VII.—CRITICAL NOTES

Thinking and Experience. By H. H. PRICE. Hutchinson's University Library. Pp. vi + 365.

PROFESSOR PRICE'S book contains such a wealth of interesting and valuable matter that it is quite impossible in the compass of a review even to summarize it adequately without attempting to criticise it. I shall endeavour here to indicate what I take to be the main points.

The books opens with a discussion of two different ways in which philosophers have dealt with the obvious fact that there are in the world many instances of *repetition*, both simultaneous in space and successive in time. There are many particulars which resemble each other in *more or in fewer respects* and in a *greater or less degree* in any one respect. One way of dealing with this fact is to take such resemblances as basic, and to define such phrases as 'This has the quality q' or 'This stands in the relation R to that' in terms of them. This Price calls 'The Philosophy of Resemblance'. Another way is to say that there are certain entities called 'universals' which are 'instantiated by' particulars; that one and the same universal may be instantiated by each of many particulars; and that many different universals may be instantiated by one and the same particular. The resemblances in question are then regarded as due to two or more particulars instantiating one or more universals in common, to their instantiating different determinable forms of a common determinate universal, and so on. This Price calls 'The Philosophy of Universals' (as an abbreviation for the more accurate title of the 'Philosophy of *Universalia in Re*').

After carefully discussing these two 'philosophies' Price concludes that, taken as purely *ontological* doctrines, there is nothing conclusive to be said against either. They are best regarded as two alternative ways of treating the same facts. The terminology of Universals is more handy; but it *may* lead careless or foolish persons to treat a characteristic as if it were a kind of thing, and it may make them think that the world of particulars is more neatly pigeon-holed than it in fact is. The terminology of Resemblance keeps us nearer to the basic facts; but it is clumsy and complex, and it may make us ignore the occurrence of close or even exact resemblance. These two 'philosophies' henceforth make sporadic appearances throughout the book in various *epistemological* contexts.

Chapter ii is concerned with what Price calls 'Recognition', which he regards as *the* fundamental intellectual process. He first subdivides this into recognition of a presented particular as an instance of a familiar *characteristic or species, e.g.* as red or as a cat,

and recognition of it as a manifestation of a *familiar continuant*, *e.g.* a certain pillar-box. We might perhaps call these two processes 'specific identification' and 'numerical identification'. Price argues that the latter involves the former and something else besides. To identify what one now sees with Mr. Jones, the presented particular must be recognised as having 'the Jonesy look'. And it must further be taken to be connected by a spatio-temporally continuous sequence of particulars of certain kinds with certain past particulars which had that look when they were presented to one. It is plain, from the behaviour of animals, that both these processes take place in them; and it is plain that they often take place in us when we do not and could not formulate our experience in words and sentences.

Price next subdivides specific identification into what he calls 'primary' and 'secondary'. It is an instance of the former when one looks at something and identifies it as *white*. It is an instance of the latter when, although one is *merely* looking at it, one identifies it as *cold* or as *snow*. Even primary specific identification presupposes that instances of the characteristic recognised have been presented to one, and that the relevant common features have made some kind of persistent impression on one. But it does not presuppose that any explicit process of comparison, contrast, and abstraction has been performed. It is to be noted that the characteristics recognised in primary specific identification may be highly *complex* and may be relatively *indeterminate*. Even a person who has the use of speech and of imagery may not be able to name or to image them. (*Cf. e.g.* the 'look' by which one recognises a friend.)

Secondary identification is a very special case of identification by means of *signs*. The sign-property, *e.g.* the whiteness of the visually presented object, is recognised *primarily*. The significate-property, *e.g.* the coldness or the property of being snow, is recognised *secondarily*, through the activation of an associative disposition originally formed by past conjunctions of visual and tactual sensations. One peculiarity of this form of sign-cognition is that there is no interval of felt transition (either inferential or associative) between recognition of sign and recognition of significate. Another peculiarity which Price alleges is that the significate-property must be *capable* of being primarily recognised, and must *in fact* have been so recognised in the past experiences of conjunction which gave rise to the relevant associative disposition. (This fits in with his example of a visually presented particular 'looking cold'. I do not see how it can be reconciled with his example of the secondary identification of a visually presented object as a *bit of lead*. Surely no presented object can be *primarily* identified as a *substance of such and such a kind*, seeing that the latter property involves causal and dispositional properties.)

Price then considers how the fact of primary specific identification would be dealt with (1) by the Philosophy of Universals, and (2) by

that of Resemblances. According to the Philosophy of Universals, recognition would be awareness by an individual that a particular now presented to him is an instance of a certain universal which had been instantiated by particulars presented to him on former occasions. It thus presupposes what we may call 'retentiveness', though the excitement of the trace need not, and generally does not, result in conscious *recollection* of those past particulars or *comparison* of the present instance with them as recollected. In the Philosophy of Resemblance the essential part played by retentiveness is more explicit. On that view, to identify a presented particular as one of a certain sort is to recognise that it resembles each one of a certain set of particulars, which were presented to one in the past, at least as strongly as the least resemblant of these resembled each other. (I have stated this rather more elaborately than Price himself does.) These 'exemplary' particulars must all have had a fairly strong resemblance to each other in certain respects, and as much *unlikeness* as may be in all other respects. Both 'philosophies' have to assume that there is an innate tendency to be impressed by such likenesses standing out against a background of unlikeness, and that the trace of such an impression is activated when one is presented with anything that *in fact* sufficiently resembles the exemplars in the respect in which they outstandingly resembled each other. They have further to assume that, when such a trace is activated, it can and generally does manifest itself in a feeling of familiarity and in appropriate reactions towards the presented particular, *without* calling up recollections of the exemplars.

In this connexion Price points out that, when a class has been marked out by resemblance to certain mutually resemblant exemplars, other selections from it would have done equally well as an exemplary group. He also points out, as an analogous case, that, when a person uses intelligently or hears understandingly a word like 'tall', he is plainly in some sense 'remembering' human bodies or various heights and 'comparing' the human body under consideration with them. But equally plainly he is not as a rule *recollecting* one or more of these 'exemplary' human bodies.

In Chapter iii Price discusses the question whether *primary* recognition can be mistaken. Such recognition involves two factors, *viz. noticing* something present, and (in some sense of the phrase) 'remembering' something past. Price says that *noticing* cannot significantly be said to be either correct or incorrect. It may be altogether absent in cases where one would expect it to be present. Or it may be partial, either in the sense of ignoring certain features which are being sensibly presented among others, or in the sense of taking note only of a relatively indeterminate characteristic and ignoring the determinate form in which it is being presented. (I suspect that critical discussion would reveal some very thin ice here.)

The fundamental question for Price is, therefore, whether 'memory', in the sense in which it is involved in primary recognition, can be mistaken. The discussion throws light on what that sense is *not*, and shows how tenuous that sense *is*. Price considers the hypothesis that an individual was born one second ago, but has all the ostensible memories which a normal adult member of its species would have. He regards this hypothesis as logically, if not causally, possible. Let us suppose, *e.g.* that this hypothetical individual is a cat. Then I understand Price to assert that, if it were to see what is in fact a mouse, it would be able to 'recognise' the characteristic 'mousey' look, though in fact it had never seen, or even dreamed of or imaged, anything that looked as a mouse looks. Now Price repeatedly insists that 'memory' is an essential factor in all conceptual experience and intelligent behaviour, and that this important fact has been sadly overlooked. But, since the ostensible remembering required need not be veridical, and need involve nothing more than a feeling of familiarity in reference to the presented particular, the assertion seems little more than a tautology. We should *not* talk of a presented particular as being 'recognised' *unless* it felt familiar; and we *should* talk of it as being 'recognised', *provided* it felt familiar, even though that feeling should be completely misplaced because no such particular had in fact ever been presented to that individual before.

On the main question Price's conclusion is that primary recognition is better described as *non*-fallible, *i.e.* as something below the level at which the notion of true or false can correctly be applied, than as *in*fallible.

In Chapter iv Price considers the general features of Sign-cognition. (Secondary recognition is a very simple special case of this.) He mentions and describes the following four features of sign-cognition. (1) It involves two closely blended aspects, *viz.* a sensational or quasi-sensational one and an ideal or conceptual one. (2) It is in principle independent of the use of words or images. (3) It is closely bound up with relevant practical behaviour, *viz.* doing or setting oneself to do something *in reference to* the significate. (4) The reaction, overt or private, remains closely bound to the sensory or quasi-sensory experience which presents the sign on any occasion.

The sensational or quasi-sensational aspect of sign-cognition presents no difficulty. Any occurrent instance of such cognition presupposes an associative disposition, already formed in an individual by appropriate past experiences, and a present sensory or quasi-sensory stimulus to excite it. The excitant may be either veridical or more or less delusive or even completely hallucinatory.

The alleged ideal aspect needs more discussion, in view of the fact that we are here concerned with a form of cognition which is in principle independent of words and images. Price mentions the following four features in which the reaction of an individual in

reference to the significate in sign-cognition is analogous to what we should unhesitatingly call ' thinking of so-and-so ' when it makes use of words and images. (i) It is liable to be *mistaken*. (ii) It is a reaction towards something which is *absent*, *i.e.* not as such being presented to the senses of the individual at the moment. (iii) It involves *abstraction*. (iv) Something analogous to *logical* distinctions, *e.g.* negative, alternative, conditional, etc., can be significantly applied to it.

The first of these features needs no discussion, and the fourth is discussed in a separate chapter. As regards reaction in reference to something *absent*, Price points out that in secondary recognition the signified characteristic is, no doubt, ascribed to the *perceived object*, but it is ' absent ' in that it is not being sensibly presented at the time, as the signifying characteristic is. Again, in numerical identification, what is ' absent ' is that sequence of past particulars which one takes to have filled the spatio-temporal gap between that which is now being presented and certain others which were presented in the remoter past. As regards *abstractness*, the point seems to be this. A cat, *e.g.*, reacts in much the same way to anything that looks sufficiently like a mouse of *some* size or colour. Again, anything that looks sufficiently like a block of ice ' looks cold ' to a grown-up Northern European, but within a fairly wide range it does not look to have one degree of sensible coldness rather than another. On the other hand, some sign-reactions (*e.g.* those of a skilled tennis-player) are most delicately adjusted to minute variations in the sign. So, if we are to use the same terminology in speaking of them, we must say that they are reactions in reference to an extremely *determinate* (though still abstract) significate.

Price discusses in considerable detail his contention that in sign-cognition the ' thought ' of the significate is closely bound to the perception or quasi-perception of the sign. In the end this generalisation turns out to be unconditionally true only in the somewhat trivial sense that the ' thought ' has to be *started* by actual perception or quasi-perception. In many cases the significate remains in some way ' before the mind ' after the perception of the sign has ceased. The important questions which Price discusses in this connexion are the two following. (1) What are the circumstances which tend to make the *continuance* of the ' thought ' of the significate independent of the continuance of the perception of the sign ? (2) In what sense is the significate ' before the mind ' in such cases of independent continuance ?

His answer to the first question is that the favourable conditions are (i) that the significate shall be signified as fairly *remote* in time from the occurrence of the sign, and (ii) that the significate shall be of considerable *interest* to the individual. These conditions are strengthened if, in addition, the sign is only *weakly* significant. (This is a feature which is of course positively correlated with remoteness in time of the significate.)

His answer to the second question may be summarised as follows. We must first distinguish between *pre*dictive, *retro*dictive, and *juxta*dictive signs. What he has to say applies primarily to fairly long-range predictive signs. Suppose that an individual perceives something which he primarily recognises as an instance of ϕ, and that this is for him a sign that an instance of ψ will occur after an interval. Suppose that he is interested in the occurrence of such a particular. Then his persistent disposition to recognise an instance of ψ, if he should perceive one, will be *sub-activated* and will remain in that state during the interval. This will manifest itself in certain characteristic modifications of his actual experience or his behaviour during the interval. These may be described in general terms as 'being in a state of *preparedness* for an instance of ψ'. The alternative manifestations include (*a*) the use of appropriate sentences or the occurrence of appropriate imagery, in creatures who are capable of speech or of image-thinking, or (*b*) increased sensitiveness to *other* signs which are relevant for or against the occurrence of an instance of ψ, or (*c*) appropriate actions or incipient actions. If the sign is only weakly significant, or if there are conflicting signs, the state of preparedness is liable to take the special form of *vigilance*, *i.e.* preparedness for several alternative possibilities, including the *non-occurrence* of an instance of ψ. (I must omit here Price's account of what happens in the case of retrodictive and juxtadictive signs.)

In Chapter v Price deals with what he calls 'the logic of sign-cognition'. He claims to detect, even at the level of intelligent animal behaviour, something closely akin to the notions of Negation, of Degrees of Inductive Probability, of Disjunction, and of Conditional Propositions.

The notion of Negation is bound up with the fact that no signs are completely reliable, and that many are predictive and involve a period of expectancy. Having perceived an instance of ϕ, the individual is put into a state of preparedness for an instance of ψ. During that interval he has an experience which *we* might express by saying '*Not yet* a ψ*!*' And, if the sign should have misled him, the period will end with an experience which *we* might express of saying '*No* ψ after all*!*' It is the experience of falsification, again, which gives rise to something akin to the experience of expecting an instance of ψ with various *degrees of conviction*. Then, as we have seen, the significate is often relatively indeterminate, and perceiving the sign puts the individual into a state of preparedness for *this*, *that*, *or the other* alternative.

Price devotes most attention to the case of analogies to the notion of *Conditional Propositions*. The question is whether at the pre-verbal level there can be anything analogous to a sign ϕ having as its significate something which would be expressed at the verbal level by a phrase of the form 'if χ-then-ψ'. Price holds that an instance is provided at the purely behavioural level by the case of

a cat watching a mouse in a state of preparedness to do (ψ_1 if the mouse does χ_1), (ψ_2 if the mouse does χ_2), and so on. This, of course, illustrates disjunction as well as conditionality.

As a result of an elaborate discussion Price reaches the conclusion that something closely analogous to the notion expressed by 'if . . . then' arises from a conflict-situation, where there is a *tendency* to make a sign-inference, but this is *inhibited* in one or another of certain ways, but is *not altogether suppressed*. Two important cases are discussed under the names of 'co-signification' and 'chain-signification'.

These may be enunciated as follows. (1) ϕ_1 alone is a weak sign of ψ, and so is ϕ_2 alone, whilst ϕ_1 and ϕ_2 is a strong sign of ψ. An individual is presented with an instance of ϕ_1 alone. He has a weak tendency to expect a ψ. This arouses the idea of ϕ_2, which is *not* being presented to him in sense-perception. If it were actually being presented to him along with ϕ_1 he would *strongly* expect a ψ. This tendency is activated, but it is also inhibited by the fact that no instance of ϕ_2 is being presented to him. His state, due to this sub-activation, corresponds to what we should describe as taking the occurrence of a ϕ_1 as a sign for the *conditional* significate which we should express by the sentence 'if there should be a ϕ_2 also, then there will be a ψ'. (2) ϕ is a *weak* sign of χ, and χ is a *strong* sign of ψ. An individual is presented with a ϕ. This leads him weakly to expect a χ. If a χ were actually being presented to him, he would strongly expect a ψ. There is thus a tendency for him, when presented with a ϕ, to expect a ψ. But this tendency is inhibited, though not altogether suppressed, by the fact that he has only a weak expectation of a χ. His resulting state is what we should describe as taking the occurrence of a ϕ as a sign for the *conditional* significate which we should express by the sentence 'if there should be a χ, then there will be a ψ'.

Price compares and contrasts these cases with others where there is a feeling of *necessitation* in passing from the perception of a ϕ to the expectation of a ψ. This feeling, he thinks, arises only when the prospect of a ψ is highly distasteful, and yet ϕ is so strong a sign that the perception of a ϕ makes one confidently expect a ψ. He says that both conditional signification and feeling of necessitation can arise only in a being who has what we may call a 'sense of objective reality', *viz.* in one who makes inferences from undoubted premisses even when the conclusions are highly distasteful to him, and omits to make them, even when highly attractive to him, when one or more of the premisses is uncertain or the sign is a weak one. He holds that this 'sense of reality' is closely connected with the presence of *self-consciousness*.

In Chapter vi (*Signs and Symbols*) and Chapter vii (*Signs, Symbols, and Ostensive Definition*) Price discusses with immense elaboration and patience the connexion or lack of connexion between *symbols* and signs (in the sense in which we have already considered them).

The discussion takes the form of a critical examination of what he calls ' The Sign Theory of Symbolisation '. So far as I can understand, the theory is that a symbol is a *humanly produced* particular, and that the relation between a symbol and what it symbolises for a person is essentially the same as that between a non-humanly produced sign (*e.g.* black clouds) and what it signifies for a person who perceives it (*e.g.* rain in the near future). If so, the relation is what Price calls ' inductive ', *i.e.* a symbol now works as such for a person because he has repeatedly observed tokens of that type conjoined with instances of a certain other universal, so that an association by *conjunction* has been set up in him between the former and the latter. On the one side there would be certain words or sentences uttered, or certain gestures made, on many occasions in presence of an addressee ; and on the other side certain overt states of the addressor's body or states of his immediate environment, which the addressee can perceive.

There are a number of *prima facie* objections to this theory, which Price develops ; *e.g.* that some symbols function as such by mere *resemblance* ; that we often use and understand descriptive sentences without *believing* in the existence of what they describe ; that *individual words* have meanings, and that the meaning of a sentence is determined by those of the words in it ; that the theory fails to deal with the *logical connectives* in empirical sentences, and with sentences which are *non-empirical* ; and so on. Price attempts to provide, in terms of the theory, more or less satisfactory answers to each of these objections, and he is not persuaded that either severally or collectively the alleged difficulties are insuperable.

Nevertheless he rejects the theory on the following grounds. The theory looks at symbols entirely from the point of view of an *addressee*. It can give no plausible account of their use by a person in his own thinking, speaking, and writing. And, for that very reason, it is inadequate even as an account of their use in communication between intelligent waking persons. For in such communication the addressor is or has been thinking with the symbols as he produces them, and the addressee (if the communication is successful) is thinking with the symbols which are addressed to him. The Sign Theory is in the end circular. Understanding an utterance addressed to one cannot just consist in being led by it through association to expect so-and-so. For, in the first place, the addressee may perfectly well understand it without being led to expect anything in particular by it. And, secondly, when he *is* led to expect so-and-so by it, this presupposes that he understands it, though there is in general no temporal gap between the understanding and the expecting.

Yet the Sign Theory is based on certain important facts, and it emphasises an essential feature in the use of symbols. The truth is this. There must be some *primary* symbols, directly tied to observable particulars, if there are to be symbols at all. And this

tie can be established only if these primary symbols are used by one's neighbours in the main either *veraciously* or, if not, at least with *systematic* mendacity. A basic symbol, then, is a type of particular which fulfils the following conditions. (1) Tokens of that type must be readily producible and controllable at will by any intelligent being who is to use it as a symbol. (2) Tokens of that type must have been regularly conjoined with observable instances of a certain universal, and this constant conjunction must be such that it impresses and leaves a trace upon those who use the symbol. It is the former feature which makes the relation between symbol and symbolised *irreversible*, and which enables basic symbols (unlike ordinary signs) to be used in trains of thought which are not tied to immediate environmental cues.

This leads Price to an elaborate critical discussion of the processes by which one acquires ostensive definitions of primary symbols. He follows this up with a polemic against certain unnamed philosophers, who are alleged to hold the curious doctrine that one's knowledge of the meanings of *basic* symbols, though in fact acquired inductively by a process of trial and error, might conceivably have been acquired in some quite different way or even have existed without having been acquired at all. He discusses this *prima facie* nonsense with a degree of patience and elaboration which does equal credit to his heart and to his head.

The main points which Price makes on his own account are the following. One does not generally acquire an ostensive definition at a definite date and by a process of being taught. One acquires it gradually by a process of trial and error in one's social intercourse with others. There is often a stage of imperfect understanding and hesitant usage of the symbol. Moreover, one does not generally acquire ostensive definitions of basic symbols *one at a time*. Very often one acquires a more or less vague understanding of *several interconnected symbols* simultaneously, and one then uses one's more exact understanding of some of them to improve one's vaguer understanding of the rest.

Chapter viii (*The Imagist Theory of Thinking*) and Chapter ix (*Images as General Symbols*) are closely interconnected and may be taken together. Price begins by insisting on the following plain facts, each of which has been denied by some reputable philosophers. (1) There undoubtedly is a certain recognisable process which occurs in most people and which may be called 'imaging'. (2) Visual and auditory imaging, at any rate, presents itself as *acquaintance with objects of a peculiar kind*, which in some ways markedly resemble certain physical things or events as they appear to sight or to hearing, as the case may be. But in certain other respects (*e.g.* their spatial properties, their normal antecedents and sequels, and so on) they differ fundamentally from physical things or events. (3) Visual images do resemble pictures enough to make the description of them as 'mental pictures' far more illuminating than

misleading to anyone who is not either woefully silly or wilfully naughty. (4) Many people do use non-verbal images as symbols in certain processes of thinking or of intelligent bodily behaviour, and words would be quite unsatisfactory to them as substitutes.

The theory which Price calls 'Imagism' turns out to be an extreme form of a wider and more plausible theory which might be called the 'Replica Theory'. Imagism is the doctrine that the *primary* symbols are mental images. All other symbols are secondary. Words whose meaning can be given only by ostensive definitions are not really basic, because they are merely substitutes for images, which are the only *basic* symbols. Price argues that there is no difference in principle between the use of non-verbal images in thinking and the use of diagrams, models, etc. What is common and peculiar to both is that the symbols used, unlike words and sentences, are *replicas* or *quasi-instances* of the concepts which they symbolise.

Price thinks that those who find the theory plausible have at the back of their minds the following tacit assumption. They feel that there is something paradoxical about thinking of anything which is not being presented at the time to one's senses. When, and only when, the symbols used are replicas or quasi-instances of the object thought of, thinking of the absent approximates as closely as its nature permits to the ideal of inspecting the present. But this account of the motives for the theory is no justification of it. In actual fact the basic symbols are tied to what they symbolise by *ostensive definition*, without needing to be replicas.

Granted that Imagism must be rejected, it might still be the case that its adherents have given a correct account of that not inconsiderable part of our thinking which does use images as symbols. So Price proceeds to consider this account on its merits. The two fundamental tests for the possession of a general concept by a person are (1) his ability to *recognise* instances of it as such when they are presented to his senses, and (2) his ability to '*think of*' instances of it when none are being presented to him. Some imagists have held that recognition involves comparing the presented instance with a kind of standard image, which one in some sense 'carries about with one' like a pocket-ruler. Price has no difficulty in showing the absurdity of this contention.

It remains, then, to consider the imagist account of thinking in absence. The theory is that to think of an instance of a general concept, *e.g.* Dog, in absence, consists in (or at any rate involves) having an image which is a quasi-instance of that concept. Stated in this extreme form, the theory is at variance with easily observable facts. But at any rate it is true that many people often do use images when thinking in absence of an instance of a general concept. So Price proceeds to consider how images function in that capacity.

The *prima facie* difficulties may be illustrated in terms of the concept Dog. (1) Any dog-image is *ipso facto* a quasi-instance, not

only of Dog, but also of all the less determinate concepts, *e.g.* Mammal, Quadruped, Animal, etc., under which that concept falls. (2) Any dog-image will resemble one particular dog, *e.g.* a certain fox-terrier, too closely to be a suitable quasi-instantial symbol for any and every dog. (3) On the other hand, if one is thinking in absence of a *certain particular* dog (say Fido), the very best that any one image can accomplish is to resemble what Fido *looked like* on one particular occasion from one particular point of view. Price considers two suggestions (not necessarily exclusive of each other) for dealing with the first two difficulties. One is a development of a theory of Hume's, the other is the theory of Generic Images.

According to the first of these alternatives we must remember three things. (1) The question *which one* of the various concepts quasi-instantiated by a given image shall be symbolised by it on any particular occasion, depends on the predominant practical or theoretical interests aroused in the individual at the time. (This suffices to show that Imagism is not a *complete* and self-contained account even of image-thinking.) (2) The symbolisation need not take place by means of a *single* or a *static* image. There may be a *sequence* of appropriately dissimilar images, or there may be appropriate *continuous variation* in a single persistent image. (3) In most cases such developments will not actually take place except in a very scrappy form. A more accurate account of the facts is to say that the individual is in a *felt state of readiness* to develop his actual imagery in certain directions and to inhibit developments in certain other directions.

Price considers two alternative forms of the Generic Image Theory. One is a variant of Galton's 'composite photograph' theory. The other is much more startling. Price suggests that there may be images which are *intrinsically* indeterminate in character. Some images, he says, may be 'inchoate entities, incompletely determinate particulars'. At a later stage he goes further and says: 'It would appear that such incompletely determinate particulars do occur in image-thinking . . . .' (I very much doubt if he has produced any adequate evidence for this stronger statement. But I must confess that when I inspect many of my own images I find it impossible to describe their nature in language that does not sound absurd. This causes me no surprise, since it is obvious that ordinary language was evolved to subserve utterly different ends.)

I will take together the last two chapters, *viz.* Chapter x: *The Classical Theory of Thinking*, and Chapter xi: *Concepts and their Manifestations*, since they are closely interconnected. According to the Classical Theory the essential feature in thinking is *inspecting* and noting relations between certain *non-sensible* entities of a quite peculiar kind, *viz.* 'universals' or 'concepts' or 'abstract ideas'. This doctrine is quite compatible with Empiricism, which is a theory

as to the *origin* of concepts in the *dispositional sense*, and not a theory as to what happens when such a disposition is activated. Nor does it necessarily involve Realism. For one form of it, *viz. Conceptualism*, denies universals, both *in re* and *ante rem*, and holds that thinking is concerned with *intra-mental* entities of a peculiar kind. We must therefore consider in turn the realistic and the conceptualist forms of the Classical Theory.

The realistic form of the theory is this. To say that a person has the concept Dog, *e.g.*, means that he has acquired the capacity to apprehend, in the absence of presented instances of it, the universal which is common and peculiar to dogs. He is really *thinking* of dogs when and only when he is actually apprehending that universal. A person who uses the word 'dog', however correctly, without doing this is just talking without thinking. Of this theory Price says that there is certainly no introspective evidence that we have any such experience when thinking of dogs in the absence of presented instances. And 'how very odd to suggest that being-a-dog is something which can be inspected . . . *by itself* in the absence of objects which are characterised by it'.

The conceptualist form of the theory presupposes the Philosophy of Resemblances. It alleges that the disposition, which is set up in a person who has observed a number of creatures which strongly resembled each other in certain respects and were very dissimilar in other respects, manifests itself in the following way when it is activated in the absence of anything which resembles these exemplars as closely as they resembled each other. It manifests itself as an experience of *inspecting* an *intra-mental* entity of a peculiar kind, called an 'abstract idea of a dog'. Price points out that, on this view, there would be as many abstract ideas of a dog as there are occurrences of a thought of a dog when no dog is present to the thinker's senses. He does not consider this to be a conclusive objection. (I should have thought that it is almost impossible to make sense of, *e.g.* Locke's account of mathematical knowledge, when this consequence of Conceptualism is recognised.) In the end Price rejects the theory because, if he introspects when thinking of dogs, triangles, etc., in the absence of presented instances, he simply cannot find himself inspecting any object of the kind alleged.

What makes the Classical Theory plausible is the fact that thought 'overflows symbols' in various ways. We can recognise the following three stages in thinking of a topic. (1) Thinking out a problem for oneself for the first time. (2) Carefully arranging and formulating one's thoughts about it, either for oneself or for others. (3) Repeating and applying the thoughts when they have become very familiar. Symbolism tends to be very scrappy both at the first stage and at the third. The scrappiness at the *first* stage cannot be explained in terms of habit and 'telescoping', and yet this is the stage of thinking *par excellence*.

Further *prima facie* support for the theory is derived from the following two facts. (1) We often have the experience of *groping* for the right symbols for our thoughts, and unhesitatingly rejecting some as unsatisfactory before we have found any that seem satisfactory. (2) The number of symbols which can be perceived or explicitly recollected within any one specious present is very much smaller than the minimum number needed to symbolise any coherent thought-content. Yet one's understanding of what one hears or reads, and one's production of appropriate words at each successive moment in speaking or writing, plainly depends in some way on having the whole context in one's thoughts.

The Classical Theory would account for these facts by alleging that in all such cases the thinker is inspecting a pattern of inter-related universals (or alternatively of inter-related 'abstract ideas'), and that it is this which enables him to reject unsuitable symbols, to grope after suitable ones, to hold the thread of a long discourse in his mind, and so on. Price accepts the facts, but he cannot, for the reasons already stated, accept the theory. He proposes an alternative explanation, in terms of the sub-activation of associated dispositions giving rise to a state of *felt readiness* to speak or write in certain ways, to produce or inhibit certain images, and so on. He thinks that the Classical Theory shares with Imagism the prejudice that there is something 'fishy' about thinking of an instance of a concept when none is present to one's senses, and the narrow view of 'memory' which would reduce it to recollecting formerly perceived instances. The result is that thinking is forced into the mould of *visual perception*, as that experience presents itself to naïve persons who know nothing of the physical, physiological, and psychological processes involved in it.

Price concludes his book with a most interesting detailed positive account of the various ways in which the possession of a concept by an individual may manifest itself. He considers that the *minimal* manifestation is *recognition* of an instance as such when presented to one's senses. In the absence of a presented instance a concept may manifest itself in a great number of ways. They range from sign-cognition and sign-guided behaviour; through image-thinking and the actual production of public *quasi*-instances, such as diagrams or models, or of *complete* instances; to the production of intelligent discourse and the understanding of the discourse of others. This last manifestation reaches its zenith when the individual is ready to express his own ideas, or to formulate the ideas of others, in alternative sentences to those which he actually utters or actually hears or reads.

I have been able to give here only a bare outline of the main doctrines of Price's book. There is a wealth of admirable discussion on points of detail which I have had to leave untouched. The book seems to me to be an extremely good one. It treats in a most illuminating way topics of fundamental interest and importance.

A delightful feature of it is the fairness and the thoroughness with which Price states and discusses doctrines which he eventually rejects, and the way in which he brings out the strong points in them and shows what has made them acceptable to men at least as intelligent and as truth-loving as ourselves and our contemporaries. It is a pleasure to read a contemporary philosophical book written in the English of a gentleman and a scholar. Price, as one might expect, keeps a happy mean between pedantic technicality, on the one hand, and, on the other, that vulgar colloquialism which nervously shuns every word and phrase which would not naturally occur in the conversation of one's bedmaker or one's bookmaker.

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The Philosophy of Science. An Introduction. By STEPHEN TOULMIN. London: Hutchinson's University Library, 1953. Pp. 176. 8s. 6d.

IN this book Dr. Toulmin discusses a small number of related and important questions that arise in the logical analysis of theoretical physical science. Indeed, his main concern is to examine the status of laws of nature in the light of their functions in physical inquiry; and the views he advances on other matters (among others, the nature of theoretical discovery, the relation of theory to observation, the role of models, the existence of sub-microscopic entities, and the justification of induction) are largely corollaries to the conclusions reached on that central issue. The over-all approach adopted, with its strong emphasis on the "language-shift" that is alleged to be involved in any new physical theory, is heavily indebted to Wittgenstein and writers influenced by the latter; and the answers supplied to the chief problem discussed are highly reminiscent, though probably arrived at independently, of the instrumentalist conception of scientific theory developed in America by Charles Peirce and John Dewey. The major claims are supported by many apt and carefully worked out illustrations drawn from the history of physics; and though the argument is in consequence sometimes repetitious, the use that is made of the examples is genuinely illuminating and ties down the discussion to the actual practice of science. On the other hand, popular accounts of modern physics are severely censured for presenting theories without reference to their office in accounting for experimental facts, while the usual run of logic texts are similarly criticized for their failure to consider logical problems in the context of concrete inquiry. Moreover, an interesting and often just polemic is carried on with some prominent writers on the philosophy of science, among others