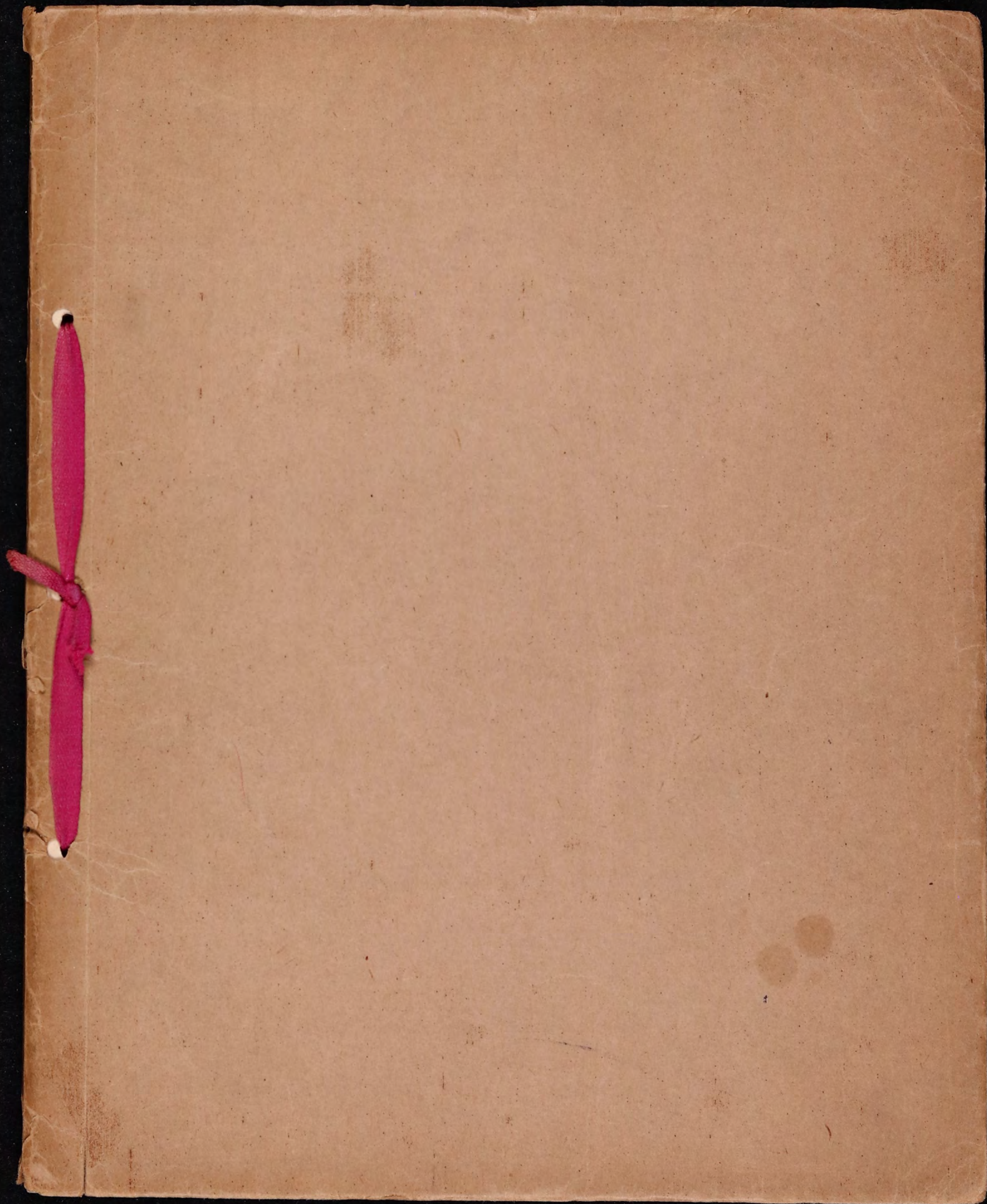




This adventure in intellectual autobiography  
is dedicated to my wife

BERYL MARY HARDING

and intended for those who find that  
the recognized philosophies of our time  
do not altogether meet their needs

THE HIERARCHY OF HEAVEN AND EARTH

A New Diagram of Man in the Universe

D. E. Harding

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## THE HIERARCHY OF HEAVEN AND EARTH

### A New Diagram of Man in the Universe

(Synopsis)

#### PART I

##### CHAPTER I THE VIEW OUT AND THE VIEW IN

1 (page 1 of full version) The missing head. This book is an unconventional attempt to discover, for myself and in my own way, what I am and what I amount to in the universe.

What am I? Let me try to answer this question as honestly and as simply as I can, forgetting the ready-made answers.

At once I make a startling discovery --- I have no head! Here are my hands, arms, parts of my trunk and shoulders --- and, mounted (so to say) on these shoulders, not a head, but this paper and desk, the wall of this room, the window, the sky beyond.... My head has gone, and in its place is a world. And all my life long I had supposed myself to resemble other men and animals!

2 (5) The head found. A further discovery follows: while I have no head where I thought I had one, I have innumerable heads where I thought I had none --- heads mysteriously shrunken and variable, twisted back-to-front, and multiplied endlessly, in every reflecting surface. That my head pervades the region round about is indicated, first, by the fact that I have only to give any object there a polish to find my head in it; second, by the fact that if I take a box with a small hole in it (that is, a camera) and point it to the centre of the region, I find my head trapped inside the box; third, by the fact that my friends tell me that my head is present to them where they are, so that they can describe it in detail.

3 (5) The human region and its centre. There is, then, a zone where I keep my heads. Approaching observers report that, towards the inner edge of this zone, my head grows till only a part is visible, and that this part gets hazier and hazier till nothing appears at all; receding observers, on the other hand, say that towards the outer edge of the zone my head shrinks till its place is taken by the whole body, and this in turn shrinks till it vanishes altogether. These, therefore, are the inner and outer boundaries of what may be called my human region. My friend, entering this region, takes on my head; and I take on his, for each of us is situated in the human region of the other.

But we are not content to exchange heads. Neither of us holds on to what is presented to him, but instead projects it upon the other. Thus my friend insists that the head he registers is not where he is, but here at the centre of my human region; and he says this regardless of the fact that if he were to come here to verify his statement he would find on the way things very different from my head, and then nothing. Or, if he came all the way here, he might find, not what he calls my head, but what he calls his own.

Like him, I am haunted by elsewhere-ness. If I take myself as I am to myself, I find presented these men, trees, clouds, stars; and I scatter them all as if in a giant centrifuge, leaving the centre empty. If, instead, I take myself as I am to others, I am a host of creatures of numberless shapes and sizes; and 1.

all of them, though they belong out there, I pull in here as if by a powerful magnet, leaving none at large. Accordingly it is impossible to pin me down either to my centre here or to the centres of my regional observers there. I am a game of hide-and-seek in which hider and seeker never meet because each takes refuge in the other.

4 (8) The view outwards from the centre. Let me now examine, in more detail, the view out. I find presented here the most diverse objects, which may be sorted in many ways; notably according to their range or remoteness. All the men I register are dispatched to my human region a few feet or yards away; all the clouds to a greater distance; all the stars still further. If my friend is to reveal himself to me as a man, he must keep his distance; if he comes too near he is likely to appear as a mass of very lowly animals, and nearer still he may take on the guise of mere particles. In other words, the class distinctions I note among my guests are linked with residential distinctions. If you are a star, you can never trespass out of my star region into any other; if a man, your home cannot be far away. I allow no slumming in my zoned suburbs, and no social climbing.

5 (11) The view inwards towards the centre. No host can be found here amongst these ill-assorted guests, busy making off for their segregated homes. To find him it is necessary to accompany them on their outward journey. I must identify myself with a retreating observer, who reports what I am in each successive region. His story is of a dwindling head, a mannikin, a house, a street of houses, a town, a country, a planet, a star (a star that has developed into a solar system), a galaxy, and in the end a spark of light that goes out altogether. And if, finding this report unsatisfactory, he decides to approach me instead of going away, his tale is equally curious, and the end is the same. Whether he moves away or draws near, he finds all manner of nonhuman transformations, and finally nothing.

6 (12) Some common-sense objections answered. To the objection that it is not I who am so transformed, it may be replied; what I am is the question at issue, and may not be prejudged. In any case, if one view of me (say the back view) is not enough for the observer in my human region, if it is necessary for him to move about there to find out what I am, then I see no reason for restricting his movements to that one region, provided he keeps the centre of all the regions in view. Again, if I, from my side, am concerned with the inhabitants of many regions, it would seem fitting that my observer should not restrict himself to one of them. Moreover, if it is admitted that the near view, revealing something less comprehensive than a man, is nevertheless germane to my nature, then there seems no good reason why the far view, where the scene becomes more comprehensive, should not be equally relevant. At least at this stage, neither can be given in preference, and neither ignored.

7 (14) The view inwards and the view outwards brought together. Both my own view out and my observer's view in are so unexpected that, if either had to stand by itself, it might well be taken for an illusion. But they agree, each complementing and supporting the other. Looking in at me, and looking out with me, come to much the same thing --- with this vital difference, that whereas the first reveals my head, my human body, my planet, my star, my galaxy, the second reveals other heads, other bodies, and the rest. Thus the two accounts agree in describing me as human, planetary, sidereal, galactic, and differ only as to

which men, planets, and so on, are involved. The view in is of a particular one of these; the view out is of the others. And their combination, the twofold story which must now be told, is of a pair of mutual observers who, whether they retreat or advance, keep equal status. When one finds himself in the other's star region, he too is revealed as a star; when each inhabits the other's human region, they are men; venturing closer, they are less than men. Always their relationship is symmetrical.

8 (18) The elastic self. Now these remarkable metamorphoses are happening all the while. Consider the place I call here. When I tell my dog to come here, I mean to this part of the room; when my friend comes here, he comes to this house; when foreigners come here, they come to this country; if one day Martians arrive, they will arrive here, even though they alight in Australia. The rule is that my here expands and contracts along with my there.

Again, I am always taking up the viewpoint of, and identifying myself with, such diverse units as my solitary human self, my family, town, nation, race, and even planet. And this unit that I think for, that I vaguely feel behind me, that I have for backing, is on a par with what I am facing or up against. Once more, equality. I grow at a moment's notice a 'body' to match what I have in 'mind', though it is true I can discover this body only by taking up my station in other bodies, in my regional observers who are where I keep all my property. Here at the centre is nothing but a receptacle for others --- an infinitely elastic receptacle for infinitely elastic objects. In fact, this centre is continually swelling to include in its own nonentity the surrounding regions with their full population of observers, and continually shrinking to extrude them again, like rabbits out of a magician's top hat. Thus to perceive another man is to abolish this man -- atoms, molecules, cells, head, limbs -- in his favour; thus to perceive another planet is not merely to look beyond all of this one, nor merely to incorporate it, but also to dissolve the whole of it into room (so to speak) for that planet. When mutual observers approach, thereby shrinking in each other's estimation, each produces the other from his own central void; and when they recede again, thereby growing in each other's estimation, each does so by re-absorbing the other.

My receding observer finds it necessary, from time to time, to shift the direction of his gaze. He attends, say, to a cell; and then, as the cell shrinks and vanishes and a limb comes into view, his line of sight is likely to move a little. It moves again when the whole man takes the limb's place; and later there are shifts of direction from the planet's centre to the solar system's, and from this to the Galaxy's. And once more the inside story confirms the outside; my observer sees truly when he finds the lesser me eccentric to the greater; for when I temporarily forget my private interest and identify myself with my town, or country, or planet, I acknowledge a more distant centre, and for the time being place myself there. The larger the unit to which I am thus attached, the more remote its headquarters are likely to be. Initially eccentric, I can only grow by correcting this condition, stage by stage. My observer finds this out in his own fashion, as I do in mine.

9 (19) The depth of the picture. In place of the head I have lost, then, I may have almost anything here I like, so long as I project it, attribute it to another, read depth into it. This dimension of depth is peculiar; I have only to look at the house opposite to see that its distance is not given as its height and breadth are given. It is more actively and less directly discerned. The object's distance is our distance apart, a joint effort, shared in a way that its apparent breadth is not shared between us. 3.

There would seem to be three stages. (1) Between a pair of stars presented here for inspection there is evidently a space which I can measure, but between this star - the Sun - and either of them there is no such space, for the line connecting us, seen end-on, has no length at all. The pair of stars is here. (2) Yet I find it impossible to keep them here: they are bent on a long journey in depth. I see my guests home. (3) But in fact they are not simply lumped together here, nor simply scattered in my regions, nor simply on their way in or out. Neither the unified flat world here at the centre, where no residential class distinctions are recognized, nor the same world in fragments and scattered in all directions and to all distances, is enough by itself: everything suggests that they are conjoined in a living unity of process which is at once flat and deep, here and there, mine and not mine. I can see no way of ridding my constitution of this far-reaching ambiguity.

10 (22) Epilogue to Chapter I. This self-portrait is as yet a tentative outline, which will be corrected as the details are filled in.

## CHAPTER II MY KNOWLEDGE OF THE EXTERNAL WORLD

1 (24) The scientist is called in. Common sense suggests that, before going on, I should hear the scientist's account of the way I come to experience these objects of mine. How, in his view, do I see the hand that writes these words?

2 (25) The scientist's account of vision --- light. He tells me, in effect, that a portion of a star detaches itself, travels to my hand, and bounces off it into my eyes, where a pair of small inverted pictures of my hand is formed. I find this story full of difficulties. For instance, since sunlight (whatever that may be) takes time to get across from my hand to my eye, I see, not the hand I have now, but the hand I once had; and I do not see even this out-of-date hand, but only its surface, or rather, less than half of that surface. Further, if the light by which I see my hand is the light it rejects, which it refuses to make its own, is not the thing I see somehow the very opposite of my hand? How can I say it is pink if pink is the one colour it will have none of?

Again, I seek in vain any comprehensible account of what happens in the interval between my hand and my eye. If neither my hand, nor a flock of replicas of it, makes the journey, if what travels is quite different from what lies at either end, and is not starlike or handlike or pink or five-fingered, then all manner of doubts arise -- doubts which convenient little words such as light, and waves, and photons, seem quite unable to resolve.

3 (26) The scientist's account of vision --- nerves and brain. Putting all these difficulties to one side, let me consider the rest of the story. I am told that somehow there occurs at the back of my eye a picture of my hand --- shrunken, upside-down, and right-side-left. How do I get to know of it? The answer I am offered is, at its briefest, that no man can see my hand, but millions of animals, and that each sees not my hand but a tiny part of it, and in fact does not see that part but tastes it, and in fact does not taste it but tastes (I should say: reacts chemically to) certain changes in a light-sensitive substance in my eye -- all of which is going on in a place remote from my hand.

Certainly it is nothing like a taste, and still less like a star or a sunbeam or a hand, which passes along my optic nerve to my brain. The story is now of electrical impulses travelling along attenuated animal bodies. What happens at

the terminus in my visual cortex is no less obscure. It is safe to say, however, that no surgeon operating on my brain is ever likely to find there a model of my hand, and even if he did do so, he would have to explain how this dwarfed and pitch-dark version of my hand, composed of one kind of animals, can do justice to the full-size illuminated original, composed of a very different kind.

This is not the whole story -- much more than retinæ, optic nerves, and visual cortex, is involved in vision -- but its point is that everything depends on the unbroken incoming train of events; events in the sun, space, my hand, my eye, my nerves, my brain. For if this train is interrupted anywhere (as when the sun is darkened at night, or my eyes are shut, or my brain is injured in a certain way) then I cannot see my hand.

4 (29) The unknown outside world. If the foregoing account is in the main correct, I can only know what happens in a part of my brain, at the terminus of the incoming train of events. The outside world is an inference. Worse, it is surely the wildest of guesses, in view of all the hazards of that journey, with its variety of vehicles, and the exigencies of changing from one to another, and above all the immense discrepancy between the universe at one end and the brain cell at the other. To believe that 'the world I see' at this end is even remotely like 'the world as it is' at the other end, is blind faith. Moreover the entire story from sun to visual cortex is itself more than suspect; for it is impossible to throw doubt upon what this apparatus is alleged to reveal, without throwing doubt also upon the apparatus itself. And so, if I take the scientist's tale seriously, I am not even left with that tale, but only with my private collection of colours and shapes, which may have no relevance whatever to any universe beyond themselves.

5 (30) The senses other than vision. Nor does the scientist's account of the other senses help. For in every instance the tale is essentially the same -- a tale of outside events, of events in a sense organ, of events in nerves and brain. And only the last, which nobody pretends is like the first, is directly experienced. In short, my senses, whether taken singly or all together, are more like blinds than peepholes. If by some fortunate chance a chink should let through a ray of outer sunshine, I have no means of telling it from the candlelight within.

6 (31) Am I alone? The world, then, may be my dream, and I its sole dreamer. And even the dreamer may be a dream within this dream. At this moment a pink patch is moving across a larger white patch, to the accompaniment of a faint grating sound; there are also a certain warmth, a certain pressure. To be sure of much more than this is impossible.

7 (32) Shall I reject the scientist's story? The scientist's explanation of how he knows the world turns out to be an explanation of how he cannot possibly do so. And from the very start, by assuming the real existence of sun and hand and eye, he took that knowledge for granted, assuming the very thing that needed proof. Nevertheless I do not propose, on account of these contradictions, to dismiss his story. For, firstly, both he and I, if we are outside a lunatic asylum, cannot help but take on trust our perceptions of the external world; and secondly, we both believe his story to be substantially true and of the greatest practical importance. Instead of rejecting it, then, I shall try to retell it in a way that gets rid of its inconsistencies.

8 (33) The confusion in the scientist's story. He tells me that my world is not over there, but here 'in my head'. Now this is what I found in the previous chapter, with one all-important difference --- I find only the world here 'on my shoulders'; he finds my head as well. He overcrowds this spot I call here. But in fact my head and my percept will not mix. Here I am headless, eyeless, brainless; all are crowded out by my world. I keep such things over there in my regions, for my observers to appropriate. My world and my brain must keep apart. And this is only common sense. Manifestly my head could not contain the sun. I am where the sun is, not where my brains are, though it is true that they play their part in bringing about the sun's presence here.

The sun I now see is not shut up here in any little bone box; no hordes of primitive animals stand in its way. Freed now from all competition or confusion with eyes and nerves and brain, my objects are at liberty to come to themselves -- not copies or models or impressions of themselves -- here at the centre. The sun is a sun and sunny, not over there in itself, but here in me and in its other regional observers. And so with the plain man I say that roses are as red and as fragrant as they seem, and the real sun is warm and yellow, and marmalade and toast have a flavour that is all their own and no illusion. These colours and shapes and smells and tastes are not my way of misinterpreting the real universe, not even useful clues to a universe which produces such effects in me: they are the facts, the sort of stuff the universe is made of. And the reason why the scientist's story suggested the contrary was that it mixed the immiscibles -- my brain and my world.

9 (35) The scientist's story revised --- the inward journey. Let me, then, retell his story thus; -- Light from (1) the SOLAR SYSTEM (in particular from the sun) reaches (2) the EARTH (in particular its atmosphere) and eventually (3) my HUMAN BODY (in particular my hand) from which it is reflected to (4) my HEAD (in particular to my eye) some of whose (5) cells are specially affected. Since cells consist of molecules, and molecules of atoms, and atoms of electrons and protons, the story should then go on to show how the changes wrought in my cells are reducible to changes in and among these progressively smaller units.

Now the scientist who describes this train of events is none other than my approaching regional observer; for his account of how I see my hand is an account of his journey through my regions, from the place where he registers a star, through places where he registers a planet and then a man, to places where he registers mere particles, and in the end nothing definite at all. His tale is no longer of things in a row, with that mysterious abstraction called light leaping from one to the other, but of a nest of regional manifestations the first of which contains the second, the second the third, and so on to the void at the centre. He peels this star like an onion, discovering in it a planetary layer, a human layer, a cell layer, and many more, till he arrives at the very core which is nothing.

But this account so far is the very opposite of what is needed; it shows the universe breaking down by orderly stages to nothing here in me, whereas the question is how it is built up here. To remedy this defect, my observer must turn round, looking out with me instead of in at me; and then it is plain that while his journey from the sun was my undoing and eventually my abolition, it was at the same time the building-up of the sun. The moment of his arrival is the moment of the sun's completion, and of my reduction to a mere receptacle for it. The same radial process which is for me centripetal and destructive, is for my object centrifugal and constructive.

10 (37) The inward journey continued. But no competent travelling observer is content to give such a bare account of my regional organization. He is concerned with 'explanation', with the discovery of links between each regional manifestation and the next, till he comes to the centre of the system. For instance, he may note how the troubled condition of the planet as a whole affects my country, how this in turn affects my family fortunes, and how these affect my condition as an individual. He may then seek to describe how the stimuli which have thus converged upon my body's surface set up nervous impulses which converge upon my brain, and upon some particular brain-area, and even upon some particular synapse, or gap between two nerve cells --- upon the switch where some fatal connection is established, where the central decision, which is the point of the entire converging system, is irretrievably made.

11 (39) The outward journey. But this central decision issues in regional action, in a diverging system of events which spreads, by way of efferent nerves and muscles to my body as a whole, to my impact on my family and town and country, and my country's impact on the community of nations, and so on to the remoter regions. The connection made here at the centre is at once the final outcome of a world-wide converging stimulus, and the initiator of a world-wide diverging response: and the two chambers of this infinite hourglass are inseparable. The observer who reduces me to nothing by travelling to the centre, holds a return ticket.

My story is precisely the complement of his. I say he is nothing over there in himself, but builds up to manhood, say, or stardom, here at the centre, and reduces again to nothing as he returns home. He says I am a man or a star over there in my regions, but reduce to nothing here at the centre, and build up again to my original status as I return there. Whereas he finds (1) me regionally, (2) nothing centrally, (3) me regionally; I find (1') nothing regionally, (2') him centrally, (3') nothing regionally. And this is only another way of saying that the inward journey which is the making of my object is my unmaking, and the outward journey which is its unmaking is my making.

12 (40) Mind and body. To the central station I give the name mind, to the regional stations the name body. That is to say, my mind is the view out from the centre, my body the view in --- where the term view is given its widest meaning. The difference between my body and my mind, then, is firstly one of direction; secondly one of content (my body comprises this body; my mind, all other bodies); thirdly one of place (my mind is central, my body regional).

### CHAPTER III PROJECTION AND REFLECTION

1 (49) Errors of the instrument. If the regional object is nothing over there at its own centre, but comes to itself here in mine, how can I ever be wrong about it? The first half of the answer is that, as an empty receptacle for the object, I am incapable of distorting it: the instrument is perfect because it does not exist. The second half is that, since the object is what it is to all its observers, of whom I am but one, I must always distort it. But my errors are, basically, errors of omission. There is nothing in the object itself at its own centre against which regional opinions of it may be checked; they can only be checked against one another. The truest view, then, is the most inclusive; the untruest, the least inclusive. But in the end all are valid, because all go to make the object what it is. I know the object in so far as I become all its observers in all its regions.

2 (52) Errors of projection (i). But even if I can never be wholly wrong about the datum here, do I not often project it upon the wrong place -- as when I mistake the lamp on the hill for a star? I say that there are ultimately no errors of projection, but only uncommon and private projections which we call illusions, and common and public ones which we call true. If enough observers project upon any centre a consistent content, then we say that the thing becomes an objective reality, for no centre is armed to keep off anything that is attributed to it. In this lies the explanation of innumerable 'psychic phenomena': the real is what is consistently and persistently imagined.

3 (55) Errors of projection (ii). There is much evidence that no line can be drawn between 'unreal imagined objects' and 'real perceived objects'; and certainly there is none to show that there are two worlds, one of fact and the other of imagination. Rather it seems that there is one universe which is the work of countless 'observers' of every grade, busy projecting upon one another all their contents. Those relatively unreal ones which are the product and the source of few and feeble and peculiar projections, differ from the others -- the relatively real ones -- only in degree.

4 (58) Projection and reflection (i). Nor can I find any reason for dividing my objects into (a) genuine observers, who are two-sided and something for themselves as well as for me, and (b) mere things, whose views in are matched by no views out. There is much to suggest that a view in implies a view out, however rudimentary; that the observer, who is very apt to attribute to the object some of his own capacity for observation, does not do so in vain; that to be two-sidedly alive is to bring others to similar life; that observation is infectious or nothing. Primitives, children, poets, worshippers, find around them a vitality which is no longer their own projection, but comes back to them as a foreign influence. The phenomena of telekinesis and the poltergeist hint that the mountains which faith moves are not merely metaphorical. Authors testify that their characters develop an intractable life of their own, which startles or even menaces their creators. The evidence of psychic phenomena accumulates ....

It would seem that society is a great novel, of which each of us is at once joint author, and one of the characters, and many of the characters. At every level, we make each other what we are, by mutual projection and reflection.

5 (61) Projection and reflection (ii). And, after all, it is common knowledge that we get out of things what we put into them: our love and hate are returned, but not as ours; our enthusiasm is infectious; what we think of others, that we become.

Each grows aware of himself in and through his equals, without whom he is nothing; and his self-consciousness is not in the end a different thing from their consciousness of him. To confer on myself a body is to confer on the objects around me a mind, for only they are in a position to note my body; therefore the self-conscious man is not one but many, even if he is alone on a desert island. Someone over there is watching him, and that someone is himself, yet another.

6 (64) Projection and empathy. So far from being confined to this centre, I habitually place myself at other centres, enjoying as far as I am able, besides their view of me, their view of all the world. I cannot recognise a man as such without partially identifying myself with him, and taking up a share of his life. 8.

It is much the same with nonhuman and even inanimate things - trees, waves, clouds, mountains - I have the irresistible feeling of entering into what they are for themselves; I cannot divorce the manifestation here from its own centre (which I make mine) over there. Thus is established a two-centred system whose 'subject' and 'object' poles are frequently reversed; and the two-way traffic of this system, with all its experienced content of 'mind' and 'body', is indivisible. No item belongs exclusively to either pole, but to the system as a whole.

6 (66) The mirror. The other centre to which I thus join myself may be my mirror. What happens when I look in the glass is that I, who am nothing here, place myself there where I am a man, and project him back upon this centre. Now this is only a specially lucid case of self-observation in general; my glass does for me what my friends do, only with fewer complications, for I contribute only a part of my friend's nature, whereas I am for the time-being the whole life and mind of my mirror. What is happening everywhere obscurely is happening plainly here --- the mirror is living, active, human, and perhaps suprahuman, in commerce with the centres ranged about it. Between us, my glass and I achieve a man, but break the mediating radial processes (which appear abstractly in optical diagrams) and neither of us achieves anything.

8 (68) Some levels of projection-reflection. Our mutual status varies with our mutual range, and our mutual range is determined by the vigour of our projective activities. If these are short-range, we do not amount to much; if long-range, we are more comprehensive. Let me give some tentative examples. (a) Where there is no projection, no second centre, there is nothing, not even an electron. (b) For modern physics, a primitive physical particle is something only in so far as it has regional effects, or, in my terms, in so far as it projectively contributes to others. (c) Amongst cells, this projective activity is visibly bodied forth in mitosis; the dividing cell establishes two centres (centrosomes) whose commerce appears as the nuclear spindle. (d) In sexual reproduction, the offspring is a more long-range joint projection of the parents -- a projection which may, if it involves rearing, take many years. And it is only by making such new projections continually that the living can survive. (e) I have shown that self-conscious creatures have yet another way of populating the surrounding world. (f) And eventually they become interested, not merely in themselves as they appear to the spectator, but in the spectator's total experience; projection here means a real union of centres. (g) Finally, some of these self-conscious beings postulate a Being who does not find Himself in Himself, but in His Other, in His projected image; and add that all which exists owes its being to this, the supreme and all-embracing instance of projection-reflection, of the imagination which creates.

Note that the scope and quality of what is projected improve with range; and that the lower grades of projection continue to play their part below the higher grades, as their basis.

9 (70) The inequality of subject and object. At every level we project our equals. Yet man advances by painfully discovering how unlike other things he is, how superior to animals and trees and stones on the one hand, and how inferior to his gods on the other; indeed the clearness with which he perceives this hierarchy that towers above him and opens at his feet, is the measure of his progress.

10 (71) The equality of subject and object -- the suprahuman. The explanation

is that he knows, and therefore spans, this double and widening gap between himself and his objects. If he had no access to the base and the apex of the hierarchy, he could never see himself as in the middle. Man cannot know his very real inferiority without knowing what he is inferior to, and without being in some way raised to its level. And this, subject to varying qualifications, has been the teaching of all the higher religions.

11 (75) The equality of subject and object -- the infrahuman. Knowledge of a level is only to be had at that level, by one who joins in the projective-reflective activities which constitute it; and I shall try to show that this is true of the infrahuman levels explored by the scientific, no less than of the suprahuman levels explored by the religious. The physicist whose object of study is an atom, places himself in the atom-region of that object, which region no man can enter; for the radial extension or feeler, which he puts out towards the object, cannot retain human status, but must conform to each of the object's regions as it traverses them. Thus, when the microscopist examines an animalcule, he enters its world, with its utterly different reckonings: here a few millimetres is a vast distance, and to cover it in ten minutes is to race. In fact, such an observer is distributed throughout a number of the object's regions: as human at the end where he is (say) twelve inches from the object, he describes it in terms which are inevitably anthropomorphic, thereby raising it to his own status; nevertheless his very human account is a description of the infrahuman life he is living at the other end, thanks to the instrument which extends him to within a fraction of an inch of the object. Thus each party is assimilated to the other's rank without loss of his own. This ambiguity is typical of our investigation of all nonhuman levels.

12 (77) Conclusion. Note the following stages: (1) the primitive estimate of the object as man's equal; (2a) the religious estimate of the object as his superior; (2b) the scientific estimate of the object as his inferior; (3) the philosophical estimate of the object as his inferior and superior; with himself midway, yet capable of sending feelers to the crown and the foot of the hierarchy, and so entering on equal terms into the life of each level.

## PART II

### CHAPTER IV THE CLOSE VIEW

1 (82) The unknown body. Part I was a preliminary survey of my regional organization, which Part II will map more thoroughly.

My observer begins in the region where I am a man. He has a vision I am rarely granted --- a human body seen as if for the first time, by one who did not know whether to expect this flesh and blood, or machinery, or gas, or a flame; who has no idea why these limbs should not be caterpillar tracks, or why this head should not be a constellation or a dial or a flower. Occasionally, by courtesy of my travelling observer, I have glimpsed myself the man, instead of an abstraction; it is a breath-taking and memorable experience.

2 (85) The unknown interior. But the scientifically minded observer does not keep a surprised and respectful distance; he goes into matters. He finds this

smooth exterior to be a tissue-thin screen for a fabulous menagerie of live things, fed at short intervals through a hole near the top of their cage; beings which, though blind and brainless, respond with exquisite finesse to their keeper's commands. Most curious of all, my observer can read to me a whole medical library, or lead me round endless museums of bottled viscera and laboratories full of <sup>amputated</sup> disembodied but living organs, without persuading me to take seriously this wild life just under my waistcoat. In theory we all accept it; in practice we find it incredible.

But this is only to be expected. We do not want to lose human status; therefore we keep to that region where, as men, we are skin-deep and emptied of all infrahuman contents. In so far as I function at the human level, I am eviscerated: all my organs are absorbed into the central void, which becomes accommodation for my human visitor. That is to say, whole men and parts of men are incompatible, for levels may not be mixed.

3 (86) Order of importance in the body. But my parts are real enough, and are moreover arranged in a hierarchy which is a rough model of the hierarchy as a whole. Science supports more or less the traditional view that in the human body order of height is order of importance; in particular, higher nervous centres tend to be higher in both senses of the word. Again, if in our social intercourse we are not complete men to each other, then we are busts, or if not busts, then heads.

4 (87) The community of organs. As man I am one living thing; as organs, many living things, which may, if suitably housed and fed in a laboratory, long survive the whole. Even now I often shrink to live the life of a single organ or set of organs --- an aching tooth, a cold hand, a greedy belly --- no copy of their life, but the real thing. Indeed it would be possible to write my biography in terms of the struggle between the parts of the body, for their perfect subordination to the interests of the whole is - even in health - an unrealized ideal. And when I am too quarrelsome at this level, I die.

5 (89) Cells. Yet even at their most independent, my organs do not rank as true individuals, but as fragments. Not so the cells of which they are composed. These -- billions of them -- are distinct, self-contained animals, of many different types and ways of life. Most are sedentary, but some make their way freely all over the body; and each, whatever its way of picking up a living, is born separately and dies separately, feeds for itself upon its environment, and excretes into it. And it is the ever-present and ruthless competition between different types of cell which is the chief insurance against any one type multiplying to the destruction of the whole community.

Taking up my observer's viewpoint, I call these billions of animals they; here, I must say we. When I say that I am writing about my cells, I mean that these creatures, by means of an unspeakably vast communal effort, are attempting this essay in autobiography: in these words they are now recording the activity by which they make that record. I may be described as an organization which an enormous animal population has formed to further certain common ends and achieve self-knowledge. But again, I do not believe in my cells. I am a king who is so wrapped up in foreign policy that he is permanently unconscious of the existence of his subjects, without whom there is neither foreign policy, nor State, nor monarch.

6 (91) Man into cell, cell into man. How does my intention to write this sentence issue in the concerted action of the myriads of animals now engaged upon that task? How do I get at them, or become them? Again (if Chapter II was right in suggesting that my sense experience is cellular before it is human) how does what they make of one another issue in what I make of my companions? How do they get at me, or become me? Certainly such questions, were any cell of mine intelligent enough to frame them, would be condemned by his positivist fellows as meaningless theological speculation, and the existence of any supra-cellular being dismissed as superstition. Besides, the speculating cell would be quite unable to explain how, in stepping down one rung of the hierarchical ladder, I divide into twenty millions of millions of animals, and how, in stepping up again, they all coalesce in a single human climber. He could only plead, lamely enough, that these hierarchical or regional metamorphoses have to be accepted with natural piety. In the language of the observer who is moving radially through my regions in search of explanations, what I am qua man persistently refers down to what I am qua cells, and what I am qua cells persistently refers up to what I am qua man. This two-way radial traffic, this elsewhere-ness, in which my observer himself is caught up, is of my essence.

7 (92) The cell-mesh. Each of my cells is, in effect, an observer, who, by placing himself at close range, discovers me to be cellular. In the ordinary sense, it is true, my cells do not for the most part keep their distance, but are in contact. The most important part of the cell, however, is the nucleus, which is separated from the cell-wall by a zone of cytoplasm; this relatively unorganized material acts as a distance-piece or fender. Cellular range is observed in spite of contact, just as human range is still observed when men shake hands, and sidereal range is observed though stars' gravitational fields overlap.

8 (94) The empty body. My approaching observer sees me as many cells, then as one cell, then as a cell-organ (e.g. a chromosome), then perhaps as a giant protein molecule, which in its turn is discovered to be a great community of atoms, elaborately patterned. Finally, the atom is analysed into a society of 'ultimate particles', some of which are collected together in the atom's nucleus, while the rest circulate about them rather like planets round a sun. In fact, the atom is no more solid than the solar system; it is practically empty, and there is no sense in describing even its particles -- circulating electrons, and nuclear protons and neutrons -- as material or solid objects.

My observer, then, who is determined to go into the details of my nature by approaching me, finds at last something like a sky sprinkled with stars that are on the point of vanishing. And - he may well remark - the final curiosity is that such a sparsely constellated void should yet contrive this description of itself.

9 (95) Inside the atom. If I really am atoms, it is worth while examining atomic structure a little more carefully. The simplest case is the hydrogen atom, which has for nucleus a solitary proton (a relatively massive, positively charged particle) balanced by a solitary orbital electron (a much less massive, negatively charged particle). The helium atom has two orbital electrons, balanced by two nuclear protons, which are linked with two neutrons (uncharged particles whose mass resembles that of protons). The same general pattern is followed in all the heavier atoms; normally, the number of circulating electrons (up to 92)

is matched by an equal number of central protons, and the latter are as a rule accompanied by a somewhat greater number of neutrons. In the higher atoms, the electrons are not bunched together, but are distributed in a number of distinct shells, each of which has limited electron-capacity. The innermost shell contains up to two electrons; the outermost, up to eight. And atoms behave as if they preferred complete outer shells; for example, the chlorine atom, whose three shells contain two, eight, and seven electrons respectively, may fill the vacant place with the single electron of the sodium atom's outer shell. The result of this happy electron-sharing arrangement is that the two atoms, each with its outer shell fully occupied, together comprise a molecule of sodium chloride or common salt.

I have described subatomic particles as if they were ordinary bodies whose whereabouts and physical properties were determinate. In fact, however, they are infected with uncertainty. The physicist cannot pin down a particle: all he can do is to state mathematically the likelihood of its being in a certain place at a certain time. Circulating electrons, then, must be thought of as diffuse rings -- 'clouds of probability'.

And the position of the cloudy electron ring depends upon the energy-state of the atom: when a unit of energy is absorbed, an electron springs to a wider orbit; when it is emitted again, an electron springs to a narrower orbit.

10 (97) The atom and the regional schema; the hydrogen atom. Such, in roughest outline, is my portrait at close range. But what of the portraitist: has he suffered a like change?

Suppose he has come so close to me that I am for him (say) no more than a proton, or hydrogen nucleus. What, then, if this inquiry so far is on the right lines, may be expected? (1) He has come to a zone which is habitable only by an electron or something of the kind; and he may well, as in some other regions, move round this zone to get a completer view of me. (2) If his estimate is to be approximately constant, his motion must be more or less circular. (3) Any notable increase in me is likely to find him at a more respectful distance; or decrease, to find him nearer. (4) Experience in other regions suggests that such re-estimations of me are likely to be sudden. (5) But what I am and what he makes of me are the same thing, for I am nothing in myself: we are a projective-reflective couple, like the positive and negative poles of an electric cell. (6) We are of equal status, but not necessarily equal: one of us, for instance, may be heavier than the other. (7) And our status is here extremely humble: we are unlikely, in that case, to be very efficient observers. We may well be ignorant of each other's exact whereabouts. And if we do not know them, they do not exist: the vagueness of our knowing is the vagueness of our being....

It is unnecessary to keep up the pretence any longer: this conjectural description of the observer who makes me out to be a hydrogen nucleus is an unorthodox description of the electron that circulates about that nucleus. My observer, at his inhuman end, reaches identity with my attendant electron.

Regarding the proton in itself, at the centre, science has nothing to say: only its regional effects are observable, and their unobservable source is not even so much as a necessary fiction. And this, I, who am at the very centre, confirm: what is only here is nothing.

11 (99) The atom and the regional schema; more complex atoms. It is the experience of my travelling observer that while, in the long run, increase of range

means increase of status, this rule does not apply to the short run. Between one of my regions and the next, the view is apt to prove less and less interesting, or even to fade away altogether. This tendency, which I call the law of the spindle, is as plain at the atomic level as at any other.

I have said that the atom's electron shells have different capacities. Now this capacity, in the more complex atoms, increases with the radius of the shell, and then falls off again. Thus the shells of a uranium atom, starting with the inmost, contain 2, 8, 18, 32, 18, 12, and 2 electrons respectively. And this is what we should expect if (a) each successive shell is essentially an observation post from which the nucleus is viewed, and (b) increase of range up to a certain point adds content to the view, which beyond that point declines. Indeed the same law would seem to regulate the nucleus itself, setting a natural limit to its compact shells of protons and neutrons. In general terms, the rule is that my growth at a given level leads to instability and disruption, before it is continued (and in a sense recommenced) at the next.

To find the regional schema of this inquiry clearly bodied forth and freed from irrelevant detail, go to the lowest hierarchical levels. Here my zonal constitution, with its spindle-law, is unmistakable. And the procedure of elsewhere-ness, of projective-reflective couples, can no longer be ignored. For example, one orbital electron is typically linked with another of opposite spin, and has for opposite number a nuclear proton of unlike charge; the proton in turn exchanges identity with a neutron companion. Again a gamma ray gives birth to a positive and a negative electron of equal mass and opposite charge -- twins which, when they fail to keep distance, vanish. At this level, in short, the fundamental conditions of all knowing can no longer be separated from what is known. The physicist very properly sends out feelers towards me to discover 'what I really am'; for he comes to a region where we are both reduced to the merest -- and most revealing -- outline of what we are at ordinary range, to that region where our regional structure is laid bare at last.

12 (102) The horizontal and the vertical. But none of my regions is self-supporting; its very existence depends upon imports and exports. Each is the well-guarded province of some department of science, but two-way radial traffic unites all these zones into one indivisible realm --- the realm of that unitary or vertical science of which this book is a prospectus; of that hierarchical science which may one day recognize the hierarchical scientist.

13 (102a) Vertical and horizontal modes of development. Let me conclude with some illustrations. My growth has two complementary and alternating phases; (a) the vertical, as my observer, attending only to this centre, retires through a widening system of concentric circles; and (b) the horizontal, as he attends also to a second centre, thus linking me to it. The atom is (a) built up by the addition of new shells, but (b) the existing shell is first built up as its electrons entertain newcomers. The molecule is (a) built up by the addition of new atoms which increase the radius of the whole; but (b) they are held together by their shared electrons, each of which, Janus-like, recognizes a pair of nuclei. The cell (a) grows up to a certain limit as a roughly concentric system of increasing radius; but (b) growth thereafter requires that the cell's materials -- the chromosomes in particular -- recognize two centres, and look (so to say) in two directions. In the multicellular animal, (a) 'concentric' development, in which cells are specialized and integrated with regard to the needs of the whole, is preceded by (b) mere aggregation of relatively undifferentiated cells; but (a) the organism's concentric development soon reaches a limit, after which (b) further growth means the establishment of new centres in its offspring.

Similarly society develops by (a) the co-ordination for common ends of (b) a growing population of private citizens. The citizen owes (a) single allegiance to the whole community, but also (b) plural allegiance to other citizens and small groups. For his impartial travelling observer, he belongs to and so links two families (his own and his wife's), in much the same way that, on closer inspection, he belongs to and so links two cell nuclei or two atom nuclei.

The gist of my observer's report is that I cannot grow very far 'vertically', as a concentric system, by adding others to my periphery, without also growing 'horizontally', by attaching myself to other centres.

#### CHAPTER V THE CLOSE VIEW, CONTINUED

1 (103) The physical basis. The observer has come to where I am a proton, or something of the kind, but he has yet to make contact. What is the scenery between the station where I am viewed as one of these particles, and the terminus where there is no view --- supposing that my observer is willing to jettison enough to make the journey? Perhaps science will one day resolve the proton and the electron into still more primitive particles. Yet even they would not be my true 'physical basis', but only its regional appearance. The question is: appearance of what?

2 (104) The centre of the regions. The ultimate substratum would only call for further analysis if it were internally differentiated; therefore I must suppose it to be uniform, a featureless unity; and if a featureless unity, changeless and inscrutable, then surely nothing. And this is indeed what I find myself to be, here at the central fountain of all my regional appearances.

5 (106) The centre and causation. Nothing can touch me; or rather, only nothing can touch me. For to act upon me you must advance through my regions, conforming to each in turn, till, arriving here, you share my central nonentity. And this joint nonentity is the source of my reaction to you; every disturbance I contrive in my regions begins here. Small wonder, then, that this all-creating and all-destroying Centre (which hereafter has a capital C, to distinguish it from centres in general) should be a favourite topic of numberless philosophical and psychological and mystical treatises, and the main preoccupation of much devout experience.

4 (108) Action at a distance. To speak strictly, it is impossible for one body to act upon another at a distance (that is, regionally) precisely because of that distance; or at the point of contact (that is, Centrally) because both are there annihilated. Only the radial process as a whole, as an unbroken lever-arm whose moment is nothing at the fulcrum and increases in each successive region, can move me. That is to say, action upon me is always (a) from one of my regions, (b) through the intervening regions, (c) to this Centre; these three in one. And my action is the same, reversed. Thus when I stretch out an arm to greet my friend, this end of me is in his human region and human; the other end, where I touch him, is Central to him and nothing; while the intermediate part conforms to each intermediate region. In real, regionally organised space (as distinct from the abstract and uniform space of physics), my arm reaches down from the middle of the hierarchy to the very base, and is itself transformed accordingly. And the many-

regioned whole must act as one before it can be said that I -- the man here -- touch my friend there.

5 (109) A model of the vertical process. How is it that our distance is the making of us, and our nearness our undoing? How comes it that the near view of a colourless, scentless, silent, and altogether poverty-stricken medley of particles gives place to a man and a man's world, with its unspeakable wealth of experience? From what in electrons does this rather contemptuous reference to them spring? Whence life, mind, values?

My departing observer can do little more than note admiringly the developing scenery of each zone in turn, from the absolutely featureless desert at one end of the journey to the infinitely colourful and varied human climate at the other. Nevertheless he may detect a certain general configuration which is common to all regions. For example, he finds in his field of view (framed by the carriage window, so to say) a unit of a given order, then several such, all of them shrinking and drawing together and losing their differentiating features, until they are lost to view, and a unit of a higher order supervenes. And if he now makes the return journey, this procedure is reversed; the swelling higher unit produces and gives place to several lower units which repel one another as they grow, till only one is left. He may then conclude that the reason I became more interesting in my outer regions, the secret of my improvement, is that I was not self-sufficient, but made myself small, and embraced my fellows; and, conversely, the reason for my decline was my aggressive, thrusting, repellent behaviour, as I crowded out all others but my sole self.

6 (112) Sociability and its results. In other words, his theory is that sociability and hierarchical ascent are two descriptions of one process, as also are unsociability and hierarchical descent. He calls an atom a society of particles, a molecule a society of atoms, a cell a society of molecules, man a society of cells; and adds that to descend this social hierarchy it is only necessary to push away all but oneself, while to ascend it is only necessary to take them all back. There is advance from this hierarchical level to the next when the units at this level, becoming specialized in structure and function, find one another indispensable, and a society is founded with qualities and functions not exhibited by its members seriatim. But to say that these novel and unpredictable emergents are the product of social relationships, explains nothing; it is only a way -- only one way -- of recording what is observed.

7 (114) The members of the societies: panpsychism or spiritual pluralism. To be social is to be social-minded. Is it likely that the humbler ranks are, in fact, minds as well as bodies, two-sided, or anything for themselves?

I am a vast hierarchy, which could not survive for a moment if its members at every level were not able to react appropriately to the subtlest changes in their environments. How are these changes registered? Now I know for certain how this is done at one level of the hierarchy, namely the human: I have no difficulty in detecting the behaviour of my fellow men, for it is behaviour in me, the very stuff of me. Moreover I know of no other way than this way of mutual immanence, whereby interaction is possible. Until I am shown another way, then, I can only invoke the principle of continuity, and suppose that my constitution at lower levels resembles that at higher levels, and that there also I am two-sided -- a view out as well as a view in, something for myself; namely, a system of regional

aspects of my fellows. All other 'explanations', such as the doctrine that disembodied spirits called Laws of Nature play each particle of me like a pawn in a cosmic chess-game, seem to me to invoke supernatural aid unnecessarily.

Of course it must be remembered that the lower the level the poorer the view, both in and out, must be; and to give the name of mind, or even feeling, to these very humble perspectives, is misleading. In my atomic capacity, my narrowmindedness and myopia are such that I am almost mindless and almost nothing, either for myself or my fellow atoms; the all but featureless world I inhabit is the projection and the measure of my own idiocy. Now this is not baseless speculation. I am atoms, have inside information, am qualified to speak for them; they are a lower power of what I am. If I were not able genuinely to go down to their level of myself, I could never describe them or their world and its poverty of content; knowledge about a level is only to be had by going there.

8 (118) The pyramid of societies. I am, then, a social pyramid, floating upon a void, but growing more and more lively and substantial towards the apex. This condition is maintained by continual building operations which make good, from the base upwards, the wear and tear that is always destroying the structure from the apex downwards.

I have already described the storeys of this pyramid. Between them are many intermediate structures -- mesoforms, or units which lack integral status, since they are imperfectly individuated. Such are the organs and tissues that lie between the whole man and the cell, and analogous structures within the cell.

These distinctions are not clear-cut, for the criteria of individuality (such as indivisibility, independence, definition, freedom from accident) are incapable of measurement. Nevertheless I think the evidence justifies my provisional selection of hierarchical individuals, as distinct from mesoforms. I must add the reminder that hierarchical status and individuality are two very different matters; it is not enough to specify which storey a feature belongs to, but also the level within the storey. For each pyramidal stage tends, by beginning once more the task of unification, to reflect the architecture of the whole; the law of the spindle governs the entire design.

9 (121) The observer at the apex of the pyramid. Also it must be remembered that this pyramid is not 'solid', but a kind of castle in the air. I am the base, my observer is the apex, and between us is regional space. It is as if I were the ruin -- or rather, the faint outline -- of some boundless ancient monument, visible only from the air. The higher the archaeologist flies the more of me he takes in, and the more he makes of me, and the more interesting my plan becomes. But for him there is no emergence, no towering structure with himself the pinnacle; there is only observation. All he does is put himself in a position to discover what really exists at the pyramid's base. And in fact all experience whatever is just such an air survey of the substratum or base or Centre; what we make of it is very much a question of how high our ceiling is.

10 (122) The principle of numerical and spatial limitation. Some further qualifications are necessary. First, as to my number: my apical observer can only take in one of me at a time, or a few at most; hence he has little justification for regarding me as 'really' an immense population of cells or molecules or atoms. To say that a man must in fact contain all these subordinates is to misuse that word, for the container and its alleged contents are incompatibles which belong to quite different occasions. Levels will not mix; and nobody need be put