rather to psychology, the social sciences, and the philosophical clarification of ideas. With all the many faults of these undisciplined studies, they seem to talk about—or help us to talk about—the important things, namely *us*.

I don't see how Space Travel can make our vital tasks any easier. I *feel* as if it would make them harder; as if someone were lowering back-cloths of steadily increasing inappropriateness behind the human actor, like the Marx Brothers in *A Night at the Opera*. However, I expect this is all prejudice and nonsense. Space Comics would still be silly fantasy even if the world were brought into correspondence with them, but then, fortunately, I suppose it can't be. Humans aren't going to be turned into cartoon characters, and they are a part of the world, when all is said and done.

—J. M. HINTON,
Lecturer in Philosophy, V.U.C.

★

## COMMENT IN BRIEF

**Librarian:** Well, I don't know really what to think. But isn't it terrible really? Something could be up there and we wouldn't know anything about it.

**Housewife** (very Kiwi): "Ha, Ha," I said when I heard it first. "They have done it first after all." And all these Yanks running around like little boys! Especially the bloke who said it was just a hunk of iron that anyone could send up. I think he was crackers.

**Contractor:** It makes you wonder just what they have got. I don't like the idea of them shooting things up above us at all. There should be some kind of international control.

**Overheard in Pub:** Search me, I don't know how it stays up there. Whose round is it?

**Engineer:** It is the future that is interesting. Manned satellites and that sort of thing. Do you know that, if you were one of identical twins and left the earth, you'd be younger than your twin when you came back? I can't follow all the mathematics of it, but that comes into Einstein's Theory of Relativity.

**Shipping Clerk:** Oh, it's way above my head!

**Female Relative** (aged): Almost anything seems possible. And I can't help wondering what God thinks about it all. You'll see! They'll go too far one of these days.

**Typist:** Oh yes, it is wonderful I suppose. But I don't go in much for that sort of thing. What I mean is what's the point of it anyway if it comes to that.

## ENGINEER

SPEAKING as an engineer one's immediate reaction is praise for the scientists and technicians who worked it all out, and some surprise that it has happened earlier than had been forecast. As a spectator it is difficult to know the reaction of the American engineers to all this, but from the quoted comments of their spokesmen it appears that national pride is somewhat hurt. I can't help feeling though that these comments have been most unwise and also most unfair to the American technician. That Russia won the race is hardly surprising. A couple of years ago Sir Winston Churchill gave the figures that tell the whole story. Russia has some 50,000 engineering graduates a year, United States 25,000, and Britain only 1,800. And the Russians recently advertised their intention to train four million engineers and their technical assistants and craftsmen in five years. No one, I gather, is paid higher or starts higher in the social scale in Russia than an engineer. This is not so in the West.

In a society which is predominantly agricultural the farmer is the most important member of the community; in our present type of society the engineer should occupy this position. Where you have vast sums of money spent on the training of technicians you can't help but have rapid technological progress.

This is a strong plea for the recognition of the engineer as an important member of any society that wishes to hold its own in the present world race for supremacy. While I personally have no leaning at all towards what we understand as the Communist Way of Life, there is little doubt that in the production of a vast army of scientists and engineers it is responsible for putting Russia where she is today. It is up to the West to appreciate this reason for this change in the balance of power, and to take whatever steps it can to accord the engineer facilities, and encouragement, in his work.

★

MY first reaction was a rather mean pleasure that the Russians had beaten the Americans, and without nearly so much talk. My second was a certain amout of concern that we in the West are a bit soft in the competitive race. Russian education, for instance, applies much tougher standards than we are prepared to allow for our children: "Life is real; life is earnest."

## THE LAW

We don't want to live in that ruthless way, but we may pay for it by doing without the advances that scientific development makes possible. The satellite's launching shows clearly that we have been rather led up the garden path concerning the technical ability of the Russians.

I wonder, all the same, if this event is not just another grandiose human device for dodging more important problems. We find it a great deal easier to experiment in science than to attack problems like the world food supply or how to live at peace.

The legal aspects are most interesting. Our property law, like that of ancient Rome, is based on the principle, *cuius est solum, eius est usque ad caelum et ad inferos*—ownership extends from hell to heaven. In other words property rights extend from the centre of the earth outwards into infinity. Legislation has modified this for private property. For instance, you can't complain if N.A.C. flies aeroplanes over your piece of land, though they are absolutely liable if anything should drop on you. But in international law the sovereingty of national states is based on the undiluted principle. If an aeroplane flies over another country without permission it is an intruder. There has never been any dispute that a nation is entitled to complain of such trespass. Hungary imposed an enormous fine on the crew of a U.S. aircraft forced down by their air patrols, and the fine was paid, though under protest. It is agreed in the West, however, that shooting down is going too far.

Although this Roman Law principle is accepted in international law, nobody knows to what altitude it applies. It can be assumed to extend at least to the greatest height reached by piloted aircraft, but there is still a big gap between that and the present satellite. I think the purpose of the law is to ensure that a country's territory is free from unwanted observation and from potential attack—yet nowadays how is anyone to know when these conditions apply? We are not even certain whether or not the present satellite is capable of taking photographs. Of course, in this case, any trespass on territorial air could probably be justified on the ground that general interest constitutes tacit consent.

Any long-term solution of the legal problems could only be a result of international agreement. I think what we are likely to get is agreement on a conditional open-space rule, which may be coupled with international inspection of satellites and their equipment. It may even be the beginning of a break-through in policies of scientific secrecy.

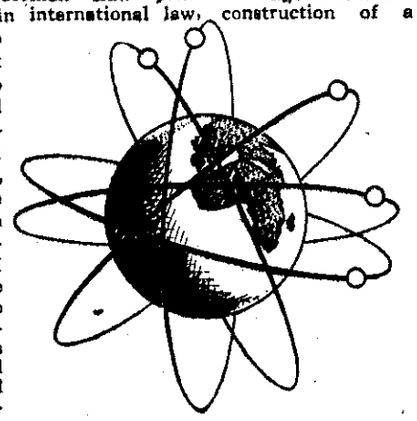
There are a couple of interesting sidelights. One is that the scientists apparently are not perfectly sure the satellite and its rocket *will* burn up on reaching thicker air. The Sydney businesshouse which has ensured against damage with Lloyds may yet collect. If it did, I should think the underwriters might have a legitimate claim against the Soviets as owners of the falling objects.

Another aspect is that in war an intercontinental ballistic missile may cross neutral territory. Now, to remain neutral, a country must not permit passage of troops or munitions. The question may arise: Should every neutral country be obliged to maintain fleets of anti-missile missiles in order to prevent such passage and maintain its neutrality?

—E. K. BRAYBROOKE,
Senior Lecturer in Jurisprudence, V.U.C.

★

WE had known four or five months ago that the Russians had started construction of a satellite so the launching was not a complete surprise. What was surprising was that they succeeded so quickly, and so much in advance of the United States. We can no longer be complacent about Russian scientific capacity.



But the satellite wasn't put up there just for the fun of showing how clever we are. It was for the International Geophysical Year. The Americans plan to pack their satellite with instruments, and no doubt the Russians have done the same, so we should learn a

## ASTRONOMER

lot about the structure of the earth among other things. My particular hope is that we can now get some measure of the radiation from the sun. Our atmosphere cuts out much of the ultra-violet region of the spectrum, but instruments in a satellite will not be affected.

On the sun there are flashes of exploding hydrogen gas — almost like lightning—which cover huge areas. Radiation from these affects our ionosphere, which in turn affects the transmission of radio waves. We don't know, but we suspect it is the ultra-violet radiation that does the affecting. The satellite could check on that. The cosmic ray "showers" we get on the surface are thought to be secondary effects of the rays which hit the ionosphere—a kind of chain reaction downwards—and the sphere ought to measure these things and give us an idea of the nature of the primary rays. These studies of the ionosphere are important for radio, of course, and it may be that in future we'll be able to broadcast the most dreadful programmes over much greater distances.

We have not yet got the instruments for it, but if we could get a photograph in deep ultra-violet light the stars may well look quite different. Some that are quite faint here may look blindingly brilliant from outside the atmosphere. We suspect that they are. It would have to be by photograph, though, because ultra-violet is invisible to the human eye, besides being very damaging. It would not do to look directly at the stars from a manned satellite.

I have not looked at the satellite through our telescope—there is too little time, and it would only be from personal curiosity. Our main interest at this observatory will be in the solar outbursts and their subsidiary effects. It will take time, of course, for information to become available, but it could be of great use to us.

—I. L. THOMSEN,
Director of the Carter Observatory, Wellington.

★

I'M intrigued to find that the newspapers refer to this thing by its Russian name of sputnik. The English language has welcomed a new word, just as it welcomed the word blitz. Now whether this silly thing goes round circling the globe for a month or a year I don't really care:

## UMBRELLA MAN

I have consulted my physical, spiritual and financial well-being and found it makes no difference at all. At the same time, when I heard that signals from it had ceased, a loneliness struck. Somebody had removed an umbrella that I had never had before.

I understand that over 100 of these things are to be projected beyond my own immediate orbit. Somehow this makes me feel less lonely. But if the rocket *and* the stick are going to stay out there in space — while I go round and round faster than I can ride a bicycle—it rather militates against Brick Bradford, scrum-cap or not, projecting himself into his usual enormities.

—DENIS GLOVER.