ORBIT

Christmas and New Year Issue

December 1962

The Journal of the Rutherford High Energy Laboratory

Christmas Message from the Director

I am very glad to have access to the front page of this issue of ORBIT to give all members of the Laboratory, their families, and all other readers, my best wishes for Christmas and the New Year.

1962 has been a very busy but also a fruitful year. It has, however, been marred by the tragic loss of our friend and colleague John Wilkins, without whom those of us who knew him well can never be quite the same again.

Nimrod, after hard work by our own staff, our colleagues of the U.K.A.E.A., and our contractors, has successfully passed through a number of important stages and a multitude of minor crises, without change in the estimated completion date. The P.L.A. has gone smoothly on to a 24-hour schedule and has become a research centre for a large number of university colleagues. The "Chemists' Cyclotron" project has been launched, and the "Oxford Project" has made good progress. The Atlas Laboratory has been started, and the Restaurant has been started, stopped, and started again. Our numbers have grown to nearly 900, and some of us still work in "temporary" huts. ORBIT has been launched and is a credit to its outspoken contributors and to the Laboratory. Our sister laboratory, the Electron Laboratory, has been approved at last and promises to make a very quick start.

1963 is going to be tough but exciting. We must push Nimrod through to completion, and adapt ourselves to its operation and use. We shall have, at last, the opportunity to become a research laboratory all over, and not just in the P.L.A. area and a few pockets in Building R.1. We shall enjoy the privilege of working with even more university colleagues, who will spread more widely around the Laboratory.

I thank you all for your hard work and friendly cooperation during 1962. I wish you all a good Christmas holiday, which you have earned (and Hogmanay too, if you are Scottish by birth or sympathy), and a happy and successful 1963.

T. G. Pickavance

The Electron Laboratory

Professor A. W. Merrison, Professor of Experimental Physics at the University of Liverpool and Director of the Electron Laboratory, contibutes this article on the new National Institute project.

In the last two years the whole aspect of elementary particle physics has changed, and the subject has started to advance in exciting and quite new directions. Some of the new work has started on the basis of new theoretical ideas and some has been the result of experiments throwing light on questions which have been puzzling physicists for some time.

It has become very clear that some of the most rewarding parts of the subject in the future will be those which are opened up by experiments with electrons with energies of a few thousand MeV. For example, as a result of work with the electron linear accelerator at Stanford, California, and with the electron synchrotron at Cornell, we are beginning to get much clearer ideas of the structure of the proton and the neutron and to get some idea of the way this structure is related to other phenomena in this field. High energy electrons are particularly suitable as probes for this sort of analysis, principally because their dominant interaction with nucleons (i.e. protons or neutrons) is through the Coulomb field, which is certainly well understood. Another reason is that their de Broglie wavelength is small compared with the dimensions of the nucleon (which has a radius of about 10^{-13} cms).

It is as a result of work of this kind, and other speculations about possible experiments in this field, that the National Institute for Research in Nuclear Science has undertaken the construction of a 4 GeV electron synchrotron, and a new laboratory to house it, in the North of England.

The particular merits of an electron synchrotron in this energy range were first pointed out to the Institute in April 1960 by J. M. Cassels, who was at that time working at Cornell. As a result of his suggestion the Institute appointed a working party, under the chairmanship of J. C. Gunn of Glasgow, to look into the fields of physics which would be opened up by an electron accelerator in the energy range of a few thousand MeV, and to say what was the best sort of accelerator to build in order to do physics in this region. This working party in November 1960 came unanimously to the conclusion that there was a very strong case indeed for building an electron synchrotron of 4 GeV in the U.K. They recognised however that the competition in this field was already very keen and pointed out that if full value was to be secured from this project it should be started immediately. The Minister for Science announced financial approval of the project in July of this year.

The major technical problem in building a high energy electron synchrotron, or any electron machine where the electrons are constrained by a magnetic field to move in a circle, is easily explained. While the electrons move in a circle there is, of course, a centripetal acceleration. Because of this acceleration the electron radiates electromagnetic waves and the intensity of this "synchrotron" radiation can be calculated in a completely classical manner. A rough approximation for the energy radiated per turn by an electron is

$$\Delta E = \frac{10^{-13} E^4}{R}$$

where ΔE is the energy loss/turn in MeV, E is the energy of the electron in MeV and R is the radius of curvature of its path in metres. For our 4 GeV synchrotron we have a radius of curvature of 20 metres so $\Delta E = 1.3$ MeV/turn. The radio-frequency system must develop at least 1.3 million volts to accelerate electrons at this energy. Because the radiation loss goes up as the fourth power of the energy this rapidly sets a practical limit to the maximum energy of such accelerators. Even more alarming, is the power which must be supplied to the beam. Suppose the beam current is 5 μA then the energy lost per turn (i.e. in 0.6 microsecs.) is 6.5 joules or an instantaneous loss rate of 11 mega-watts! Again the radio-frequency system must be capable of supplying this.

There are at the present time three high energy electron synchrotrons besides our own either working or being planned. These are at Cambridge, Massachusetts, at Hamburg and at Yerevan in Soviet Armenia. These are all machines with a maximum design energy of about 6 GeV. That at Cambridge operated successfully earlier this year and the German and Russian accelerators should be working in about two years time. There is a very large and exciting field of physics for these machines to share, but it is clear that the National Institute synchrotron must be built very quickly if it is to compete on reasonable terms with the other accelerators. If all goes well our machine will be working towards the end of 1966. Our maximum energy of 4 GeV has been chosen to cover all the foreseeable fields of physics open to such machines with one exception, and that is the field of anti-particle physics. However, by lowering our sights on the maximum energy we save considerably on construction costs and design difficulties, and, most importantly on the time taken to build the accelerator.

Our synchrotron, like the others mentioned above, will be designed with a "strong-focussing" magnet. The magnetic field is shaped in such a way that the focussing forces exerted on the electrons are very strong indeed and reduce considerably the oscillation amplitudes of the electrons. In this way the magnet aperture, and hence the whole magnet, can be reduced in size very considerably. In fact the magnet will weigh about 500 tons compared with the 7000 tons of Nimrod. The price we pay for this is that the machine is

very sensitive to mechanical misalignments. The individual magnets providing the guide field must be positioned to 0.010 ins. in a diameter of 200 feet i.e. 1 part in 240,000. It is clear from this that the foundations for the magnet building and the subsoil on which they rest have provided a major problem in the construction and siting of the accelerator.

Having decided that such a machine should be built in the United Kingdom the National Institute was faced with the problem of siting the accelerator. Eventually it was decided that the machine should be built in the Liverpool-Manchester area and that the actual site should have good communications with Glasgow. The university physicists in these three cities had shown a particular interest in this machine and have already a good tradition of doing elementary particle and nuclear physics in their laboratories.

Finding a particular site, however, was not easy, principally because of the severe geological requirements. It became clear that if we wanted good rock not too far below the surface, then the sandstone outcrops which are found in North Cheshire looked to be suitable, and we concentrated our attention on these areas. Eventually by a process of elimination we selected a site near the village of Daresbury in North Cheshire and we have recently applied for planning permission to build the new accelerator and its laboratories there. Not inappropriately, perhaps, Daresbury is the birthplace of Lewis Carroll.

At the moment physicists and engineers at the Universities of Liverpool and Glasgow and at the Rutherford Laboratory are very busy settling the leading parameters of the synchrotron, a process of balancing micro-amperes and MeV against money. But already, the main shape of the machine is known. The magnetic guide field will be provided by a ring of 40 separate magnets, each about 9 feet long and weighing 10 tons, erected on a diameter of 200 feet. Particular attention has been paid in the design to provide rather long straight sections, about 10 feet, between the magnets. This should make the machine particularly accessible for experiments. The whole magnet is run as part of a resonant circuit at a frequency of 50 cycles/second. Electrons will be injected with an energy of about 40 MeV from linear accelerator and, of course, a particular effort will be made to inject a large current. The final current of 4 GeV electrons will be about 5 micro-amperes, and the radio-frequency supply to drive this will probably be provided by large 500 Mc/s klystrons.

By the time the synchrotron is working it is possible that the major area of experimental interest in high energy electron physics will be in searching for breakdowns in the laws of electrodynamics. There has been a very strong interest in these experiments recently and already we can put quite severe limits on, for example, the distances down to which the electrodynamic laws hold. But whatever physics is to be done by the machine it is clear that it will provide the physicists of this country with a most powerful and interesting experimental programme, which will provide a challenge for years to come.

Laboratoire de l'Accélérateur Linéaire

Work is nearing completion on a further stage to the electron linear accelerator at the Nuclear Physics Laboratory, Orsay, France. The accelerator reached an energy of 1 GeV on 1st January 1961. Now the additional stage will increase the energy to 1.3 GeV making the accelerator the most powerful of its type in the world.

At Stanford, California, U.S.A., an electron linear accelerator project is underway which will reach an energy of 20 GeV within five years with a possible extension to 40 or 50 GeV. The Orsay machine is expected to achieve 1.3 GeV by the end of 1962.

Inauguration of the First Atlas Computer

Sir John Cockcroft pressed the button to inaugurate the first Atlas computer at Manchester University on Friday 7th December.

The computer has been developed jointly by Manchester University scientists and Ferranti over the past six years and is the most powerful in the world. Its coming into operation multiplies by about six the available computing capacity in Britain.

Two further Atlas computers are on order; one by London University and one by the National Institute. The National Institute 'Atlas Laboratory' is located next door to the Rutherford Laboratory and work is underway on the site.

Dr. Howlett, Director of the Atlas Laboratory, attended the inauguration ceremony.

" Can't miss it ! "

Dick Burleigh

I have been asked, as a visitor from California to say a few well-chosen words on my impressions of England. Two which immediately come to mind are "charming" and "delightful", but I suppose I shan't be let off as easily as that.

When Charles Darwin was voyaging on the "Beagle" he came to Buenos Aires, even then a town of some size. Apparently with considerable astonishment he notes, "every street is at right angles to the one it crosses, the parallel ones being equidistant." This little passage had always been a bit of a puzzle to me. Why should Darwin see anything odd about a town laid out on a rectangular grid? Are there any other ways? Now, after ten months of week-end navigating in England, we can safely say, yes, there certainly are!

Somehow the plan ('Plan may not be quite the right word - it somehow implies there has been some planning!) of an English Town reflects the English love of individual freedom. You simply let a bloomin' street do whatever it jolly well wants to! Not only is it allowed violently to change its direction, it is actually encouraged to change its width and even its name! If, gentle reader, this comes as a bit of a surprise, may I call your attention to the interesting quadruple metamorphosis of "St. Aldates" in Oxford which first mysteriously fades into "Corrmarket", then dissolves into "Magdalen", imperceptibly melts into "St. Giles" and finally ends up as "Woodstock Road", all in a length of 800 yards? Oh yes, somewhere in there is an additional little bit quaintly referred to as "Carfax" but I've never been able to discover just what it is; it seems to be just a spot in the middle.

Well, all this sort of thing can lead to confusion when asking directions. There seems to be a standard English reply, no matter where you are or where you're trying to get to, it always seems something like this (reference to at least one pub is absolutely essential): "Down to the bottom, (the first few times we heard it, we thought this phrase was a bit personal), left at the Mermaid or past the Bricklayer's Arms, second turn on left", and invariably ends up with the phrase, "can't miss it"! But the English have seriously underestimated us, because we invariably do. For good measure there's usually a reference to some weird unit of distance such as a "stone's throw" or "five minutes from here". (We really must think sometime about converting to the metric system, really we must.)

But its a pleasure to try the shoe on the other foot. A month or so ago, I was plodding sturdily up Bath Street in Abingdon, carefully disguised as a native, when a car drew alongside, the bulging luggage-rack denoting non-natives. "I say", said a striped Blazer (purple and pink, incredibly enough) on the off-side, "could you please tell us how to get to the Faringdon Road"? "Well, now," I said in my best Berkshire accent and with the casual air of the man who knows what he's talking about, "do you really want the Faringdon Road or do you actually want to get to Faringdon?" "Because", I smugly added, "the Faringdon Road doesn't actually go to Faringdon." (I had been trapped on this very point just five days earlier). "Oh", said the Blazer with obvious relief at finding himself in the hands of an expert, "we really want to go to Faringdon." "In that case," I said, clearing my throat for a good running start, "down to the bottom, first turn on the left, you'll see the Plough dead ahead, right at the Busy Bee, right again a stone's throw past the George and Dragon. "Now", I paused, gathering steam for the second lap, "you'll find yourself on High Street which, however, just past the Grapes, oozes into Ock Street. Five minutes down Ock Street, past the Crossed Keys on the left, the Air Balloon on the right, and at the cross-roads, with the White Horse on your right, you'll find a sign post pointing to Faringdon." And then, as the coup de grace, "Can't miss it!". But I bet he did.

'It couldn't happen here' (?)

On December 6th, 'Pravda' attacked some Soviet scientists for 'Living at Science's expense' and producing nothing useful.

Examples were quoted - S. I. Sukolar studied the soils of the Ural river valley for 17 years, 'The end of his work is not in sight and there are also no concrete recommendations'. M. N. Kabirov 'pretended to be working hard on three themes, but in fact was writing plays for a local theatre, while not forgetting to receive his salary on the nail.'

EDITORIAL

Despite the Cuban crisis, the Sino-Indian war, Bye-elections, the Common Market and debates on Why Build Accelerators, we have almost reached the end of 1962.

Looking back in all areas of the Laboratory there seems to be the feeling of a good year's work well done, and a growing awareness that the New Year will bring to completion the building of Nimrod. Much fascinating nuclear physics work with the P.L.A. and with Nimrod looks to be in store for us in the years to come, but it may well be that the year 1963 will be the most exciting of all.

We hope that ORBIT has added a little to the enjoyment and satisfaction of the past months, and that it will continue to do so in the future. Christmas seems the ideal time, to thank on behalf of the editorial panel, all those who play their part in the chain of events which brings ORBIT out -

the contributors who generally respond with enthusiasm to any call for articles, and who make considerable efforts to supply lively and interesting material;

the typists who painstakingly type and retype the layout of ORBIT's pages, to fit the articles together in accordance with the Editor's changing demands;

the reproduction section who have met every 'deadline midnight' they have been called upon to meet;

and finally the distribution network who, with any luck, put a copy of ORBIT every month into every pair of hands in the Laboratory.

And now it remains to add our best wishes for Christmas and the New Year to all our readers. Let us hope that 1963 proves an exciting and satisfying year for us all.

The Year of Nimrod -1963

Leo Hobbis

Early in 1955 the vanguard of the P.L.A. Group occupied a few thousand square feet of a partly finished Building 412 (now R.12). This little band living on the Southern frontier of A.E.R.E. in quite primitive conditions (we had to persuade Joe Marsh very strongly to get even the simplest essential amenity), comprised, if I recall correctly, Laurie Phillips, Pat Alderman, (Big) Bill Smith, Herbert Whitby, Ted Harrison, John Macken, Noel Swan-Taylor, John Overton, Bob Fowler, Harry Chandler, Charlie Halliday and myself, with a visiting contingent from Special Maintenance Group which included Charlie Wakeford.

Very soon we were joined by our colleagues from Building 152 and while construction of the P.L.A. continued, much thought was being given to multi-GeV machines. By 1956 many of us were at work on the serious design study of Nimrod. Unwittingly perhaps, we were also laying the foundations of the Rutherford Laboratory which came formally into existence in 1957 and in the years that followed we were to see the fragmentation of the A.E.R.E. General Physics Division (Will ye no' come back again?) into C.T.R. and Accelerator Divisions followed by the disappearance of the latter when nearly all its staff transferred to the N.I.R.N.S.

Those 7 years since 1956 have seen a vast expansion in our ranks, and the work, though of unrelenting pressure and not without many frustrations, has brought much reward and proud achievement. For the Nimrod project, 1963 will see the first fruits of this sustained labour. Much still remains to be done during the next 6 months or so, and we can be certain of having to meet increasing demands of all kinds. Fortunately, we have all learnt a great deal during the last few years about the nature of our task and we now have in the Nimrod team, Institute, Authority and Contractors' personnel together, an experienced force which, in spite of the various origins and organisational affiliations of its members, possesses an excellent team spirit. But the responsibilities and privileges are not prerogatives of this team alone, for we count on the essential support of others throughout the Laboratory, including many whose connection may appear to be quite tenuous.

May we start 1963 with strength renewed for this final effort which could well reach its climax at the height of next summer. Without any distortion of judgement or straining of modesty we can all look forward to the successful commissioning of Nimrod as a vital contribution to fundamental research in this country and an outstanding national achievement.

" What shall we call it, dear ? "

Peter Jones

"Where do you work?" they said.

I was sitting round the dinner table at the digs with five other Harwell men after my first day at A.E.R.E.

"The Seven-gee-ee-vee-proton-synchrotron project." I said.

"The what?"

I thought a moment.

"Er... The Hole!" I explained.

"Ah!"

They understood.

The project was still in its early stages and we were merely the Accelerator Group of the General Physics Division of A.E.R.E. so people did not know much about it. They could, however, see a large excavation going on in the chalk and I found this to be the easiest way of referring to my project. It was the Hole and I worked down it.

Of course to those outside Harwell there was no difficulty. You simply said: "I work at Harwell" when they would look at you as if you were Albert Einstein himself and talk about Atom Bombs, Security Screening or your digs.

As frequently happens with holes, it was filled in. Three cranes came and perched round the edge and then began to empty endless amounts of concrete into it. Another name, more fitting to the final object, was needed. One of the first was "Gevatron" which had the merits of slipping off the tongue as well as being related to the official title. It was never finally accepted. Like "Perhapsatron", "Solartron", or "Sanatron" ("San" as in "sanitary") it was an etymological half breed - a mixture of Greek and English. What is more all the best official names are composed of the initial letters of their full titles. For example: "North Atlantic Treaty Organisation" pronounced NATO or "Fiendishly Rapid Electronic Device" pronounced FRED. Already some of the best Accelerator Physicists in the country had been working on the problem. One result was the apt but slightly derogatory "High Energy Accelerator for Protons" or "HEAP", while another was the gay "HEPCAT" or "High Energy Proton Circular Accelerator Type".

With the building grew the organisation. The Accelerator Group became the Accelerator Division and the formation of an entirely new body was announced: The National Institute for Research in Nuclear Science. A status had been achieved.

"Harlequin" had a little article on it and ran a competition for a name for the machine which produced many useful suggestions. There was a fair sized bevy of "trons": NEWTRON, GIVATRON, RUTHERTRON and RHELATRON (from Rutherford High Energy Laboratory). The classical scholars had a go and offered TITAN, OBERON, GEVIATHAN, NIMBUS or "National Institute Machine for British University Scientists", URANUS and VENUS - alias "Very Energetic, Nearly Underground, Synchrotron". The most suitable planet SATURN had, unfortunately been bagged by our opposite number in France. A note of gaiety crept in with CAROUSEL and one of hangover with ASPIRIN which is "National Institute Research Proton Synchrotron" spelt backwards with an I in the middle. PROMETHEUS, who stole fire from heaven in a hollow tube was a runner up but the prize went to HEPTATRON.

The concrete still poured in, and out of the hole emerged a strange roofless ring of eight mighty pillars surrounding a ninth taller pillar on top of which was a huge inverted cone - a druidic temple dedicated to that great heathen deity, S.W.O. Perhaps that was why the final official title followed the Harwell practice of being mythological - NIMROD the mighty hunter after the secrets of the nucleus.

'ALICE' in Wonderland ?

Any thoughts on the name for the Electron Synchrotron? Send them in to the Editor and we may publish the suggestions in the next issue. So far, following the 'Electron Laboratory in Wonderland' snippet in the last issue, we have received 'ALICE':- maybe A - Accelerator, L - Laboratory, E - Electrons. Can anyone do anything with I and C.

Editor

Once upon a time, there was a Red Indian who had three squaws. He loved each of the squaws equally and for their Christmas present he gave to one a rug made of antelope hide, to another a rug made of buffalo hide and to the third a rug made of hippopotamus hide.

To show their gratitude, the squaws all presented him with children some months later. The squaw on the antelope hide had a son; the squaw on the buffalo hide had a daughter and the squaw on the hippopotamus hide had twins - a son and a daughter. This only goes to show that the squaw on the hippopotamus hide is equal to the sum of the squaws on the other two hides.

Back Door

Herbert Whitby

From the November issue one may assess the escapist potentialities of canoeing from the experiences of 'H & T', and the importance of discomfort in giving piquancy to pleasure - at any rate in retrospect. But they 'got away from it all', - or most of it, obviously not for the first time or the last.

The need to escape, this search for something, the modern 'safari' cult, is it largely a post-war phenomenon? Nowadays the place of fiction is usurped by the proliferation of safari reports, they have become easily digested fodder for the insatiable maw of the book-clubs; all sunlight and swamp, courage and contagion, wonder and stench the deification of 'earthiness'. It seems purpose enough, for example, to rush out under the blinding impact of the Sahara and agonize without water in a world of sand. Long enough, at least, to justify writing a book about it later, under our own calm, grey, reflective skies. Presumably the cult stems from the fullness of contemporary life, this do-it-yourself set-up, full of ever-increasing chores and the untiring efforts to evade them. Inevitably it seems, we all carry (and drop) more and more bricks for this complex edifice, and most of us at some stage start looking for a back-door. When we find the one our key fits, it could open onto the Sahara, the Antarctic, the Isle of Wight or the Upper Thames - where matters little, they all glow with equal radiance. Then sometimes the door opens onto a nearly-forgotten world; time-veiled early things, the delights which atrophied as we carried our first bricks.

So it could be that 'H & T' were indulging in a nostaligic evocation, the days of cowboys-and-Indians, or the more orderly stimulus of the late Baden-Powell? Whatever their reason a sense of achievement would lie in the attempt.

Age has many compensations, over the years one can find so many back-doors, so many things beckoning, one wonders how many the edifice will accommodate and still stand up.

I am one of 'H & T's' oddities, an angler, out to catch the same elusive spirit that deserted them on the rapids of the Upper Thames. But angling is very diverse; I, too, am mystified by the competitive angler and his twenty-yard stretch. The desire to pit his skill against his fellows would seem to stem from within the edifice, he is no escapist.

Some years ago, a 'Nimrod' meeting lingered over an obscure detail, maybe important, but I was not held. Before me was the window. Out there the air trembled in the heat of July, between the buildings a glimpse of trees and distance beyond distance, tender blue, inviting. It was a vista I knew by heart, and can see still, though bricks have taken its place. Remote and detached under a grey sky, on this-day its spirit invaded the invader; a lethargy flowed almost tangibly over the ramparts of steel and concrete, the sound of Nimrod's attack was slowed, defensive and listless. Whether the shape of the trees, the sweep of the hill, the thought of stifling heat and the insect drone just out there; something it was, touched off a memory, untarnished and vivid over the gulf of the years. Thus came to me another key out of the blue day: this time without conciously seeking escape.

The door opened inevitably onto a sunlit day, that wonderful sun which gilds our earliest memories. I was with my father, enough to gild any memory of mine; we were hidden among the sedges at a lakeside. The water lay dark and tranquil, reflecting the glory of chestnut trees in full flower, surprising for it was the end of June. Over all was a brittle silence, even the birds were languid and hushed, the passing aircraft and the muted roar from the main roads was yet but a distant threat. I was watching my father methodically casting a spinning-bait fan-wise over the sensitive surface, far out, close in-shore, then over towards a tiny island smothered in the creamy spume of elderflower. The sing of line flying through the rings, the 'plop' of the spinner breaking water, the only sound. Then suddenly over where a tree lay dead and bleached in the water the plop surged into a boil, the lake surface writhed and flickered our excitement. A ten minute battle was on. Poignantly I recalled the shimmering beauty of that three-pound perch, all gold, red green and silver, its immense vitality, and the dart to the depths when it was released.

The frail link with the past snapped and I was back with Nimrod, but it changed my world. Somehow I had to find time to re-create that memory, again and again.

Therefore 'H & T', even if sometimes we anglers are muffled, gum-booted mysteries on the river bank, we may be explicable without resort to psycho-analysis. And I will extend the same indulgence to you - provided you are never tempted to write a book about it!

The Safety Section wish all readers a satisfying and SAFE New Year.

'A Sudden Desire for Mince Pie'

Edmund Wilson

It was a splendid party given in a Montchoisy appartment by several UNO secretaries who, having left their native land in search of emancipation were determined not to be found lacking in hospitality. The party waxed and the guests were just reaching that warm and noisy state born of slight inebriation and excessive infatuation when someone realised the time. Anyone unversed in the stern reality of the Geneva way of life might be forgiven surprise at the sight of young people hurriedly taking their leave at 10.30 when not all the glasses were empty and when no censorious parents, husbands or wives would await their return home.

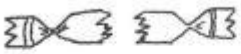
But at 10.30 the neighbours, indigenous and conscientious citizens of Geneva, would be anxiously pacing the floor, hovering over their telephones, each eager to win the praise and adulation of his countrymen by being the first to inform the local Gendarmarie of the shocking and unbridled attack on their privacy. For after this time only the neurotic chirp of the cuckoo clock and the maddening jangle of innumerable cow bells are sweet to the Genevese ear. Have no illusions, to these upholders of the true Calvanist morality of good neighbourliness, the sophisticated chink of ice in the cocktail shaker is as worthy of chastisement as the most outrageous and orgiastic rites.

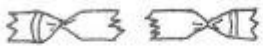
Encounters with the officers of the Gendarmarie on such occasions are to be feared, for although Lilliputian in stature beside a London Bobby and comparitively effeminate in attire, they wield summary justice, (and their revolvers), in a manner which is an anathema to a fellow countryman of Tom Payne. Ask them the way and you will find their English impeccable, but try and explain away some minor indiscretion and you will be met by an uncomprehending bovine stare.

The International Set of Geneva, probably the most extrovert and neurotic of the world's population seek refuge from these guardians of public morality. In the summer they may be seen basking in sensuous lethargy and flattering bikinis on the Plage, ready, at a whisk of a lanyard or the jingle of a handcuff, to plunge into anonymity in the waters of the lake. In the winter they flee Geneva for the comparitively cosy and welcoming friendliness of the mountains, there to persue the ascetic and stimulating art of ski-ing.

The lake, or at this time of the year, the snow covered range of the Jura are an ever present temptation to the unwary physicist on his way to CERN, and there is no doubt that the delights of summer and winter sports more than make up for the discomforts of police supervision. If one is unathletic there is the simple pleasure of eating ambrosia beyond the comprehension of the biggest expense account that lured a British Civil Servant to corruption.

But in December the lake is cold and the snow thin and the expatriate Englishman has a sudden desire for mince pie. So for Christmas wir fahren gegen England. Besides, who knows, if one stays, the gentleman in riding boots who calls at 1 a.m. on Christmas night may not after all be Father Christmas.





The Rutherford Laboratory Dance

Fortunately the weather was kind on the evening of December 7th and this accounted for some of the success of the Laboratory Dance in Building 150. Approximately 300 people attended and all parts of the Laboratory were well represented. In addition to two bars and two buffets, there were two dance bands in separate rooms in vigorous competition with each other. Most people agree that it was a pleasant and happy evening and to a large extent we must attribute this to the forsight of the organizers, the catering, and the ingenious lighting.

A Christmas Lecture

O COME ALL YE FAITHFULL followers of off-beat physics and hear the humble shepherd Ted Harrison discourse upon the symmetry between the very small and the very large, and tell how one of the possible consequences of this is the existence of stars, stars of wonder not excluded.

The lecture is entitled "THE ATOM AND THE COSMOS" 5.30 p.m., Thursday, 20th December, R.1 Main Conference Room.

T.R.W.

Personnel News

Congratulations to Janet Partington and Rod Morgan, both of Magnet Group who were married in Lancaster on 15th December.

Ted Harrison gave a lecture on 'Magic Numbers of the Universe', at 8.00 p.m. December 12th, on the B.B.C. Third programme.

When asked for comments on his talk, he said: 'So far as I can see, there are two kinds of people who think about this sort of subject. There are those beyond the reach of ordinary mortals who dwell in ivory towers, and wrestle naked with phantoms and demons. The second kind consists of that sort of individual whose knowledge of the atom is minute and whose ignorance of the Universe is immense; he rushes in where wise men fear to tread. So far it seems that I am the only member of this second class.'

Comings and Goings

J. R. J. Bennett joins the Cyclotron Group; Dr. E. Pickup joins Bubble Chamber Group on a Fixed Term Appointment.

V. J. Rimmer and G. K. Morrison join P.L.A. Accelerator Physics.

G. M. McPherson joins P.L.A. Nuclear Physics; B. F. Lonsdale joins P.L.A. Engineering; P. W. Workman joins P.L.A. Radiochemistry.

F. Wright and K. Stone join Central Engineering; K. L. Yeo, G. E. C. Fry and M. R. P. Williams join Nimrod Engineering.

Miss J. E. Robertson, D. C. Thomas and N. A. Cumming join High Energy Physics; P. D. Morgan joins High Energy Physics (Engineering).

M. P. Ludlow and E. C. Rodwell join Electronics; J. E. Ellis joins Nimrod Injector Group.

J. M. Russell joins Administration.

Mrs. B. J. Burrows, Mrs. B. Jowitt, R. L. J. Foster, A. W. Kirk, A. R. Edmunds, K. C. Morris and R. Kimbrey have left us.

Suggestion Awards

Congratulations are extended to the following, whose suggestions won awards at the third meeting of the Rutherford Laboratory Suggestion Awards Committee, which was held on 3rd December, 1962:-

A. Dobbs		£15. 0. 0.
D. Laws		£3. 0. 0.
P. Parry	encouragement award of	£1. 0. 0.
J. C. Sutherland	" "	£1. 0. 0.

The Suggestion Awards Committee is meeting again on 7th January, 1963. We shall be pleased to receive any ideas to improve either safety or productivity.

D. E. Jones

An Official letter posted at T.R.E. Malvern on 15th November reached us addressed to, 'National Institute for Research in Nuclear Survival'.

Coincidentally the Agenda for the Whitley Council Standing Committee recently contained an item on the proposal to use the Magnet Room as an H-bomb shelter in the event of a nuclear war!