

A. C. Clarke  
Arthur C. Clarke

BULLETIN

of the

BRITISH INTERPLANETARY SOCIETY

Vol. 2.  
No. 10.

November  
1938

Contents.

Editorial.

Rocketry and the Law.

Report of November Meeting.

The December Meeting:..

Correspondence: .

Editor: A.C.Clarke,

88, Grays Inn Road, London, W.C.1.

Editorial.

Several times recently we have asked for comments and suggestions regarding the "Bulletin", and we have received a number of replies from members - particularly provincial members - who were grateful for the articles and information contained in this publication. It was therefore with considerable interest that we came across an item entitled "Impropaganda" in Mr P.E. Cleator's quarterly "Interplanetary Parade", which as some members may know, appears in "Tomorrow". With the permission of that Magazine's Editor, we are reproducing Mr Cleator's words below.

"There have arrived in quick succession, no less than three printed "Journals" - ASTRONAUTICS (of the A.R.S.); ASTRONOMISCHE RUNDSCHAU, of the new German Society, and the ASTRONAUT of the M.I.S. - and a nondescript assortment of duplicated Bulletins from sources both varied and numerous. The Journals are admirable and the Bulletins execrable!

"It has always been, and will probably ever remain, my firm opinion that mimeographed reports are not worth one tenth of the time and trouble their preparation involves. Aesthetically, they are an eyesore. As a permanent record, they are hardly worth the slight effort of preserving. And for the purpose of propagandism they are worse than useless. For the defence, I am aware, it is urged that whereas the question of cost seriously restricts the output of printed Journals, monthly Bulletins provide an inexpensive means of keeping Society members and others in reasonably close touch with events, and that as such, they are necessary. In my time, I have prayerfully perused the contents of dozens of these slovenly sheets. I dispute the necessity..... What, in actual fact, do they contain? For the most part, the veriest twaddle - words to the effect that at a recent meeting a good time was had by all; demands that recalcitrant members remit their subscriptions instantaneously - or else; and clarion calls to readers for

[Cont. on p.9

### Rocketry and the Law

Eric Burgess, who is President of the Manchester Astronautical Association, contributes this article which will be of interest to those members who remember the newspaper reports of the case "Rex v. Manchester Interplanetary Society". It will also serve to emphasise some of the points raised in the article on the 1875 Explosives Act in a recent "Bulletin".

All followers of astronautics will, no doubt, remember the Interplanetary case of June, 1937. At that time, a great deal of untrue information was circulated and the actual facts hidden. With the aim of clarifying the legal situation regarding rocketry, and revealing the true details of the case, this article is written. Perhaps it will also prevent over-enthusiastic members from unfortunate clashes with the Law, and assist those persons who wish to delve into the legal side of astronautics.

March 27th., 1937, Easter Saturday. A Manchester Society decided to spend the holidays experimenting on the banks of the river Medlock. Six of the members constructed experimental rockets for the meeting, and all had great hopes for the success of their projectiles. The hour scheduled for the commencement of the meeting arrived and the launching ground was crowded with hundreds of people waiting to see "the rocket going to the Moon". Numerous reporters and press photographers were also present, and a news-reel cameraman together with all his equipment completed the scene. Unfortunately all were disappointed. No rocket went to the Moon or anywhere near it, and the meeting concluded with an unfortunate accident, namely the bursting of a metal rocket case. Sundry pieces of metal were scattered amongst the spectators crowding round the racks against all the orders, requests and demands of the Society, resulting in various minor injuries.

Plain clothes officers then intervened and the meeting came to an undignified end. Statements were taken from the Secretary and the members whose model had caused the trouble, and after gathering up their launching racks and models, the members left the field.

At a later date the Secretary was asked to visit the Explosives Department of the Town Hall and the President volunteered to go with him. The interview resulted in members being advised to curtail their activities for the next few weeks.

In April, however, after the trouble appeared to have died down, a Research Committee was formed, and a stone building on the wind-swept and lonely moorland near Hollingworth was rented as a research station. A great future was planned, and several week-ends were spent digging trenches and generally improving the site of the launching ground.

Then the activities of the Society were abruptly terminated. Summonses were served on four of the members for alleged contraventions of the Explosives Act of 1875, and an Order in Council of April 30th., 1894. Normally quite annoying, but in this case exceptionally so, for the President had arranged to be in Paris visiting M. Esnault-Pelterie at the same time as the summonses were supposed to be heard at the Manchester City Police Court.

Solicitor and Barrister were hastily engaged, and the case adjourned. The President made his visit, and in England the newspapers printed short paragraphs on the "Rocket Firing Sequel".

On May 1st. the case was first heard at the Stipendiary Court with Mr J. Wellesley Orr as the magistrate. The Prosecution, opening the case, stated that the summonses were against members of the Interplanetary Society.

"Inter----what? ? ?" queried the Magistrate.

It was then explained that the objects of the Society were to send projectiles to great heights and ultimately to reach the planets. The President was heard first, and the other members informed that they would be dealt with afterwards.

Discussions on legal terms as applied to Dr. Goddard's super rockets, making and manufacture, and even

the constituents of plum puddings, held the attention of all present. The defense contended that there was a difference between making and manufacture\* and that the Act had been legislated to prevent the manufacture of large quantities of explosives for commercial use, but that it did not apply to the making of small quantities for experimental purposes. The Magistrate did not hold with this opinion, however, and the case was adjourned at this point.

The next stage of the case was when the members again visited the Court on June 3rd. Defending Barrister was unfortunately called away on an appeal case and the interplanetary case was again adjourned, sine die.

The third, and final, hearing of the case was on Monday, June 14th. The discussions became more and more heated, and technicalities flowing across the Court emptied the Public Gallery in half the time they had at the first hearing. The President was called to the witness box and after a short questioning by the Prosecution was then interrogated by the Magistrate. Discussions became more heated still, and Newton's Third Law of Motion, jet-reaction, thermal efficiency, delayed combustion and instantaneous explosions were explained to the Court. Defense contended that the model used at the meeting was not a rocket under the meaning of the Act, for it was not intended to produce any pyrotechnical effect. The dictionary describes a rocket as a "firework made of a case filled with saltpetre, sulphur, and charcoal, fastened to a stick and projected through the air". Our models had no sticks attached to them and unfortunately they were not "projected through the air". Not producing any pyrotechnic effect, they could not be classed as fireworks. Potassium Chlorate was used in addition to the above mentioned chemicals, and under the Order in Council of April 30th., 1894 it

.....

\* The dictionary describes:-

Make Create, compose, prepare for use, construct.

Manufacture The operation of making anything from raw material.

is illegal to mix  $KClO_3$  with sulphur in a firework. Therefore, if our models were not fireworks, then they did not contain an illegal fuel.

No definite solution was arrived at, and the Magistrate suggested that the Prosecution should withdraw the summonses if the President promised not to use potassium chlorate and sulphur in any future experiments.

Summing up, Mr Orr stated that it was not the intention of the Law to prevent experiments, but to safeguard the public and the experimenters themselves.

Thus ended the case, no definite advance having been made. The only definite rule arising out of the case was that it is illegal to use an admixture of  $KClO_3$  and S in any experiment. It still remained undecided whether or not an interplanetary rocket is a firework.

Eric Burgess.

### The November Meeting.

The November lecture on "Atoms and Radioactivity" was well attended, and again we were pleased to note some new faces.

Mr. Day dealt with his subject from the historical viewpoint, referring to the early speculations of Democritus and others on the nature of things, which led after 2,000 years to the first scientific formulation of the atomic theory by Dalton. The atomic theory was well founded long before it became possible to discover any of the physical attributes of individual atoms, sometime after the middle of the 19th century. Towards the end of the last century, progress accelerated tremendously with the discovery of X-rays, cathode rays, and radioactivity. Investigation of the cathode "rays" revealed that they were far smaller and lighter than even the hydrogen atom, and that identical rays or particles came from every element. This showed that the different elements had at least one common constituent, later christened the "electron". At the same time Becquerel's discovery of radioactivity, followed

by Mme. Curie's isolation of radium, revealed the fact that one element could change spontaneously into another with the liberation of enormous amounts of energy. The old stable, indestructable atom had gone for ever.

Then came Rutherford's investigation of the internal structure of the atom, resulting in the "planetary" atom which is still used for many purposes. About this time came the invention of the most remarkable instrument in modern science - the Wilson cloud chamber, which made it possible to photograph the tracks of individual electrons or ions. Mr Day illustrated this part of his lecture with photographs of a cloud chamber and some tracks observed in one. Another very important instrument was the mass-spectrograph, invented by Aston, which enabled the physicist to "sort" atoms according to their masses, and thus resulted in the discovery of "isotopes" - different varieties of the same atom, possessing the same chemical properties but having different masses.

Mr Day also sketched out the family trees of the radio-elements, showing how after a complicated series of changes, uranium is degraded via radium to lead.

When it was found that Nature was transmuting elements, attempts were made to produce similar results artificially. The first deliberate transmutation was achieved by Rutherford, using the rays from radium to smash nitrogen atoms: in 1932 Cockroft and Walton performed the first entirely artificial transmutation, using ions accelerated in a giant vacuum tube.

Progress then became so rapid that it was impossible to give more than the briefest outline of it. Several new particles were discovered - the neutron, positron, deuteron, yukon (heavy electron) and the still semi-mythical neutrino. Cosmic rays were also investigated in great detail by Milliken, Blackett and others, and the debris produced by their reckless passage through matter revealed much of interest, though the origin of the rays themselves is still a major mystery.

In recent years attention has been largely concentrated on artificial transmutations, which have resulted in the discovery of scores of new elements, including several short-lived radio-active substances of possible commercial value. Lawrence's invention of the "cyclotron", in which ions spiral out through a magnetic field until they have acquired an energy equivalent to millions of volts, made it possible to perform transmutations on a much larger scale than anything attempted before.

Either Mr. Day had stunned his audience with his display of facts, or else he had anticipated their questions, for there were few of the usual queries after the lecture. The question of atomic power was, of course, raised, and it was pointed out that although the energy was certainly locked up in the atom, and would presumably be released one day, no-one knew whether it would emerge in the form of heat, electricity or some other manifestation.

The lecture was profusely illustrated with photographs and excellent sketches that would have done credit to the B.I.S. design staff.

\* \* \* \* \*

### Lecturers Wanted!

It is becoming exceedingly difficult to find lectures ( and lecturers ) for the General Meetings, and though we have been ringing the changes on the Council members, they and their ideas are rapidly becoming exhausted. There must be not a few people in this Society who have a lot of things they could tell us, and yet have remained in stony silence while other people did the talking. Surely some of you Sphinxes will volunteer to give a lecture to us! We guarantee a quiet, well-behaved audience, and no heckling until question-time. If you cannot attend the London meetings, you can send written speeches which will be read to the meeting and then published in the "Bulletin". Apart from this, ideas for talks, debates, ect., will always be welcome.....which reminds me, what about those articles for the "Bulletin"?

\* \* \* \* \*



God's sake to send in some suggestions. And so on. And so on and so on and so on. Here, I heave no bricks at the perspiring compilers of these inane reports. They surely face a Herculean task - the making of sense out of nonsense, the creating of something out of nothing. No wonder the result of their labours, intellectually, is on a level with a parish magazine!

"What, then, is the remedy? A constructive mood being miraculously upon me, I advocate the total abolition of the duplicated Bulletin in favour of a quarterly printed Journal. Do I hear it objected that three months is a long time to wait for news? With the greatest of respect, what news? The stock banalities aforementioned? Or is there, perchance, a danger that someone will abscond to the moon three days after an issue of a Journal has appeared? Such a calamity, it seems to me, might be averted by the simple expedient of producing a special edition. A far-seeing Editor, indeed, might prepare such an edition in advance.....

"A curse, then, on Bulletins. Let them be anathema!

After this devastating oration, perhaps we may be allowed to say a few feeble words in our defence. We admit that the poor little "Bulletin" is not as beautiful as it might be, though we do maintain that the lining up of the type has greatly improved its appearance (and also doubled the labour required in its production.) Since we cannot afford to have it produced professionally, we are afraid that at the present it is the best we can do on the B.I.S. duplicator, which, alas, is now going rapidly into a decline. As for it being an eyesore, that is a matter of opinion. We are sorry that Mr. Cleator's aesthetic sensitivities are so highly developed: this modern world, with its advertisement hoardings and jerry buildings, must cause him intolerable pain which we should be the last to increase. Should the effort of perusing the "Bulletin" prove too agonising to him, we will gladly refrain from sending him copies.

The "Bulletin" is not intended for propaganda. It may not be essential that members should know what happened at the last meeting, but it is essential that they should know what will happen at the next, and when

it is going to happen. For this reason alone notices of some sort have to be sent out, and so while we are doing that it seems only common sense to go a little further and give the members reports of the last meeting and anything else that might be of interest. It seems to us that this cannot help stimulating interest among provincial members who are otherwise apt to feel cut off from the activities of the Society.

As for the charge of "Twaddle", that is for the readers to decide. The Treasurer maintains that appeals for subscriptions are far from twaddle, and indeed absolutely essential, though perhaps he will receive little support on this point. No doubt we have printed twaddle in the past, and no doubt we shall in the future. These pages may yet contain repetitious and irrelevant anti-religious diatribes.

Mr. Cleator's suggestion of a quarterly Journal is an admirable one, and will certainly be put into practice - when the B.I.S. has three times its present membership. At the moment, as Mr Cleator is perfectly well aware, it is a financial impossibility to produce four Journals a year, certainly Journals which would escape the charge of "twaddle". A Journal costs at least £12; a Bulletin 12/-. We produce a Journal whenever we can afford it while the writer is Treasurer we will not print one more often, and we think that most members will agree with us that this is the only sane policy.

However, we may be mistaken, and the majority of members may agree with Mr Cleator. If so, we should be very grateful to hear from them, in order that we may be saved further wasted effort. We will then cease publishing the "Bulletin", at the same time apologising to those members whose sensitive eyes and minds we have unwittingly offended.

A.C.C.

21.11.38.

The December Meeting.

This month we are departing entirely from our usual practice at General Meetings. There will be no lecture; instead, we intend to have a "Questions and Answers" night. There must be hundreds of queries and problems that members would like to have answered, and this will be the time to bring them along. Do not hesitate because you're afraid of showing any technical ignorance.....if you still aren't sure why a rocket works in a vacuum, don't hesitate to ask. If you cannot attend the meeting, your questions will be read out and the answers printed in the next "Bulletin". There will be a Chairman to delegate the questions asked to the officers best qualified to answer them, and to see that too much time is not spent on any one subject. As the success of this - admittedly experimental - meeting will depend entirely on you, please lay in a good stock of problems to exercise the minds of the Technical Committee, and make the best of this unique opportunity to heckle your officers! Questions need not be technical - we hope they won't all be - and no aspect of the B.I.S.'s activities will be barred from the discussion.

The meeting will be held at the Duke of Yorks, Derring Street, Oxford Street, on December 6th, at 7.30.p.m.

.....  
CHANGE OF ADDRESS

We are asked to announce that the address of the Hon. Secretary has been changed to:-

13, Park Avenue,

Wood Green,

London, N.22.

\* \* \* \* \*

Correspondence.

From time to time we intend to give in the "Bulletin" selections from letters which we think will be of interest to readers. If you have any views or theories you would like to air in our columns, don't hesitate to write in. Just one warning - letters running to more than a few hundred words will be ruthlessly cut.

R.A.F.  
North Cotes.

Dear Mr Editor,

I have noted your indignant cry in the October Bulletin of the B.I.S. and I am answering the call in your last exclamatory sentence - explaining why I haven't written. Firstly, as a humble Associate Member, I do assure you that I read Editorials! Secondly, I do also assure you that I don't throw the monthly Bulletin into the W.P.B. (Government issue) unopened and unread. On the contrary I'm extremely interested in the current work, research, lectures and discussions of the Society, and would gladly pay a larger subscription for a larger Bulletin.

With reference to Mr. R.A.Smith's article on the B.I.S. Experimental Policy, I am entirely in agreement with it and fail to understand the point of view of critics who claim that useful work could be done on the development of postal and life-saving rockets; this is the British Interplanetary Society, not the G.P.O. or Trinity House! I am very much looking forward to the "Journal" giving a full description and drawing of Mr Smith's space-ship.

I should like to ask one question before I close this letter; has any research been made into the possibility of the sudden and unpleasant detonation of the fuel of a space-ship by ultra-short wave radiations of certain frequencies from the sun, which may - and I should think undoubtedly do - exist undamped and unimpeded beyond the blanket of the earth's atmosphere?

Flt. Lieut. D. Ross Shore.