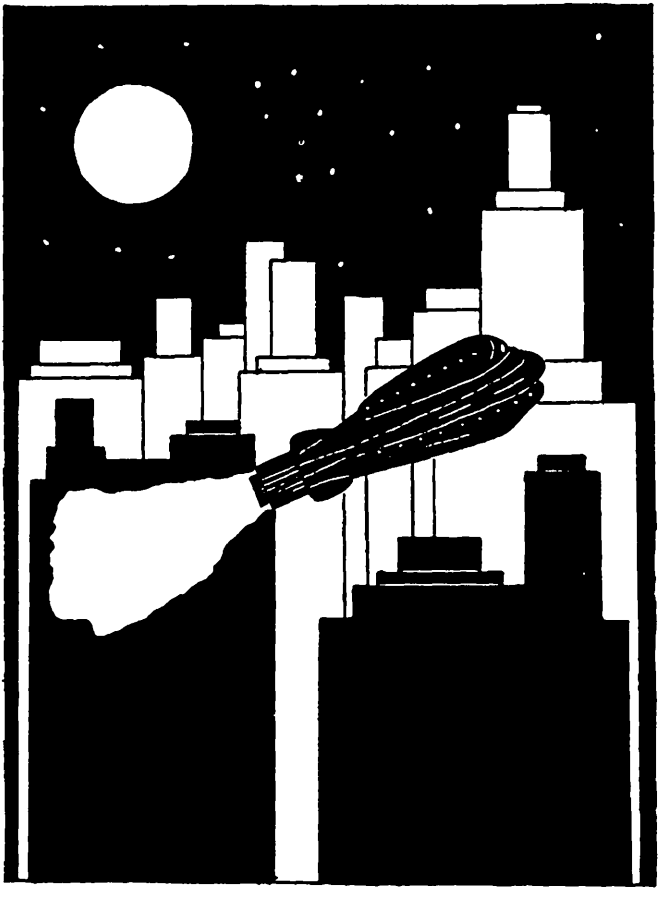
No. 4. OCTOBER, 1934. Vol. I.

Journal of the British Interplanetary Society.



JOURNAL OF THE

British Interplanetary Society

P. E. CLEATOR,
President.
34, OARSIDE DRIVE,
WALLASEY,
CHESHIRE,
ENGLAND.

L. J. JOHNSON,
Secretary.
46, MILL LANE,
LIVERPOOL 13,
LANCASHIRE,
ENGLAND.

CONTENTS FOR OCTOBER

		Page
INTERPLANETARY SOCIETIES—ARE THEY TOO FICTITIOUS?	J. G. Strong, B.Sc.	33
EDITORIAL	P. E. Cleator	34
A MISTAKE OF THE ANTAGONISTS OF SPACE TRAVEL ...	Steinitz	35
LIST OF NEW MEMBERS		37

INTERPLANETARY SOCIETIES—ARE THEY TOO FICTITIOUS?

By J. G. STRONG, B.Sc.

THE action of the American body in re-naming themselves " The American Rocket Society," though it may seem retrograde to some, is ordinary common sense, and we should do well to follow their example as soon as possible. Quite apart from the physical impossibilities of interplanetary travel with the means at our disposal, the development of rocket engineering comes foremost, and to employ the word " interplanetary " for the Society when our hopes are centred on straight rocket flying is misleading. We might as well call it the " Interstellar Society," or the " Intergalactic Society," and be done with it.

In this country, more so than in others, the outlook is conservative. " Misling " the public is an offence, punishable by the reluctance with which members subscribe. Though there is no objection to such a society being formed, it must be remembered that it remains only a corollary to the more practical theorems of rocket flying. In a sense the two parties are working toward a common goal, yet the non-technical public cannot separate the chaff from the wheat, and therefore supports neither.

To achieve anything like real success rocket flying will have to be opened to commercial enterprise. No one is going to advance sums of money unless he is fairly certain of a reasonable return for his outlay. Equally important are the " brains " who will have to design our machines, but we cannot hope to attract these two types by the word " interplanetary." Both are fully aware of its present impossibility. As a deterrent to increased membership of the Society, the word " rocket " is bad enough, since one instinctively associates it with fire and explosives. But " interplanetary " is worse—it is still fantastic.

Nevertheless, much can be done by giving the Society a name worthy of its ambitions. As the Institute of Rocket Engineers, or as the Society of British Rocket Engineers, we are mentally linked with similar bodies formed for the advancement of British Science, such as the Institutes of Mechanical, Electrical, and Chemical Engineers. We should be subsidiary to them—but we cannot help acquiring their dignified status, which is remarkable for the amount of weight it carries. It is a fine psychological point which could be turned to advantage.

Against the proposal of a change of name is raised the objection that the Society has received some publicity under the present designation. That is true, but it may also be added that the past *is* the past, and soon forgotten.

Notable scientists have expressed their willingness to aid the Society by joining. We handicap their work by hiding under an ambiguous, if not fictitious, name. We shall be known as idealists if we continue as an " Interplanetary " society. Our problems remain hypotheses—at all times a target for ridicule. Consider the matter well. To impede potential membership is fatal.

EDITORIAL

By P. E. CLEATOR.

What's in a Name?

IN an article in this issue, Mr. J. G. Strong, who is a Member of the Society, advocates that the name of the Society be changed, and that the word "rocket" be substituted for "interplanetary." Furthermore, he would not have us become merely a rocket society, as has our contemporaneous organisation in America; we are to emerge from the metamorphosis as an Institute of Rocket Engineers, or as the Society of British Rocket Engineers.

I am of the opinion—with which members of the Council agree—that such a suggestion is not one to be adopted lightly. At the same time, it is desired to give it every consideration—hence the publication of Mr. Strong's article. Before coming to any decision in the matter, the Council wish to have the views of all members, and a communication to the Secretary in this connection is earnestly requested.

The following points should be borne in mind: The *raison d'être* of the Society—however remote it may seem at present—is to achieve the conquest of space, and thence interplanetary travel. There can be no question, therefore, but that the term "interplanetary" is a fitting designation. Moreover, the word suggests, and embraces, rocket research. But is the contrary really true? I doubt it. While it is very probable that space *will* be conquered with the aid of the rocket motor—which, at present, admittedly provides the only feasible method of propulsion in a vacuum capable of immediate development—there is no guarantee that this will always be so. It must be remembered that man did not think of a propeller when he first attempted to fly. There is always the possibility, therefore, that a rocket society, in so far as interplanetary travel is concerned, may ultimately miss its veritable aim.

Finally, there is the *reason* for the proposed change. Are we to pander to public opinion (for that is all it amounts to)—an opinion which held to ridicule the votaries of heavier-than-air flight, and which refused to credit the marvel of wireless telegraphy to such good effect that the inventor died heart broken, deserted even by his friends, who also deemed him mad? Is that, forsooth, the opinion to which we must bow?

And *a priori*, it seems to me that a change in name, regardless of the reason for it, would be universally misconstrued as an admission of doubt, as a confession that the interplanetary idea only belongs to the realm of extravagant fiction.

Let us expunge all suspicion of hypocritical subterfuge, and unhesitatingly declare whether we believe in the possibility of interplanetary travel or not. For there lies the answer to the question of changing the name of the Society.

A MISTAKE OF THE ANTAGONISTS OF SPACE TRAVEL

By Dr. Ing. OTTO STEINITZ,
Chairman of the E.V. Fortschrittliche Verkehrstechnik.

SPACE travel is at a critical stage of development to-day. Past generations knew of it only as a theme of scientification, the authors of which, through lack of knowledge, resorted to innumerable and purely imaginative artifices for overcoming the problems involved. Not until after the beginning of the present century did the theory of space travel, at the hands of Professor Oberth, Robert Esnault-Pelterie, Dr. Goddard, and others, emerge from extravagant fiction to a scientific possibility.

It was these pioneers who proved that it was theoretically possible to achieve interplanetary travel by utilising the power of rocket exhausts. But there was, and still is, a wide gap between theory and actual practice. The latter demands the construction of a vessel—the space ship— capable of efficiently utilising the power of the rocket motor. No such ship has yet been invented.

Progress in this direction is seriously impeded by the question of expense. The solution of this problem entails that the world be convinced that the theory of space travel is not at fault. And in this connection, it is strange, yet true, that there still exists many a prejudice and misconception, even among the scientifically minded, which, by all rights, should have been eliminated years ago.

One of the greatest of these, perhaps, and about which I lectured so long ago as the year 1904, concerns the amount of power necessary to overcome the gravitational influence of the earth.

Disregarding air resistance, calculations show that this power amounts to approximately 6,000,000 kilogram-metres* for every kilogram of weight involved. It is of no consequence how great the speed of ascent is, nor does it matter whether the course is a straight line or not. *Distance* is the important factor. Because the force of gravity varies directly as the mass and inversely as the square of the distance, the greatest amount of power is required in the immediate vicinity of the earth. Once the earth has been left behind, it matters little, in so far as power is concerned, whether we contemplate a journey to the moon, Mars, or more distant objects.

*Kilogram-metre : 2.7235×10^{-6} kilowatt hour; 3.6530×10^{-6} horse power-hour; 0.0027235 watt-hour ; 0.0034177 cubic foot-atmosphere ; 0.0092972 British thermal unit (mean) ; 0.096782 litre-atmosphere ; 2.3427 gram-calories (mean) ; 7.2330 foot-pounds ; 9.80665 joules (absolute) ; 232.71 foot-poundals ; 1×10^{5} gram-centimetres ; 9.80665×10^{7} ergs.

There is no known fuel or explosive capable of delivering 6,000,000 kilogram-metres per kilogram. The most powerful fuel which we possess is a mixture of liquid oxygen and hydrogen, which gives about 1,700,000 kilogram-metres per kilogram.

Consequently, there are many who doubt that the problem of space travel is capable of solution. It is contended that it is impossible to lift a body out of the earth's influence because there is no known fuel able to lift its own weight, let alone a space ship and its contents. The argument *seems* sound, and even physicists are misled by it.

Actually, it is not necessary that the fuel should be carried beyond the earth's influence. The fuel will be consumed at the onset of the journey, and its energy imparted to the ship. Thus, as a result of fuel consumption, the weight of the ship will continually decrease, while its momentum will progressively increase. In this way, the ship will acquire sufficient kinetic energy to overcome the earth's gravitation. Calculations dealing with the power necessary for an interplanetary journey, therefore, are based on the fact that the bulk of the fuel will be left behind, after having given up its energy to the ship, well within the earth's influence.

A simple analogy will make this clear. In shooting an arrow from a bow, energy (from the muscle of the archer) is first stored in the bow. It has been calculated that this power amounts to about 20 kilogram-metres for every kilogram in weight of the bow. Now 20 kilogram-metres is just sufficient to lift 1 kilogram 20 metres, at the earth's surface. Yet it would be absurd to maintain that the bow could not shoot higher than 20 metres, for those 20 kilogram-metres of energy in every kilogram of the bow are not required to lift the bow itself. On the contrary, the energy is used to project the arrow which, because of its comparatively small weight, can be shot to a much greater height. Let us suppose that the arrow weighs 1/20th of the weight of the bow. It would rise 20 times as high as the bow could transport itself—that is (excluding such factors as air resistance) 400 metres.

In interplanetary travel, the space ship represents the arrow, the fuel the bow. And the altitude obtainable by the ship is in no way limited by the weight (or mass) of the exhaust gases which are left behind.

I trust that this explanation of what, to the uninitiated, must appear a hopeless disparity between the amount of energy required for an interplanetary voyage, and the amount of power which exists in known fuels, will serve to remove prejudice in this connection, and thus open the way for a renewed interest in rocket research.

o o o o

NEW MEMBERS.

The following new members were elected during the months of July, August and September of this year :—

Fellows.

DIPL. ING. E. LOEBELL ...	Cleveland.

Members.

T. E. ASHCROFT	Liverpool.
K. W. CHAPMAN	London.
F. W. L. GODDARD, B.Sc. ...	Tolworth
E. HASTIE	Liverpool.
F. P. KNIGHT	Walsall.
T. WHITE	London.

Associate Members.

R. J. AMRAM	Istanbul.
A. C. CLARKE	Taunton.
J. HEGGINBOTTOM	Hyde.
R. MORRIS	London.
G. N. WILDISH	Newbury.
A. C. WOOD	Hyde.

The annual subscriptions for the three classes of membership are : Fellowship, £2 2s. 0d. ; Membership, 10/6 ; Associate membership, 5/-.

All classes of membership are open to both sexes, and all members receive free copies of the Journal of the Society.

Ordinary meetings of the Society are held fortnightly in winter, and monthly in summer, at which time addresses on all phases of the activities of the Society are presented by members and invited speakers.

For full particulars and Membership Application Forms, address all enquiries to :—

THE SECRETARY,
THE BRITISH INTERPLANETARY SOCIETY,
34, OARSIDE DRIVE,
WALLASEY, CHESHIRE, ENGLAND,
or to
L. J. JOHNSON, Esq., *Secretary*,
THE BRITISH INTERPLANETARY SOCIETY,
46, MILL LANE,
LIVERPOOL 13, ENGLAND.

J. & C. Moores Ltd., 40-42 Brownlow Street, Liverpool 3