Signals from Mars.

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In one of the London Cinemas they are showing a film entitled a "Trip to Mars". A band of youngmen go to Mars (where, of course, the people are thousands of years ahead of us,—there is no bloodshed, no eating of meat nor drinking of wine) and after a time return—the hero with the daughter of the Prince of Wisedom on the planet Mars, as wife. Apart from the fact that the film is said to be a triumph of artistic production, the imagery is undoubtedly of great interest not merely to the cinemagoer but to the astronomer as well suggested evidently by the recent discussions in the newspapers on the behaviour of wireless receivers. It will not therefore be amiss to essay an appraisement of the scientific value of Martian speculations generally—which periodically find their way into the newspapers.

In order to have a clear apprehension of the speculations to which wireless indications have given rise, it is necessary to remember in what wireless telegraphy consists. In wireless signalling (as in the case of the ordinary telegraph) we have a sending station at which periodic electric disturbances (electric oscillations) are set up by a suitable device at the will of the operator, corresponding to any proposed signal according to a certain convention, or Code as in the case of 'Morse' Code of ordinary telegraphy. These oscillations travel through space and on reaching a receiving station, indicate their presence by producing effects, which enable them to be read as messages by any one who knows the sender's code. By a suitable device also, the message may be recorded as *dots and dashes,* as in Morse telegraphy. On the whole, then, it is seen that there are three main factors in the operations : Electric oscillation, at a certain point of space (the sending station), corresponding effects, magnetic or otherwise at another point of space or receiving station and a code—agreed upon by the two stations

viz. the one at which the signalling clerk operates and that at which the receiving clerk interpretes the signals.

Now it appears that not long ago, several receiving stations had their records interspersed with marks, which from the point of view of actual signals were undoubtedly spurious. And the ingenious suggestion was made that these constantly recurring marks were signals from Mars. It is obvious, however, that in order to explain the spurious marks at the receiving stations, all that we have to admit is that there were electric disturbances of unknown origin and unknown meaning at unknown regions of space, which the recorder of the receiving stations automatically picked up. And it would no doubt be a legitimate subject of enquiry as to what the origin of these electric disturbances was. Unfortunately, the electric phenomena in the atmosphere generally, and in particular, in the upper regions are so complicated and so little known that it would probably, in the persent state of our knowledge, be a fruitless search. Nevertheless, the idea of a Martian signalling to the earth is wild flight of imagination, which goes immeasurably beyond the boldest speculations, permissible in science.

The only data that are really available to us are supplied by the telescopic appearance of the planet and its relative position in the Solar System. From the fact, that it is neither too near the Sun as Mercury nor too far off as Jupiter, it would be reasonable to argue that life such as is known to us and which for its existence and growth depends on Solar rays is possible on the planet. From its telescopic appearance also, the snowcap for instance, the surmise seems to be justifiable—that it contains water and snow and, therefore, atmosphere such as is alone consistent with life, as we know it on the earth. Beyond this, it is not safe to go. The so-called canals have been the subject of much speculation, but though it would be most gratifying, if they were really such, it seems to be certain that to read into the markings, that are alone decipherable on the planet's surface, an indication of great engineering skill, would, in the present state of Science, be mere poetic fancy. If this be granted, we seem to be very far from

an explanation of the so called signals on the Martian hypothesis.

For, even if we admit, as we may with good reason, that there is life on the planet, it is not so certain that forms that inhabit it will be in any sense similar to those that are familiar to us on the earth. Unless, indeed it could be proved that the simplest from of life is unique and that the process of evolution is also a unique process, it would not be safe to admit that the planet is inhabited by beings similar to ourselves as the highest form of life on its surface, It is, thus, not quite *certain* that the highest form of life on Mars, if such exists, is really capable of communicating with the earth as is often assumed in these discussions. There is thus much force on the contention of a writer in the "Scientific American" who says :—

"On our own planet, the development of life apparently entered at an early stage upon two diverse roads. The forms subsequently evolved though probably of common ancestry are nevertheless clearly and naturally divided into two kingdoms, the animal and vegetal. But there is no reason for supposing that the course of events has been the same in other worlds than ours, e.g., it may be that on Mars plant life only exists. Now, suppose that, as the speculators on the subject commonly assume Mars has supported life longer than on the Earth, In such a case, the plant forms would presumably have reached a high stage of development. Plants would there exist, compared with which, our highest plant such as daisies and asters, are simple and rudimentary. Nevertheless, it is not conceivable that any plant, however high in the scale could hold communication with the human race".

Granted, therefore, that Mars is inhabited by living beings there is the initial difficulty that the highest form on its surface may not be human, as we know them on the earth. At the same time, there is no reason to suppose that given life, the process of evolution will not be the one that we are familar

with on the Earth—that the process of evolution is other than a unique process. The following remarks of the writer quoted above seems accordingly to overshoot the mark:—

> "However I think that it is most reasonable to suppose that if life has been produced at all upon other planets than our own, it has assumed forms of which we know nothing; forms which may be neither animal nor vegetal, which transcend our experience and of which we are therfore quite unable to conceive. Given life, plastic and protean and the laws of probablities, and such a result would seem to follow as a matter of course."

As I have just stated, such a contention is somewhat extravagant. It follows, therefore, that we may very reasonably argue that Mars may very possibly—if not probably—inhabited by beings similar to ourselves and capable of inventive genius possesed by man. We may well admit this, if for nothing else, simply because we are unable to conceive a course of development other than that which has operated in our own planet. But even if we grant this (the problemetic nature of which is by no means negligible), our difficulties are by no means solved. For we have to further admit that the process of evolution has been so much longer and the resulting intelligence so much higher on Mars than on the Earth that the Martians are capable of devising and weilding wireless apparatus of inconceiveably stronger calibre, such as is capable of signalling through distances, of the gigantic dimensions, such as space between two planets! In a future paper I propose to detail the relative magnitudes that such a supposition involves. It is not however difficult to realise that in the present state of our knowledge, anything like the Martian achievement is beyond our purview. It is of interest, however, to note that, if in the course of evolution on our own earth, it comes to pass that human intelligence is able to compass the distance that. seperates us from Mars, through the wireless, the concomitant inventions in telescopy and photography may also enable them to decipher a detailed

knowledge of the planets and its inhabitants. Till then, however, we must be content only to speculate.

But is there any reason ro suppose that Martian intelligence is of the higher order required for our theory ?

The question of the ages of the planets is still an unexplored field.* Even in the comparatively simple case of the Earth, where direct data of some kind are available. the range of probablity is so wide that it is useless at present for all scientific purposes. In the case of Mars, practically no data are available, so that the only justification for the supposition that Mars is older than the Earth or, in any case,life has existed longer on it than on the Earth is, that it fits in with the hypothesis of a superior Martian intelligence.

But even if this superior intelligence is postulated and if indeed this is responsible for the Signals, what prospects would there be for these Signals to be read by us without the code and knowledge of the language on which the code is based ? In fact, circumstanced as we are in relation to the Martians, any communications between the two worlds seems to be altogether out of the question and that it does not seem to redound to the credit of the Martian intelligence that it should have attemped the fruitless task of holding converse with us. The ingenious hypothesis on analysis is thus proved to be so incomprehensible that one is surprised at its periodic recrudescence in the newspapers even for the purpose of mere striking the imagination of the ordinary reading public.