have all the parameters of the problem fixed and known. In a network, such parameters are the original topology of the network (Although not necessarily that after military attack) and the capacities of the links.

Probabilistic Problems. These have some random parameters having a known probability distribution. The distribution of message lengths, and the traffic intensities throughout the normal working day are well known.

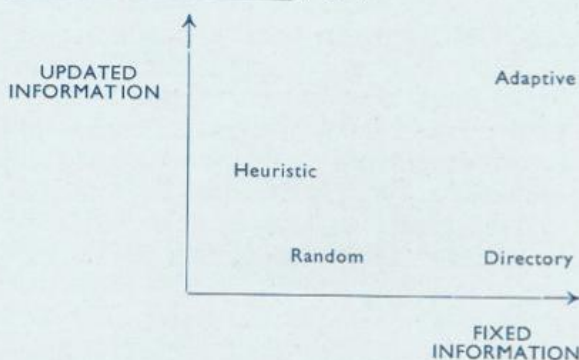
Statistical Problems. These have some parameters which are unknown or non-random. To find out the true state of affairs it is necessary to take samples of data, which are in general expensive. In a network, this corresponds to monitoring the state of the network and its traffic.

Strategic Problems. Strategic problems are usually called games, and are played against an enemy or against nature. What we do depends on the decisions taken by the enemy, so it is necessary to watch and interpret his actions.

The first two types of decision, deterministic and probabilistic, use only fixed information about the network, defined by the ordinary peacetime operation of the system. The second two types of decision, statistical and strategic, use updated information about the network. In fact, they observe the state of the network and its environment at any instant, and base their decisions on that. Routing doctrines can be classified according

to the type of information, fixed or updated, which they use (Fig. 4).

ROUTING DOCTRINES (Fig 4)



Random Routing. This has already been mentioned. It uses no updated information, and little, if any, fixed information about the identity and position of other nodes.

Directory Routing. Directory routing defines primary, secondary and tertiary routes between all pairs of nodes on the basis of the original topology of the network. This system, with a provision for a limited amount of consultation by the operators, is that used in most networks today. It is slow to respond to difficult conditions, and will certainly be inadequate as speed and traffic increase.

Heuristic Routing. As its name implies, heuristic routing learns by observation. In effect, it says that if we are in London, and messages from Singapore to San Francisco consistently reach us from Aden, and messages from San Francisco to Singapore consistently reach us from New York, then we should send all messages destined to Singapore to Aden, and all messages destined for San Francisco to New York. The routing doctrine is learnt by observing the flow of traffic. The concept is interesting because although any part of the network has very little information, the whole system behaves in the manner required. The disadvantage is that it does not respond very rapidly to changes of situation, and is applicable mainly to large, distributed networks.

Adaptive Routing. This doctrine uses both fixed and updated information, and is efficient in normal operation, but also rapid in its response to a hostile environment. It is the most resilient and invulnerable method of controlling the network, and is the one to be examined more closely.

Assume that the length of the queue of messages waiting to go down each link of the network can be monitored. We call the parameter delay, because it represents the delay between a message joining the queue and its being transmitted. If all the delay parameters are given, how is the optimum route defined? It is usually the one which minimizes the summation of the parameter, in this case the quickest route. Now, quickest routes have an important property. Looking at Fig. 1, we can say that if the quickest route from A to E is via C and B, then the quickest route from C to E is also via B. This is the Markov property, and means that the route taken for the remainder of a journey to a given destination is independent of where the message has come from. Message routing is not a function of message history.

If, however, two parameters, such as delay and error rate are associated with each link of the network, how is the optimum route defined? There are two possibilities. First, there might be a direct trade-off between the two parameters. This could happen if, when the raw error rate increased, the message were repeated or sent more slowly. If such a trade-off is known, then the "cost" of a link can be defined as the weighted average, in the appropriate proportion, of delay and error rate. The decision is still Markov, the optimum route being given simply by the minimum-cost route.

The second and more likely possibility is that there is no such trade-off between the parameters. Assume that delays and error rates are additive along any path to form the overall delay T and overall error rate E . One realistic discipline is to place a threshold on E and minimize with respect to T . In words, "Enumerate all the paths from origin to destination whose overall error rate E is less than the acceptable maximum and of those paths choose the quickest. If there is no path with E below the threshold, choose the path with least E ." It is evident that the routing decision is now non-Markov, because the route taken for the remainder of a journey is a function of how much error rate the message has already accumulated.

A device called a Dynamic Route Selector has been built in Cambridge to solve the non-Markov two-parameter routing problem

by reducing it to a sequence of Markov problems. The device is wholly electronic and as fast as a digital computer. It has been fitted into a simulation of a strategic communication network and will be used to study the advantages offered by adaptive routing for a military system. The simulation enables the improvement under normal and abnormal conditions, the most economical layout, and the best routing doctrine all to be measured quantitatively.

Although the two parameters we have been considering have been delay and error rate, there is no need for them to represent such physical quantities. Two examples are given where non-physical parameters might be employed.

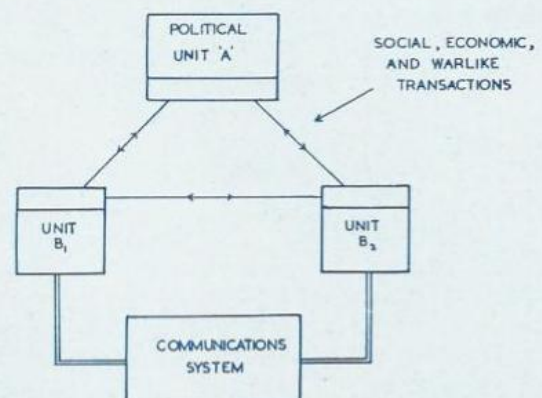
In present-day systems, the precedence of a message is specified by the originator, and is often related to the time in which he wants the message delivered. Queues are at present organized rigidly in these discrete precedences. If, however, the originator were to instead specify the time by which he wanted the message to be delivered, we can estimate the transit time across the network and hence calculate the "spare time" which the message can have in the system. If messages in the queues of the system were ordered not by time of arrival and precedence, but by "spare time," the result would be that messages would be delivered not as soon as possible, but close to, and not later than, the required delivery time. The system would be able to sustain more traffic before degrading the service offered to the user.

Let us return for a moment to the basic thoughts on the role of the communication system. Our system has to convey messages; the messages themselves convey ideas, information and instructions to preserve the unity of an organization. If there were no sociological interaction between two nodes, there would be no desire or need for communication between them. Fig. 5 represents the society's internal and external interactions. The ideal communication system would be able to assess the importance of each message to the achievement of the aims of the society as a whole. This involves the assessment of semantic information, which is possible only to a limited extent at the

moment. However, we can introduce simple ideas based on our knowledge of the hierarchical military society we serve. If at one particular node we see a lot of traffic converging and going to local subscribers, we might imply that a military crisis, exercise, or deployment was in the offing. Further, we might expect some response in the form of locally-originated messages replying to instructions, giving situation reports and so on. To be ready to handle this traffic we could increase the value of the parameters fed to the adaptive routing system about our outgoing links. This would deter, but not veto, other nodes from using ours as a relay centre. Thus our facilities would be free to cope with the rush of traffic when it came. This is an elementary example of predictive routing based on our knowledge of the society we are serving.

This article has presented an outline to the problem of operating a communication network in a military environment. The adaptive routing doctrine is applicable to present-day networks and along with some of the more sophisticated ideas, could be applied to the automated systems of the future. When any process is automated, there is a natural tendency merely to imitate at higher speed what men have done before. The better approach, surely, is to take a fresh look at the fundamentals of the problem, so that a solution can be found which realizes more fully the potential of new techniques. This is what is being attempted.

COMMUNICATIONS AND SOCIETY (FIG. 5)



COLLECTIVE SECURITY

by FLIGHT LIEUTENANT P. T. ROBINSON

THE PROBLEM DEFINED

*'Collective security can be defined as collective action taken in the interests of an established international order to prevent or restrain a State from resorting to armed force.'*¹

*'Collective security may be defined as a system which assures that illicit ends cannot be achieved by any means whereas legitimate ends can be achieved by the proper means.'*²

*'Integral to the concept of collective security is the notion of the 'indivisibility of peace' and the belief that since aggression by its very nature is a threat to the whole world order it must be stamped out wherever it occurs, irrespective of the political complexion of the aggressor.'*³

These three quotations show that a system of collective security implies far-reaching commitments and obligations by, ideally, all states of the world. Such a system assumes that all states agree that in case of aggression their interests are best served by collective action, even if this means accepting limitations on their own freedom of action. This system is more than an alliance for it is not directed against one power or group of powers but against any aggressor. A corollary of this is that organisations such as Nato, Seato or the Rio Pact are not collective security arrangements, mainly because they are limited geographically and do not therefore attempt to deal with aggression or threats to peace outside their areas. On the other hand such regional collective self-defence arrangements could become part of a wider collective security system.

The requirements of a collective security system have been stated as : "(1) a broad agreement on principles as to which ends and means are legitimate and which are not, (2) available machinery for applying the principles to specific situations, and, (3) a general will to use the machinery."⁴ These requirements pose considerable problems for sovereign states. They have to agree that they will make all the sacrifices necessary to protect the status quo from overthrow by force and accept that they cannot be judges in their own cause. If change in political arrangements is necessary it must be achieved by peaceful means, through an established machinery, not through unilateral action. States on joining the United Nations accept these requirements, in theory, particularly the first,⁵ but it is evident that no system of collective security exists in the present world. The basic problems would appear to be a lack of will to develop and use the machinery already available. This article will try to show some of the background to the present situation, explain some theoretical and practical problems, and suggest some basic ways in which a measure of progress might be achieved in a rather ideal world.

THE BACKGROUND

The United Nations represents the latest of a series of efforts⁶ to create a collective

⁴ Gross, *op cit* p. 7.

⁵ See especially the Preamble and Articles 1 and 4 of the Charter of the United Nations.

⁶ Others were the Grand Design of Henry IV of France, the Treaties of Westphalia (1648) and Utrecht (1713), the Confederation and Concert of Europe in the nineteenth century, and the League of Nations. See Quincy Wright, "A Study of War," p. 780.

¹ Georg Schwarzenberger, "Power Politics," p. 244.

² E. A. Gross, "The United Nations : Structure for Peace," p. 6.

³ G. L. Goodwin, "Britain and the United Nations," p. 41 n. 90.

security system to replace the balance of power as a means of preventing war. The 'maintenance of the balance of power' was the main aim of statesmen until 1914 when its 'failure' to prevent war caused a revulsion against it. The framers of the Covenant of the League of Nations tried to create a collective security system in 1919. The Covenant included agreements to "respect and preserve as against external aggression the territorial integrity and existing political independence of all Members of the League," (Article 10) and to subject any member resorting to war in violation of its undertaking "to the severance of all trade or financial arrangements and the prevention of all financial, commercial or personal intercourse between the nationals of the covenant-breaking State and the nationals of any other State," (Article 16). Military action was left to the decision of individual members on the advice of the Council of the League. The failure of the League may be seen progressively in the ease with which Japan took Manchuria in 1931-2, in the inadequacy of half-hearted economic sanctions to prevent Italy taking Ethiopia in 1935, and in the inability of the League to stop Hitler after 1936.

Many reasons are put forward to explain the failure of the League: the fact that it was not universal in membership, lacking, at various times, powers like Russia, the United States and Germany; the fact that it lacked authority and could not have been given any more authority⁷; the fact that it did not ban war but tried to distinguish between just and unjust wars; the fact that when armed action was needed the more important powers were not prepared to be involved; and the fact that the system contained technical deficiencies; all these played their parts, singly and in combination. Another reason might be added. Quincy Wright suggests that, "collective security has been able to develop only during periods of a stable balance of power," and "only when the balance of power has been so stable that attention has been diverted from it has

collective security worked."⁸ This apparent paradox raises some interesting problems beyond the scope of this paper.

THEORETICAL PROBLEMS

This very general and over-simplified consideration of the failure of the League of Nations provides a basis for a brief discussion of some background ideas on the causes of war and hence on the ways in which war might be prevented and a better world be achieved. Kenneth Waltz in "Man the State and War" suggests that answers to the question "Where are the causes of war to be found?", can be put into three categories: within man, in the internal structure of states or in the nature of the relations between states. These are called respectively the first, second and third images of international relations.

In the first image most of the causes of war are found in man, if war is to be prevented man must be changed. Reinhold Niebuhr suggests that, "As individuals, men believe that they ought to love and serve each other and establish justice between each other. As racial, economic and national groups they take for themselves whatever their power can command."⁹ Men need therefore to be taught to live in a society without losing their individual virtues.¹⁰ Generally there is little hope that the nature man can be changed and therefore a solution must be sought in the two remaining images.

The second image suggests that wars can be reduced or eliminated by reforming states. The problem here is to decide what criteria should be adopted to create a 'good' state. This question has obvious relevance in the present ideological struggle but it is one which has been exercising political theorists for thousands of years. The spectrum of criteria is very wide but two limiting cases may be cited: the liberal view is that the essential rationality of man should be allowed

⁸ Wright *op cit* p. 781.

⁹ R. Niebuhr, "Moral Man and Immoral Society," p. 9.

¹⁰ See also Wright, *op cit* Appendix XXVIII, for a psychological view of this point.

⁷ F. H. Hinsley, "Power and the Pursuit of Peace," pp. 315-7.

free play within the state with the minimum of controls ; the other view is that, as force is needed to maintain order within any state so will it be needed in a state's external relations. This image too has its weaknesses because it is not necessarily the nature of the state which causes war, just as it is not simply the nature of man. The present communist (despotic) against democratic (capitalist) struggle does not give much hope for changes although there are many who believe that the two sides are gradually converging socially, economically and politically and that eventually a detente might be possible.¹¹

The third image finds the causes of war in the nature of the relations between states, the so-called 'International Anarchy.' Because each state has to safeguard its own interests war can occur when these interests come into conflict. To quote Rousseau, the remedy for war among states lies in 'a form of federal government such as shall unite nations by bonds similar to those which already unite their individual members and place the one no less than the other under the authority of the law.' Even if a federation is not created some form of supra-national authority is needed with power to deal with recalcitrant states, in other words a collective security system. This third solution can apply whether states are 'good' or 'bad,' whether men are good or evil.

Normally, those who write on the causes of war in this theoretical fashion tend to find the solution to the problem of preventing war in just one of these three images. This sort of approach lends itself to the production of idealistic, utopian solutions. A more useful approach is based on the realisation that war is the result of a mixture of causes or, better, the result of a mixture of deficiencies in society. Thus it could be said that war results from the nature of man or of states, or both, but that it could be prevented if an

¹¹ See, for example, Hinsley, *op cit*, pp 360-4; H. Butterfield, "International Conflict in the Twentieth Century," pp 61-4, on the hope for a detente based on previous experience of an ideological struggle in history, the conflict between Catholic and Protestant, which is no longer an armed conflict; and W. W. Rostow, "The Stages of Economic Growth," chap. 9, on "The Relative Stages of Growth and the Problem of Peace," for a consideration of the policy alternatives open to Russia in her present state of economic development.

adequate international police system existed. War cannot be prevented by improving man unless all men are improved simultaneously, the same applies to states, otherwise the remaining 'bad' men or states will simply take advantage of the 'good.' Even the third image cannot work alone because a world government could not be formed unless there were fundamental changes in men and states first to make it possible. So there is no simple theoretical solution to the problem, the best that can be hoped for is the development of some sort of consensus on the undesirability of war and on measures to help prevent it.

THE PRESENT SITUATION

Having shown some of the theoretical problems it is now possible to move on to the current situation with the world divided into two rival groups competing for the allegiance of a third group of 'uncommitted' nations and at the same time wanting to remove some of the insecurity of the conflict. This conflict can be seen in the policies of deterrence and the associated diplomatic situation, and in the current condition of the United Nations.

Many commentators suggest that the present nuclear situation has introduced a measure of stability into international relations¹² or that there is an international order based, as Michael Howard says "on recognition of disagreement, and of the limitation of one's own capacity to secure agreement. It is based on the understanding by nations that their capacity to impose and extend their own favoured order is limited by the will and effective ability of other states to impose theirs."¹³ It is also suggested that the Great Powers, and among these we may include countries like the United Kingdom and France, have a common interest in ensuring that local crises do not get out of control and that possession of nuclear arms is not spread further. On the other hand this stability or deadlock does not allow much

¹² See for example, N. Brown, "Towards the Super Power Deadlock," in "World Today," September 1966, pp 372-4; A. Buchan and P. Windsor, "Arms and Stability in Europe," pp 5-8; Hinsley, *op cit* p. 346.

¹³ M. Howard, "Military Power and International Order," in "International Affairs," July 1964, p. 405; also L. J. Halle, "Peace in a Nuclear World," in "Survival," March-April 1964.

room for changes in the present situation, particularly in Europe where the question of Berlin and Germany are still vital¹⁴. It also seems true that "Every country in the world today is similar to a giant with a hearing aid — a hearing aid which is frequently out of order."¹⁵ In other words it is becoming more difficult for one country to influence another, especially by threats. The fact that a country possesses nuclear weapons does not necessarily increase its capacity to impose its will on other countries. Many states can therefore feel reasonably free to do much as they wish.

This condition of international "semi-order" can be seen again in the current situation in the United Nations. It seems far from being the guardian of peace and security that the authors of the Charter envisaged. The Security Council failed in its main function early in its life and had to be supplemented by the General Assembly's Uniting for Peace Resolution. It has been able to work only when the permanent members have not felt their interests to be adversely affected and has thus reflected the division existing in the outside world. The United Nations has to continue to work while accepting that it cannot take action against the Great Powers nor, indeed, against lesser nations; national interests come first. However, it would be a gross over-statement to say that the United Nations to date has been a failure, it does aid the accommodation of conflicting views and interests and does have a certain moral strength, particularly through its permanent officials.

FUTURE DEVELOPMENTS

The next task is to try to see what ways lie open for the future development of the international society towards a collective security system. It will be assumed that a desire does exist for some progress to be

made. Three main lines can be discerned: the first is concerned with arms control and disarmament; the second with the changing nature of the international society; and the third with the development of the United Nations and of international law. All three are vital to any collective security system.

By discussing methods of achieving arms control and disarmament as pre-requisites for a collective security system it is not intended to prejudge the issue of which should come first. There are two main attitudes to disarmament, one says that rivalries in arms cause wars, therefore destroy arms; the second says that arms rivalry is part of a deeper set of conditions which must be remedied first.¹⁶ This difference of view has bedevilled all efforts to limit or reduce arms since 1919. One writer suggests, from United Nations experience, that nations must progress in settling their differences and have confidence in each other's good faith and intentions to renounce the use of force in settling their differences before hopes of an agreement on limitation or reduction of armaments are realisable.¹⁷ Whether or not one accepts this view, there can be no doubt that evidence of good intentions is vital in the limitation and reduction of armaments. Since the nuclear test-ban treaty there has been a new deadlock at Geneva, not because of lack of desire to achieve results but because of mutual distrust. It is suggested that one way to break this deadlock is for states to take unilateral, conditional steps.¹⁸ This requires considerable courage but might be successful in showing good intentions. This initiative should then lead to measures to control and stabilise national deterrent arms before reducing them, while concurrently

¹⁴ The following opinion is also worth bearing in mind: "A revisionist foreign policy is obviously incompatible with a defence establishment geared only to deterrence, since the essential quality of the deterrent strategy is that it supposes reaction not initiative" C. Bell, "Negotiation from Strength," p. 210.

¹⁵ K. W. Deutsch, "The Future of World Politics," *Political Quarterly*, January-March 1966 p. 22.

¹⁶ A third view might be presented: that disarmament would have some bad effects on international relations. Professor Howard suggests that the Great Powers are at present restrained in their policies by the knowledge of the dangers of the weapons they possess and that if these dangers were reduced by the removal of the weapons then these policies might be less restrained, to such an extent that no international authority would be effective. See "Problems in a Disarmed World" in "Diplomatic Investigations," edited by H. Butterfield and M. Wright.

¹⁷ L. M. Goodrich, "The United Nations," p. 237.

¹⁸ See R. S. Leghorn, "The Pursuit of Rational World-Security Arrangements," in "Arms Control, Disarmament and National Security," ed. D. G. Brennan, p. 416.

building a United Nations force. This aspect of the problem is relatively simple compared with the need, at least in the early stages, for a system of inspection. The other part of the arms problem is that of proliferation of nuclear weapons with consequent risks of irresponsible or accidental use of them. One estimate suggests that there could be between twenty and forty nuclear powers in the world by the year 2000. It is interesting to speculate on how this can be prevented without the use of force, assuming that these potential nuclear powers refuse to refrain from acquiring the weapon. Basically the whole question of arms control becomes one of achieving a consensus and is completely linked with the other two problems.

The achievement of a consensus of opinion leading towards the creation of a collective security system is made more difficult by the obvious fact that people are different. People have different aims and aspirations and different cultures but most of the proselytising for collective security is done in terms of Western values and ideals — 'democracy' is the supreme example — and these do not necessarily have the same attractions for the majority of the world's population. There are other, more potent attractions for the many countries of the world that are young and nationalistic. The development of regional organizations is suggested as a partial solution on the way to a more universal one but there are obstacles here. It is possible to point to Western Europe as an example of successful regional action but, even if it is successful it is hardly an example of immediate value because of the special historical, economic and political conditions in this small area.¹⁹ It would seem a reasonable generalisation that internationalism is a feeling that can possibly be achieved by rich and satisfied states after a long period of change. To expect this sort of attitude in an intensely dynamic international society is to expect too much, particularly when many of the states have hardly reached their economic 'take off' points and are less than twenty years old.

Finally, there is the question of the development of the United Nations and of international law. It has been suggested above

¹⁹ R. J. Yalem, "Regionalism and World Order," in "International Affairs," October 1962 p. 465.

that the United Nations already provides much of the machinery needed for a collective security system, that the main requirement is for the members to decide that they wish to use it. There are some gaps, however, that must be filled, particularly in providing "machinery for applying the principles to specific situations." The machinery of the United Nations is very weak on the side of assisting peaceful change in that it has no authority to do more than make recommendations. This aspect could be improved in two ways, by developing international law and its machinery; and by giving the United Nations the means to enforce legal decisions.

The development of international law needs to be mainly in the field of settling disputes. This is a vital part of any scheme of disarmament for no country will relinquish its ability to defend itself until it can see that it will be defended in some other, effective, fashion.

To develop the law two advances must be made, first in the system of actually making law and second in the system of applying it. The present international law does not embody a legislative process as found inside countries, it cannot have one until the world is a single state. It has been suggested that treaties and the "general principles of law recognised by civilised nations" should be the main sources of international law, particularly the latter. The fact that the principles are *general*, gleaned from all cultures, should make them reasonably acceptable to most states. The international law already covers a large number of human activities — for example civil aviation, postal services, patents, copyrights, international communications — because these activities cannot be carried on internationally without law. The hope is that international dispute settling will become as important to states as the organised passage of mail among them. The chief weakness in international law is that there is only one court, the International Court of Justice at the Hague: "As matters now stand, it is as if, in domestic law, you had to run to the Supreme Court every time you had a dented fender or a back alimony claim."²⁰

²⁰ A. Larson, "Arms Control through World Law," in Brennan, *op cit*, p. 430. The suggestions on international law are based mainly on this article.

It is proposed that the International Court make use of its legal right to create smaller chambers to handle specific issues or to sit in various parts of the world. It could also create lower courts empowered to give opinions, though not judgements. The hope is that if the international legal system is made more accessible then states might use it more and hence come to accept the value of impartial judgements.

Having developed the law the final requirement is to provide an enforcement system. The domestic legal systems might be said to work at their lowest level because people fear being caught and punished for committing a crime. They have this fear because in well-run states the government has the monopoly of force. Ideally therefore the United Nations should have the monopoly of international force. The fact that such force exists does not mean that it has to be used, many methods short of force are available and are usually effective in the domestic sphere, bearing in mind that many people are basically law-abiding; they should also work in the international. Assuming the developments in law already considered it is not unreasonable to expect that there would be respect for the law and its institutions. The United Nations force should be large enough to deal with any state and should be made up of men contracted to the United Nations and not part of national forces. There would have to be carefully constructed safeguards to govern its activities, especially to ensure that it would not be able to act for long periods autonomously.

The three lines of development for the international society have been considered separately but it is important that they should occur concurrently. Forces cannot be reduced unless states can see some other method of protecting their interests, therefore there must be some concurrent increasing protection from the United Nations force together with a developing system for peaceful change and dispute settlement through the United Nations and the International Court. States must be able to lose their fear of each other for the system to be effective, they must also be prepared to give up a considerable part of their sovereignty.

THE IMMEDIATE FUTURE

It must be emphasised that much of this essay has been based on the somewhat idealistic assumption that states do want to have some sort of collective security system and that they are therefore prepared to make the sacrifices entailed. The lines of development suggested merely scratch the surface of the question but they do give a slight idea of what is required. When the present world is considered again one cannot feel very sanguine about achieving much progress. The nature of man does not seem to be such that he can, in groups, give up so much independence for some unseen and unproved future good. Even the slowest rate of change would probably be too fast. Reference has been made to a developing aversion to use of violence in international relations and to the possibility of gradual change under the nuclear deterrent umbrella but the question must be asked whether this is not a rather European point of view rather than a world one. The fact is that there are many new and backward countries in the world that have not really entered on their nationalistic phase, they have to pass through this on their way to internationalism. It has taken Western Europe five hundred years to move as far as an economic community stopping short of large surrenders of sovereignty; there does not appear to be much hope for the development of a collective security system in the world in the near future.

This conclusion does not necessarily mean that there is no scope for action by the leading powers in the world; to suggest this would be unduly pessimistic. The new countries need not take five hundred years to become less nationalistic, they start out in fact less than a century behind. The slowness of Western European development was in part the result of economic causes, these need not be as important now although the problem of developing the under-developed is a very large one. Further progress towards disarmament can probably be made without necessarily developing the United Nations, such progress need not even be on rational lines as suggested here. The best grounds for optimism lie in the fact that some governments are actively considering means of making progress towards some sort of collective security.

SOME ASPECTS OF LUBRICATION

by FLYING OFFICER M. GARRIGAN

Today the average person is more conscious of the importance of lubrication through the increasing use of the motor car and the market created by the careful car owner's desire to reduce engine wear. Advertisements assail our eyes and ears on the different characteristics of various oils, each boasting some unique additive that is the answer to the car owner's prayer. Yet though frictional wear for the motorist can be expensive, to the nation the cost of damage due to friction, according to Ministry of Technology publications, runs into hundreds of thousands of pounds per annum, and even this is deemed to be a conservative estimate. The non use or incorrect use of lubricants causes as much rapid wear to industrial machines as to the normal motor car, and has thus become an important subject for research. In this article we shall consider not only the nature of lubrication but also some tests that have been carried out in the Mechanics of Machines Laboratory at Cranwell to discover the properties of various oils.

The normal concept of lubrication which most people have is that of hydrodynamic lubrication. In hydrodynamic lubrication a moving body is separated from a stationary body or body moving with a different velocity by means of a continuous film of lubricant. Lubrication of this kind exists in the cylinders of a car engine between the cylinder walls and the piston rings. Resistance to motion is proportional to the rate of shear of the lubricant film and therefore to the viscosity of the lubricant, which is a measure of its resistance to shearing. This is basically what is aimed for and achieved when a normal journal bearing is run at its design speed and load.

Whilst this condition of hydrodynamic lubrication can be achieved at design speed and load, it is worthwhile investigating the conditions of lubrication of bearing surfaces when the machinery is started from rest, or when the pressure between the bearing surfaces is so great that the film of oil is squeezed from between the surfaces. Obviously when the lubricant does not form a continuous film between two surfaces, the surfaces themselves must come into intimate contact e.g. for "big end" bearings in car engines, where one surface is made of a material much softer than the other. When a hard bearing surface comes into contact with a softer bearing surface the asperities of the hard and soft surfaces collide, the soft asperity is sheared off and a fragment of it becomes firmly attached to the hard asperity. This fragment will eventually become detached and thus create a free wear particle. The resistance to motion under this type of lubrication is proportional to the rate of shear of the soft metal and will obviously be greater than for film lubrication. Such a condition is commonly known as "boundary lubrication."

In some cases it is not practical to have the surfaces in contact made of dissimilar metals. A good example of this occurs in gear teeth. Since the teeth in mesh have to transmit the same load they must be made of similar strength materials. Since the load is confined to a small area of each tooth, the pressure is so great that continuous film conditions cannot exist and boundary lubrication occurs. Where such conditions exist friction welding of the asperities occurs which raises the temperature locally of the metals and therefore reduces the shear strength at that point. The weld is broken

and again free wear particles are created which by themselves may cause further damage to the bearing surfaces. In this situation which could occur in a gear box containing an incorrect grade of oil, the resistance to motion will be proportional to the temperature reduced shearing strength of the hard metals.

In general therefore, there are three main types of lubrication :

- a. Hydrodynamic, where a continuous oil wedge separates the sliding surfaces.
- b. Mixed lubrication, where if the load of the bearing is increased or the sliding speed reduced beyond the limits of the design, the thin film will be penetrated by surface asperities which disturb the laminar conditions of flow of the lubricant. The surfaces are then separated by a mixture of hydrodynamic forces and thin layers of lubricant adhering to the surfaces.
- c. Boundary lubrication, where a further increase in load or decrease in sliding speed will cause the bulk of the lubricant film to be squeezed out until a film of only a few molecular-layers thick is left between the surfaces and intimate contact occurs.

Investigation of a. above had already been carried out with existing equipment at Cranwell. To investigate fully the effects of b. and in particular c. above it was necessary to obtain further equipment, since to carry out this work on the existing apparatus would not provide conclusive results and would damage the bearing surfaces thus impairing its proper use.

BOUNDARY LUBRICANTS

All surfaces under normal conditions are covered with surface films of one sort or another. The films may be layers of oxides, nitrides or even grease or corrosion products. Chemically clean surfaces, it has been shown by Bowden and Young, weld together on contact producing abnormally high coefficients of friction. These conditions are impossible to obtain however in normal practice, and industrially clean metals show lower coefficients in sliding contact due to the existence of surface films. In the strict

sense the term boundary lubricant includes anything that reduces friction under boundary conditions, but in practice it is usually reserved to describe the film which is deliberately introduced and differs from natural surface films by certain important attributes :

- a. It must have a low shear strength. Most natural metallic films have a shear strength comparable with the metals themselves.
- b. It must adhere readily and firmly to the interacting surfaces. This excludes moisture and such oils that can be removed by physical means.

It has been known for some time that many animal and vegetable fats and oils possess effective boundary lubrication properties. It was discovered that the effective boundary lubricant common to all these naturally occurring organic substances is a fatty acid of high molecular weight — one of the most important of which from an industrial point of view is stearic acid.

MECHANISM OF BOUNDARY LUBRICATION BY FATTY ACIDS

It has been shown that the molecules of fatty acids are long chain compounds having carboxyl groups which attach themselves to the metal surfaces. The active end or polar head of the molecule adheres to the metal with sufficient strength to avoid being dislodged during surface contact. The action of the chain formed by stearic acid is to stand out from the surface rather like the pile of a carpet. When two surfaces with a fatty acid lubricant between them are brought together some metal junctions are formed through the film but the shearing of the junction is now largely dependent on the shearing properties of the boundary lubricant.

The disadvantage of using fatty acids as boundary lubricants is that they have a relatively low melting point (approx. 150°F) and therefore are not very satisfactory where high loads or speeds are to be used. To increase the range of an oil containing fatty acids as a boundary lubricant, certain active chemicals or chemical groups are added. These additions are termed EP additives and the active chemicals in use are chlorine, sulphur and phosphorous. The melting

point of the EP layers are high (e.g. iron chloride, 1,200°F) and their lubrication qualities improve with temperature up to failure. Therefore by combining fatty acids and EP additives in one oil a fairly consistent coefficient of friction can be obtained.

THE SETA-SHELL FOUR BALL EP LUBRICANT TESTING MACHINE

To investigate the properties of various oils as boundary lubricants and the effect of using lubricants with poor boundary properties in terms of wear and load carrying ability it was, as previously mentioned, necessary to acquire suitable equipment. It was decided that the most satisfactory and flexible piece of apparatus available was the Seta-Shell Four Ball EP lubricant testing machine. The basic operation of this machine is that three half inch diameter steel balls are locked together in a cup and held stationary. A fourth ball is then rotated in the cavity formed by the other three, the cavity having been first filled with the oil to be tested. A constant speed motor drives the fourth ball and increments in load can be made by using a load arm arrangement. A graphical representation of changes in co-efficient of friction can be obtained by linking the rotating drum indicator mechanism to the torque arm attached to the cup holding the three balls. Two basic experiments were carried out on the machine :

- a. To obtain wear/load and co-efficient of friction/load graphs for particular oils.
- b. To establish the $2\frac{1}{2}$ second seizure-delay load for selected oils.

The first of these will be considered in this article.

The oils selected for this experiment were chosen for their widely differing boundary lubricant properties. Three oils were selected;

- a. Shell vitrea oil 31. This is a general purpose light machine oil.
- b. Castrolite 10W30. This is a car engine oil.
- c. Castrol EP 140 Hi-Press. This is the only oil used that is specifically designed for EP lubrication.

The experiment on each oil was exactly the same. The oil to be tested was poured into the cup holding the three clamped balls. A

load was then applied and the balls were allowed to remain in contact for exactly 60 seconds. After that time the three clamped balls were removed from the machine and examined under a microscope. The wear scar diameter produced on each ball by the rotating fourth ball was measured and a mean diameter obtained. The procedure was then repeated with increasing loads. With each run a trace was taken on the rotating drum mechanism and marked with details of load and the oil being tested. From the results of the experiment a graph (Fig. 1) was constructed. This shows the log of the mean wear scar diameter plotted against the load. Also shown on this graph is the Hertz line, which is the graph of the diameter caused by elastic deformation of the balls under static load and is calculated from an equation developed by Hertz.

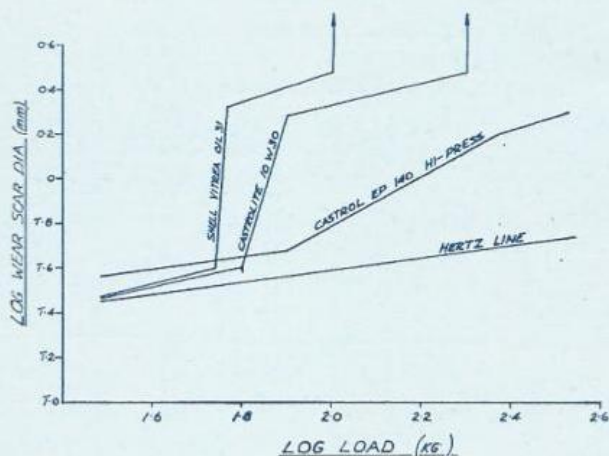


Fig. 1

From the graph it can be seen that each of the oils follow the Hertz line quite closely at first and then suddenly there is a sharp rise in the wear scar diameter for a relatively small increase in load. The rate of increase in wear scar diameter was much less for the EP oil than for the other two.

To illustrate more clearly the properties of the different oils as boundary lubricants a common load was selected from the co-efficient of friction/load graph which gave the salient points of each oil at that load. A co-efficient of friction against time indicator type trace was then constructed for each of the oils. (Fig. 2).

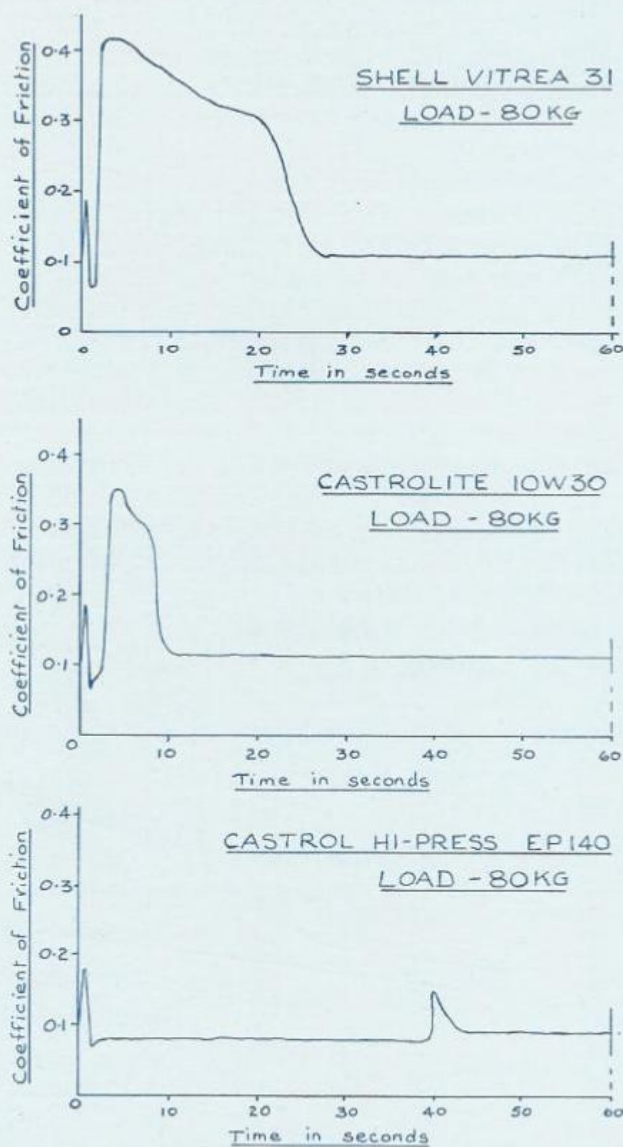


Fig. 2

The first and most obvious thing about the graphs is that at certain loads for each oil there begins a disproportionate increase in the size of the wear scar diameter accompanied by a rapid increase in the value of the co-efficient of friction. The rate at which the wear scar diameter increases varies with each oil. The increase is most rapid with the light oil and far more gradual with the EP oil. This has been called "initial seizure" giving a peak value of the co-efficient of friction. From Fig. 2 it is also seen that after initial seizure has occurred there follows a further period where the co-efficient of friction remains relatively high — this has been called the seizure co-efficient. The co-efficient then falls to a value comparable with the

co-efficient of friction prior to initial seizure — this has been termed the reclaim value. It can be seen that the time to initial seizure varies with each oil, the light oil being almost instantaneous and severe and the E.P. oil occurring much later and far less severely.

CONCLUSIONS

As expected the EP oil gave a much better performance as a boundary lubricant than the other two. The engine oil was second best and the light oil the poorest of the three. In considering the importance of the initial seizure it can be understood why the severity of this should be kept as low as possible when one considers the shock load that such a seizure has on a system. The shock load, if great enough, could cause failure of some component and at best would give a poor bearing surface due to the tearing of the surface during initial seizure. It was found during the experiment that initial seizure only occurs once between two surfaces. If surfaces that have experienced initial seizure were mated again they progressed through the increments of load without this phenomenon re-occurring.

The time that the seizure continued after initial seizure had occurred was also found to be important, since the longer this continued the possibility of final seizure leading to the welding of the balls increased. In considering the best way to avoid severe initial seizure it was found that if the balls were "run in" with the EP oil they would then operate through the increments of load without further seizure occurring.

A final consideration was that of the initial contamination of the surfaces. The balls used were delivered, coated with a protective grease or oil, but experiments showed that results given by balls which had had this coating removed were such that no difference could be detected from those results given by the untreated balls. In conclusion it is perhaps unnecessary to comment on the importance for the engineer or designer to select the right lubricant for a specific purpose since so much good design and manufacturing skill can be wasted through a wrong selection. Have you checked your car's oil level and oil grade lately?

ARMS CONTROL

by WING COMMANDER JAMES WALSH

ARMS RACE

To enhance their security, the major nations have participated in an arms race during the last two decades, a race that has often been qualitative rather than quantitative, depending more on the improvement of weapons and forces than on the increases in their number which were typical of arms races in the past. Arms races in the past have by no means inevitably led to war: it has been suggested, for example, that it was through *lack* of an arms race that the Second World War began, for the western allies did not see the urgent need for rearmament until it was too late — “too little, too late,” it has been said; and there is much in the view that armaments are only symbols of the existing tensions which are the real cause of war. It is nevertheless true, as Hedley Bull¹ points out, that within many states armaments tend to create or shape the will to use them, as well as to give effect to it; and that between states, arms races have tended to sustain or

to exacerbate conflicts of policy, as well as to express them, armaments generating their own pressures so that a spiralling process towards war has often taken place. Each increase in the security of a state through an improvement in its armaments position can bring about a relative decrease in the security of an antagonistic state — a state to some extent is only as secure as it feels itself to be — which results in the latter's further investment in armaments, with the resultant feedback into what has become a spiralling process.

In the present state of military technology, said Kissinger² in “The Necessity for Choice,” an arms race is the most unstable of all forms of security. Since modern weapons have such devastating destructiveness and since they may not provide the security they are meant to guarantee, disarmament is bound to have an appeal to many states. Disarmament proposals have been put forward by great and small states alike. Long and involved negotiations have taken place, but, as in the years between the

¹ “*The Control of the Arms Race*,” Wiedenfeld and Nicholson (1961), p. 6.

² *Chatto and Windus* (1960), p. 286.

wars, post-war attempts at disarmament have been a failure, with the result that general and complete disarmament appears to be merely the academic interest of the few who continue to negotiate about this seemingly unattainable end. Lord Chalfont, our Minister of State for Disarmament, has recently said³ that "general and complete disarmament, which is the declared aim of most of the world's civilized governments . . . means to the statesmen and negotiators a world structure in which the size and power of national military establishments have been progressively decreased to a level at which they will be capable only of meeting the requirements of internal security and providing a residual ability to defend communities against attack from outside. At the same time, it will have been necessary to evolve an international system for preserving the international rule of law for the settlement of disputes and for keeping the peace." The difficulties in the path of achieving such disarmament seem insuperable and are too well appreciated to merit discussion here. Would the unequal strength ratio of a purely internal Red Chinese security force to that of, say, Thailand, make the latter state feel secure? What proportion of the international force would be provided by the major powers? How would it be controlled? What about the immense difficulties of the phasing of disarmament, of verification and inspection? It appears to me that one difficulty alone militates overwhelmingly against the achievement of general disarmament: a relatively small evasion by a nuclear power (for example, hiding perhaps twenty nuclear weapons with delivery systems) would give it a triumphant advantage in an otherwise nuclear-disarmed world. Effective general disarmament, then, tends to be regarded as "pie-in-the-sky," to follow, if at all, a political settlement of which there does not seem to be even a distant prospect. When states have put forward proposals for general disarmament, they have been accepted as statements of an ideal, or, as for instance when Mr Khrushchev spoke at the United Nations General Assembly in 1959, they have been acknowledged largely as an attempt to score a propaganda point.

³ Article in "Encounter," October 1966, "The Politics of Disarmament."

ARMS CONTROL

Meaning of Arms Control

In the last few years a distinction, not, I think, commonly appreciated, has come about between disarmament, with its sorry history of misplaced or at least frustrated idealism, and the more realist conception of arms control.⁴ Whereas disarmament implies the reduction or elimination of weapons and forces, arms control embraces all measures intended to reduce the likelihood and destructive consequences of war, especially nuclear war. It may not involve reduction of armaments and may, in fact, suggest increases, if greater stability could be achieved in that way. While it seeks to pursue the national interest and maintain national security, arms control recognizes a common interest between antagonistic states. It includes all the measures by which they can co-operate so as to promote common interest in the military field. Herman Kahn, in the introduction to his book "On Escalation" gives the illustration of two men pledged to fight a duel to the death, with blow torches, in a warehouse filled with dynamite: they would be sure to agree to fight with the lights on, for while both understood that only one will survive, and would each like to be that one, neither prefers the certainty of both being killed. In other words, even the most dedicated enemies can have common interests in self-preservation.

Unless the Soviet Union had already determined to begin a general war with the West and was preparing for it, there would be a common interest to both sides in reducing the advantages of striking first, for that very advantage, although common to both, raises tensions and increases the likelihood of war. There would be common interests, too, in avoiding accidental war and in being drawn into an unwanted war started by a third party. These common interests form the bases of arms control. They do not depend on mutual trust and good faith; distrust on the part of both sides can be taken for granted. We can, however, trust in people in the sense that we know that they are sane and rational beings who will act

⁴ Some commentators, however, do not distinguish between the terms, using them interchangeably while some others include disarmament as an end of arms control.

predictably in accordance with self-interest. Much that can be done in arms control, moreover, need not be written down in the form of treaties and guarantees which are formal obligations, for the idea of arms control does not necessarily entail the negotiation of settlements; but both sides may see value in adhering to a recognised although unnegotiated pattern of behaviour or set of rules which when initiated by one side, may induce the other to reciprocate tacitly. The avoidance of a suicidal general war, then, is the central common interest on which the concept of arms control has been based and from which a *modus vivendi* has tended to spring.

Stable Deterrence

Arms control recognizes nuclear deterrence as the keystone of Western security policy and tries to improve it. Much of the discussion of a few years ago centred on the problem of the necessarily high state of readiness associated with deterrence. This readiness involves a "self-fulfilling prophecy": if one side achieved a high pitch of readiness, with dispersion of forces and alerts, the antagonist might not be able to distinguish it from preparations for a surprise attack. The analogy of the old-style cowboy enemies meeting in the saloon has often been used to illustrate the danger — the quicker on the draw survives. A few years ago the bombers and the slow-reacting, liquid-filled missiles that comprised the Western deterrent force could have been destroyed by a surprise attack of a preemptive nature, based on enemy assumptions made from signs of a high state of Western readiness in a period of great international tension. The need to stabilize deterrence so as to avoid surprise attack was the basis of much of the arms control thinking of the late 1950s and early 1960s. It was seen that deterrence of a more stable character would be provided by phasing out weapons systems of a first-strike type such as the Thor missiles which were so vulnerable that they could not be considered as retaliatory weapons. Emphasis was given by both the West and the Soviet Union to the hardening of missile sites, to mobility and dispersion, and in the West at least, to the strategy of controlled response.

Accidental War

The risks of premeditated war were considerably decreased by these measures, and deterrence made more stable. It is probable, however, that in the late 1950s and early 1960s the risks of accidental war were higher than those of premeditated war. Accidental or inadvertent war could be brought about by mechanical fault or human error despite the existence of stable deterrence. Even with safeguards, it was far from impossible for a missile to be launched in error, for a meteor to be mistaken for an attacking force or for unauthorized behaviour of the "Dr Strangelove" type to occur. By a stretch of the imagination one can conjure up the possible catastrophic results of a coincidence of the blackout of the NE United States of November 1965 with the Cuban missile crisis of three years earlier. Greater and greater emphasis was placed, particularly in the West, on fool-proof command and control of nuclear forces, and many technical and organizational safeguards have been developed. In the United States particularly, much publicity was given to these measures to allay public concern about the dangers of inadvertent war, especially after the publication of the book "Fail Safe" in 1962. The very term "fail-safe" was replaced by the term "positive control." Unilateral action, however, on the part of the West, could go only so far in the reduction of the chances of inadvertent war, and the Soviet Union has been slow to show its hand. Its slowness may well be the result of its own Marxist-Leninist philosophy, since economic determinism allows little room for the possibility of human frailties or mechanical error having any bearing on the fate of mankind. An article published in the Soviet English language quarterly, *International Affairs*, in December, 1966, however, shows that the Soviet leadership is well aware of the possibility of uncontrolled war through accidents and errors. Although the article compiles a list of instances of American nuclear accidents or near-accidents culled from the free-world press, it omits completely (as one would expect) any mention of similar Soviet mishaps. Nevertheless, it is consoling that the USSR is obviously keenly aware of the problem, and that it has therefore, like the West, no doubt taken arms control measures to ensure that modern

weapons, particularly missiles, do not impose their own conditions.

Arms Control Agreement

Much of the progress in arms control, then, tends to come from tacit agreement, sometimes partial, sometimes reluctant. No settlement resulted, for instance, from the 1958 Geneva Conference on the Means of Preventing Surprise Attack, but there is no doubt that many points were taken to heart by the West and the Soviet. The moratorium on nuclear testing which lasted from 1958 to 1961 was an arms control measure tacitly recognised but none the less effectively pointing the way to the possibility of an eventual formal agreement. By 1962 arms control measures, taken unilaterally and usually tacitly, had done a great deal to damp down tensions and help the growing détente between the West and the Soviet Union. Then in that year the world came closer to the brink of general nuclear war than ever before or since. Almost as a reaction to the Cuban missile crisis, formal agreements were actually reached, after considerable negotiation: the partial nuclear test-ban treaty, and the arrangement to institute a "hot-line" between Washington and Moscow. These modest formal agreements have since been followed by others, including the arrangement for "hot lines" between London and Moscow and Paris and Moscow, and the agreement not to put nuclear weapons into outer space. There have been tacit agreements, it seems, to avoid large-scale passive defence and to show great caution over the adoption of large-scale anti-missile defence, either of which could lead to an acceleration in the arms race and to less stable deterrence.⁵ More could have been achieved: the USSR failed to recognise the feasibility of the US counterforce strategy which would

⁵ *In many ways, anti-missile defences for the major nuclear powers might be regarded as interfering little with arms control: the systems are defensive, they would help to reduce casualties, they would help to reduce the chance of war by accident and by the catalyst action of a third party, and they would tend to make potential nuclear powers see less advantage in proliferation. On the other hand, they would lessen the ability to deter in the sense that they raise doubts about the ability to achieve "assured destruction" and would therefore detract from stability. The same argument applies in most respects to passive defence.*

have helped to decrease the destructiveness of nuclear war; there has been failure to achieve a comprehensive test-ban treaty, including a ban on underground testing; and China and France have refused to participate in the main negotiations.

It has become very clear, however, that a state can increase its security by co-operative measures with a potential enemy. Some arms control supporters, especially American academic strategists, even argue that a state can often benefit by sharing information with others rather than by withholding it. For example, the knowledge or even suspicion that there has been a technological breakthrough in weaponry by one side may be very destabilizing and build up tensions so that the security of the first is decreased rather than increased by the breakthrough. It is very difficult for any state, however, to contemplate giving away hard-won and costly secrets. It is still impossible for states which have been built up on the tradition of what is a loss for one is a gain for the other to accept wholly the logic of enhancing security through co-operative measures. Nevertheless, the idea of the interchange of information is central to many advanced arms control schemes.

PROLIFERATION

Although the West and the Soviet Union have generally conflicting interests acerbated by the war in Vietnam, it seems that the world of the 1950s and 1960s has survived an extremely dangerous period when the possibilities of nuclear war between the two continuously dominated the international scene. Arms control, with its small steps which have been more realistically attainable than the sweeping programmes needed for general disarmament, has helped to stabilize the international environment. However, as some dangers recede, others have loomed into view. All the arguments about stability and mutual deterrence have been based on the assumption that there is a relatively small number of nuclear powers. Since Communist China exploded a nuclear device in 1964 and since it has apparently progressed rapidly towards a delivery system in the last two years, the potentiality of nuclear proliferation has become very much clearer

to the world. The prospect that in very few years China, which clearly is not disposed towards participation in arms control agreements, may have the nuclear capability which the Soviet Union, had, in 1960, is a terrifying one. It is not only that China, with its professed ambitions to overthrow the international order, has become a member of the nuclear club, but that the problems of the 1950s and the early 1960s have to be encountered again in the 1970s, with the great dangers of accidental and perhaps catalytic war recurring as nuclear weapons come into inexpert and inexperienced hands. Apart from the five existing nuclear powers, there are more than a dozen states which, if they wished, would soon be able to create a nuclear weapons system. In the next decade the number of potential nuclear powers will increase substantially. If some of these states do "go nuclear" it is quite possible that they will not take heed of the experience of the maturer nuclear powers in the control of nuclear weapons, for irresponsible nuclear diplomacy, it may seem to them, could yield great dividends. There would for instance, be greater opportunities for international blackmail by small states. There

would inevitably be an increased tendency to neglect conventional forces from over-reliance on expensive nuclear weapons, and crises would become increasingly difficult to manage. One can even foresee civil wars turning into nuclear wars or at least threatened nuclear wars, should rebel leaders get possession of nuclear arms. Kissinger in 1960 said in his book "The Necessity for Choice" that the early period of the 1960s was "the last moment when the problem of nuclear diffusion could be dealt with." Others have since echoed the urgency of his words: the middle 1960s were the "last chance for reaching some agreement on non-proliferation"; the middle 1960s were a "watershed" in the attempts to grapple with the problem; the "Economist" of 21st May 1966 said that by July 1966 "the last deadline will be very close." The early 1960s have gone. 1966 has come and gone indecisively. The negotiations on proliferation continue, but although the negotiators are more optimistic than before, many arms control problems are firmly canalized in the proliferation issue — the critical question whether there is, or is not, to be a *sixth* nuclear power.

The Helicopter and How it Flies

John Fay Second Edition 17/6 net

All the fundamental features of rotary-wing flight are explained in this book, without resorting to mathematical formulae. The subject matter ranges from the definition of a helicopter to vertical and forward flight, torque and its balance, stability and the differences between helicopters and gyroplanes. This text now becomes part of the *Without Formulae Series*.

"One of the best concise works of exposition on the helicopter that we have seen." *Aeronautics*

"I can recommend the second edition, just published, to anyone with an interest in aviation affairs."
Royal Air Force News

Flight Briefing for Pilots

N. H. Birch and A. E. Bramson

Volume I of this important and successful series covers pre-flight briefing and flight practice; Volume II contains those exercises needed to complete the syllabuses for the Flying Instructor's Rating. Volume III, *Radio Aids to Air Navigation*, has just been brought out in its second, revised edition. Vol I 15s net, Vol II 20s net, Vol III 30s net.

SIR ISAAC PITMAN & SONS Ltd. 39 Parker Street, London W.C.2

Life Assurance
and Mortgage
Consultants
4 York Row
Wisbech Cambridgeshire
Wisbech 2711 & 2712

barwick
associates
limited

WE PROVIDE

Facilities for mortgages (both immediate and future) with major building societies or insurance companies and advice on the type of mortgage plan most suited to your circumstances

Facilities for investing with major building societies and advice on how best to save and with which Society and so prepare for the day when you will need that mortgage.

Facilities for life assurance or endowment assurance with major companies and advice on how to insure adequately WITHOUT the unnecessary burden of high premiums.

We are solely occupied in providing the above facilities to members of Her Majesty's Forces and at no time do we charge fees.

I shall be pleased to personally attend to your enquiries.

Yours sincerely,

Brian G. Barwick

LASERS AND MASERS

by NO 94 E1 ENTRY

New uses of the laser have been reported at the rate of one every week for the past year. They range from using laser light to soften granite before boring tunnels (one minute exposure to a powerful laser softened a granite rod of one square inch cross-section so that it could be crumbled between the fingers) to using a laser range-finder to deliver bombs at low level in Vietnam (the range-finder laser is currently being advertised for sale in Aviation Week). Lasers weld metals, drill diamonds, carry TV broadcasts, track satellites, speed-up chemical reactions, track clouds, interfere with semi-conductors, and push paddles. Lasers have been used to simulate radio aerials, micro-engrave metals, record 3-D images, find ranges, guide missiles, and read microfilms.

It began, like many other discoveries with Einstein who in 1917 showed that when an atom or molecule has somehow had its energy state raised, the release of the energy can be controlled by subjecting the atom or molecule to a small electromagnetic field of a suitable frequency. It was this idea that led Dr Charles Townes, an American physicist, to have one of the most important scientific "brainwaves" for several decades.

Early one morning in 1954, Dr Townes was sitting on a park bench in Franklin Park, Washington, when the idea of stimulated emission of radiation began to take shape. He went back to his laboratory and, using a microwave generator and a source of electromagnetic field, he produced a MASER. (The acronym maser standing for microwave amplification by stimulated emission of radiation).

Prompted still further by the success of his maser, Dr Townes toyed with the idea of using light waves instead of micro-electromagnetic waves. Partly by accident and partly by perseverance, he eventually came up with the first practical laser. This was a ruby rod in which the chromium atoms were excited by a flash gun and reflected until they reached a high enough energy level to escape from the ruby itself. The resulting emission was found to be a highly concentrated beam of infra red light.

What was more important about the beam was that it was light of a single wavelength (monochromatic), it was coherent, and that it was plane polarised (the oscillations of the wave are in one plane only).

These qualities made Dr. Towne's discovery a most important advance in scientific circles because scientists had been trying for years to find such a source of light for application to many accurate pieces of scientific and industrial apparatus.

Thus, the laser (light amplification by stimulated emission of radiation) was born and its applications in its various subsequent forms are numerous ranging from cutting diamonds to interplanetary communications.

Since their inception, lasers have developed in type and power and have thus become a most important part of scientific equipment for use in experiment and practical applications in surgery, engineering and communications.

HOW LASERS WORK

The first laser built, a solid laser, used a ruby crystal as its active element, and since the ruby laser is still the most common type, the ruby laser will be described in detail and the other types of laser will be described in relation to the ruby laser.

The ruby is activated initially by an intense flash of light from a spiral flash tube similar to those used in electronic photo-flash units. The ends of the ruby are silvered and the photons emitted by the chromium ions in the crystal build up into a parallel beam inside the crystal. One of the silvered ends, however, is only about 98% reflective and the photons are emitted as a parallel beam of red light.

Although the average power of 1 — 1,500 joules of this pulse is relatively low, the peak power can be increased greatly by a technique known as "giant pulsing". In this, one of the mirrors is removed from the ruby crystal and an electrically operated shutter is inserted between the crystal and the mirror. By this technique the laser action can be maintained inside the crystal until a high proportion of the chromium ions are activated, and emitting photons. The shutter is then opened and a light pulse of very short duration is emitted, whose peak power has been made as high 1,000 megawatts.

Solid lasers, similar to the ruby, have been made with elements made of glass, containing traces of rare earth element. Although these elements are larger than rubies they can be moulded, rather than grown as crystals, and are a lot easier to mass produce. Other solid lasers have been made but all need temperatures in the region of -200°C to operate and are thus fairly impracticable.

Gas lasers are similar to ruby lasers except that the element is a low pressure gas, and the activation energy is supplied in the form of radio frequency electromagnetic waves.

These lasers operate continuously and give a more coherent and better collimated beam than solid lasers. This continuous beam has many applications in the fields of short range communications and high accuracy measuring devices.

A third type of laser, the semiconductor laser, is activated by passing an electric current of about $2,000\text{ a/cm}^2$ across a junction of two types of gallium arsenide. A coherent and monochromatic beam of light is emitted from this junction. Due to the heating effects of the high currents, lasers of this type must be very small and cooled in liquid nitrogen. As the laser light can be modulated simply by varying the exciting current these lasers show great promise in the field of communications.

Liquid lasers resulted from the discovery that by passing laser light into certain liquids, the frequency of the beam can be changed. Since a limited number of frequencies are available from lasers these devices are extremely useful in that they expand the range of frequencies of laser light.

COMMUNICATION BY LASER

The basis for the enthusiasm about the future possibility of using lasers for long distance communications is the simple fact that the capacity of a communications system is proportional to the width of its band of frequencies. Enormously wide bands of frequencies are available to a system utilizing electromagnetic waves in the visible region of the spectrum.

Today there are probably more research physicists and engineers working on the problem of adapting the laser for use in communication than any other single project in the field of laser applications.

There are several proved methods of transmitting large volumes of messages over great distances.

The oldest is the coaxial cable system. Copper wire conductors are gathered together in bundles of eight to twenty. The frequencies used range from 500,000 to 20 million cycles per second.

The bandwidth of the microwave tower systems, in which the relays are placed some 20 to 30 miles apart, is between one billion and ten billion cycles per second.

The wave guide system incorporates tubes, two inches in diameter, and uses frequencies from 30 billion to 90 billion cycles per second.

All of these systems employ the principle of simultaneous transmission of many different messages over the same pathway. A signal is transferred from one frequency to another by a system known as modulation. The single frequency carrier wave produced is then successively modulated by a large number of voice channels to produce a new composite signal wave. At the receiving end a similar network separates the single wave into its components and these in turn are subdivided by means of a demodulation process into individual signals. The higher frequency regions (visible region) of the electromagnetic spectrum have a much greater potential capacity than the lower frequency regions because they have far more room to accommodate communication channels. For example: because the frequency at the centre of the visible region of the spectrum is 100,000 times greater than the frequency of the six-centimetre waves used in the microwave radio systems, the theoretical capacity of a typical light wave is about 100,000 times greater than that of a microwave.

The two properties of monochromaticity and spacial coherence make the laser a potentially useful oscillator for communication systems.

Research is being directed towards finding a satisfactory light detector for use at the other end of the laser communication path. One system which has been perfected is a system involving observances of electron emission due to impinging light beams. The efficiency of the system falls when light in the infra red region of the spectrum is used.

Although economics will play a major part we can expect to see the laser revolutionizing long distance communication systems.

INFORMATION STORAGE

We are used to a delicious young lady in a Kodak advertisement proffering a piece of film on which is recorded the "complete Congressional library," or some such thing. We become blasé about the capabilities of optical systems to store information, when this capability is really quite vast. When one realises that all the reading requirements of London for a year could be met by film which would fit in a briefcase, the true capabilities of film storage begins to come evident. Imagine coupling this to the calculating capability of a computer, which would now have its own private brains trust on tap at any instant. We could have language translators which really work reliably, and portable filing cabinets would use optical systems to fit a complete history into a coat pocket.

But it is of no use to have a vast amount of information without being able to read it rapidly. The laser has provided the major step forward in both storing and reading information in film. It does so in a type of morse code, which requires a superfast method of switching a laser on and off. One way of accomplishing this is by means of the Kerr cell.

The laser shines through two crossed polarisers. These are analagous to two very thin slits, set at right angles, so that practically no light gets through. A potential applied to the Kerr cell 'twists' the light coming from one polariser so that it can pass the second one, and continue on, via an optical system, to the film, which either rotates or

traverses the pin-point of light at a high speed. Switching the Kerr cell 'on' and 'off' gives a series of pulses of 'on' and 'off' light, recording a series of dots on the film. The very high speed switching capability of the Kerr cell means that information can be recorded at a realistically fast rate. The film is read by a photo-electric cell which reproduces the 'on' and 'off' light signals from the film.

The newer lasers, still in the development stage, can switch their light beams to many discrete pinpoints, and, presented with a sheet of film, can therefore select the exact piece of information required and 'read' it immediately, instead of scanning it all until it reaches the required spot. This is obviously an advantage where computers are concerned, since information processing is still the slowest portion of their task.

LIGHT RADAR AND ITS APPLICATIONS

A normal radar system uses electromagnetic waves contained in a small band of frequencies. The wave is "bounced off" an object and returned to the source. The range of the object from the source can then be computed, knowing the time taken for the wave to complete its journey. Light radar uses a short beam of light from a laser, in the same way the beam is "bounced off" or reflected from an object. The frequency of the laser wave is fixed and definite and is more accurate than a band of frequencies used in normal radar.

Light from a laser can also be adopted into a Doppler radar system. Doppler radar is used in computing the approach speed of an object to a source. The wave "bounced" on to the object from a source changes frequency due to the motion of the object. The source receives a different frequency (f^1) from that emitted (f). The approach speed can then be calculated by the formula.

$$f^1 - f = \frac{2 \times \text{APPROACH SPEED}}{\text{SPEED OF LIGHT}}$$

The length of a laser beam on earth is finite and limits its use as a radar. However over a short range, a laser can become a range finding device in aiding weapons or artillery. In clear air it is able to resolve the distance of an object ten miles away to within ten feet.

Beneath the sea the submariner has no method of communication and only Sonar to act as his eyes. Sonar has been proved totally inaccurate as the changes in sea water density "bend" the Sonar beam and give false indications of an object's position. As normal laser light cannot penetrate sea water a blue/green laser has been developed. The laser beam does not "bend" as much as sonar, but its simple frequency is scattered easily on contact with any change in colour of sea water, thus limiting the range. However the accuracy gained can be used to give a radar fit for navigation radio and enemy action.

Space contains no atmosphere, dust, water vapour or contamination that can absorb or scatter the laser beam as it does on earth. The length of a laser beam in space is limitless.

The French, USSR and USA Gemini and Apollo space projects have been evaluating the use of lasers in space, both as a means of communication and as a radar. The radar success is quite phenomenal. The space docking projects recently carried out by the USA uses a doppler light radar system, which is accurate to one thousandth of an inch per second in calculating satellite closing speeds. Light radar was used by both the USSR and USA for soft landing a capsule on the moon, the laser being used as both an altimeter and a descent speed indicator.

The ring laser consists of four double-ended gas lasers arranged in the form of a square mounted on a table. Two rings (A and B) of laser light are set up, A in an anti-clockwise direction and B in a clockwise direction. While the table remains stationary the detecting device "sees" no difference between the beams. However, if the table is rotating (say) in a clockwise direction the beam A will travel a shorter distance than before, and the beam B will travel further; the two beams will pass through the semi-transparent mirror and their interference

detected. The purity of laser light enables a rotation as small as 1/30,000 of a degree per second to be detected. This arrangement is the basis of a very accurate gyroscope system; a Lockheed laser gyroscope has been installed in an American guided missile destroyer. The most promising field in which the ring-laser will be used is as a guidance system for spacecraft, where accuracy is vital. The ring-laser has many possibilities in the field of astronomy, it has already been used to make accurate measurements of the earth's rotation. Apart from being more sensitive than the conventional gyroscope, the laser gyroscope does not require continual re-setting, as it has no tendency at all to creep.

LASERS TO DETECT AIR TURBULENCE

Air turbulence has always been a danger to aviation, yet it could not be detected by any known method until the advent of the laser. The laser operates in much the same way as a conventional radar installation; the atmosphere is basically particulate in nature and these particles act as reflectors for the extremely high frequency laser pulses. When used to detect turbulent air, the laser has an optimum range of about five miles, although as with the majority of laser applications, it is still very much in the experimental stage. It is air turbulence incidentally, which makes stars appear to "twinkle."

DETECTION OF STAR MOVEMENTS

Lasers are used for multipurposes in astronomy. A particular application worth mentioning is its ability to detect the movement of a distant star during a short period. A laser scanner developed in the USA can shorten to six weeks a search for slow changes in the positions of stars which previously took twenty years.

Up to now, such movements which are only a fraction of a second of an arc have been detected by comparing manually two photographs of the same area of the sky taken ten years apart. But the recently developed scanner can detect these changes automatically.

The laser beam scans both photographic negatives together, passing through them to strike separate photomultipliers. Some of the light is absorbed when the beam passes over the position of the star reducing the photomultiplier output. The signals are stored in memory of a computer, which, when the scanning is complete, holds a map of each star plate.

Scanning is accomplished by passing the beam through a rotating octagonal prism and a system of triangular prisms which split the beam into two and reflect each of the split beams on to each of the star plates. Scanning a 14in. square plate takes half an hour.

At present, the output still has to be measured normally, but work is being done to develop a system in which a computer will be used to feed back information about the stars and their relationships.

THE USE OF LASERS IN PHOTOGRAPHY

Until recently in high speed photography, the fastest films were taken by a set of cameras and rotating mirrors which give a few million frames per second. But with the introduction of the laser it has been possible to attain much higher speeds. With the film rotating at extremely high speeds with the light from the laser flashing, it is possible to expose the film for periods as short as 25 nanoseconds. This is achieved with electrical Q switching devices.

The science of holography, a method of taking three dimensional photographs, was first discovered in 1947, but there were no convenient sources of coherent, monochromatic light available until recently.

A beam of coherent, monochromatic light is directed at a partly silvered mirror in such a way, that half of the light is reflected directly onto a photographic film and the other half of the light falls on the object to be photographed. The reflected light from the object and that from the mirror forms a microscopic interference pattern on the

photographic film. The film is then developed in the normal way, but no lens is used between the source of light and the film. The laser is completely suitable for this purpose.

The resultant photograph, known as a hologram, in ordinary light appears cloudy and bears no relation to the original object. When laser light of the same frequency is shone on to the hologram, a three dimensional full scale image of the original object, which is subject to parallax, is observed, and one's eyes have to refocus when they look at different points on the object.

By using light of a higher frequency than that used in making the hologram the image is magnified, and with light of a lower frequency the image appears diminished. This property can be used for magnification purposes, but is limited by the size of the crystals on the photographic film. It is not practicable to use shutter speeds of less than one-twentieth of a second, as not enough light can reach the film, and so holography cannot be used with moving objects.

It has been suggested that holography may be used in television and cinemas to improve realism. This will not happen for some time, until a holographic unit can be made cheaply enough.

LASER WELDING

The power intensities that can be obtained with a focused laser beam are orders of magnitude higher than those obtainable using other heat sources with the exception of the electron beam. The high energy intensity should enable the welding operation to be completed in a very short time, thus reducing the total amount of energy required for a particular operation.

When a laser beam is focused on a metal surface, the radiant energy will be expanded in four principle ways. In the case of highly reflective metals reflection represents a high percentage of the total incident energy. Much energy is employed in melting the metal and a part is used in vaporising it. A small amount of heat is lost into the unmelted metal base. The relative proportions of

energy dissipated via each of the four mechanisms are principally dependent on the thermal and optical properties of the individual metals, and on the intensity and pulse duration of the laser beam. The pulse shape is also important.

The major difficulties associated with laser welding in its present pulsed form are defined by : " The upper limit to the power intensity that can be tolerated in a welding operation is exceeded when a jet of vapourised metal is emitted from the weldment surface." If the power intensity is sufficient to produce surface boiling the pressure developed can expel liquid from the weld pool leaving a hole rather than a weld bead.

The place of the laser in welding technology can obviously be assessed under two headings : present and future. While it is evident that the device has immediate value in a number of fairly specialised applications, major interest centres around possible developments of the technique.

Why has there been such a leap in the uses of what seems to be just another, though rather good, producer of light ? We must fall back on our opening explanation. Laser light is special because of its three unique properties, a single phase, monochromaticity, and high parallelism. The prospects for light of this type are unlimited. Submarine communication systems loom on the horizon. Bouncing laser beams off reflective surfaces in orbit creates instant trans-atlantic cables that cannot be cut, and need no servicing. A 'laser lathe' might shape the super-hard ceramics of tomorrow into the most intricately tiny components. And with an increase in efficiency, a laser might replace ion or plasma rockets to give us the ultimate perfection in rocketry, for a rocket depends on the velocity of its 'exhaust' for its efficiency, and nothing succeeds at travelling fast quite so well as light itself.

What, then, can one say about the lasers contribution to science ? It has, altogether, been one of our most valuable and powerful tools, and will undoubtedly continue to be so. One might almost say that the laser is to optics what the wheel is to the carriage ; the one cannot progress far without the other !

PEACE FOR OUR TIME, TOO ?

(AN EXAMINATION OF THE MUNICH
CRISIS, ITS INFLUENCE, AND ITS
RELEVANCE TODAY)

by FLIGHT LIEUTENANT A. C. ROGERSON

*" this is the second time in our history that there has come back from Germany to Downing Street, peace with honour. I believe it is peace for our time."
(Neville Chamberlain after his return from Munich, 30th September, 1938).*

*" No conquerer returning from a victory on the battlefield has come home adorned with nobler laurels than Mr. Chamberlain from Munich yesterday ; and King and people alike have shown by the manner of their reception their sense of his achievement He had not only relegated an agonizing episode to the past, he had found for the nation a new hope for the future."
(The Times 1st leader — 1st October, 1938).*

*" a disaster of the first magnitude We have sustained a total and unmitigated defeat And do not suppose that this is the end. This is only the beginning of the reckoning."
(Winston Churchill during the House of Commons debate on the Munich Agreement — 3rd to 6th October, 1938).*

Of course we know now who was right. The Munich Crisis proved to be yet another example of Churchill's remarkable prescience regarding the Nazi threat. But it is too easy for us, safe in the hindsight of history, to join Churchill in decrying the actions of that rather pathetic figure in the highwinged collar who came back from Munich with a piece of paper in his hand. Too easy and also short-sighted for such an attitude can blind us to many of the real implications of the Czechoslovak crisis of 1938 and also prevent us from realizing what a tremendous influence Munich had had on world affairs ever since. This influence was seen in its most ludicrous extreme when in July 1955 President Eisenhower returned from the Geneva Summit Conference and stepped out of his aircraft to make his returning-home speech. It was raining hard but Vice-President Nixon would not allow umbrellas to be used in case a parallel should be drawn with the return of

Chamberlain from Munich. So Eisenhower spoke in the rain and risked his health.

Because Munich is particularly relevant to us today — to us who, also, seek peace for our time — I wish to consider three aspects of the Munich crisis, or at least, since this can be only a relatively short article, to touch upon them. Firstly, to outline the Munich crisis itself. Secondly, to point out some of the implications of the crisis which are relevant to us today. Thirdly, to give some examples of how Munich has haunted statesmen ever since and influenced greatly post-war diplomacy, in order to emphasise what we ignore at our peril, that contemporary affairs are frequently affected greatly by events of the past, long after we have attempted to relegate those events to the history book. To show, in fact, that history like crime frequently catches up with us.

THE MUNICH CRISIS

Background to the Crisis

One of Hitler's first moves after his occupation of Austria in March 1938 was to assure the Czechs that the Anschluss was no threat to their country. In reality, however, he was already considering how he might take her, for possession of Czechoslovakia was essential to his expansionist plans in Europe. The lever, which he decided to use, was the problem of the three and a half million Germans in the Sudetenland area of Czechoslovakia, and encouraged by Hitler the Nazi Party in the Sudetenland became more and more vociferous in its demands for the Sudeten Germans.

Czechoslovakia could not meet this growing Nazi threat on her own. Who was to help her? Since Russia made it clear that she would not help the Czechs until France had first given them aid, their real hope lay with France and Britain. It was the leaders of these nations, above all Chamberlain, who were the "men of Munich."

The Men of Munich

Chamberlain, a businessman turned politician, had a keen analytical mind and a great grasp of many subjects. He knew less, however, of foreign than of domestic affairs, and, unfortunately, it was in this very field that he intended to by-pass the normal channels of communication and advice. He called his policy "appeasement" but did not mean by this peace at any price. To Chamberlain "appeasement" was the detailed investigation of any problem likely to cause war and the solution of such problems peacefully by summit meetings with other heads of state. He believed very strongly in the efficacy of this personal contact at the highest level. In this policy he was warmly supported by Lord Halifax, who succeeded Eden as foreign secretary in February 1938, and by Sir Neville Henderson, British ambassador to Berlin, who believed "he was divinely ordained to stop another world war."¹

Edouard Daladier was in the middle of his third premiership of France at the time of the Munich crisis. He was far more pessimistic about the chances of reaching a settlement with Hitler and far less taken in by him than Chamberlain. Unfortunately his desire to stay in power led him to follow the particular demand of the moment, and he allowed himself to be overridden by Chamberlain time after time. Georges Bonnet his foreign minister, decided early on that France would have to abandon Czechoslovakia. Like the other "men of Munich" he lacked experience in foreign affairs.

Factors Leading to Munich

Three different factors led these men to the meeting with Hitler and Mussolini at Munich.

¹ "Munich" by Keith Eubank, p. 18.

Firstly, there was the British and French unpreparedness for war. Secondly, there was a wrong estimation, especially by Chamberlain, of Hitler's aims. Thirdly, there was the belief, which has already been touched upon, that the crisis could be solved around the conference table.

Britain was not ready for war in 1938. The Chiefs of Staff reported as much to Chamberlain on 28th March. The same was true of France. She had large armies ready to defend her frontiers but not the offensive ability on the ground or in the air to support Czechoslovakia against Germany, and Daladier knew this. Perhaps both Chamberlain and Daladier overestimated the Nazi war machine, nevertheless they feared it greatly and were prepared in 1938 to go to almost any lengths to avoid war with it.

Then there was the underestimation of Hitler's aims. Harold Macmillan summed this up recently in a television interview by saying: "It is very difficult if you are accustomed to a fairly reasonable behaviour in international affairs, which after all had governed the world for a long time with a certain degree of honesty and probity, to be up against a thing as evil as Hitler was, and to be asked to believe that a whole nation could be seized by such a man and his thugs."²

This was the basic trouble. Chamberlain, who did not read "Mein Kampf" until after Munich, could not grasp that Hitler wanted to dominate Europe and tried to deal with him as with an honourable statesman whose word could be trusted.

The Munich Crisis and Aftermath

Crisis followed crisis over the Sudetenland from May 1938 onwards. Britain and France, increasingly frightened that they were going to be drawn into a war with Germany, put more and more pressure on Czechoslovakia to make concessions. Finally, the Czechs dug their heels in and refused on 25th Sep-

² An interview on BBC-1 with the Rt Hon Harold Macmillan on his autobiography "Winds of Change 1914-39" and printed in "The Listener" of 8th September, 1966.

tember, 1938 to accept Hitler's Godesberg demands. Just when it seemed that war was inevitable, Hitler invited Chamberlain, Daladier and Mussolini to meet him at Munich on 29th September.

The Czechs were not even allowed a representative as the Munich Agreement, deciding their fate, was hammered out and signed by the four powers. This gave Hitler all he wanted for the moment, and without war. The Sudetenland was to be ceded to Germany in four stages, beginning on 1st October. An international commission, consisting of representatives from Great Britain, Germany, France, Italy and Czechoslovakia was to settle the outstanding problems produced by the cession, including the final frontier and the areas for plebiscites. Thus an independent nation was torn asunder without a chance to state her case or even to object. Worse still there was no effective guarantee of even what remained to her.

Still, it seemed that war had been avoided especially when Chamberlain persuaded Hitler to sign a joint statement with him at the end of the Conference, stating that the two leaders " regard the agreement signed last night and the Anglo-German Naval Agreement as symbolic of the desire of our two peoples never to go to war with one another again" So while the Czechs mourned their lost territory, Chamberlain and Daladier returned to the rapturous and relieved applause of their people. Only a few opposed what had been done at Munich. Among these was Macmillan, who on 5th November at a bonfire for the village children and his own children "burned a figure in an old coat and a bowler hat and a rolled-up umbrella and called it Chamberlain."³

The applause had scarcely died away, before the ominous consequences of Munich began to be apparent. The International Commission to settle the questions raised by the cession of the Sudetenland became so dominated by Germany that eventually a much greater area was handed over to the Reich than that agreed at Munich, and there were no plebiscites. Finally, after a mounting pressure upon Czechoslovakia this time on the question of Slovakian independence,

³ BBC-1 interview, cited above.

President Hacha of Czechoslovakia, was summoned to Germany on 15th March, 1939. Hitler told him that his troops already had orders to march into Czechoslovakia, but if there was no resistance then he promised her autonomy and limited national freedom. Under this threat and with no guarantee of outside support, President Hacha was forced to disarm the Czech armies and place Czechoslovakia "in the hands of the Fuhrer and the German Reich." Thus, while Britain and France watched helplessly, Hitler swept aside the Munich Agreement and seized Czechoslovakia. Too late for Czechoslovakia, and almost too late for the free world, Britain and France woke up to reality.

THE INFLUENCE OF MUNICH

The Ghost of Munich

Of course, our attitude to Munich is coloured by the subsequent events — the seizure of the rest of Czechoslovakia in March, 1939 and the outbreak of the 2nd World War six months later. Hence, when Churchill entitled one of the chapters in his first volume on the 2nd World War — "The Tragedy of Munich" — he summed up what was generally everyone's post-1938 attitude to Munich. But Munich became, in retrospect, more than just a tragic episode. It became symbolic of the sort of nightmarish situation which nations in the future hoped to avoid. Thus, in almost every post-war crisis, particularly those where nations have been threatened with aggression, the ghost of Munich has haunted the statesmen involved. Consider the following:—

The Korean War — "This was the same kind of challenge Hitler flaunted in the face of the rest of the world when he crossed the borders of Austria and Czechoslovakia. The free world failed then to meet that challenge, and World War II was the result."⁴

Suez — "British motives for attacking Egypt were the simplest of the lot. Sir Anthony Eden suffered from the Munich complex to an extreme degree. He was completely convinced that Nasser was a second Hitler."⁵

⁴ *The Truman Memoirs, Volume 2* — "Years of Trial and Hope," p. 491.

⁵ "Suez — Ten years after" — Peter Calvocoressi (printed in the *Listener* on 14th July 1966).

Krushchev and Berlin — “ In 1961, Krushchev intensified the Berlin question by dividing the city and resorting to extensive testing of nuclear bombs. The charge of ‘another Munich’ and ‘appeasement’ again beclouded diplomacy. Some argued that Krushchev was pursuing a role modelled on that of Hitler in 1938 regarding Czechoslovakia, with the East Germans playing the role formerly assigned to the Sudetens. Krushchev was seeking to undermine the West by negotiation and threats, just as Hitler had done in September 1938.”⁶

The Warsaw Pact Declaration (July 1966) — calls upon the “ ruling circles of the Federal Republic of Germany to renounce the criminal Munich dictat, and acknowledge that it has been null and void from the very beginning.”⁷

It is obvious then that the Munich crisis has been in many people’s minds on many occasions since the end of the 2nd World War. What is more important, conclusions have been drawn from Munich and applied to these post-war crises. What conclusions have been drawn ? What influence have they had ? Are they the right conclusions ? These are the questions I want to consider in this and the final section of the article.

An Aggressor is Never Satisfied

The most immediate, and probably the healthiest, conclusion that was drawn once Munich was seen to have failed, was that an aggressor is never satisfied and that it is fatal to think one can curb his appetite by making concessions. Hitler, people were quick to point out, had not been satisfied with the Rhineland, Austria, the Sudetenland and Czechoslovakia, but had gone on to desire and take Poland. They learnt, as Winston Churchill on 17th November 1938 had predicted they would learn : “ The Prime

Minister is persuaded that Herr Hitler seeks no further territorial expansion upon the Continent of Europe ; that the mastering and absorption of the Republic of Czechoslovakia has satiated the appetite of the German Nazi regime By this time next year we shall know whether the policy of appeasement has appeased, or whether it has only stimulated a more ferocious appetite.”⁸

Also, the condoning of one act of aggression makes it all the more difficult to oppose further aggression later on and also makes the aggressor over-confident and less likely to believe in a change of heart. Thus Hitler did not really believe that Britain and France meant their pledge to Poland and the other European countries, which they made after the fall of Czechoslovakia. “ The men I got to know at Munich,” he remarked to his generals on 14th August 1939, “ are not the kind to start a new world war.” The disastrous failure of Britain and France to convince Hitler of the firmness of their intentions was not lost on post-war politicians. Would Krushchev, for instance, have given way over Cuba if the U.S.A. had on previous occasions proved weak ?

This recognition that not only is an aggressor’s appetite never satisfied but also that it is dangerous to try to satisfy it has proved to be one of the most consistent themes in Western, particularly American, diplomacy since the war. In April 1965, for instance, President Johnson said this about the Vietnam war : “ Let no one think for a moment that retreat from Vietnam would bring an end to the conflict. The battle would be renewed in one country and then another. The central lesson of our time is that the appetite of aggression is never satisfied.”⁹

It did not take long after the 2nd World War for the Western nations to realise that the Nazi threat had merely been replaced by the Communist threat : “ A shadow has fallen upon the scenes so lately lighted by the Allied victory,” Churchill told the American people in March 1946. “ Nobody knows

⁶ “Munich” — Keith Eubank, p. 298, based on articles in the *New York Times* of 4th April 1959 and 9th July, 16th August, 30th September and 2nd October 1961.

⁷ *The Warsaw Pact Declaration arising from the meeting of the Warsaw Pact countries on 5th-8th July 1966 (printed in “Survival,” September, 1966).*

⁸ “The 2nd World War” — Vol I “The Gathering Storm” p. 299.

⁹ Lyndon B. Johnson’s speech at John Hopkin’s University on 7th April 1965 (*The Department of State Bulletin*, 26th April 1965, L11, pp 606-10).

what Soviet Russia and its Communist international organization intends to do in the immediate future, or what are the limits, if any, to their expansive and proselytizing tendencies What they desire is the fruits of war and the indefinite expansion of their power and doctrines."¹⁰

A year later President Truman made it clear that the United States was going to react in a very different way to this new aggressor than the democracies had reacted to the threat of Nazism. In his famous "Truman Doctrine" speech to Congress, on 12th March 1947, President Truman committed the United States to the support of all free governments that were struggling to resist outside pressure, beginning with Greece and Turkey. "One of the primary objectives of the foreign policy of the United States is the creation of conditions in which we and other nations will be able to work out a way of life free from coercion. This was a fundamental issue in the war with Germany and Japan I believe that it must be the policy of the United States to support free peoples who are resisting attempted subjugation by armed minorities or by outside pressures. I believe that we must assist free peoples to work out their own destinies in their own way."¹¹

Compared with Henderson's statement to Ribbentrop on 1st September 1938 that "the Sudetenland Germans and the Czechs were a matter of complete indifference to Great Britain," this showed a realization not only of responsibility for smaller nations facing aggression but also of the fact that such aggression, if allowed, would only lead to more aggression.

Developing from this there emerged the policy of containment — that is the prevention of the expansion of Communism, particularly Communist aggression, throughout the world. Although at times this policy has been much more aggressive and ideological than he recommended, it is basically summed up in George Kennan's advice of 1947: "It is clear that the main element of

any United States policy towards the Soviet Union must be that of a long-term, patient but firm and vigilant containment of Russian expansive tendencies."¹² In fact, this policy of containment has been one of the most consistent threads in United States' diplomacy since 1947. It can be traced from the Truman Doctrine and the Marshall Plan (1947), through the Berlin Airlift (1948) and the formation of NATO (1949), the Korean War (1950-53), the Cuban Blockade (1962) to the present war in Vietnam.

Non-Appeasement

A second conclusion that the post-war world has drawn from Munich is that appeasement does not pay. The trouble is that the word "appeasement" has meant different things to different people — as Humpty-Dumpty said in "Alice Through the Looking-Glass," when he used a word he made it mean what he wanted it to mean, nothing more nor less. By dictionary definition, "to appease" is to pacify, quiet (strife, anger, person); soothe; satisfy (appetite, prejudice)¹³. Chamberlain, as we have seen, meant by "appeasement," the peaceful discussion and peaceful settlement of issues likely to cause war. But in post-war currency the word has been used rather differently, mainly in one of two ways. Firstly, it has been used, with direct reference to what actually happened at Munich, to mean the attempt to settle matters peacefully by making concessions. Secondly, it has been used, especially in the form "appeasers," to denounce almost as if they were traitors, those, who in a crisis, try to seek a peaceful or "soft" solution.

In the first sense, appeasement, or rather the desire not to appease, has produced virtually the same effects as the recognition that an aggressor is never satisfied: "Most older Americans who think about these things rationally or intuitively do not want to live again through the horror of the retreats before an extremist power system they had witnessed in the 1930's. There has consequently been no such series of retreats in

¹⁰ Churchill's speech at Fulton, Missouri ("Vital Speeches of the day," XII, 15th March 1946, pp. 329-32).

¹¹ Truman's speech to Congress (The New York Times, 13th March 1947).

¹² "Foreign Affairs" (July 1947) — an article by Kennan entitled "The Sources of Soviet Conduct."

¹³ The Concise Oxford Dictionary.

the post-war world.”¹⁴ The most effective example of this lesson was over Cuba in 1962. When Kennedy and his advisors learnt that Russia was installing missiles and nuclear bombers in Cuba, they refused to negotiate with Krushchev or consider any sort of swop, such as the American bases in Turkey for the Russian bases in Cuba. They made it clear that they would settle for nothing other than unconditional withdrawal of the Russian weapons from Cuba. Not surprisingly, the generally hostile reaction of the British press to the Cuban blockade, caused many Americans to refer to us again as “appeasers” and “Men of Munich.”

In its second form “appeasement” has been used to refer, unfairly, to the actual men of Munich and to others who at times since the war have attempted to follow a moderate line. To their detractors, these “appeasers” are men who betray their country by attempting to come to terms with an enemy. The Americans seem to have been particularly troubled by this pejorative use of the word, and it has frequently been hurled against anyone who seeks anything other than a military solution, particularly during the Korean and Vietnamese wars. Keith Eubank¹⁵ points out that in the Korean War continued charges of appeasement almost prevented any sane discussion of American Far-Eastern policy, and quotes Senator William Knowland who declared that “appeasement was surrender on the instalment plan,” and equated lack of decisive action with appeasement: “Talk of seating the Reds in the U.N. is appeasement. Talk of establishing a neutral zone in Korea is appeasement. Waiting around for Mao Tse-tung to become Tito is appeasement.”¹⁶ The same sort of criticism has been levelled by the “hawks” against the “doves” over the war in Vietnam, as Senator Frank Church of Idaho complained in the Senate in February 1965: “Already cries of ‘appeasement’ are being directed at anyone who speaks up for a negotiated settlement of this escalating war.”¹⁷

¹⁴ “Patterns and Problems in U.S. Foreign Policy” — Saville Davis (“International Affairs,” October 1956).

¹⁵ *Op. cit.* p. 297.

¹⁶ “The New Isolationism: A Study in Politics and Foreign Policy Since 1950” — N. A. Graebner, p. 68.

¹⁷ Selections from the “Congressional Record” (1963-65) printed in “Vietnam” edited by Marvin E. Gettleman.

Negotiating from Strength

One lesson that many people have drawn from Munich is that it is fatal to attempt to negotiate from a position of weakness. Those who argue this way say that Chamberlain and Daladier were doomed to failure at Munich because they could only negotiate from weakness and were therefore forced to make concessions. Hence, they say, one must never go into the conference room unless one can negotiate from a position of strength. In Coral Bell’s words: “At the level of the man-in-the-street there is a consciousness — associated in America with the name of Yalta and in Britain with that of Munich — that past negotiations from positions of weakness have had results that were unpalatable, and that therefore better future results may necessarily presuppose a better negotiating position.”¹⁸

According to Miss Bell this phrase “negotiation from strength” has haunted Western diplomacy since 1950, when Churchill remarked “Certainly we must seek to negotiate from strength and not from weakness,” and Acheson commented that “The only way to deal with the Soviet Union, we have found from hard experience, is to create situations of strength.”¹⁹

In her excellent study of the subject in her book “Negotiation from Strength” (quoted above) Coral Bell shows the effect, by no means entirely beneficial, that the belief has had on U.S. diplomacy since that date.

Collective Security

I do not wish to say much on this subject since it is dealt with at length in another article in this supplement, but there is no doubt that the concept of collective security owes much to conclusions drawn from Munich and the immediate pre-war period. Western statesmen since the war have been determined to avoid the piecemeal advance of Communism by opposing it, as Hitler was not opposed until 1939, with military

¹⁸ “Negotiation from Strength” — Coral Bell, p. 209.

¹⁹ “Department of State Bulletin,” 20th March 1950, Vol XXII No 559, pp. 427-9.

alliances whose watchword is "so far and no further." Hence N.A.T.O., S.E.A.T.O. and C.E.N.T.O., whose intention is exemplified by the preamble to the S.E.A.T.O. treaty, September 1954 in which the parties to the Treaty state their intention "to declare publicly and formally their sense of unity, so that any potential aggressor will appreciate that the parties stand together in the area."

THE RELEVANCE OF MUNICH

Were the Men of Munich Wrong ?

So far, apart from a cautionary word at the beginning of this article, I have accepted the generally held view that Munich was a great and tragic mistake. But, in assessing the relevance of Munich for us today, we must look at the other side of the coin and consider the questions — Was it really a mistake ? Could the men of Munich have done anything else, and if so what would have happened ?

Once again I would like to stress that our view of Munich is biased because we see looming up behind it the rape of Czechoslovakia and the horrors of the 2nd World War. This does not necessarily mean that what was done at Munich was wrong. It is possible that Chamberlain and Daladier were right to act as they did, and that by doing so they allowed us to win rather than lose the war that followed.

I am reminded of the story of the motorist who in a vision of the future sees himself being involved in a car crash and losing his sight. The Devil appears to him and promises that he can prevent the accident from happening but that the motorist in return must give him his soul when he dies. The motorist agrees and a few days later he misses by inches the lorry, which in his vision he had hit. Exulting over the fact that the Devil has kept his word, the motorist relaxes his attention, takes the next bend too fast and his car leaves the road and falls over a precipice. In a flash he realises that he has merely exchanged a bad situation for one that is much worse. So, perhaps, with Munich. Hitler was all set to invade Czechoslovakia on 1st October, 1938. He only stopped his invasion

because at Munich he was given all he wanted for the moment without war. If Chamberlain and Daladier had stood firm, therefore, we might have had war in 1938 instead of 1939. We might well have lost the war.

In a chapter entitled "The Riddle of Munich"²⁰ Keith Eubank considers this possibility. No plans for an attack on Germany existed in 1938, he points out. There had not even been any planning with the Czech general staff, nor joint planning between Britain and France. France, who only had two light armoured divisions in 1938, did not have the offensive force to launch an attack on Germany and save Czechoslovakia. Her Air Force of 700 planes was hopelessly outnumbered and outclassed by Germany's 2,800 planes. Nor was Britain much better. Since only in Shakespeare's "Winter's Tale" does Bohemia have a sea-coast, Britain's Navy could provide little aid to Czechoslovakia. According to Eubank, Britain could only have provided two divisions on the Continent and only five, fully equipped, regular divisions were planned in 1938. The R.A.F. also was not ready for war. Less than 30 fighter squadrons were ready for service and only five were equipped with Hurricanes and none with Spitfires. There was also a shortage of pilots for these squadrons. The situation was similar in the bombing squadrons — lack of modern planes, of aircrew, of airfields and of servicing facilities. Britain was short of anti-aircraft guns and its radar chain was not completed. If the Battle of Britain had come in 1939 and not in 1940 we might well have lost it.

These are all "ifs," of course. Germany, too, was not ready for a world war in 1938, though she was more than ready for a war on one front. The breathing-space which the men of Munich earned for us, therefore, may well have been vital. If we wish to blame the leaders of Britain and France, perhaps we we should do so for their failure to meet the Nazi threat in 1936 and to re-arm then, and for their blindness in believing that a peaceful

²⁰ *Op. cit.* pp. 278-287, in which he cites, among other sources.

The Survey of International Affairs, 1938; "The Central Blue" by Sir John Slessor; "British War Production" by M. M. Postan; "War at the Top" by James Leasor; and "Royal Air Force, 1939-45" Vol I by Denis Richards.

compromise could be reached with Hitler, rather than for their concessions at Munich. It may well be that the "tragedy of Munich" was that there was really no other way in which Chamberlain and Daladier could have acted. Lord Butler in a recent television interview said: "I would have thought his (Chamberlain's) main mistake at Munich was getting that piece of paper from Hitler and imagining that Hitler was going to stand by it. I think the time he bought for us was very valuable, for two main reasons: one reason was that it enabled us to reinforce and build up our air force; and the second reason was that it enabled us to fortify the Commonwealth and unify it."²¹

Were the Conclusions Drawn from Munich Right?

In a previous section of the article I have pointed out four conclusions that were drawn from Munich which have greatly affected Western foreign policy since the war. Should we still let these conclusions affect us? Are they the right conclusions? Let us consider them again?

An aggressor is never satisfied. This lesson, so harshly learnt from the events of the 1930's, has an eternal relevance — vide Alexander the Great, Attila, Genghis Khan, Napoleon and many others, as well as Hitler. Today, therefore, we should be aware that Communism (Russian or Chinese) is set on world domination and that concessions are only likely to encourage it. In a frightening article²² Russell Braddon predicted China's conquest of the whole of South-East Asia down to the shores of Australasia within 10-15 years, and then he says, we will see ". New Guinea becoming to the Pacific what, in 1938, Czechoslovakia was to Europe." He is unduly pessimistic but the warning is clear — if the United States pulls out, or is forced out, of Vietnam before a peace or settlement is made then the Chinese may well be encouraged to march into the rest of South-East Asia. This lesson from Munich we must not forget.

²¹ An interview with Kenneth Harris on B.B.C. 1 on 26th July, 1966, and reprinted in *The Listener* on 28th July.

²² "After Vietnam — China's Conquest of the Eastern Hemisphere" (*Weekend Telegraph*, 10th June, 1966.).

Appeasement. We would be wise to be very wary of this word. If we mean by it the first post-war definition that I have given — that is, the making of concessions to preserve peace, then we should continue to realise the dangers of such a policy as emphasized immediately above. But we should also recognise that there are times when such "appeasement" is better than war, as perhaps it was in 1938. Do we seriously believe that every issue is worth a war, especially a nuclear war? This was one of the major weaknesses of Dulles' policy of massive nuclear retaliation. If we are not careful "non appeasement" can be as dangerous as "appeasement."

As for the second way in which the word "appeasement" or "appeasers" is used, as a term of abuse for anyone advocating a peaceful or negotiated solution, then the sooner it drops out of our vocabulary the better. International affairs have no more room for the foolhardy than for the cowardly. To pass over negotiation at the right time and in the right place is to court national suicide. What is more, those that cry "no appeasement" in this way because of what happened at Munich, so often base their views on a wrong premise. They believe that Hitler was bluffing and that if his bluff had been called he would have given way. Hence, they say, all you really need is to show firmness, a refusal to compromise, and a potential aggressor will always back down. But suppose, like Hitler in 1938, your aggressor is not bluffing, are these men really prepared to unleash their weapons of war? If not, then this policy is no more effective than appeasement in deterring an aggressor, and much more dangerous.

Negotiation from Strength. This might appear to be the most obvious of the conclusions to be drawn from Munich. Yet it, too, needs to be handled with care. "There is just one way in which you can make your country secure and have peace," Churchill said in 1913, "and that is to be so much stronger than any prospective enemy that he dare not attack you."²³ But if your opponent decides to do likewise all that happens is a

²³ Quoted by M. Wight in his essay "The Balance of Power" in the book "Diplomatic Investigation" edited by H. Butterfield and M. Wight.

massive arms race with all its inherent dangers.

Coral Bell says²⁴ that the trouble with the slogan "negotiating from strength" is that it has often meant that neither negotiation nor strength have been properly sought. Thus, she points out the United States has often been so busy making itself strong that it has missed chances of negotiation. There is also the question of how strong one has to be to negotiate with strength — as strong as the enemy? much stronger? The slogan can become almost meaningless in a limited war situation like Vietnam. The United States is far stronger than the Vietcong, North Vietnam, or even China at the moment but she cannot even persuade Hanoi to get round the conference table.

Collective Security. Without doubt the concept of collective security has proved its worth since 1945, but it also tends to give permanence to existing divisions. We must watch very carefully to see that the benefits of our alliances are not outweighed by the possibility of a settlement that might be obtainable if they were disbanded.

Conclusion

The Munich Crisis is one of those events which stands out from time in a position of eternal significance. Succeeding generations will ponder it anew and learn from it lessons applicable to their time, as we do today. But while Munich has much to teach us and has a tremendous influence still, we must not let its dead hand exert the wrong pressure upon us. We must be very careful not to draw incorrect historical analogies. The unfortunate results of doing so have been seen on several occasions since the war.

For instance, the dangers of what André Fontaine has termed the "Munich complex," are seen in the Suez episode, which arose from the British side, largely because of a false and emotional identification of Nasser and his seizure of the Suez Canal with Hitler and Czechoslovakia — "Macmillan, too, believed Eden's false historical analogies and saw Egypt through a forest of Flanders poppies and gleaming jack-boots. And be-

²⁴ *Op. cit.* p. 188 and following.

yond Macmillan there was Mollet, gifted and persuasive, who with the eagle eyes of an ex-Resistance man, saw Nasser as Hitler more plainly than anyone."²⁵

There is also the disastrous way in which Munich has made the Americans over-emphasize the importance of military strength in meeting any threat, and led them to see a military threat in every move of Communism. In Europe, in fact, such a reaction proved correct — the threat was largely military — but elsewhere in the world the Communist threat has frequently been largely political.²⁶ America, in its blind fear of Communism, has sometimes picked allies, such as Diem in Vietnam, whose regimes were opposed to the very principles Americans were trying to defend. The United States, says Saville Davis has "never learned that political force has come to out-rank military force she has permitted herself to be pushed into the position where the Communists wanted to push her; aligned against the revolutionary tides of the time."²⁷ Typical of this was her intervention in Dominica in April 1965.

We owe the United States a great deal. She has nobly donned the cloak of world security, which countries like Britain and France are no longer capable of wearing. But for her sake and for our sake, we must hope that she forgets soon this wrong lesson from Munich and stops reacting blindly to Communism by shoring up the nearest regime, however unpopular. "If the Americans could move from unpopular towards popular government under their aegis instead of from narrower to narrower base of power, then Communist wars of liberation could be honestly met — with the power of the ideals and convictions of the American people as well as their own arms and battalions."²⁸

Could we, perhaps, then really hope for a lasting "peace for our time."?

²⁵ "The Suez Report" — Hugh Thomas (*The Sunday Times*, 18th September 1960).

²⁶ "Patterns and Problems in United States Foreign Policy" — Saville Davis (*International Affairs*, October, 1965).

²⁷ *Op. cit.*

²⁸ *Op. cit.*

YOUR PROBLEMS

PRESENT :

ADEQUATE FAMILY PROTECTION
IMPROVED INVESTMENT YIELD
INCOME TAX SAVING

FUTURE :

EDUCATIONAL PROVISION
PENSION AUGMENTATION
HOUSE PURCHASE

These can be solved by modern 'programmed' LIFE ASSURANCE, specially 'tailored' by an EXPERT to 'fit' your own requirements, rather than by haphazard policies.

Whilst achieving this, the Income Tax Rebate on premiums is equal to an immediate return of 16½% per annum on your investment and as profits are tax free, they are worth *considerably* more than a similar investment, subject to tax.

The cost of cover for ALL FLYING has now been reduced drastically and as the Air Ministry pay 75% of this, coupled with the fact that Income Tax rebate is allowed on the *full* premium, the ultimate net cost is negligible.

All Officers should take advantage of this up to the limit of £5,000 on which the Air Ministry grants this concession.

Detailed advice, entailing no obligation, will be forwarded, on learning your date of birth and requirements, by—

FRANK S. ULYATT

JOHN ULYATT. W. MICHAEL KINGSTON)

Insurance Consultants

19-21 MUSTERS ROAD, WEST BRIDGFORD, NOTTINGHAM

Telephone No. NOTTINGHAM 89851 and 88975

Don't take risks with Insurance! Consult an expert **BROKER**, who will give you the benefit of many years' experience and recommend the **BEST** Company for your needs.

CONFLICT OR CO-OPERATION IN SPACE

by WING COMMANDER E. SHARROCK

"I believe that the exploration of space will have a profound effect upon how we look at our life here on earth. It will put all our affairs in a wider and more wholesome perspective.

Ever since Copernicus we have known that our earth is a small planet in an immense universe. But while we have known this intellectually and theoretically, most of us have not really taken it to heart, not really felt it in the marrow of our bones.

*As the full significance of that fact is brought home to us by the actual exploration of space, it will seem increasingly absurd that we have not better organized our life here on earth."*¹

INTRODUCTION

From earliest times, man has travelled by land and sea, but it was not until 1903 that the first controlled flight was made by the Wright brothers. Yet, only 54 years later, on 4th October 1957, the first satellite was launched into orbit and within four more years, on 12th April 1961, man took his first journey into space. The situation today is similar to that which existed when Columbus discovered the New World, for we are entering a new phase in man's existence, and the results of our explorations could change our whole way of life. The New World territories were annexed by the nations who first discovered them; their economic potential was exploited and nations fought

each other for land. Harbours became not only trading ports but also bases from which to attack enemies, and a general 'free for all' with little semblance of international law prevailed.

National rivalry and conflict might now extend into space. We are beginning an age which was the realm of science fiction only a few years ago, yet those tales usually centred around international teams of earthmen exploring space together. Such conflict as occurred was with creatures from other planets, and rivalry on earth appeared to be transcended by common endeavour. Now, for the first time in history, man is able to obtain an outside view of his world with implications which could make internationalism and interdependence vital requirements in world politics. Unfortunately, it may well be that the abilities of our scientists have outstripped those of our politicians; that we are approaching the achievements of the 'sixties and 'seventies with the politics of the 'fifties. Before considering whether international action in relation to space activities justifies such criticism let us first review some of the military and peaceful applications.

MILITARY SPACE OPERATIONS

The military operations possible in space divide broadly into two groups — counter-

¹ From an address by Vice-President Hubert H. Humphrey at the Robert Goddard Memorial Dinner, Washington DC, 16th March 1966.

earth and counter-space. It is natural for man to see space vehicles as an extension of earth operations and to consider how they can assist him. The most often quoted idea is that of the nuclear bomb satellite which might, on command, descend to explode on its target or explode in space and cause damage by radiation. Such a satellite can be in synchronous orbit (i.e. rotating in synchronism with the earth, thus appearing stationary over its target) or in a random orbit passing over its target at intervals. The former would give continuous coverage but requires a high orbit (19,350 nautical miles), whereas the latter can be lower but requires several satellites for continuous coverage.

Major disadvantages of such satellites are their cost and the risk of accidental operation. For this latter reason alone it is unlikely that any nation would deploy such a weapon without first having the ability to recover it safely or to send manned vehicles to inspect or neutralise it. There is a further disadvantage, which paradoxically is also one of the bomb satellite's advantages, in that the enemy will be aware of the satellite's existence and also its exact location. The psychological effect of this must act as a great deterrent to an enemy, but it also means that he might intercept and neutralise it; and he may well argue that to do so is not a hostile act, but legal self defence. This raises the question of whether a satellite infringes the sovereignty of a nation over which it flies, and whether there is any legal precedent for shooting it down, intercepting it, capturing it, or interfering with it in any other way. This consideration affects all space operations and will be dealt with separately later.

Satellites can also be used for earth reconnaissance. Again the orbit may be synchronous and thus give a continuous record of events in one area, or may sweep several target areas at much lower altitudes in random orbit. There might even be an ability to manoeuvre the satellite so as to select the viewing area at will. The survey can be photographic, televisual or infra-red. Already such satellites are in orbit, and the ultimate appears to be a manned version, enabling events to be interpreted as they occur. This dispenses with the transmission of much unnecessary data which occurs with the present types. The American Manned Orbit-

ing Laboratory (MOL) is basically a manned reconnaissance satellite, and is planned to take a crew of four on 30-day orbital flights starting in 1968. Typical duties of such a vehicle are the surveillance of military and civil developments, radar and radio eavesdropping, detection of ballistic missiles, anti-submarine surveillance and the functions of a command and control post in time of war.

A ballistic missile could be detected from a satellite within two minutes of launch and it is logical to consider using satellites to intercept missiles. Early interception could be achieved, before decoys had time to deploy, and possibly even over the enemy's own territory. However it has been estimated that up to 3,500 anti-missile satellites would be needed to give complete earth coverage and deployment on this scale is hardly likely.

Knowing the potential of satellites, a nation must keep constant scrutiny of all those thought to be hostile. At present the United States keeps track of over 1200 items in space, and must guess their purpose. The desire therefore exists to be able to rendezvous in space with such objects, to be able to inspect them either electronically, or physically and to be able to neutralize or destroy them, if need be. Such action by one nation against the property of another would clearly carry the risk of conflict.

Ideally, this could be an opportunity for United Nations supervision, perhaps even for a United Nations force to undertake such roles. Their task could be surveillance of potential trouble areas in the world, and a general monitoring of activity on the earth and in space. Such a role would be aimed at peace-keeping and could be combined with other operations arising from the non-military applications of space activity. However the present status of UN and the costs involved make such a project purely a pipe dream.

THE PEACEFUL USES OF SPACE

Many examples of the non-military uses of outer space exist already. In general it can be said that these uses arise from the large areas of the earth's surface scanned by

a satellite in its orbit. Perhaps the best-known satellite to date is the "Early Bird" synchronous satellite which was launched in April 1965 and which provides communications between North America and Europe. This together with other satellites such as the two launched last year can provide worldwide television and radio coverage, without the atmospheric interruptions to which long range radio communications are subject. The capacity of such systems could replace our present cable systems and could give very great advantages in communications with supersonic transport aircraft. Advantage can also be gained from the weather satellites of which the United States TIROS, NIMBUS and ESSA series are examples. These check cloud movements, televisually and by infrared and the implications of such a system for long and short term weather forecasting are tremendous. A sufficiently comprehensive view of earth cloud patterns can be given to enable cloud and weather trends to be predicted for months ahead.

The long distance view of our earth has also given opportunities for confirming the accuracy of our maps. United States GEOS 'A' satellites have been launched which will survey the earth's gravitational field and establish earth co-ordinates to within ten metres. Astronomy also stands to benefit from the use of telescopes in satellites. Present telescopes lose considerably by atmospheric attenuation and distortion, and a comparatively small one mounted in space could tell us far more about the universe than our present giants.

Finally we have the value of satellites for navigation purposes. This is really an extension of astral navigation. Like a star, a satellite's position relative to earth is precisely known at any time but, whereas the star is often masked by cloud, the satellite can be a radio beacon or transponder on which bearings can be taken at any time. The advantages of this to aircraft and ship navigators are obvious and such systems are already in use by the US Navy.

Space activities can thus improve our knowledge of the earth and space, our communications, our weather forecasting and our navigation. The examples quoted have been mainly American because little is

known of the Russian programme. The duplication inherent in this independent effort is obvious, and the savings and benefits from an international programme equally obvious.

INTERNATIONAL AGREEMENTS ON SPACE ACTIVITIES

Much of the original impetus towards co-operation in space arose from the International Geophysical Year (IGY) organised by the International Council of Scientific Unions (ICSU) in 1957. In August of that year, during a meeting in London of a sub-committee of the United Nations Disarmament commission, came the first proposal that the United Nations should concern itself with the peaceful uses of space. As a result, an ad-hoc committee was formed in December 1958, replaced in December 1959 by the United Nations Committee on the Peaceful Uses of Outer Space. Disagreements prevented this Committee from sitting until November 1961, and even then, this was only achieved by agreeing to operate without voting — effectively a veto arrangement.

In December of the same year, the General Assembly adopted a resolution setting out the following principles:—

- a. International Law, including the UN Charter applies to outer space and celestial bodies.
- b. Outer space and celestial bodies are free for exploration and use by all states in conformity with International Law, and are not subject to national appropriation.

It was not until two years later in December 1963 that a Declaration embodying the above principles was adopted by the United Nations General Assembly. This was followed by further agreements that space activities should be peaceful and weapons should not be located in space.

Recently there have been suggestions by President Johnson that an agreement on uses of outer space might be based on the Antarctica Treaty. This Treaty also grew out of the activities of the International Geo-

physical Year. Signed by 12 Nations in December 1959, it broadly covers a suspension of territorial claims in Antarctica, free use of the area for scientific research, and the establishment of a mutual inspection system to prevent military activities. Now how relevant could this be to outer space? A major point of similarity is that no known economic potential exists in Antarctica at present, nor any in outer space. Because of this, nations might be magnanimous in sharing their scientific investigations. However, should some vital exploitable economic resources be found in Antarctica, is it likely that nations could refrain from grabbing as much as possible? The parallel with outer space needs no elaboration.

There is also a flaw in the comparison between Antarctica and outer space, for the military advantages of the latter could be paramount in future conflicts. Therefore, whilst the Treaty may work satisfactorily in Antarctica, a nation would feel that its security was more threatened by space activities, and would be unlikely to accept so permissive an agreement.

It may well be that the first real co-operation between East and West will come from bi-lateral agreements between America and Russia. In August 1963 the NASA Deputy Administrator, Dr Hugh Dryden, wrote to General Anatoly Blagonravov of Russia saying that the United States was willing to discuss additional possibilities for co-operation in space. The Russian reply was that, once both nations had put instrumented payloads on the moon, discussion and co-operation on manned lunar landing programmes could begin. This situation was reached on 1st June 1966 with the landing of the Surveyor satellite on the moon, but as yet there is little sign of co-operative progress.

What would be the advantages or disadvantages of a joint United States/Russian lunar programme? The present space race is based on the military implications quoted earlier, but it also arises from the desire of both nations to prove their technological superiority to the uncommitted countries of the world. From the outset, Russian space achievements have been used for political ends. Sputnik I in October 1957 lent credence to the claims of an ICBM capability made a

few months earlier; Lunik II hit the moon just before Krushchev visited the United States; Sputnik IV, the first (unmanned) spaceship was launched on the eve of the ill-fated Paris summit conference of 1960; Titov was launched in Vostock II in 1961 just before the building of the Berlin Wall; and Komarov's recent ill-fated space flight commenced on Lenin's birthday anniversary. This sort of space propaganda inevitably spurs the United States to equal, or greater efforts.

It now seems likely that neither country will achieve sufficient technological superiority over the other to give a great political benefit. A co-operative programme could give a boost to the 'peaceful' image which both countries seek to project. Russia might gain rather more from her image as the once-backward country now competing with the giants, but she is likely to do this anyway. What could be lost by a joint programme — security? Accepting that both countries are achieving much the same technical progress it appears that each has an equal amount to gain by the exchange of information inherent in co-operation. Each can already guess at the other's methods by its achievements, and military techniques need not necessarily be prejudiced by a joint lunar venture. The real value from such a programme would be that the co-operation involved might pave the way to a verifiable ban on military space activities.

However, by now both nations separate programmes are well advanced and, despite disasters, the aim still seems to be to land a man on the moon in this decade. Knowing the slow speed of international negotiation, it seems unlikely that any joint programme can be achieved before the first national lunar landings have been made. Thus, despite the risks of purely national programmes in space, and despite the advantages inherent in an international programme, it seems inevitable that national pride and fear will drive the United States and Russia further into a space race. We seem embarked on a struggle to extend the military parity existing now on earth to a similar parity in space, together with a wasteful duplication of all the peaceful benefits which can come from space activities.

POSSIBLE FUTURE CONFLICT IN SPACE

Despite UN agreements that weapons should not be located in space, a Nation may still feel itself threatened by another's satellites. Where such a threat arises from an aircraft the rights of the country overflown are clear. Air law states that a nation has sovereignty in the airspace over its territory. However there is no definition of the height at which airspace ends. Obviously some limit is needed in order to determine what constitutes infringement of sovereignty. There have been many learned discussions on the subject. One suggestion is that airspace be defined as ending where atmosphere ends — a limit difficult to define. Another relates to the limiting altitude for aerodynamic lift. There does however seem to be a general agreement that the defined limit of airspace should be at about 50 — 70 nautical miles altitude.

Assuming a limit to have been defined, what is the legal right of a nation to use a satellite to observe or threaten another state, and what action can the other take to counter the threat? The United States keeps reconnaissance satellites in orbit and argues that, when facing a potential opponent as secretive as Russia or China, it is essential to security and survival to know their warlike preparations. She claims that such action is defensive and justified under the United Nations Charter. Russia, on the other hand, says this is aggressive espionage and therefore illegal. However, she has not seriously pressed her protests, and no doubt has reconnaissance satellites of her own.

The issue clearly hinges on the definition of the legal right of states to act in self defence outside national territory. The accepted definition of this right was established in 1841 by the then United States Secretary of State : to justify action a nation must show "a necessity of self-defence, instant, overwhelming, leaving no choice of means and no moment of deliberation."² — but nothing unreasonable or excessive must be done. If we accept this definition (and the Nuremberg

trials accepted it) it can be argued that the United States faces an ever-present threat of missile attack from Russia, and is entitled to seek as much warning as possible. Her need for such action is "instant, overwhelming" and certainly "leaving no moment of deliberation." Thus there appear good grounds for the United States action so long as hostility exists between her and Russia or China, and providing her information gathering is confined to the threat. However such actions clearly carry the risk of conflict at some time in the future.

CONCLUSION

The nations of the world, and in particular the United States and Russia, are faced with the choice of co-operative progress or a possible extension of world conflict and rivalry into space. At present the world appears to be set on the latter course and there seems little hope of a change in the near future. However, there may be consolation in the fact that the same fear which now drives us, may yet force upon the world a desire for some system of international co-operation.

BIBLIOGRAPHY

1. Joseph M. Goldsen : *Outer Space in World Politics*. Praeger (New York) 1963.
2. M. N. Golovine : *Conflict in Space*. Temple Press (London) 1962.
3. *Interavia* 10/62 : *Space and Politics*.
4. *Air Force and Space Digest*. February 1962 : *Self Defence in Outer Space and the UN*.
5. *Air Force and Space Digest*. October 1963 : *Surveillance from Space*.
6. *Air Force and Space Digest*. November 1964 : *Problems and Prospects of a Joint United States/Russian Lunar Exploration*.
7. *Air Force and Space Digest*. October 1965 : *MOL-Evolution of a Decision*.
8. *Air Force and Space Digest International*. May 1966 : *International Co-operation in Space*.
9. *Space/Aeronautics*. December 1965 : *The Soviet Space Programme*.
10. *Space/Aeronautics*. January 1966. *Aerospace in Perspective*.
11. *Commonwealth Survey*. 8th December 1959 : *The Antarctica Treaty*.
12. *Commonwealth Survey*. 2nd February 1960 : *Outer Space : International Co-operation*.
13. *Military Review*. December 1964 : *Who owns the unknown?*
14. *The Year Book of World Affairs 1965 : UN and the Law of Outer Space*.

² Quoted in "Self Defence in Outer Space." *Air Force and Space Digest*. February 1962.

NOTES ON CONTRIBUTORS

Flying Officer D. J. Silk joined the R.A.F. as a cadet at Henlow in 1961. He obtained a Double First in Mechanical and Electrical Sciences at Cambridge, and is at present engaged in research into communication networks, leading to the PhD degree. In December 1966, he was elected a Research Fellow of Queens' College, Cambridge.

Flight Lieutenant P. T. Robinson joined the R.A.F. in 1958 after graduating from the University of Wales where he read History. His main interests when he joined the staff at Cranwell were in economic and social history but he has since developed an interest in International Politics.

Flying Officer M. Carrigan attended school at St. Bede's College, Manchester and then served a seven year apprenticeship in industry. He gained an H.N.C. at the Royal College of Advanced Technology, Salford, and after a short period with I.C.I., joined the R.A.F. as an Engineer Officer in July, 1966. He is at present on no 35 E.O.G. course at Cranwell.

Wing Commander J. Walsh is an historian who became converted into a political scientist by means of a tour at the American Air Force Academy where he was an associate professor in the Department of Political Science. He is now Senior Tutor (Humanities) at the R.A.F. College, and teaches a broad Strategy-Defence Policy course to cadets.

No 94 EI Entry The ten members of No 94 EI Engineering course began their studies at R.A.F. Cranwell in April 1966. During their first year course on physics, taught by Flt Off. A. Jarman, they were impressed by the laser equipment at Whittle Hall, R.A.F. Cranwell and were inspired enough to submit the article on Lasers and Masers. No 94 EI course graduates in August 1968 but will remain at Cranwell for a one year post graduate course.

Flight Lieutenant A. C. Rogerson read Modern History at Oxford from 1956-59. While there he flew with the University Air Squadron and so progressed naturally into the R.A.F. when called up for National Service. After two years as a National Service Education Officer, he had a brief flirtation with administration in the United Kingdom Atomic Energy Authority, before returning to the R.A.F. in 1963. Following a tour on a V-bomber station, he was posted to Henlow and thence, as a result of the merger, to Cranwell in 1965. He is now an instructor in the English Department.

Wing Commander E. Sharrock assumed his present position of Chief Instructor in Systems Engineering at R.A.F. College Cranwell in January 1967. He is a BSc (Eng) graduate from London University who joined the R.A.F. as a National Service Education Officer in 1949. After 18 months service at R.A.F. Henlow he transferred to the Technical Branch and attended the 1953/54 Guided Weapons Course at Shrivenham. During his service he has held positions as Squadron Engineer Officer and has been greatly concerned with Guided Weapon Development Projects.

BOOK REVIEWS

THE MONTGOMERY LEGEND

R. W. THOMPSON

Allen and Unwin

32/-

This is Book One of one more book which examines what the blurb calls "the foundations and substance of the Montgomery Legend." The process dates back at least to the publication in the late forties of Liddell Hart's "The Tanks" and continues through the fifties with his editorship of "The Rommel Papers," Fuller's "Second World War," Connell's "Auchinleck" and enters the sixties with Corelli Barnett's "The Desert Generals."

The Montgomery Legend always increased in intensity in direct proportion to one's distance away from the fighting troops. (The possible exception to this was the 51st Highland Division who, since they arrived in the desert as late in the day as the Legend himself, were particular favourites and received almost as much publicity). "Monty" was always more of a hero to the factory girls of the north than he was to the veterans of Beda Forma or the "New Zealand Box." Amidst a growing library of books on the war in the Mediterranean, Mr Thompson's new book is notable for three important reasons.

First of all he examines objectively and concisely the reasons for Churchill's removal of Auchinleck from Command of the Middle East in the summer of 1942. This occurred at the moment when Auchinleck had turned retreat into counter-attack, saved Egypt and drawn up the plans for the battle of Alam Halfa. This battle was subsequently fought, without acknowledgement, by Montgomery and it is widely considered that had it been fought under Auchinleck the battle of Alamein would have been rendered unnecessary. Auchinleck's removal is discussed against the background of 1942, the year when Britain first found herself "caught between two kinds of civilization and striving not to commit herself to a choice she is neither European nor American." Mr Thompson recounts how "on the 23rd the Prime Minister left for home well pleased with himself. His catharsis was complete. The result of his intervention had been to set back the offensive by six weeks and to recreate the myth of Rommel."

But what of the myth of Montgomery? "In the summer of 1942 Britain needed a Champion she needed a Victory It was politically necessary. The Champion Britain chose, quite fortuitously, and even by accident (sic), was General Montgomery. We needed a bold champion and a glamorous man and General Montgomery was neither bold nor glamorous. The choice once made could not be easily changed, and from the military point of view it seemed unlikely to matter. There is a limit to the number of generals even a Churchill may sack! It is the author's contention that it was for this reason that this "simple tactition of the old school," whose one idea in attack was to mount a set piece operation reminiscent of the first World War, was allowed to battle his slow way from Alamein to the Elbe.

It is on the third count, however, that the author will endear himself to those who have served at the cutting edge of an army. Spaced throughout the book are passages which speak for the man on the battlefield. They may be read with profit by all armchair strategists, students of military history and those who aspire to high command. "A battle is many things to many people To all it is an immersion in elemental violence testing body, mind and spirit to the limits those who have remained steadfast will have helped to maintain the subtle links of morale . . . their names will never be known and their reward will be that they have discovered resources in themselves of which they might otherwise have remained forever unaware. No one who has endured the ordeal of battle is ever quite the same again. He is usually better equipped to face whatever life may hold for him including death."

This is a book for those who are genuinely interested in the Eighth Army, either because of personal associations or because they are students of military history. The literary stylist may find too much repetition; the author is rather inclined to drive his points home with a steam hammer. Furthermore the objective examination of our national myths is always a trifle painful to the majority of people who like King John as a "bad thing" and Richard III as the arch-typical "wicked uncle." There are those who would disagree with the author that "myths and legends are always signs of weakness"; reality is very complicated, may not the myths of history play an important part in national morale? Churchill certainly thought so for he spent much time and trouble on his work "The History of the English Speaking People." The legend of Montgomery could be described with some truth as a Churchillian myth but, like Alfred and the cakes, it will probably last.

G.R.E.W.

ASTRONAUTICS IN THE SIXTIES

A Survey of Current Technology and Future Development by KENNETH N. GATLAND. Paper back edition published by *Iiffe Books Ltd.* at 7s. 6d.

The science of Astronautics which sprang from foundations in Missile Technology, has now become a rapidly expanding field in its own right, the rate of progress being such that important advances come quickly one upon the other, with little time for each to be assimilated. This extremely informative, and well written book, which was first published in 1962 set out to place a multitude of projects into perspective, and to show where the various avenues of development were likely to lead both in the present decade and beyond. The years since have shown how successful the author was in this respect since our current technology has already outstripped many of what at that time were regarded only as promising possibilities.

For his information the author has drawn on large numbers of individuals, publications and industrial

research organisations, and performed a mammoth task in turning a wealth of material into a relatively easy to read continuum. He starts by discussing the technical problems of rocket propulsion, and various new and specialised techniques developed as a result of these requirements, and goes on to describe in detail various types of space vehicles designed for specific purposes such as space research and exploration, communications, navigation, surveillance and weather forecasting. Other chapters deal variously with the military aspects of space, robot explorers, solar probes, mega-pound boosters, men in space, men on the moon and with the prospects ahead in the decades beyond the sixties.

Because of difficulties of access to information, elsewhere the book deals largely with research carried on in the United States, and to a lesser extent in Russia, but includes an informative chapter on space research in Western Europe. It is perhaps unfortunate that at this instant in time, much of the information is already dated. Ample illustration is provided through carefully selected plates and three dimensional line drawings, and the end product is a serious factual approach to space exploration in the widest sense, written in such a way as to be readable by anyone interested in scientific progress and achievement.

A.W.

THE ANATOMY OF THE AEROPLANE

DARREL STINTON

Published by G. T. Foulis

63/-

Any teacher of Aeronautics is aware of the apparent gap which often exists in the mind of the student, between aeronautical principles which can be neatly derived, and the engineering practice which is involved in the production of the many-purposed aircraft. The author, drawing on his experience as both test-pilot and lecturer, has based his book on a set of notes originally prepared for student test-pilots, and has attempted to bridge this gap, undoubtedly meeting with a large measure of success.

The book includes a minimum of fundamental theory, the mathematics employed is negligible, and more often than not the author confines himself to merely quoting the expression of principles in terms of the appropriate design parameters and then showing how these have to be refined to meet the practical design case. From all this it is fairly clear that in order to obtain maximum benefit the reader requires at least some background of aeronautical theory.

The book is easy to read, and is full of appropriate photographs and well annotated diagrams. The theme is logically developed from discussion of the physical and operational environment and operational requirements of aircraft, through the structural and aerodynamic requirements which have to be met, to the final aircraft configuration as a compromise between these often conflicting requirements. The whole point of the book is given additional emphasis by a final set of appendices, each of which, in turn, deals with particular applications in the form of various projected designs.

This is certainly not a text-book in the widely accepted sense but it is a 'must' for any 'student' of aircraft design.

A.W.

HEROES AND AEROPLANES OF THE GREAT WAR 1914-1918

JOSEPH A. PHELAN

Arthur Barker

42/-

It's a matter of glamour, I suppose, and deeds of derring-do. If, in a psychological game of association, you fed your subject the idea "World War I Air Forces" you would get the reactions, "Ball," "Bishop," "Richthofen," "Immelmann," "Pup," "Brisfit," "Spad," "Camel." All, you will note, fighter pilots and fighter aircraft. If you tried the same experiment with World War II you would get the answers "Spitfire," "Bader," "Battle of Britain," "Stanford Tuck" and, only as an afterthought, "Gibson," "Lancaster," "Cheshire." And yet, as Douhet and Mitchel and Trenchard all knew, the real function of an air force is offensive and its characteristic weapon is the bomber.

Mr Phelan's book goes some way to redress the balance. It is true that his heroes are the fighter pilots, but his story of the development of the strategic bomber is the most fascinating and most significant part of his book. The speed of technical advancement is astounding. Sir Thomas Sopwith recollects the first half of the period :

"We literally thought of and designed and flew the airplanes in a space of about 6 or 8 weeks. Now it takes approximately the same number of years. From sketches the designs went to chalk on the wall. Until about the middle of the war there was no stressing at all. Everything was built entirely by eye. That's why there were so many structural failures. We didn't start to stress airplanes at all seriously until the Camel, in 1917.

Flying in those days was empirical We just flew by the light of nature. Some of us were lucky and some of us weren't.

Yet in the autumn of 1917 the German Staaken RV became operational. It was a 5-engined bomber with a span of 138 ft. 5½ ins. Thus, if in these statistics alone, it outclassed the Lancaster by one engine and 36 ft. Its bomb-load, of course, was somewhat less than that of the Lancaster ; but, even so, it could lift nearly 4 tons.

The standard German bomber, the twin-engined Gotha GV had come into operational service at the end of 1916. It was on 13 June 1917 that 21 of these machines carried out the immensely significant daylight raid on London ; significant, not because of the casualties which amounted to 150 killed and 350 injured, but because of the results. Public clamour demanded an answer to this invasion of the homeland. The immediate result was the withdrawal of fighter squadrons from the Western Front. The German bombers had forced the R.F.C. into a defensive posture ; a gambit that the R.A.F. was to employ against the Luftwaffe a quarter of a century later. The long-term result was the Smuts Committee, from

which sprang the Royal Air Force as an independent service, and the first British Strategic Bomber Force, consisting of 4-engined Handley Page V/1500s with a span of 126 feet and an endurance of 17 hours.

All these aircraft are most beautifully illustrated in the book ; for, in truth, it is a picture-book. It contains more than 400 richly executed paintings and drawings. The text merely supports the illustrations, but it has the qualities of a meat-extract : it contains the maximum of nourishment in the minimum of volume. It is amazing how much solid fact is contained in this commentary that is written in so deceptively simple a style.

Mr Phelan has achieved a remarkable combination. He has given us a superb picture book which is also a work of reference.

G.C.T.R.

THEORETICAL AERODYNAMICS

L. M. MILNE-THOMPSON

Macmillan

50/-

This book is the fourth edition of a standard aerodynamics text first published in 1948. Then as now it must be considered a serious text dealing almost exclusively with the subject of theoretical aerodynamics and thus is not a book for the casual reader.

The author has retained the approach used in his earlier editions and gives a comprehensive if not all-inclusive treatment of his subject. This edition is not a simple reprinting but does include a reasonable amount of new material. Included in the fourth edition is a chapter dealing with conical flow, presented in the author's style of mathematical rigour and easy-to-read (if not always easily understood) explanatory material.

I do question the author's statement that the mathematical equipment of the reader need not extend beyond the *elements* of differential and integral calculus since his approach, in my view at least, requires a fairly advanced level of mathematical proficiency for the material to be fully appreciated and comprehended.

I am also critical of the failure of the author (or his publishers) to bring the illustrations in the book up to a modern standard. This criticism also applies to the text where terms such as "metacentric ratio" are used in preference to the more common expression today of "static margin."

In addition, although the author makes quite a flourish of his intent to use vector methods freely, by the standard of other modern authors of comparable stature, this work can hardly be considered *avant garde* in its use of vectors ; in fact one may be critical of the author's failure to have employed vectors and vector notation more extensively.

On the whole, an excellent text or reference book that the serious undergraduate should be aware of and, time permitting, well-acquainted with.

D. E. Tonini.

CUSTOMS OF THE SERVICES

New Revised and Enlarged Edition.

Group Captain A. H. STRADLING, OBE

Gale and Polden

10/6

A cynic reading this book today may think that much of the advice offered would be more apposite to an "Adam Adamant" than an R.A.F. Officer and that only a fastidious square would be guided by it in our present materialist world. Such thoughts would indeed prove that the cynic knows "the price of everything and the value of nothing."

In the services today it is gratifying to note that the age of social correctness and good manners is not completely dead. This book has much to offer to most officers and achieves its direct aim of assisting newly commissioned officers to appreciate the customs of the services. Yet it would be wrong to conclude that this book is solely concerned with etiquette and social correctness. It deals also with the origins of service customs and insignia and gives advice on command, leadership and discipline which is surely useful to all officers.

This new, revised and enlarged edition is, therefore, good value, but in its presentation it is marred slightly by the index being out of sequence from page 83 onwards and appears dated by its reference to the Air Council commending it to all officers.

D.F.B.

THE HELICOPTER AND HOW IT FLIES

by JOHN FAY

Pitman

17/6

This book is written by a test pilot and is in the "Without Formulae Series." It is evidently intended for "the pilot, interested layman, apprentice or technician transferring to helicopters," and it should provide a useful introduction for this type of reader. The main features and flight characteristics of the helicopter are well described but many of the technical explanations are unsatisfactory. For example, the phase lag between blade pitch and flapping is attributed to inertia but in fact it is a consequence of the system being forced at its natural frequency. The phase lag is independent of blade inertia and it is quite easy to explain this in lay terms. There is thus no justification for the simple but incorrect explanation.

The order in which topics are introduced does not always appear to be logical. Blade flapping is discussed on p. 34 but one of the main reasons for providing flapping hinges, viz to eliminate dissymmetry of lift in forward flight, is not mentioned until p. 75. Many of the illustrations are vivid and informative but others seem rather pointless or even inaccurate.

The author makes acknowledgements to a long list of distinguished helicopter engineers and pilots. With such helpers one would expect the author to produce a work of impeccable technical accuracy. Unfortunately this is not the case, even allowing for the difficulty of writing for the non-technical reader.

F.A.B.

ROBIN HOOD



THE BEST I.P.A. BREWED
A HOME ALES PRODUCT

