

Behaviorism identifies a mental state with the pattern of its manifestations.

The Mind-Body problem thus leads us on again into the fields of metaphysics and epistemology. For now we must ask: Is there any way of retaining the conceptual link of mind with behavior while denying that the subject matters of mental and behavioral descriptions coincide exactly? If so, is this new position compatible with human limitations on understanding and knowledge? Affirmative answers to both questions will occupy us in the first part of the next chapter.

Chapter 5

CENTRAL-STATE MATERIALISM

(i) The Causal Theory of the Mind

Some terms get their meaning by reference to the effects produced by what the terms denote. Take "poison", for example. No one understands what a poison is if he doesn't understand that drinking it is not a good idea. It is in terms of its deleterious effects upon human or animal health that we express what "poison" means. There is a conceptual connection between poisons and ill-health. Yet talk about poisons is not just talk about ill-health. It is talk about substances which can play a *causal role* in ill-health. A poisonous substance will, if swallowed in large enough doses, without any inhibitor, by a person who takes neither a neutralizer nor an emetic, and provided his metabolism is typical, adversely affect his health.

Arsenic is a substance quite separate from humans, healthy or otherwise. It is a poison whether swallowed or not. Yet although arsenic is something different from humans and health, when we describe it as poisonous we are adverting to its connection with illness and death. "A poison is apt to produce illness and death" is like "A furnace heats"; it is a statement specifying conditions under which a substance deserves the label "poison" ("furnace"). By contrast, "A poison tends to deteriorate if left standing" or "A furnace burns more fuel if the draft is forced" do not deal with what must be so if the label "poison" or "furnace" is deserved.

We explain what a poison is by reference to health, but not to deterioration if left standing. "Poison", we can say, is an *essentially causal term*. Through this causal element, poisons and health are conceptually linked although they are different things.

Some terms apply to objects not in virtue of what the objects cause, but in virtue of what played a part in causing them; terms like that could be called *essentially effectual terms*. For example, "sedimentary rock" or "pig iron" can be explained only by reference to how such rock or such iron comes to be produced.

The Causal Theory of mind likens most mental descriptions to "poisonous", but appeals occasionally to the other pattern shown by "sedimentary rock".¹ A decision to go swimming, for example, is held to be a state of the person tending to cause going-swimming behavior, that is, behavior from the wide and vague collection: assembling swimming gear, asking others to come swimming, going to a beach, filling the pool, swimming, etc. As in the case of poisons, we must add qualifications when we say the appropriate effects will be produced. The decision will not issue in going-swimming behavior if I am paralyzed, or have an accident on the way, or change my mind, or am ordered by my superior officer to remain on duty. Nevertheless it is not just a matter of fact that your decisions to go swimming typically issue in your going swimming. The decision earns its title to the description "decision to go swimming" because it is a mental state which tends to have precisely that effect.

So too with, for example, "seeing a cricket ball". A man who sees a cricket ball is a man who is in a

¹ See, e.g., Armstrong, *op. cit.*

state which, if circumstances are favorable, has a characteristic range of effects: catching, dodging, striking the ball, warning people in its path, directing those searching for it, applauding the batsman, etc., etc. We can call effects in this range "cricket ball discriminating behavior," and say that seeing a cricket ball is a mental state which is both essentially effectual—it is produced by the action of a cricket ball upon the eyes—and essentially causal—it is a condition of capacity for cricket ball-discriminating behavior. It is only a capacity for such behavior. The capacity is not necessarily exercised; the sight of a cricket ball may give rise to no discriminating behavior whatever.

A capacity is a disposition; the Behaviorists were right to emphasize how heavily dispositional much mental description is. The Causal Theory of mind appropriates that lesson of Behaviorism. Mental states are typically states with a causal role in disposing men to certain forms of behavior; so runs the Causal Theory.

An itch is a cause of scratching, a tickle of giggling, a pain of wincing. Emotions are causes of characteristic patterns of action: rage of shouting, jealousy of poisoning, envy of denigrating, joy of singing. Moods do not have dispositions to characteristic activities as effect, but are modifying causes: there is a recognizable style in the behavior of an anxious man no matter what he is doing; he behaves, as we say, anxiously, rather than indulges in any special sorts of action. On the Causal Theory of mind anxiety is an inner state which affects the manner in which he conducts himself. And the same goes for hope and desperation.

To describe a man as intelligent is not just to say with the Behaviorists that he is apt to turn in an intelli

gent performance, a performance in which more problems are solved more readily and more adequately than is typical for men. It is to say that an inner structure or condition of the man is an indispensable immediate causal factor in producing the intelligent performance, and that this inner condition is what is rightly called intelligence. "Intelligence" names not the performance-pattern but one part of its cause, the inner and therefore mental part.

Sometimes the connection of mental state to behavior is more indirect. In thinking, for example in deliberating upon what to do, mental states of belief and supposition lead not straight to behavior but to other mental states, inferred or concluded beliefs, which may then govern action at some much later time. And the opinions I form in deliberating may never be given a behavioral manifestation because situations in which they would be operative in controlling behavior never arise. Yet according to the Causal Theory, all mental states can, directly or through the mediation of other mental states, cause the person who has them to pursue one course rather than another in the conduct of his life.

Thus the Causal Theory of mind has two strands: that the various mental events and processes are postulated causes of segments of behavior belonging to various recognizable patterns, and that the mental causes are given their names in virtue of their postulated connection with those behavior patterns. The first strand admits the view that the mind is something inner, separate, and standing behind behavior. It thus allows for the existence of definite, non-behavioral, non-dispositional mental episodes and states, and so avoids one chief problem of Behaviorism. It also allows (indeed insists)

that mental states are causally efficacious in behavior, and so avoids the other chief problem.

The second strand, that mental terms get their meaning by reference to the behavioral effects of the mental states they denote, preserves the truth of Behaviorism that there is a conceptual connection of mind with behavior. But the connection between them is not that of referring to just the same facts.

The Causal Theory of mind views mental concepts as theoretical. The picture it paints is this: Men, confronted with the surprises of human (and animal) behavior in comparison with the activities of water, earth, and trees, have surmised that something inside them is causing their distinctive conduct. This something, of which little is known but its causal powers, is called a mind. And the mind is credited with as much complexity as there is complexity and difference in the characteristically human behavior of men. Talk about mental characteristics is talk in terms of a theory (the theory of minds) about what makes men tick.

Little is known, in this primitive stage of theorizing, about what a mind is: is the cause of behavior a demon in the breast, a soul dispersed throughout the body, a spirit without any spatial features, or a plastic box two inches behind the nose? It is a task of scientific theory-development to find out. The conceptual analysis of mental descriptions leads to a cause within the man, but leaves open what kind of cause it is. Defenders of the Causal Theory of mind liken "mind" to "gene". Men, struck by the surprising fact that for the most part cattle, sheep, sweet peas, and fruit flies reproduce offspring after their own kind, have surmised that something passed from parents to offspring is causally re-

sponsible for the offspring's development into a creature resembling its parents. There are as many genes as there are distinct hereditary characteristics. A gene is something which causes offspring to resemble parents in, say, eye color. Talk about genes is talk in terms of a theory (the theory of genes) about what makes children like their parents. It is talk in terms of a cause for the phenomenon of inheritance. Discovering what the cause actually is (a special DNA molecule in the cell nucleus) is a scientific triumph in theory development which no amount of reflection on statements of genetic theory will accomplish. The same holds for the mind.

(ii) **The Significance of Mental Terms**

The Causal Theory of mind requires an extension of the limits placed by positivism on the conditions under which terms are significant. Positivism restricts the content of a term to perceptual features in conditions to which it applies. A general positivism, provided it grants that bodily movements are perceptible, leads directly to Behaviorism about minds. By contrast, the causal account of minds depends upon an epistemology of postulation. The epistemology of postulation admits as significant terms which apply to postulated causes, which may be imperceptible, of perceptible features in the world. This extension not only allows the philosophy of mind to escape its Behaviorist fetters, it permits a much more satisfactory philosophy of micro-objects in scientific theory, and a much more realistic philosophy of God, of the past, and of what is hidden in the depths of the sea.

The argument to Behaviorism from positivist restrictions on the significance of mental terms has to my mind been successfully challenged by the more liberal epistemology of postulation. The way is open to explore less paradoxical accounts of what a mind is, and the Causal Theory is a very promising one of these. To give a sample of its promise: the mental causes of behavior may be causes of which we are not conscious; on this view the unconscious mind is not at all scandalous or impossible. Whether or not we have such a thing is just a question of psychological theory.

Again, the Causal Theory of mind allows that not all the properties of the mind must be mental ones. The mental properties are those relevant to the causation of behavior. But that which causes behavior can have a host of other properties as well, for example, warm or cool, moist or dry, which are not referred to in describing the mind as governing behavior. In breaking the idea that every property of the mind must be distinctively mental, the Causal Theory breaks one of the strongest prejudices supporting a Dualist bifurcation of the world.

Self-Awareness

The comparison of minds with genes reveals, however, a very great peculiarity of minds. Minds are supposed to be hypothetical, hidden, inner causes of behavior. Yet in our own case they may be inner, but are certainly not always hypothetical or hidden. Some mental episodes, mental states, and mental processes are given to us in self-awareness or by introspection. A fit of anger and a pang of remorse are not in our own

case hypothetical events proposed to explain the experienced movements of our bodies. They are themselves items given to experience. They are given, of course, not to perception, but to the inner awareness whereby we know, without the use of sense organs, some of what is going on in our own minds. Such mental events are not theoretical; they belong to the data, not to its explanation.

Here the Causal Theory is given a subtle and ingenious turn. Why is there such difficulty in giving any full description of these mental episodes and conditions? Why do they prove so elusive to introspective research? Why are we so ignorant of their true nature and relations? The answer given is that we are aware of inner states only as causes more or less like each other. All I know, when I know I am having a fit of anger, is that a cause of throwing, gnashing, and abusing, directed at some person or group, has come to existence in me, that it is stronger or weaker than others, and that it is already producing bodily changes, for example, flushes, clenching, or shivering. In a slogan, we can say: Introspective knowledge is knowledge of causes. Introspective awareness is awareness only of the causal properties of an event or state. The awareness is in turn a mental state, and it also, insofar as it is mental, has causal properties. In this case, the causal properties give us a capacity for discriminative acts.

In its attempt to accommodate the facts of self-awareness, the Causal Theory of the mind thus exploits the transparent character of inner awareness, and the way that awareness continually points beyond the mental state to the associated action.

Inner knowledge is, according to the theory, direct

knowledge of causal powers, which we have learned to recognize in the course of growing up. Whether there can be introspective knowledge of a mental state's causal powers without any associated knowledge of its intrinsic qualities is hard to say. Such knowledge is certainly unusual, but then introspective knowledge is unusual in all sorts of ways, so why not in this?

Survival of Death

The idea that a man's mind survives the death and dissolution of his body is older than history. It seems to make sense at least to most people, whether or not they share the ancient hope in another life. Here is another way in which the Causal Theory of mind is closer than Behaviorism to common modes of thought. For the Behaviorist, mental life without sense organs and limbs is a flat impossibility. If the description of a man as having solved a problem in mental arithmetic is a description of the bodily responses to which he has become disposed, then of course the bodiless man, who is not disposed to any responses whatever, cannot solve problems in mental arithmetic. The same goes for any and every mental description. They all apply solely to bodily actions and dispositions to such actions. Disembodied mental life is ruled out by the Behaviorist analyses of mental concepts.

The Causal Theorist is not so radical. He holds that our descriptions of mental life are descriptions of inner states typically effective as causes in bodily action. A Causal Theorist can be a Dualist. He can hold that the inner causes are states of a spiritual thing which could survive bodily death. If the surviving spirit had

the illusion that it was still allied with a body, it could not only do mental arithmetic, it could decide to go swimming or to do anything else without any absurdity. After death these states could continue to be, but their descriptions as causes of behavior will no longer be apt. They would be rather like arsenic in a lifeless world: there as much as ever, but not quite poisonous any more.

In Central-State Materialism, as we shall see, the mind whose states are causes of behavior, is held to be itself a part of the body. Being part of the body, it dies and disintegrates along with the rest of the corpse. So in Central-State Materialism, although survival of death is a possibility, it turns out not to be a fact.

The fact of survival would thus refute Central-State Materialism, but would not destroy the Causal Theory of mind. Judging the survival question requires a philosophical review of the scientific evidence and rational argument for survival, and of special ways, like religious revelation, whereby we might come to know such a momentous fact. It deserves a whole book to itself: but I share the majority view among contemporary philosophers, which rejects the claim to survival. If this is the correct view, the denial of survival is not a fault in Central-State Materialism.

(iii) Central-State Materialism

The Causal Theory of mind sets up a scientific task: to find what in a man is causally responsible for those facets of his behavior which are "expressions" of mental conditions. When that task is complete we will have

a full doctrine of what a mind is, and not just a causal schema which mentions some cause or other but does not fully specify it.

It is now universally accepted that in this connection the brain and its appendages are the bodily parts which matter most. If any bodily part is the thing whose events and processes are causes of behavior, the central nervous system is that thing. Central-State Materialism thus affirms the Causal Theory of mind and adds that behavior can be completely explained in terms of events in the central nervous system. The mind, the cause of behavior, turns out to be the brain.

One more step is required to reach Central-State Materialism. This step insists that the nervous system has no properties of a non-physical kind.² It insists that the only properties the nervous system has are the properties recognized in chemistry and physics, together with their derivatives. Without this step the doctrine is not a materialism but a theory which accords to the brain two different sorts of attributes, non-material as well as material ones. Such a view is compatible with the Causal Theory of mind whether or not the non-material properties are described in terms of their part in the causation of behavior. If they are, they would be mental properties of the mind. If they are not, they would belong to the mind but not be mental properties, like having a temperature of 98.4°F.

Central-State Materialism is thus the most uncompromisingly economical version of the Causal Theory of mind. It identifies the cause of behavior as a purely

² See Brian Medtin, "Ryle and the Materialist Hypothesis," in *The Identity Theory of Mind*, ed. C. F. Presley, Brisbane, 1967.

material object, the central nervous system as conceived in neurophysiology.

Central-State Materialism and the Mind-Body Problem

Central-State Materialism does not, like Behaviorism, deny that the mind is a thing. But it does deny that the mind is a spiritual thing. So Central-State Materialism solves the Mind-Body problem by denying the second of our four incompatible propositions.

More fully, the answer concerning the relation of mind to body is: the mind is part of the body. It is a special part, the part which controls behavior. That is, it is the part which governs the movement of the limbs under the influence both of its own states (e.g., purposes) and of sensorily gained information concerning the body's environment and attitude. The part which does this is the brain, whose connections are chiefly with sense organs, which affect it, and muscles and glands, which it affects.

Thus the Mind-Body problem resolves into one of scientific detail. In precisely what changes does the brain play a part, and what part does it play? Neurophysiology is the science which will furnish the full account of the relation of mind to body. The relation of mind to *matter* is already settled: a mind is a special arrangement of matter in an organism, which is another special arrangement of matter. It is not some different non-material sort of thing standing in mysterious relation to the matter which makes up living bodies.

Just as there is no specially philosophical problem of the relation of a bus to its engine, and no special

Boat-Rudder problem or Pump-Refrigerator problem in philosophy, so there is no special Mind-Body problem beyond the scientific one of the causal interplay of elements in a system. Considered as a solution to the traditional problem of mind and body, Central-State Materialism is highly satisfactory.

As in the case of Behaviorism, the objections to Central-State Materialism lie not in its solution of the Mind-Body problem, but in its general doctrine as a philosophy of mind. Let us note first some problems which, like survival, are problems for materialism but not for the Causal Theory of mind on which it relies.

Free-Will

Central-State Materialism involves a particular solution to that great philosophical problem, the problem of the Freedom of the Will. Consider a decision to go swimming which is promptly and effectively acted on. I decide to go swimming, and forthwith do go swimming. We would normally think of my swimming as freely done. In swimming I exercise my freedom. Nothing and no one forced me to go swimming. This does not mean that my swimming had no cause. It was not a freak of chance that I ended up in the water. My swimming was free in that it was my decision, an act of my own mind, which set my body off in the direction of the water. The decision is an act of choice between various alternatives.

Now some philosophers insist that the choice must itself be free if my swimming is to be an exercise of freedom. And they insist further that if the choosing is an effect of antecedent conditions outside myself it is

not really free. For it has been determined in advance, by factors over which I have no control. For example, the state of mind described as fondness for swimming has been established in me by natural processes, and is now there whether I wish it or not. Likewise, recognizing that I now have an opportunity to swim is a mental state which just occurs, willy-nilly. If factors like these operate as natural causes which combine to result in my choosing to swim, then my choice is really beyond my control. But a choice beyond my control is not a free choice.

Philosophers who argue this way conclude that the only action which is genuinely free stems from choices for which there are no adequate natural causes. Let us call causeless choices of this kind *metaphysical choices*. On this account, men are free only if they sometimes make metaphysical choices.

How does this affect Central-State Materialism? A metaphysical choice is, or leads to, a brain state which sets activity going. This brain state is not caused by any earlier conditions of the brain or anything else. So not all brain states come into existence as effects of physical forces. Hence, if there is metaphysical choice, Central-State Materialism is false.

Whether or not men are free, and whether freedom involves metaphysical choice, are great questions which must be tackled on their own. Here we must be content to notice that Central-State Materialism is compatible only with some restricted concept of human freedom according to which some choices, although they are the determined effect of many natural causes, are nevertheless free.

Parapsychology

Parapsychological phenomena, by definition, demonstrate capacities of mind which exceed any capacities of brain. The brain is receptive only to information which arrives by neural pathways, and so is confined to perception by way of the senses. If some people can learn more about distant, hidden, or future fact than memory and inference from present sense perception can teach them, then their minds are not just brains. Such extra knowledge is said to be gained by extra-sensory perception, precognition, or more generally, clairvoyance.

Again, the brain is capable of receiving information about the mind of another only by perception of the other's body, bodily acts, effects of such bodily acts, and perception of reports from yet other people. If some minds are receptive to the contents of the mind of another by some more direct means (telepathy), then those minds are not just brains.

If some minds display psychokinesis, that is, can move physical objects by act of will, without use of natural or artificial limbs, and not by exploiting the weak electromagnetic field in the head, then such minds can do what no brain can do.

If some minds are capable of surviving the death of their owners and then temporarily controlling the behavior of a person still living, as the "controls" of trance-mediums are sometimes alleged to do, then these surviving and displacing minds cannot be mere brains.

If even a single example of any of these types of para-

normal phenomena is genuine, Central-State Materialism is false. The difficulty in parapsychology is to produce unequivocal evidence that any part of it is genuine. Each type of phenomenon is open to a serious doubt of one kind or another. Psychokinesis was the speciality of the so-called "physical mediums" who flourished roughly from 1880 till 1935, and has been the subject of dice-rolling experiments, since then. According to the reports, the physical mediums levitated objects, made them fly through the air, switched switches inside intact soap bubbles or locked metal boxes, overturned furniture, and so on. Not all the effects can be explained, or ever will be. However, all the mediums subject to thorough investigation were caught cheating sooner or later. And in really tight conditions of experimental control, when trickery is very difficult, the results were almost always meager. The shadow of doubt cast by the discovery of fraud is a wide one, for if some of a medium's effects are the work of known deceptions, it seems likely that his other effects are produced by unknown deceptions. But it would not be fair to rush to a conclusion. If the reports are to be trusted, many events have occurred for which no normal explanation seems possible, let alone has actually been found.

The psychokinetic experiments on controlling the outcome of rolling dice, conducted at Duke University under J. B. Rhine, are open to severe methodological objections, and their positive results cannot be taken to establish anything significant.

The "mental mediums" were those who, in a trance state, performed feats either of telepathy with the living or communication with the dead. There are two prob-

lems in establishing that such performances are genuine. First, it must be shown that the information produced by the medium was absolutely unavailable to her through normal channels. This is a task of the utmost difficulty. The medium cannot be monitored for her whole life to establish just what she has learned, and how. The spectacular retrieval of "forgotten" knowledge under hypnosis shows just how cautious we must be before ruling out books and newspapers read long ago, chance conversations, or the use of barely perceptible clues in accounting for the surprising and correct information mediums sometimes produce.

Further, it must be shown that the successes of the medium are of such a kind, so frequent, and so detailed, as to rule out the "null hypothesis", the idea that a medium is just a lucky guesser. And it is a dauntingly difficult project to produce any satisfactory quantitative measure of the level of success a medium must reach to establish her *bona fides* as a paranormal person. We can of course recognize some performances which would be utterly convincing. If the medium could produce, without ever failing or erring, information which would lead to the discovery of previously unknown facts about any named dead person, famous or obscure, ancient or modern, Christian or Hindu, a reasonable person would be convinced. Doubt would still exist whether this was communication with the dead, clairvoyant knowledge of the evidence, or precognitive telepathy with the investigators subsequently confirming her claims. But whichever of these processes were occurring, it would be paranormal and so sufficient to refute Central-State Materialism. Unhappily, no medium reaches such an unambiguous standard. They all

err, stumble, and produce commonplace and guessable truths as well as notable surprises. Mental mediums are not (yet) able to produce satisfactorily convincing evidence for so large an hypothesis as the existence of psychic powers.

The attempt to introduce experimental control into the study of telepathy and clairvoyance has given rise to the tradition of card-guessing experiments in psychical research. Here it is possible, by randomizing methods, control of the experimental conditions, and statistical analysis, to rule out the alternative of normal access to the information, and to measure the extent to which the rate of success exceeds what is to be expected on the null hypothesis, the hypothesis of pure chance.

A few experimental series, involving a few subjects and experimenters, have produced results diverging from chance expectation so far as to refute the null hypothesis. There remains only the question whether the subject achieves his success by normal methods. C. R. Hansel, the chief skeptical critic of parapsychology, has made a study of all the best experiments in the Western world, and pointed to opportunities for conscious or unconscious cheating in every one of them. He does not rely on the ever present possibility of publishing results which were never obtained. This requires a conspiracy to defraud on the part of whole teams of people. Hansel is concerned with ways in which a single person taking part in the experiments could have produced the reported results by normal means. In the famous Soal-Shackleton series of experiments, he can only find ways of cheating which require the cooperation of at least two people. Nevertheless, he is able to point out that the results fell back to

chance level on those occasions when Soal took no part in the experiments, and when Shackleton was tested by a different team in South Africa he produced no significant scores.

L. L. Vasiliev, working in Russia, has obtained significant results in experiments on the production of hypnotic sleep over a distance, without perception, to a subject isolated from radiations of every known sort. Not even Hansel, that most ingenious deviser of ruses, can fault the experimental methods used.

Repeatability and Fraud in Parapsychology

The Mind-Body problem requires for its solution a judgment on parapsychology, and that in turn raises general questions in philosophy, and in particular, in epistemology. We must confront the problem of how evidence can have weight, and this raises the question of fraud. The problem of fraud is that we know men can, and do, cheat and dissemble, but we do not know that they have paranormal capacities. On the contrary, the great weight of our fully attested knowledge of man's origin and constitution makes paranormal capacities extremely unlikely. So for any result in psychical research which can be explained either by appeal to paranormal powers or by the hypothesis of fraud, the explanation by fraud is the more rational one.

If the paranormal results can be obtained with only one set of people, who have an interest in the success of the experiment, on one occasion only, fraud cannot be ruled out. This is true even if we cannot think how the trick was worked. It is easier to invent a trick than to detect it.

Only repeatability can eliminate the hypothesis of fraud. If the subject can repeat, or nearly repeat, his paranormal feat for anybody, at any suitable time, in any suitable place, under conditions which any independent experimenter is free to vary at will, with assistants whom the experimenter can choose, then fraud can be excluded as an explanation of the events.

This kind of repeatability is demanded, and obtained, for experimental results in other scientific fields. Results which other experimenters cannot duplicate (or nearly duplicate) are excluded as arising from some unknown distorting influence, improper conduct of the experiment, or fraud. Unrepeatable results cannot be used to establish anything.

It is important to realize that repeatability is not necessary for something to *be* genuine. If the best jumper ever to live reaches his peak and then suffers an accident, the highest jump ever made will not be repeatable. But of course this does not mean that it was never made. Equally, perhaps only one man on one day of his life was in communication with the dead. The fact that he is unable to repeat the feat does not mean that it never happened. But it does mean that we cannot have proper evidence that it happened. Repeatability is not necessary for a phenomenon to be genuine, but it is necessary for us to have a well-founded belief in its reality. The reason for this lies in human unreliability.

I think it is fair to claim that so far, no paranormal results have been satisfactorily repeatable. So I conclude that although parapsychology could in principle refute Central-State Materialism, the researches so far fail to do so.

Even if some paranormal results were established as

genuine, they might of course be accommodated in a new, expanded, physical science. Here we must recall the relativity of materialism mentioned in chapter 2. Television is paranormal with respect to Newton's physics, but not to ours. The fact that some neomaterialism might survive the establishment of paranormal truths would not vindicate Central-State Materialism. For Central-State Materialism is a materialism based on our present physical and chemical science. If that science is inadequate, the materialism based on it is false. The doctrine that some science, we don't know at the moment which, is adequate to support a Central-State doctrine of the mind, is so vague and so weak that it is not worth holding or discussing.

(iv) The Causal Theory of Mind Examined

There are two strands in Central-State Materialism, the doctrine that the mind is the cause of behavior, and the doctrine that the central nervous system, being the cause of behavior, is the mind. Survival, freedom, and paranormal powers are threats to the second strand, but do not touch the first.

The Causal Theory of mind states that descriptions of mental events, states, and processes are descriptions of inner conditions insofar as they are, directly or indirectly, causally efficacious in the behavior of an organism. This is a simplified statement of the view. Some states, for example, having dream images, are described not as themselves causally efficacious, but as resembling other mental states, perceptual ones, which do have a real role in governing behavior. But images

are exceptional; the simplified formula captures the heart of the mind. Whatever else the mind is, matter or spirit, electric or chemical, it is a field of causes, and all its distinctively mental properties prove to be causal ones.

There seems to me no doubt that there is a conceptual connection, a connection of meaning, between mental and behavioral descriptions. It also seems plain enough that mental descriptions cannot in general be dissolved into statements of behavior and behavioral disposition without leaving something essential out. Further, we constantly employ mental categories in expounding the causes of human behavior. The Causal Theory of mind retains the vital conceptual link with behavior, gives to mind an independent existence as an inner something whose states are typically causes of that behavior, and so accounts for our natural employment of mental terms in causal explanations.

A doctrine with which it is hard to quarrel is that in our very understanding of what a mind is there proves to be an idea of the inner causation of behavior. The mental states, whether states of a spirit or states of a brain, will of course have many properties, of location, extent, physics, and chemistry (or mayhap spiritual machinery) in virtue of which they are causes. A state cannot be a cause and have *no* other properties; such a "pure cause" is just magic. But the Causal Theory of mind maintains that none of these other properties are mental. They do not enter into what we mean in any description of a state of mind as a state of mind. It is like a political description of an electorate. The electors are described by eligibility to vote, number, division into districts and wards, party affiliation, and

so on. The electors are also men and women, short and tall, slim and stout. But sex and size do not enter into the political descriptions of these people. Similarly, only as causes of behavior do properties of inner states count as mental. The mental description, according to the Causal Theory of mind, encompasses only description as cause.

The crucial question, therefore, is: Is the mind, insofar as it is mental, nothing but a field of causes? Are the only genuinely mental properties of inner states causal properties, or similarities to states with causal powers?

Pains Again

In urging the deficiencies of Behaviorism, we argued that the theory could not cope satisfactorily with the fact that pains hurt. How does the Causal Theory of mind fare in dealing with this question?

Being in pain is a complex condition. Suppose my finger is burned, and is painful in consequence. In my mental state there are at least two components: awareness that my finger has been overheated, as a result of which it is still damaged, and a peremptory desire that this awareness should cease forthwith. In this present discussion, both the awareness and the desire must naturally be given a causal analysis.

"I am aware that my finger has been burned" is analyzed as "As a result of having been burned on the finger, I have entered a new inner state apt to produce behavior wherein I discriminate the burned finger from others which are not burned." In the discriminating behavior I not only favor the correct finger, I favor it

in the burn-soothing way. That is, I give verbal and active expression to the belief that my finger has been burned.

So far so good. But the hurtfulness of the burn has not yet been captured. All that has so far been said would be true even if burns did not hurt but throbbed. Instead of the whole range of bodily sensations we in fact enjoy or endure, tingles, tickles, itches, searing pains, jabbing pains, aches, feelings of numbness, etc., suppose we only ever felt throbs. The frequency of the throbs could differentiate different bodily conditions. One throb per second in the finger would signal a burn, two a cut, three an itchy mosquito bite, three and a half a tickling feather, and so on. Then in our case of the burned finger, the whole of the above analysis of "I am aware that my finger has been burned" would be true, and the episode would not be one which hurt in the slightest.

Or again, suppose a being very like us except that instead of feeling a pain when he burns his finger or breaks his toe, he has no locatable sensations at all. He just spontaneously gains a new belief, it just "pops into his head" that he has burned his finger or broken his toe, as the case may be. Call this being an *imitation man*. His awareness of his own body would be like our awareness that the car we are driving in is getting a flat tire. Some change in our body, of which we are not conscious, has as a result that it just pops into our heads that the the tire is going flat.

Awareness of the kind we have, that our finger is burned, ceases at the end of successful soothing operations. The bare belief of the imitation man that his finger has been burned could just disappear in the same

way, as our belief that the tire is flat evaporates when we change the wheel.

The imitation man satisfies the analysis given above of "I am aware that I have burned my finger." But his pains do not hurt. There is nothing essentially hurtful, indeed no element which can be hurtful, in awareness of damage or malfunction as that awareness is analyzed by the Causal Theory. So the hurtfulness of pain must lie elsewhere.

Does it perhaps lie in the desire that the awareness should cease? Pains are unpleasant. We prefer not to have them. We often think that we prefer not to have them *because* they are hurtful. But perhaps this is a mistake. Perhaps their hurtfulness is precisely that we desire to be rid of them. Consider in the following how desire appears in a causal analysis.

"I desire to be rid of this condition of finger-burned awareness" is glossed as "I have entered an inner condition driving me toward (apt to produce) general expressions of pain, such as grimacing, together with whatever behavior I believe likely to minimize or eliminate another inner condition, my awareness of my burned finger." In everyone, this condition leads to wringing the hand and trying to cool it. In sophisticates like us, it leads further to searching out the burn cream, the analgesics, and even the doctor.

The strength of my drive to minimize awareness of my burned finger is the extent to which this purpose excludes or overrides all my other inner causes of behavior, and this varies directly with the intensity of the hurt. This is a point in favor of the idea that the desire is the hurtful element in pain. If conditions *A* and *B* increase and decrease together, then perhaps *A* and

B are the same condition. If they vary inversely, or independently, then they must be different conditions.

Nevertheless, there seems to be something wrong with the idea that a desire, understood as a cause, could be the very thing which is hurtful. What is hurtful must be something felt, and we can see that a causally understood desire is not something felt by considering other cases.

An urgent desire, causally understood, is an inner condition which, temporarily suppressing other causes of behavior, generates a pattern of bodily activity. A condition of this kind can be induced by hypnotic suggestion. A subject can be given an urgent desire, which is to say, an overmastering drive toward one particular behavior pattern, and it is clear from this case that such an inner cause is not something which, as cause, can be felt. So it is not something which can hurt.

We can also see that the causal analyses of awareness and desire in pain fail to capture the hurtfulness of pains by considering the possibility of the transposition of pains. Suppose a man for whom burning pains and crushing pains were transposed, so that when his finger is burned he feels as we do when our finger is crushed, and vice versa. The causal analyses of the elements in pain make his situation and ours exactly alike. He is aware that his finger has been burned, and so are we. He is gripped by the purpose to minimize the inner condition of awareness, and so are we. He works this purpose out in grimacing, handwringing, cream-applying, etc., and so do we. On the causal analysis of mental states, his state and ours are identical. Yet he is being hurt in the feeling-crushed fashion, and we are not. Our mental states are not identical. So the causal

analysis leaves something out, something which distinguishes burning from crushing pains even where a transposition of pains makes their causal properties identical.

We might try to save the causal analysis by further complicating the picture of pain. Neither the awareness that my finger is burned, nor my desire to be rid of this awareness, is itself anything hurtful. But in pain I am not only aware through bodily sense of the condition of my finger; I am also aware, by introspection, that I am aware of my finger's condition. So we might suppose the element of the pain situation which involves suffering is this inner awareness.

Or alternatively, we could hold that the hurtful state is my introspective awareness of the desire that my bodily awareness of my burned finger should cease.

Neither of these strategies is successful. For the introspective awareness they invoke must itself be given a causal analysis. It is in its turn no more than the entering of a third new inner state enabling discriminative behavior—largely verbal behavior—toward the original states of bodily awareness and consequent desire. And once again, the description of this second, introspective, awareness as enabling discrimination leaves undescribed the hurtfulness which distinguishes us from the imitation man, who can perform this kind of introspection yet cannot suffer. So once again the hurtfulness of the burn in general, and its particular burning hurtfulness, elude a causal analysis of the mental concepts. Everything the causal doctrine can say about pains is true of the imitation man whose pains never hurt.

Although it is a very difficult matter, I believe the same general criticism holds in the case of the different

perceptual states involved in seeing different colors, or smelling different smells, or, on the emotional side, undergoing different kinds of fear, fright, shock, and thrill. The causal doctrine covers well the description of mentality by one observing and explaining his fellow men. But the theory leaves out, to put it briefly, what waking life is like to him who is living it.

(v) The Causal Theory of Mind Amended

The criticism leveled above at the Causal Theory of mind can be expressed in this way: The peculiarly "mental" features of mental states are not all of them causal properties respecting behavior or similarities to causal properties. There are, in addition, characteristics of some mental states which especially concern how those states seem to him who has them. Thus there are the burning, jabbing, throbbing, and aching sorts of pain; the salty, bitter, sweet, and avocado-like sorts of taste; the different experiences of seeing things as variously colored; the different feelings involved in different emotions.

Let us accept the existence of these additional, non-causal features of mental states, and let us call them *phenomenal* properties. What follows for Central-State Materialism from the existence of such phenomenal properties? The Causal Theory of mind is important for materialism because purely causal descriptions of a state are *ontically neutral*. That is to say, a purely causal description of a mental state begs no questions about what sort of state it is, claiming only that it is causally operative in producing an organism's behavior.

So far as causal description goes, a mental state could be a state of a material thing, or a spiritual thing, or even a divine thing. The Causal Theory of mind leaves open, for scientific investigation to close, the question of what sort of thing a mind is. Philosophers who adopt the Causal Theory and go on to say scientific investigations indicate that the brain, a material thing, is the object whose states are causes of behavior are of course Central-State Materialists.

But Central-State Materialism is not automatically refuted if the Causal Theory is inadequate. If any property is ontically neutral, it is of course possible for a material object to have that property. So the mind can be an entirely material object even if mental states have phenomenal properties, provided the phenomenal properties are also ontically neutral. If phenomenal properties are ontically neutral, the Central-State Materialist is not embarrassed by their existence.

To see whether phenomenal properties are ontically neutral, let us return to the burning pain in my finger. The pain is a discrimination-enabling change in my mental state which sets up a desire for its own elimination. This change is in fact a change in the pattern and frequency of discharges of neurons in the cortex. But I am not aware of all this flurry of neuron firings *as a flurry of neuron firings*. Suppose, however, that I am aware of it as a condition which hurts. I do not grasp the brain-process clearly in its full reality, or in its reality at all. I grasp it, obscurely, in the guise of the painfulness of the pain. Nevertheless, it is this brain process, and not something else, which I grasp. To suffer is, on this account, to introspect rather clumsily a process which is itself material.

The phenomenal properties are not, on this view, properties of things as they actually are. They are how certain inner properties, which are both material and mental, appear to him who has them. They belong not to the reality, but to the appearance, of mental states.

Whatever belongs to appearance only is ontically neutral. It might have been some state of an indwelling spirit which, in suffering, I clumsily introspect. But it proves, so the argument runs, that the states set up in me by burning my finger, are brain states, and hurting is how these states seem to the organism enduring them.

The doctrine for hurting, that it is a merely apparent and not a real property, is then generalized to cover all phenomenal properties. So they are all ontically neutral. And as a result, even if we amend the Causal Theory and admit phenomenal properties, Central-State Materialism survives intact.

For a considerable time, I found this view very attractive. But I no longer think it acceptable. It is all very well to claim that hurtfulness is how activity of the C-fibers in the cortex appears, that the smell of onion is how the shape of onion molecules appears to a human with a normal nasal system, that scarlet is how a surface reflecting a certain pattern of photons appears to human vision. This deals with the pain, smell, or color apprehended and, relegating it to the category of appearance, renders it ontically neutral. But it leaves us with a set of *seemings*, acts of imperfect apprehension, in which the phenomenal properties are grasped. So we must ask the new question: Is it possible that things can *seem to be* in a certain way to a merely ma-

terial system? Is there a way in which acts of imperfect apprehension can be seen to be ontically neutral?

Consider a camera. A green tree can certainly be within the field the camera can photograph. And with color film, the camera produces a negative from which a photograph of a green tree can be made. We can say if we wish, although it is stretching words a bit, that the tree appears to the camera, and even appears to the camera as green. A fancy camera is made which develops and prints its own film once exposed, and we could say of this camera that at exposure it enters an inner state apt for the production of green tree photographs. Especially if the developing process varies with the color of the tree, this is a simulacrum of green tree-perceiving behavior. And it is stretching words rather less to say that the tree appears as green to the fancy camera.

Even so, this is not the sort of *appearing to* that we are concerned with. We want to insist that the camera does not experience anything at all. For all its tricks, we do not think it makes a vast difference to the fancy camera whether its shutters are open or closed. We do not think this makes the world seem a very different place, for we do not think that to the camera the world seems to be any sort of place at all. With us it is different. Whether our eyelids are open or closed makes a great difference to how the world seems. It is this difference which is in question when we ask about the ontic neutrality of the awareness of phenomenal properties. Sensitivity to various environments and differential reaction to these environments do not suffice to account for the world's seeming thus and so.

Materialists sometimes argue at this point that the

difference between an experiencing man and a non-experiencing self-developing camera lies in the simplicity of the one and the complexity of the other. The man is sensitive to a whole range of conditions whose variation makes no difference to the inner state of the camera. The man has memory, and purposes, and emotions, of which the camera is innocent. In the man, a whole host of feedback mechanisms monitor his activity. I do not find this appeal to complexity convincing. Think again of the imitation man, who duplicates all of a typical man's acquisition, processing, and retrieval of information, and all his activity, but for whom there are no phenomenal properties.

If the imitation man's finger is burned, he knows that something is going on in his finger. And he knows further that there is activity in him by which he knows this. The further activity is in fact activity of the C-fibers, but he does not know that that is what it is. He apprehends it imperfectly, as we do, but he does not apprehend it *by suffering*, as we do. He just knows it, as we just know when we are awake, for example, that whatever inner condition it is which marks off waking from sleep is present within us.

The imitation man can know sea and sky are alike in color, and even call them "blue". So can a blind man. Unlike a blind man, the imitation man can find it out for himself. When he looks at sea or sky he forms the belief that what he is looking at has the color which he has been taught to call "blue". Yet the imitation man does not see the sea and sky *as blue*. He is not able to enjoy their color, for they do not appear as colored to him. Similarly, he can tell when his finger is burned or crushed, and have a powerful drive to elim-

inate the condition by which he knows this. Yet he cannot suffer.

So far as I can see, imperfect apprehension can be kept ontically neutral only so long as it is analyzed solely in terms of what is known. So long as it is given that sort of account, the imitation man's imperfect apprehension is no different from ours. The difference is not in what is known but in how it is known. The materialist account of real men can find no place for the fact that our imperfect apprehension is by phenomenal property and not by, for example, beliefs just spontaneously arising.

I do not see how the ontically neutral descriptions available to the materialist can cover more than what is true of the imitation man. But I have not proved that this is impossible. Failing conclusive argument, we must just judge as best we can how adequate the materialist treatment of awareness by phenomenal properties can be. The next chapter discusses some of the consequences of an unfavorable verdict.