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SCIENTIFIC  
ROMANCES

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# SCIENTIFIC ROMANCES.

BY  
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WHAT IS THE FOURTH DIMENSION?  
THE PERSIAN KING.  
A PLANE WORLD.  
A PICTURE OF OUR UNIVERSE.  
CASTING OUT THE SELF.

FIRST



SERIES.

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What ways. Either at both ends, a thread to be moved down. If the thread simply stretched straight moved perpendicular to the sheet. Suppose a strain placed downwards. That is, motion of such a line slope. 2. In another thread to pass through them. 3. moving figure to another work with what straight through.

What to a creature of steps familiarity of tions of the which require greatest excited account is are very sine to generate and this vertically Fig. 2 represents straight Obviously all him of other. on his part were to fine, he move in directions, But when Why sho the line A crea could be nd erous without the physiology, we should probably—to suit an apparent mansions would be full of suffocating conditions of the construction of the dangers attending an attention concentrated on the

# What is the Fourth Dimension?

## CHAPTER I.



At the present time our actions are largely influenced by our theories. We have abandoned the simple and instinctive mode of life of the earlier civilisations for one regulated of the devices of intelligence. In such a state it is impossible to conceive that a danger may arise, not only from a want of knowledge and practical skill, but even from the very presence and possession of them in any one department, if there is a lack of information in other departments. If, for instance, with our present knowledge which can be regarded to the conditions laid down by the most-constructed mansions perfectly draught-tight, and the knowledge of the construction of the health prevent it from In no dissimilar way the mental balance is saved from dangers attending an attention concentrated on the

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*What is the Fourth Dimension?*

of threads have consciousness, and that the moving figures share this consciousness, only that in their case it is limited to those parts of the shapes that simultaneously pass through the plane. In the plane, then, we may conceive bodies with all the properties of a material system, moving and changing, possessing consciousness. After a while it may well be that one of them becomes so disassociated that it appears no longer as a unit, and its consciousness as such may be lost. But the threads of existence of such a figure are not broken, nor is the shape which gave it origin altered in any way. It has simply passed on to a distance from the plane. Thus nothing which existed in the conscious life on the plane would cease. There would in such an existence be no cause and effect, but simply the gradual realisation in a superficies of an already existent whole. There would be no progress, unless we were to suppose the threads as they pass to interweave themselves in more complex shapes.

Can a representation, such as the preceding, be applied to the case of the existence in space with which we have to do? Is it possible to suppose that the movements and changes of material objects are the intersections with a three-dimensional space of a four-dimensional existence? Can our consciousness be supposed to deal with a spatial profile of some higher actuality?

It is needless to say that all the considerations that have been brought forward in regard to the possibility of the production of a system satisfying the conditions of materiality by the passing of threads through a fluid plane, holds good with regard to a four-dimensional existence passing through a three-dimensional space. Each part of the ampler existence which passed through our space would seem perfectly limited to us. We should have no indication of the permanence of its existence.

in three dimensions. Suppose a piece of paper to represent a plane. If it is infinitely extended in every direction, it will represent an infinite plane. It can be divided into two parts by an infinite straight line. A being confined to this plane could not get from one part of it to the other without passing through the line. But suppose another piece of paper laid on the first and extended infinitely, it will represent another infinite plane. If the being moves from the first plane by a motion in the third dimension, it will move into this new plane. And in it it finds no line. Let it move to such a position that when it goes back to the first plane it will be on the other side of the line. Then let it go back to the first plane. It has appeared now on the other side of the line which divides the infinite plane into two parts.

Take now the case of four dimensions. Instead of bringing before the mind a sheet of paper conceive a solid of three dimensions. If this solid were to become infinite it would fill up the whole of three-dimensional space. But it would not fill up the whole of four-dimensional space. It would be to four-dimensional space what an infinite plane is to three-dimensional space. There could be in four-dimensional space an infinite number of such solids, just as in three-dimensional space there could be an infinite number of infinite planes.

Thus, lying alongside our space, there can be conceived a space also infinite in all three directions. To pass from one to the other a movement has to be made in the fourth dimension, just as to pass from one infinite plane to another a motion has to be made in the third dimension.

Conceive, then, corresponding to the first sheet of paper mentioned above, a solid, and as the sheet of paper was supposed to be infinitely extended in two dimensions, suppose the solid to be infinitely extended in its three dimensions, so that it fills the whole of space as we know it.

Now divide this infinite solid in two parts by an infinite plane, as the infinite plane of paper was divided in two parts by an infinite line. A being cannot pass from one part of this infinite solid to another, on the other side of this infinite plane, without going through the infinite plane, *so long as he keeps within the infinite solid.*

But suppose beside this infinite solid a second infinite solid, lying next to it in the fourth dimension, as the second infinite plane of paper was next to the first infinite plane in the third dimension. Let now the being that wants to get on the other side of the dividing plane move off in the fourth dimension, and enter the second infinite solid. In this second solid there is no dividing plane. Let him now move, so that coming back to the first infinite solid he shall be on the other side of the infinite plane that divides it into two portions. If this is done, he will now be on the other side of the infinite plane, without having gone through it.

In a similar way a being, able to move in four dimensions, could get out of a closed box without going through the sides, for he could move off in the fourth dimension, and then move about, so that when he came back he would be outside the box.

Is there anything in the world as we know it, which would indicate the possibility of there being an existence in four dimensions? No definite answer can be returned to this question. But it may be of some interest to point out that there are certain facts which might be read by the light of the fourth dimensional theory.

To make this clear, let us suppose that space is really four dimensional, and that the three-dimensional space we know is, in this ampler space, like a surface is in our space.

We should then be in this ampler space like beings confined to the surface of a plane would be in ours. Let

the same way, we obtain a block which has a curious relation to the first block.

The ordinary block is shown over again in Diagram III. Diagram IV. is the new block. The new block is like a looking-glass image of the old block. It is just

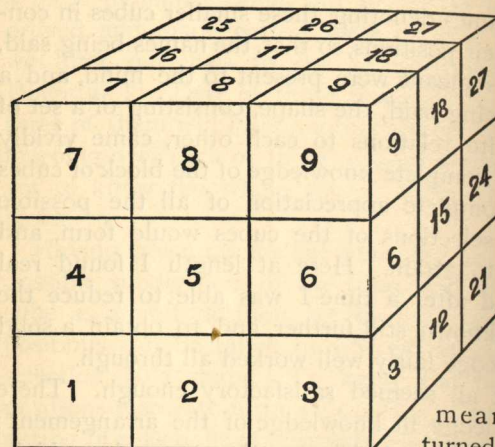


Diagram III. is a block.

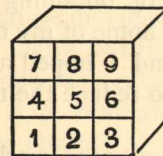


Diagram V

Also, if we take selections of blocks we get figures which are just reversed. Thus 1, 4, 7, 8, in Block III, means a figure turned to the right; in Block IV. a figure turned to the left. Again, consider the two figures formed by selecting the cubes 1, 4, 7, 8, 17, from Diagrams III. and IV. respectively. We get two figures which are just like one another as arrangements, but which we cannot turn into one another by twisting.

Considered as arrangements in themselves, these figures and these blocks seem to be identical, for the relationships of cube to cube which are present in the one are all present in the other. But considered as shapes they are not identical. For they will not coincide.

The whole matter becomes much more clear if we consider the relationship between the individual cube used and the block which it forms.

There are two starting-points, either of which we can adopt. We can start with the real material cube, or we can start with the act of arranging. When I speak of the real material cube I do not want to call

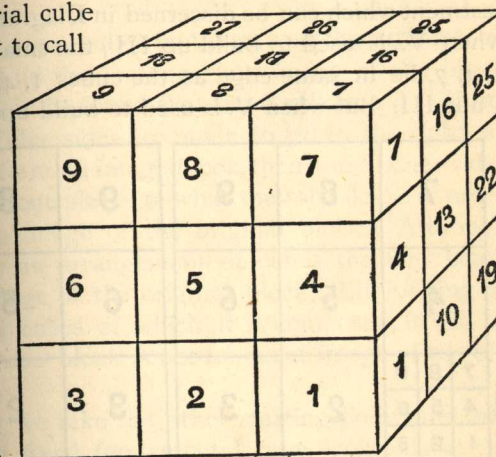


Diagram IV. is its image block.

attention to the kind of matter of which it is composed, or to the nature of matter, but to the fact that it is to be a real cube such as can be made, and which, if one edge or corner be marked, will retain that mark just where is not a product of but an object, with objects in general.

Let us start with the real material cube shown in Diagram V., which is the model on a small scale of the Block III. The numbers in it show the small cubes of which we suppose it to be built up after the pattern of Block III. The numbers also serve to show the distinction of positions—that is, we can refer to the right-hand corner or edge, &c., by saying the numbers of the small cube which lies there.

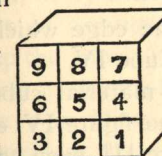


Diagram VI.

it is—a cube which the imagination, the properties of cube. Let us take Diagram V., which is the model on a small scale of the Block III. The numbers in it show the small cubes of which we suppose it to be built up after the pattern of Block III. The numbers also serve to show the distinction of positions—that is, we can refer to the right-hand corner or edge, &c., by saying the numbers of the small cube which lies there.