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MIND
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I.—PROFESSOR MARC-WOGAU'S 'THEORIE DER SINNESDATEN' (II).

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SECTION II. MARC-WOGAU'S OWN ACCOUNT OF SENSE-PERCEPTION AND ITS OBJECTS.

THE last sub-section of the previous Section has introduced us to Marc-Wogau's own account of the nature of Sense-perception. We can now explain this in greater detail by reference to what he says in Chapter V (*The Relation of Sense-data to Physical Objects*) and Chapter VI (*Sense-data and Scientific Objects*).

(A) *Macroscopic Objects.* As regards ordinary macroscopic physical things, such as books, pennies, etc., Marc-Wogau's theory may be outlined as follows.

In certain circumstances, when a person 'sees' a physical object, he *visually prehends* that physical object which he is said to be seeing. In other cases what he visually prehends is, not the physical object which he is said to be seeing or indeed any other physical object, but a particular which stands in a certain special relation to the visum. In the latter cases it is convenient to call the visual prehensum a 'sense-datum'; in the former it is not. If we go into greater detail, the theory may be summed up in the following six propositions.

(1) Suppose that a certain physical object, *e.g.*, a certain penny, is seen from various positions, under various physical and physiological conditions, and with the observer in various mental attitudes (*e.g.*, that of ordinary practical life, that of the draughtsman, that of the introspective psychologist, etc.). Then on each occasion a different particular is visually prehended. But, provided that the positions and the conditions fall within certain

limits (which can be indicated but not defined or described with complete accuracy), and that the mental attitude is that of ordinary practical life, these visual prehensa differ only abstractively and not qualitatively from each other.

(2) *Each* such prehensum is identified with the seen physical object, and is referred to, *e.g.*, as ' that penny there now '.

(3) (i) These prehensa form the nucleus of a larger group. The non-nuclear members are those which are prehended from positions or under conditions which fall outside the limits mentioned above. They differ *qualitatively* and not only abstractively from each other and from the members of the nuclear group. (ii) Each of these too is *commonly spoken of* as if it were a physical object, and as if it were the same physical object as that which is identified with each member of the nuclear group. It would be referred to, *e.g.*, as ' that penny there now '. But (iii) existence in sense E_3 is ascribed only to the nuclear prehensa. The non-nuclear ones are said to be ' non-existent ' or ' unreal ' in that sense, though they are said to exist and to be real in senses E_1 and E_2. (If the reader will look back to the account of these various senses of ' existence ', I think he will find that the last statement adds nothing substantial to what has gone before.)

(4) Every member of a nuclear group *is* a physical object, and all members of any one such group are *the same* physical object. But no non-nuclear member is, strictly speaking, a physical object. In virtue of this difference it is proper to call the non-nuclear members ' sense-data ' and to refuse to apply that name to the nuclear members.

(5) In some cases where we see a physical object, *e.g.*, the moon, the conditions required for prehending nuclear prehensa cannot in fact be fulfilled by any human percipient. In such cases, though we *perceive* the object, in the way in which supporters of the sense-datum theory think that we perceive *all* objects that we ever do perceive, we do not *visually prehend* it.

(6) Under certain conditions we visually prehend, even in normal waking life, prehensa which are neither nuclear nor non-nuclear in the sense described above. An example would be the object which one visually prehends when one sees a reflexion of a physical object in a distorting mirror. Such visual prehensa are not, even in careless common speech, *identified* with any physical object. But they are related in certain specific ways to a certain physical object which is or may be seen, and perhaps also to certain other perceived or perceptible objects. (I will include them under Russell's name of ' wild ' sense-data, though they are ' tame ' enough in comparison with those which we pre-

hend in dreams or waking hallucinations.) These cases, according to Marc-Wogau, do not raise any serious theoretical difficulties, because one is not inclined even *prima facie* to identify such a wild sense-datum with the physical object to which one assigns it. Marc-Wogau is inclined to think that what is meant by 'assigning' a certain wild sense-datum to a certain physical object can be analysed in terms of causation.

It remains to mention some consequences which Marc-Wogau believes to follow from his theory.

(i) There is for him a problem about the relation between visual prehensum and actual visum only in the case where the former is non-nuclear or wild. For it is only in such cases that the visual prehensum differs from the visum. (ii) In the case of non-nuclear visual prehensa, the relation between them and the visum is that, although the two differ qualitatively, certain conditions are fulfilled which incline us to call the former by the name of the latter. These conditions were discussed in the account of 'existence' in senses E_2 and E_3. (iii) In accepting a causal analysis of the relation between a wild sense-datum and the physical object to which it is assigned Marc-Wogau is not faced with the well-known difficulties which a causal analysis presents to anyone who holds that *no* physical object is ever prehended. For he holds that physical objects are in principle prehensible and in fact very often prehended. So the physical object to which a certain wild sense-datum is assigned on causal grounds may have been prehended on other occasions.

Before leaving this part of Marc-Wogau's theory I wish to make the following comments. It seems to me that one would not call a visual prehensum 'a penny' and would not claim to be 'seeing a penny', *e.g.*, unless one believed or took for granted that—to put it very vaguely—there was a great deal more 'to it' than those characteristics which it is, or could be, visually prehended as having. And, if these beliefs were false, one would be mistaken in saying 'I see a penny'.

Now Marc-Wogau, as we have seen, puts a certain interpretation on the statement 'This object, which I now visually prehend, has certain characteristics which I do not, and could not, visually prehend it as having.' The interpretation is that there are *other* contemporary particulars, which occupy simultaneously the same place as this visual prehensum and differ only abstractively from it; and that these between them have many characteristics which it lacks. Now, if this interpretation be accepted, it seems to me that Marc-Wogau's theory has a certain resemblance to the theory which can be roughly described as

holding that ' a physical object is a class or family of suitably inter-related sense-data '. I want to point out what I take to be the likenesses and the differences.

The latter theory would hold (i) that each member of such a class is *completely determinate* in all its predicates ; (ii) that it is only the class or family *collectively*, and not each member of it severally, which can properly be described as the physical object seen ; and (iii) that the relation between the members is not that of differing only abstractively from each other. In all these respects Marc-Wogau's theory differs from it. But there is at least one important resemblance which, it seems to me, Marc-Wogau is inclined to overlook. No prehensum can correctly be described as a physical object simply in respect of its own intrinsic qualities ; it can be so called only in so far as it is believed to be a member of a certain set of particulars inter-related in the peculiar ways which Marc-Wogau has described. Perhaps the resemblance and the difference between the two theories may be brought out by the following analogy. On the Class-theory the name of a particular physical object, *e.g.*, ' this penny ', is like such a collective name as ' this regiment '. On Marc-Wogau's theory it is like such a name as ' this soldier '. The word ' soldier ' is *not* a collective name, like the word ' regiment ' ; but it *is* a name which can properly be applied to an individual only in so far as he is believed to be a member of a certain collection of suitably inter-related individuals. If we care to carry this military analogy further, we might do so as follows. We might compare the nuclear sub-group to the privates in a regiment ; the non-nuclear sub-group to the officers of various ranks ; and the wild sense-data, which are assigned to the same physical object, to certain civilians connected very intimately with the privates or the officers, *e.g.*, their wives, their mistresses, or their camp-followers, taking these three kinds of female as representing ascending orders of ' wildness '.

(B) *Microscopic and Ultra-microscopic Objects.* Marc-Wogau considers in turn the following cases. (1) An ordinary macroscopic physical object, seen first cursorily and as a whole, and then from the same place with special attention to the parts and the details. (2) Such an object, seen first with the naked eye, and then through a microscope which reveals details invisible to the naked eye. (3) Such an object, and those minute and in principle imperceptible scientific objects of which it is said to be ' composed '. I understand him to hold that there is an important difference between (1) and (2), but no fundamental difference between (2) and (3).

(1) In the first case he holds that there are two prehensa, but that there is no reason to think that they differ qualitatively. If they differ only abstractively, there is no objection to holding that both coexist in the same place, and no reason why we should not identify both with the physical object seen.

(2) As an example of the second case he considers a line which, when viewed by the naked eye, looks continuous, but, when viewed through a microscope, appears to consist of a discontinuous linear series of dots. I think there is no doubt that the plain man would say 'The line is really discontinuous, but it looks continuous to the naked eye'.

I am not at all sure that I understand what Marc-Wogau says on this topic. I shall therefore state in my own way what I suppose to be his account of the matter. There are really three objects to be considered. (i) The object visually prehended by the use of the naked eye. Let us call this O_e. This has existence in sense E_3. (ii) The object visually prehended by the use of the microscope. Let us call this O_m. This has existence only in senses E_1 and E_2; for it differs qualitatively from the physical object in being 'unnaturally enlarged', as we might say. (iii) A 'reduced' object, which is not visually prehended either by the use of the naked eye or by the use of the microscope. Let us call this o_m. This agrees with O_e in size, but differs from it in being composed of a row of discontinuous dots. It agrees with O_m in the latter respect, but differs from it in that (*a*) each dot in it is smaller than the corresponding dot in O_m, and (*b*) the distance between any two adjacent dots in it is less than the distance between the corresponding two adjacent dots in O_m. This exists in sense E_3.

According to Marc-Wogau, as I understand him, there is no objection to holding that both O_e and o_m occupy the same place at the same time, and no reason why we should not identify each of them with the actual visum. O_e is visible, in the sense of being visually prehensible; and its parts, which are themselves visually prehensible, are continuous with each other. But o_m is not visible, in that sense; nor are any of its parts. By the naked eye it is not visible in *any* sense. By the microscope it and its parts are 'visible' only in the sense that *something else, viz.*, O_m and its parts, are visually prehensible; and that these parts, though qualitatively different in certain respects from the parts of o_m, correspond in certain respects to the latter.

So the correct statement would run as follows. This line has parts of two different kinds, visually prehensible and not visually prehensible. The former are continuous with each other, and

the latter are discontinuous with each other. Both are located simultaneously in the same region of space ; but the former fill it continuously, and the latter occupy it discontinuously as a crowd might occupy Trafalgar Square.

Marc-Wogau contrasts this example with the following. Suppose we have a picture composed of a large number of coloured dots very near together on a white sheet of paper. If it is viewed from a considerable distance away, it appears as a continuously coloured expanse ; if it is viewed from the distance of most distinct vision, it appears as a discontinuous collection of coloured dots. I think it is certain that the plain man would say of this picture, as he would say *mutatis mutandis* of the line in the previous example, ' It is really discontinuous, but it looks continuous when viewed from a considerable distance '. But Marc-Wogau holds that the two cases are fundamentally different.

I understand his position to be as follows. The object prehended by the nearer observer, like the object prehended with the naked eye in the previous example, *can* be identified with the physical object seen. The object visually prehended by the distant observer, like the object prehended in the previous example by the person who uses a microscope, *cannot* be identified with the physical object seen. For it differs *qualitatively*, and not merely abstractively, from the prehensum which *is* identified with the actual visum. So far there is no difference between the two cases. But there is the following difference. The microscopic image is not only discontinuous ; it is also *unnaturally enlarged*, in comparison with the object prehended by the observer who uses the naked eye. But the object prehended by the distant observer is certainly not larger, and it may be smaller, than that prehended by the nearer observer. We have therefore no reason to suppose that there exists, in sense E_3, a continuously coloured surface, which cannot be visually prehended, but which corresponds on a reduced scale to the continuously coloured surface which is prehended by the distant observer but exists only in senses E_1 and E_2.

If I have interpreted Marc-Wogau and the plain man correctly here, the former would have to say that the latter is right in both what he asserts and what he denies in the *second* case ; and is right in his assertion, but wrong in his denial, in the *first* case. The physical object seen in the second example *is* a discontinuous set of coloured dots, and *only appears to be* a continuously coloured expanse. But in the first example it *is* a continuously coloured line (as it appears to the naked eye), and it *is also* a discontinuously occupied line (as it appears when

viewed through the microscope). Nevertheless, the microscopic image and its separate items cannot be *identified with* the physical object and its discontinuous parts.

(3) Marc-Wogau holds that the solution which he has given in the case of features revealed only by the microscope can be applied to features which are not and could not be revealed to sight by any optical instrument but are only postulated to account for certain observable phenomena. There is no contradiction between ascribing continuity to the visible surface of a macroscopic physical object and discontinuity to the ultramicroscopic scientific objects which are held to occupy the region of space which it encloses. There is therefore no excuse for talking, as Eddington sometimes did, of the coloured continuous visible table as 'unreal', and the colourless discontinuous set of invisible scientific objects which occupy the same place as alone 'real'. Both may be 'real' in precisely the same sense.

One point remains to be noticed. Marc-Wogau considers that the solution proposed above does not commit him to any particular analysis of propositions about features which are revealed only by the microscope; or about features which could not be perceived by any means, but are postulated only in order to explain certain perceptible facts. He mentions, without criticising here, three alternative analyses. (i) If it be held that we can have a clear positive conception of objects which are in principle incapable of being perceived, there is no difficulty in interpreting such propositions quite literally. (ii) Failing this, we might resort to a special kind of analogy. We might describe any such feature as standing to the smallest object that could be perceived by the naked eye in the same relation of magnitude as a certain one perceptible object, *e.g.*, a flea, stands to a certain other, *e.g.*, the dome of St. Paul's Cathedral. This device is often adopted by popular lecturers on astronomy or on atomic physics. (iii) Lastly, one might try to interpret all such propositions as conditional, *e.g.*, as making assertions about what would be perceived if certain conditions, themselves statable in terms of sense-perception, were to be fulfilled.

SECTION III. MARC-WOGAU'S EXAMINATION OF CERTAIN ARGUMENTS FOR ALTERNATIVE THEORIES.

Marc-Wogau does not attempt directly either to prove his own views or to refute alternative views. What he does is to examine and try to refute the main arguments which have been given in support of a certain important alternative view. Since

that alternative is incompatible with his own, arguments for the former are *ipso facto* arguments against the latter. So this part of the book is in effect an attempt to refute certain widely accepted arguments which, if valid, would be fatal to his theory.

All forms of the alternative in question involve the following proposition. ' In no case is the object which is visually prehended a physical object.' Let us call this *Proposition P*. If that is true, it follows that no physical object is ever ' seen ', in the sense of visually prehended. But it is an essential point of Marc-Wogau's theory that, under certain conditions, the object visually prehended is *a* physical object, and is in fact *the* physical object which is being seen by the prehender.

It is plain that attempts to prove *Proposition P* might in theory take either of the following forms. We might try to show (1) that all physical objects have certain characteristics which all visual prehensa lack. *E.g.*, that all physical objects have causal properties, and that no visual prehensa have such. (2) That all visual prehensa have certain characteristics which all physical objects lack. *E.g.*, that all visual prehensa are coloured in a literal non-dispositional sense, and that no physical object is coloured in that sense. (3) That every physical object has a certain positive characteristic X which is incompatible with a certain positive characteristic Y which is possessed by all visual prehensa. *E.g.*, that every physical object is a *class* of particulars and every visual prehensum is a *particular*. I think that in practice the most important arguments take the following form. We start with some characteristic which would generally be admitted to be part of, or to be entailed by, the *definition* or the *commonly accepted description* of a ' physical object ' ; and then we try to show that no visual prehensum has that property. This may be attempted either by direct inspection and generalisation, or by showing that all visual prehensa have a certain positive property which is incompatible with the one in question.

We will now consider some of these arguments, and Marc-Wogau's answers to them.

(A) *Argument from Hallucination and Illusion.* It has been alleged that a visual prehensum is always a mere ' colour-expanse ', and never an entity to which the name of a physical object, *e.g.*, ' penny ', ' table ', etc., can properly be applied. There are two main arguments for this.

(1) It is said that the visual perception may be abnormally evoked and non-veridical. When that is the case the prehensum certainly cannot be correctly described by the name of any physical object, *e.g.*, as a ' penny '. But the object visually

prehended by a person who is actually seeing a penny need not differ in any of its visually prehended characteristics from that which is visually prehended by a person who ostensibly sees a penny but is in fact under a hallucination, produced, *e.g.*, by hypnotic suggestion. Therefore it too cannot properly be described as a ' penny '.

(2) Even if the perception be normally evoked, and if there be a certain physical object which is seen, that visum may be a *counterfeit, e.g.*, a bit of wax or of cardboard made to look like a penny. The argument would then proceed on the same lines as above with suitable modifications in detail.

Marc-Wogau's answer to the first argument is as follows.

(i) At the very best ' brown, flat, roundish colour-expanse ' is in many cases an inadequate description of the visual prehensum. We must substitute for it some such phrase as ' penny-looking '.

(ii) Admittedly one must go beyond one's present visual experience in order to decide whether it is veridical or delusive ; and whether, if delusive, it is wholly or only partly so. Suppose one does this, and decides that it was in fact wholly veridical. Then one would say retrospectively ' The object that I visually prehended was *a penny* '. One would not say ' The object that I visually prehended was *penny-looking*, but was *not* a penny ; though it did stand in a certain special relation to a certain penny which was before my eyes at the time '. Suppose, on the other hand, that one decides that the perception was delusive. Then one would say retrospectively ' The object which I visually prehended was *not* a penny or any other physical object ; it was *only* penny-looking, and it had not physical reality '. The fact that I must in all cases go outside my present visual experience in order to decide whether what I visually prehended in it was a penny, or only a penny-looking non-physical object, does not suffice to show that in no case was it a penny. Marc-Wogau makes the same kind of answer, *mutatis mutandis*, to the second argument.

What are we to say of these arguments, and of Marc-Wogau's answers to them ? I am not satisfied either with the arguments or the answers.

(i) Consider the transition in the first argument from the premiss ' The object visually prehended in a veridical visual perception of a penny need not differ in any of its *visually prehended* characteristics from the object visually prehended in a delusive ostensible perception of a penny ' to the conclusion ' So it too cannot properly be described as a penny '. It seems to me that, if the qualification ' visually prehended ', which I

have deliberately inserted and italicised in the premiss, be omitted, the premiss becomes doubtful. It is not certain that the object prehended in a veridical visual perception of a penny need not differ in *any* of its characteristics from the object prehended in a delusive ostensible visual perception of a penny, unless we assume a certain additional premiss. This is the proposition : ' A visual prehensum cannot have any characteristics beside those which it is visually prehended as having '. But that premiss begs the question at issue. If, on the other hand, the qualification ' visually prehended ' is *retained* in the premiss, the conclusion does not follow. For two objects, which were precisely alike in all their *visually prehended* characteristics, might be such that one *could*, and the other could *not*, be properly described as a ' penny ' ; provided that the former had, and the latter lacked, certain further characteristics, which are not and could not be visually prehended.

(ii) As regards Marc-Wogau's criticism on the arguments I would make the following comments. In my statement of it I have carefully avoided the non-technical word ' see ', and have used instead the technical term ' visually prehend '. The reason is this. What the persons who use this argument deny is that the object which we *visually prehend* is ever a physical object ; they do not of course deny that, in the ordinary sense of ' see ', we often *see* pennies and other physical objects. It is the arguments for this conclusion which Marc-Wogau is concerned to refute.

Now his refutation seems to turn on what we should *say* in certain circumstances. Now in ordinary life we should not use the technical expression ' visually prehend ', but the familiar word ' see '. Undoubtedly, if I persuaded myself that a certain ostensible visual perception was normally evoked and not delusive and not the perception of a counterfeit, I should say of it : ' The object which I *saw* was a penny, and not merely a penny-looking object without physical existence '. But that is denied by no-one. The fact that common-sense makes this answer, and that the answer is true, does not tell us what is the correct answer to a question which common-sense never raises, *viz.*, ' Was that which I *visually prehended* in seeing the penny a physical object, and in particular was it the penny itself ; or was it a penny-looking object without physical existence ? '

I would sum this up as follows. The phrases which we use in daily life to express our ostensible visual perceptions certainly suggest *prima facie* that, in a normally-evoked veridical visual perception, one *visually prehends* that physical object which one is said to *see*. The arguments, just considered, to prove that

what we visually prehend is never a physical object are inconclusive; for they rest on the tacit assumption that a visual prehensum cannot have any characteristics beside those which it is visually prehended as having. (This assumption appears to be accepted by Marc-Wogau; for the sense in which he allows us to ascribe to a visual prehensum any characteristic which it is not prehended as having is highly Pickwickian. It amounts merely to saying that some *other* member of the nuclear group to which this prehensum belongs has this other characteristic.) Nevertheless, the possibility remains quite open that the *prima facie* suggestion of ordinary language is here misleading.

It seems to me that we can now clearly distinguish the following three possible alternatives. (i) That what is visually prehended in a non-delusive visual perception *can* properly be called a physical object, and in fact be identified with the actual visum, *because* it in fact has, in a quite literal and non-Pickwickian sense, a great many other characteristics beside those which it is visually prehended as having. (This may be called 'Naive Realism'. So far as I am aware, there is no conclusive argument against it.). (ii) That it *can* properly be called a physical object and identified with the actual visum *in spite of* the fact that it does not literally have any characteristics beside those which it is visually prehended as having. That is because it is one of a set of particulars which simultaneously occupy the same place and differ only abstractively from each other; because these between them have many characteristics which it lacks; and because the name 'this penny', *e.g.*, is applied indifferently to each of these particulars. (This is what I understand to be Marc-Wogau's theory.) (iii) That it *cannot* properly be called a physical object, because it has no characteristics beside those which it is visually prehended as having. The experience described as 'seeing a penny' consists, even when it is completely veridical, in (*a*) visually prehending, *not* a penny, but a penny-looking non-physical object, and (*b*) basing upon that experience certain non-inferential beliefs or takings-for-granted, which go beyond anything that is being visually prehended. (This is the view held by many typical Sense-datum Theorists.)

(B) *Argument from Solidity.* It has been alleged that, although a visual prehensum may be in certain respects three-dimensional, yet it is never *solid*. On the other hand, the physical objects which we claim to see are solids, even when they are very flat thin ones, such as pennies or sheets of paper. Therefore, it is said, a visual prehensum can at most be *part of the surface* of a physical object.

Marc-Wogau objects that the first premiss of this argument involves a wrong description of the visual prehensum. I think that his example of seeing the moon on a cloudy night will best illustrate his contention. Sometimes the moon will sensibly appear as a flat disc, and sometimes as a solid sphere ; and we may alternate between prehending it as flat and as solid. Neither experience is less or more immediate or purely visual than the other. In particular there is no reason to hold that, when one sees the moon as a globe, what really happens is that one *prehends* something as a flat disc and then bases on that experience a non-inferential belief that one is looking at a globular solid. He admits that there is a sense in which one cannot visually prehend the far side of a house or the inside of an opaque solid. But he asserts that this means only that we do not prehend the object as having a far side or an inside of a certain *completely determinate* character. This does not entail that we do not prehend it as having a far side or an inside of a *more or less determinate* character.

In general Marc-Wogau asserts that the accounts given by supporters of the Sense-datum Theory of the spatial characteristics which a visual prehensum is prehended as having, suffer from a certain common defect. They are correct only in so far as the percipient takes up a very special mental attitude, *viz.*, that of the draughtsman or the introspective psychologist or the optician. The careful observations of psychologists of the Gestalt School have shown that such accounts are incorrect if the percipient is in the mental attitude characteristic of ordinary practical life.

What are we to say of these contentions ? (i) Marc-Wogau is certainly right in saying that the moon, *e.g.*, may look now flat and now convex, and that each of these spatial characteristics is visually prehended. Again, it is certain that, when I look at a cricket-ball and view it in ordinary light and in my usual mental attitude, the object which I visually prehend is prehended as convex. I do not think that this would be questioned by Moore ; I am sure that it would not be questioned by Price ; and it has been asserted by myself.

(ii) This is quite consistent with the statement that, in the case of the cricket-ball, *e.g.*, the prehensum is *not* prehended either (*a*) as the *whole of a closed outer surface*, or (*b*) as *solid*, *i.e.*, filled with matter.

(iii) I am not sure that Marc-Wogau wishes to maintain either (*a*) or (*b*). Perhaps all that he wishes to maintain is the following, *viz.*, (*c*) that it is prehended as *part* of the *outer surface* of a three-dimensional object of *some form or other ;* which may be

either closed or open on the side invisible to the observer; which, if closed, may be either hollow or filled with matter; and which, even if it be open, or closed and hollow, has a certain finite thickness, and therefore a *hind*-surface or an *inner* surface of some kind or other as well as a front-surface or outer surface.

(iv) It seems to me that (*c*) is the utmost that could plausibly be asserted in view of the following facts. (α) That any opaque closed object would present precisely the same visual appearance whether it were hollow or solid. (β) That, if it were solid, it would look just the same no matter what might be the nature of its content; and, if it were hollow, it would look just the same no matter what might be the colour, form, etc., of its inner surface. (γ) That precisely the same visual appearance would be presented either by a spherical object; or by a hemispherical cup held with its convex surface towards the observer and the plane of its rim at right angles to his line of sight; or by an object consisting of such a cup closed in at the back in *any* way that was concealed from the observer by the front. (An example of the last alternative would be an object consisting of a hemisphere in front and a cone behind.)

(v) I should be inclined to think that (*c*), or something very like it, *is* always taken for granted by the percipient in normal waking visual perception. I suspect too that this is something primitive and not wholly explicable by experience and association; a kind of psychologically *a priori* schema in terms of which we interpret certain regularities among our visual and tactual experiences, and the associations to which these give rise. At any rate that seems to have been Stout's view, and his opinions on psychological and epistemological matters are not to be lightly set aside. I should, however, hesitate to say that the visual prehensum is *visually prehended* as having these properties, in the sense in which, *e.g.*, it is visually prehended as round and convex and brown in the example of looking at a cricket-ball.

But, granted all this, what follows? It seems to me that it remains obviously true that, when I look at a cricket-ball, what I see, in the sense of *visually prehend*, is not correctly describable as a 'cricket-ball', *i.e.*, a solid spherical object. At the very best it is only a certain part of the outer surface of such an object. That there is a perfectly good and usual sense of the word 'see' in which I can be said to be 'seeing a cricket-ball' is true. That, however, is admitted by everyone. The question is whether what I see, in the sense of *visually prehend*, can be correctly

described as a 'cricket-ball'. And it seems quite plain to me that the answer is *No !*

(C) *Argument from Continuity.* This argument is intended to show that, although it is *not impossible* that the visual prehensum might in *some* cases be identical with the actual visum, yet it would be *highly unreasonable* to suppose that it is so in *any* case. There are many alternative forms of this argument, appealing to different empirical facts ; but the following example will serve to illustrate the general principle.

Suppose that one continues to keep one's eye on the same unchanged physical object, *e.g.*, a penny lying on one's table, and moves about so that one views it from various distances and in various directions. One has a series of visual experiences in which the appearance of the thing changes continuously. It is alleged that, in the perceptions at one end of such a series (*e.g.*, when one is viewing the penny at arm's length and in a direction at right angles to its surface), one is visually prehending the seen physical object itself, or at any rate a part of its outer surface. It is admitted that, in the perceptions at the other end of such a series (*e.g.*, when one is viewing the penny from a great distance or in a very oblique direction), the visual prehensum is *not* the seen physical object itself or a part of its outer surface. The ground for this contention is (*a*) the fact that the prehensum is prehended as having certain characteristics, *e.g.*, ellipticity, which are incompatible with certain characteristics, *e.g.*, roundness, which the seen physical object is known to have ; and (*b*) the tacitly assumed or explicitly asserted premiss that a prehensum cannot *have* any characteristic which is incompatible with any that it is *prehended as having.*

So at some stage in such a series of visual prehensa there would be a dividing line, such that the visual prehensum on one side of it *is* the seen physical object or a part of its outer surface, whilst the practically indistinguishable visual prehensum on the other side of it is of a wholly different kind. In Marc-Wogau's terminology the former would exist in sense E_3 and the latter only in senses E_1 and E_2. It is alleged that this is very improbable ; and that it is therefore reasonable to hold that *none* of the prehensa are identical with the seen physical object or any part of its surface. And, if they are not identical with *that* physical object or any part of *its* surface, it would be unreasonable to suppose that they can be identified with *any* physical object or with any part of the surface of *any* physical object.

I hope that the above is a fair and accurate account of this

line of argument. What has Marc-Wogau to say about it? The following are the main points that he makes.

(i) He says that the facts have been wrongly stated in certain important respects, because the persons who use the argument have ignored what psychologists call 'Phenomenal Constancy'. The facts included under that head may be summarised as follows. (*a*) A physical object may continue to present precisely the same visual appearance when certain physical and physiological conditions, *e.g.*, the distance and direction from which the observer views the object, the illumination, and so on, vary considerably. (*b*) This constancy in the visual appearances holds only within certain limits of variation in the conditions. (*c*) When the conditions change, and yet a certain object continues to look precisely the same in certain respects, there are always certain compensatory changes in the visual appearance either of *other objects* in the field of view or in certain *other aspects* of the visual appearance of this object. *E.g.*, if a match-box continues to look rectangular when viewed from various directions, its orientation in the visual field will visibly alter. (*d*) Constancy or inconstancy in the visual appearances under varying physical and physiological conditions depends to some extent on the mental attitude of the percipient. Constancy is most marked when his mental attitude is that of ordinary practical activity. But in other mental attitudes, such as that of the draughtsman, the optician, or the introspective psychologist, it may almost vanish. (*e*) The optimal conditions for constancy are that the object should be seen from about arm's length, that it should be roughly normal to the line of vision, and that the illumination should be ordinary daylight.

Marc-Wogau says, justly I think, that most English writers on these subjects have neglected phenomenal constancy. They have tended to confine their attention to the appearances which would be presented to a percipient who had put himself into the 'purely optical attitude'. (I suspect that, in many cases, they have not even tried seriously to examine the appearances, but have been content to infer them from geometrical considerations about the shape and size of the area of the retina affected by the light coming from the visum!) Price is the least sinful of us in this respect; but all have fallen short.

(ii) Marc-Wogau argues that the purely intrinsic visual characteristics of a prehensum are not the decisive factor in determining whether it exists in sense E_3 or only in senses E_1 and E_2. What is important is its relationships to other objects which exist in sense E_3. So there is nothing paradoxical in

the assertion that, of two prehensa which are practically indistinguishable in the intrinsic visual qualities which they are prehended as having, one is the seen physical object or a part of its surface whilst the other is not a physical object or a part of the surface of one.

(iii) It is just a fact to be accepted that, when one is said to be looking at the same unchanged physical object from various distances and in various directions, the objects prehended under certain variations in the conditions differ *only abstractively* from each other whilst those prehended under certain further variations in the conditions differ *qualitatively* from the former and from each other. The distinction between the two sub-classes of visual prehensa is quite clear conceptually, even though there be marginal cases in which it is difficult to decide whether a certain visual prehensum is nuclear or non-nuclear.

What are we to say of the Argument from Continuity and of Marc-Wogau's answers to it ? In the first place, what precisely is the relevance of the Phenomenon of Constancy ?

I think that it is relevant in the following respects. (i) It would be very paradoxical to hold that just a *single one* or a *finite number* of visual prehensa out of a potentially infinite class of such objects, forming a continuous series in respect of their visual qualities, is identical with the seen physical object, or with some part of its surface. It is much less paradoxical to hold that *every one* of a certain sub-group, which is *itself potentially infinite* and is marked off by the fact that its members differ only abstractively from each other, is identical with the seen physical object or with some part of its surface. Now recognition of the phenomenon of constancy provides one with such an outstanding group ; whilst non-recognition of it commits one either to the more paradoxical position or to the view that *none* of the visual prehensa should be identified with the seen physical object or with any part of its surface.

(ii) If it were not for the phenomenon of constancy, Marc-Wogau's theory of sense-perception and the physical object would fail at the first move. For his nuclear class, consisting of visual prehensa which differ from each other only abstractively, each of which is identified with the seen physical object, would be empty.

(iii) It must be admitted, however, that recognition of the phenomenon of constancy merely shifts the point of application of the Argument from Continuity to the boundary between the nuclear and the non-nuclear sub-classes of that group of visual prehensa, each member of which is commonly identified with

the seen physical object. According to Marc-Wogau each member of the nuclear sub-class is *quite correctly* identified with the seen physical object. But any member of the non-nuclear sub-class is identified with it *only by courtesy;* strictly speaking, it should be counted only as a 'sense-datum' and not as a physical object. Yet the two sub-classes melt insensibly into each other.

We have seen that Marc-Wogau recognises this fact, and we have seen how he tries to deal with the argument based on it. In this connexion I would make the following remarks.

(*a*) The contention that there is any fundamental intrinsic difference between members of the two sub-groups is rendered still less plausible by one of the empirical facts mentioned in connexion with the Phenomenon of Constancy. We are told, no doubt correctly, that, even with precisely the same physical and physiological conditions, the object visually prehended may be either nuclear or non-nuclear according to whether the percipient's *mental attitude* is of one kind or another. That is to say, it often depends on purely subjective conditions whether the prehensum shall *be* the seen physical object, or shall be only a '*sense-datum of*' that object.

(*b*) It is very important to remember that the persons who have used the Argument from Constancy had in mind a very different view of the nature of physical objects from Marc-Wogau's, and that they almost certainly never contemplated the alternative which he has put forward. Perhaps the main differences may be put as follows. They assumed, tacitly or explicitly, that the expression 'that physical object', *e.g.*, 'that penny', denotes a *single* particular, which has simultaneously *characteristics of many different kinds* (including causal characteristics), and has every characteristic in a *completely determinate form.* Marc-Wogau holds that any such expression as 'that penny' applies distributively to *every member of a whole class of particulars.* Some of these have characteristics of one kind, and some have characteristics of another kind; but *each* has characteristics of *only one kind.* Again, the characteristics of each (other than its date and position) are *relatively indeterminate.*

Now, on the former view of physical objects, any visual prehensum which *could* be identified with even a part of the surface of a physical object would differ profoundly in its intrinsic nature from any which *could not.* But, on Marc-Wogau's view of physical objects, there is no reason why there should be any intrinsic difference between those visual prehensa which are, and those which are not in the strictest sense, identifiable with the seen physical object.

What the Argument from Continuity shows is that it is unreasonable to divide the objects which are visually prehended when the same object is viewed from different positions and in different directions into two classes of *intrinsically different* kinds of objects. Whether it does or does not follow that it is unreasonable to divide them into those which can, and those which cannot, be identified with the seen physical object or parts of its surface, is another question. And the answer to it will depend on the view which one takes about the nature of visible physical objects and the relation of visual prehensa to them.

(D) *Argument from Certainty and Uncertainty about Existence.* Marc-Wogau's statement and criticism of this argument will be found on pages 253 to 257 of his book. I shall begin by stating the argument in my own way. It may be put as follows.

(i) Whenever a person *ostensibly sees a physical object* answering to a certain description he is undoubtedly *visually prehending something*. This prehensum is commonly called a 'visual sense-datum', and there is no doubt that it exists while it is being prehended. (ii) It is always possible to doubt whether a physical object exists and is before the eyes of the percipient, answering to the description of the physical object which he is ostensibly seeing. It is possible on occasion for the percipient himself to doubt this while he is having the ostensible perception. (*E.g.*, this might well happen to an intelligent and critical person who had an illness in which he was delirious at times with lucid intervals between.) (iii) If it is at the same time *possible* for a person to doubt the existence of O and *impossible* for him to doubt the existence of Ω, O must be numerically different from Ω. (iv) Therefore, even if the ostensible perception should be completely veridical, the sense-datum which is sensed must be different from the physical object which is perceived.

According to Marc-Wogau the argument involves a fallacy of ambiguity. In Proposition (i) 'exists' must be used in sense E_1. In Proposition (ii) it must be used in sense E_3. But Proposition (iii) is true only if 'exists' is used in the same sense of both O and Ω.

In my opinion it is possible to restate the argument without bringing in the word 'exist'; but I believe the argument to be fallacious for other reasons. I will now restate it and criticise it in its modified form.

Let us take a concrete case of a person who is ostensibly seeing a penny under the most favourable conditions, *i.e.*, the sort of conditions under which Marc-Wogau would hold that he is visually prehending the penny. The argument may be put as

follows. (i) He *cannot* doubt that there is an object possessing the characteristics which he visually prehends his prehensum as having, *e.g.*, an object answering to the description ' round-looking, brown-looking, flat-looking object in the middle of my present visual field '. (ii) He *can* doubt whether there is an object answering to the description of the physical object which he is ostensibly seeing. *E.g.*, he can doubt whether there is an object answering to the description ' object which is circular and brown and hard and smooth and made of copper, which would be visible and tangible to other people, and which is now reflecting light to my eyes '. (iii) If a person *can* be sure that there is an object answering to one description, and *cannot* be sure that there is an object answering to another description, the two descriptions cannot apply to the same object. (iv) Therefore the visual prehensum must differ numerically from the seen physical object even when the visual prehension is completely veridical.

I think it is plain that this argument is fallacious, and that the fallacy lies in Proposition (iii). It is surely plain that two descriptions might *in fact* apply to the same object, and yet a person might *know* that one of them applied to a certain object and be *quite uncertain* whether the other applied to the same object or to any object at all. *E.g.*, I am quite certain that there was a person answering to the description given in the *Dictionary of National Biography* under the entry ' Sir Philip Francis '. I am uncertain whether he or anyone else answers to the description ' the author of the *Letters of Junius* '. For those letters may have been written by several persons, in which case there is no-one answering to the description ' *the* author of the *Letters of Junius* '. And, even if all were written by the same person, he may not have been Francis. Nevertheless it is quite possible that the two descriptions do in fact apply to the same person; and most experts are inclined to think it very likely that they do.

There is in fact nothing in the argument unless we add the following premiss. ' If an object is prehended as having certain characteristics, it cannot have (and it cannot be a part of the surface of an object which has) any other characteristics. In particular, if it is *visually* prehended, it cannot have (and cannot be a part of the surface of an object which has) any characteristics which could not be visually prehended '. I have already considered this premiss, and have said that it simply begs the question at issue.

This is perhaps the best place to consider the question ' Can a Sense-datum appear to be otherwise than it really is ? ' which

Marc-Wogau discusses elaborately on pages 257 to 273 of his book. It seems to me that the alternatives need to be stated more systematically, and I shall begin by trying to do this.

Let us suppose that a certain prehensum has *in fact* the two determinable characteristics $B\&C$, and *no others*, and that it has them respectively in the perfectly determinate forms b and c. Then the following alternatives seem to be abstractly possible. (1) That it might be prehended as having $b\&c\&d$, where d is a perfectly determinate form of a determinable D which it does not in fact possess. (2) That it might be prehended as having $b\&c'$, where c' is a different determinate form of C from the form c which in fact belongs to it. (3) That it might be prehended as having $b\&\gamma$, where γ is a not completely determinate form of C, and c falls *under* γ. (4) That it might be prehended as having $b\&\gamma'$, where γ' is a not completely determinate form of C, and c falls *outside* of γ'. (5) That it might be sensed as having b, and not as having any determinate under C.

I will give an example of each alternative. We will suppose that the prehensum is in fact *scarlet* and equilaterally *triangular* and that it has *no* temperature. (1) It is prehended as scarlet, equilaterally triangular, and *cold*. (2) It is prehended as equilaterally triangular and *sky-blue*. (3) It is prehended as equilaterally triangular and *red*, but *not* as scarlet or as any other perfectly determinate shade of red. (4) It is prehended as equilaterally triangular and *blue*, but not as any perfectly determinate shade of blue. (5) It is prehended as *scarlet*, but not as having shape.

In Cases (1), (2), and (4) there would be *positive error*. They could all be described as 'prehending the object as having a characteristic which it does not in fact have'. But there is an important difference between Case (1) and Cases (2) and (4). In Case (1) the object is prehended as having a characteristic which, though not in fact present, would not be incompatible with those which are present. In Cases (2) and (4) the characteristic which is erroneously prehended as present is incompatible with some of those which are present. The error here is one of *dislocation*, not one of mere *unwarranted addition*.

Marc-Wogau considers only two alternatives, which we will call A and B. His A covers my Cases (1), (2) and (4); his B covers my Cases (3) and (5). He labours to show that the former do not differ essentially from the latter. I remain quite unconvinced. It seems to me that there is an enormous difference. In Cases (3) and (5) there is *no* error, there is only *inadequacy*. In Case (3) the inadequacy is that the quality which the object

is prehended as having is less determinate than, though inclusive of, that which it actually has. In Case (5) the inadequacy is that one fails to prehend the object as having *in any form* a quality which it in fact has in a certain determinate form. In Cases (1), (2) and (4), as I have said, there would be *positive error*. They are all instances of *mis*prehension, taking the form either of unwarranted addition or of dislocation. Now I have no difficulty whatever in supposing that one may prehend an object inadequately in sense (3); *i.e.*, as having the determinable C in a certain incompletely determinate form γ, when in fact it has C in a certain perfectly determinate form c which falls under γ. I have very little difficulty in supposing that one may prehend an object inadequately in sense (5); *i.e.*, that one might fail to prehend it as having *in any form* a certain determinable C which it in fact has in a certain perfectly determinate form c. But I find it almost impossible to conceive that one could misprehend an object in either of the senses (1), (2) or (4); and I do not find less difficulty in any one of them than in any other.

(E) *Argument from Covariance.* The essential premiss of this argument is that there is concomitant variation between changes in the medium, the position, the physiological and psychological state of the percipient, etc., on the one hand, and the determinate characteristics which the prehensum is prehended as having, on the other. From this it is inferred, in the first instance, that the seen physical object (or rather a certain imperceptible process in it) is at best *one factor* in a rather remote *causal ancestor* of the visual sensation by which it manifests itself to the percipient. From this the following two conclusions are drawn, often without any explicit recognition of the fact that they are further inferences and require additional premisses. (i) That the visual prehensum, so far from being identical with the seen physical object or with a part of its surface, is a product of a long process of causation in which the seen physical object is at most a remote contributory cause-factor. (ii) That it is unreasonable to ascribe to the seen physical object any of those determinable qualities, such as colour, which the visual prehensum is prehended as having.

I shall first summarise Marc-Wogau's criticisms of such arguments in general. These occur on pages 143 to 145 of his book. Then I shall consider in detail two particular arguments of this form, and his criticisms on them.

Marc-Wogau's general criticisms are as follows. (i) Many of the arguments tacitly assume that one is justified in ascribing to the seen physical object only those qualities which, if they

were present, would *inevitably* be perceived to be present in it. There is nothing self-evident in this principle, whether 'inevitably' be understood in the sense of logical, or of merely causal, necessity. (ii) If I am in doubt whether an object, which I ostensibly see, really exists or not, it will generally be relevant to enquire whether my visual experience was or was not evoked by light-waves emitted from the place at which I ostensibly see it. But this will not enable me to decide what sensible qualities do, and what do not, belong to the seen object unless I *already* ascribe, *independently* of causal considerations, certain sensible qualities to physical objects. (iii) No conclusion as to whether sensible qualities do or do not belong to physical objects can be drawn merely from the covariance between changes in the sensible qualities prehended by an observer and changes in his body, in the medium, and so on. All that follows is that the sensation, which in fact occurred under certain conditions, would have differed in certain respects if the conditions had differed in certain respects. (iv) The difficulties which would arise, if we supposed that *every* quality which *anyone* prehends under *any* conditions belongs to the perceived physical object, can be met without supposing that *no* quality which anyone prehends under any conditions ever belongs to the perceived physical object. (v) It is much more plausible to make sounds and smells all subjective than to do this with colours and forms. But it is no proof of the subjectivity of sound to show that it is localised, not only in the sonorous object, but also in the surrounding air and in the hearer's head.

The two particular arguments which I shall consider are (1) an argument about colour which Marc-Wogau ascribes to Lord Russell, and (2) an argument from the finite velocity of light.

(1) *Russell's Argument about Colour.* This argument is taken from *Problems of Philosophy*. It is discussed by Marc-Wogau on pages 139 to 143 of his book. I shall begin by restating the argument in my own way.

Suppose that a person is looking at a certain object at a certain moment t. For a given state of his eye, brain, and nervous system the colour which he then perceives that object to have *is* correlated one-to-one with the wave-length of the light which enters his eye at t from that object. But the wave-length of that light is *not* correlated one-to-one with that of the light which left the object at t', where $t - t'$ is the time taken by light to travel from the object to the eye. For the former depends *jointly* on the latter and on the state of the intervening medium during the period $t - t'$. On the other hand, the wave-length of the light

which left the object at t' *is* correlated one-to-one with a certain state of the object at t'. Let us call that state $\sigma_{t'}$. It follows that the colour which the observer at t perceives the object to have is *not* correlated one-to-one with that state $\sigma_{t'}$ of the object which *is* uniquely correlated with the wave-length of the light emitted by the object at t'.

I think it is plain that, if the premisses are all admitted, this is the utmost that can be drawn from them alone. Now the conclusion which Russell actually draws is that it is unreasonable to ascribe colours to physical objects. Plainly he must be tacitly assuming *some* additional premiss about colour and its connexion or disconnexion with physical objects. Marc-Wogau says that the premiss is that physical objects *have* objective colours. He then accuses Russell of contradicting himself by using this premiss to prove the conclusion that it is unreasonable to ascribe objective colours to physical objects.

I believe this objection to be fallacious. It does not appear to me that Russell would have contradicted himself even if this were the premiss which he tacitly assumes. This can easily be shown as follows. Let p be the proposition 'physical objects have objective colours'. Let the conjunction of all the other premisses be P. Then at worst what Russell would have claimed to show is that $p\&P$ entails not-p. Now this is equivalent to 'P entails that p materially implies not-p'. But 'p materially implies not-p' entails not-p. So we reach the conclusion that P entails not-p. That is precisely what Russell wants to prove. There is certainly no formal fallacy here.

The above is, however, an over-simplification of Russell's argument. It should rather, I think, be put in the following form. 'If we combine the *supposition* that physical objects have objective colours with the premisses which have been explicitly mentioned and asserted, it follows that this supposition is unreasonable. But the premisses are true. Therefore, if the supposition is made, it *must* be combined with them. Therefore the supposition *is* unreasonable.' I can see nothing logically amiss with this type of argument.

Let us now revert to the argument as I stated it at the beginning of this discussion. The missing premiss is 'The state $\sigma_{t'}$ of an object which is uniquely correlated with the wave-length of the light which it emits at t' is its objective colour'. As I have said, *this* premiss, unlike the others, is not accepted categorically as true; it is *entertained hypothetically* as a supposition to be tested. If we combine it with the other premisses, the conclusion which immediately follows is 'If a physical object has an objective

colour, that colour is not uniquely correlated with the one which the observer prehends when he looks at it '.

That is a very tame conclusion, and it is not the one which Russell draws. In order to justify the latter we must add another premiss, and this must be *asserted categorically* and not merely entertained hypothetically as a supposition. It is the proposition ' Unless the objective colour of a perceived object were uniquely correlated with the colour which an observer prehends when he looks at it, it would be unreasonable to suppose that it has any colour at all '.

I do not think that Russell would expect us to swallow this premiss whole. I think that we are expected to make the following two bites at it. (i) ' Unless the objective colour of a perceived object were uniquely correlated with the colour which an observer prehends when he looks at it, it would be unreasonable to ascribe to the object *any one* determinate colour rather than *any other*. (ii) ' If it would be unreasonable to ascribe to a perceived object any one determinate colour rather than any other, it would be unreasonable to suppose that it had *any* objective colour.'

I agree with Marc-Wogau in finding neither of these premisses very plausible when they are explicitly formulated. As regards the first, I should say that we draw a distinction between certain states of the medium, of the illumination, of the observer's body, etc., and others. We should say that it *is* reasonable to ascribe to a perceived object an objective colour identical with, or not very different from, that which a normal observer prehends when he views it by daylight through a clear colourless medium. As regards the second, I should say that it might be accepted in the abstract, though without much conviction ; but that, unless the first be granted, it leads nowhere.

I gather that Marc-Wogau would accept these remarks. He also casts doubt on the premiss that, for a given state of the brain and nervous system, the colour prehended is correlated one-to-one with the wave-length of the light that strikes the eye. According to him, accurate phenomenological observations show that there is a range within which the latter may vary without any correlated variation in the former.

(2) *Argument from the finite Velocity of Light.* I shall first state this argument in my own way and then consider Marc-Wogau's counter-arguments.

Suppose that, throughout the period from t_1 to t_2, a person sees a certain physical object O. Let us imagine the process of seeing to consist of a continuous series of successive instantaneous

acts. Consider the instantaneous act which takes place at an instant t, intermediate between t_1 and t_2. Let the distance of the object from the observer be d, and let the velocity of light in the intervening medium be c. (We shall assume for simplicity that the distance remains constant throughout the period under consideration.) Then the stimulus which called forth the instantaneous act at t was the light which then reached the observer's eye from O. This left O at $t - d/c$. Now the prehensum is strictly simultaneous with the act of prehending it. Therefore the prehensum which is prehended at t is something which exists at t and then only. On the other hand, the physical object O may have ceased to exist altogether between the instant $t - d/c$, when it emitted the light which reaches the percipient at t, and the instant t, when that light reaches him. Now (i) we cannot identify something which *certainly exists* at t with something which *may nevertheless have ceased to exist* at t. Again (ii) the characteristics which the prehensum is prehended as having depend on the nature of the light which calls forth the sensation. But the nature of that light is a *causal descendant* of the characteristics which O had at the instant $t - d/c$, when the light was emitted from it. Even if O still exists and the intervening medium be homogeneous and colourless, these characteristics may have changed by the time t when the light reaches the percipient's eye. So at best the characteristics which the prehensum is prehended as having are those which the seen physical object *had* at an earlier date.

It should be noted that Marc-Wogau does not state the argument so fully as I have done, and in particular that he does not divide the conclusion into two parts. He has three counter-arguments. I find the first of these very obscure. I shall therefore have to state in my own way what I suppose to be the first counter-argument.

(i) This counter-argument certainly turns on the notion of a literally instantaneous act of prehension, which occurs in the argument stated above. Marc-Wogau says that a certain duration must be ascribed both to the act of prehending and to the prehensum. But he seems to me to give two different reasons for this, and not to notice that they are different.

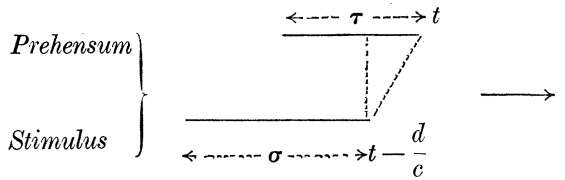
One reason alleged is that ' the light-stimulus must act unchanged during a certain period if the percipient is to perceive *anything*, and in particular if he is to ascribe to what he perceives *existence* in the sense in which physical objects are ordinarily said to exist '. The other reason is a reference to what psychologists call the ' specious present ', and to the fact that this is

not instantaneous but has a short finite duration. Unfortunately no clear account is given of that very obscure subject, the doctrine of the specious present. In any case it seems to me certain that Marc-Wogau is alluding to two different facts, whether or not he thinks that he is doing so. The first is concerned with the relation between stimulus and sensation ; the second, so far as I can see, has nothing to do with stimulus. Let us call the two alleged facts ' persistence of stimulus ' and ' finite duration of specious present '.

I believe that both these alleged facts are needed for Marc-Wogau's argument. I shall first explain what I understand by the two alleged facts, and shall then try to state what I suppose to be the essence of the argument.

(*a*) I understand by the doctrine of the persistence of stimulus that, if an act of visual prehension is to take place at the instant t, a light-stimulus must have been acting on the percipient for a short period σ, which stretches back from t to $t - \sigma$. (*b*) I understand by the doctrine of the finite duration of the specious present that the object of an instantaneous act of prehension, occurring at t, is not itself instantaneous but stretches back from t for a short period τ to $t - \tau$.

The argument, on my interpretation of it, would now run as follows. The stimulus which evokes the act of prehension at t is the light emitted by O during the period from $t - \sigma - d/c$ to $t - d/c$. (This is because of the persistence of stimulus.) The prehensum which is prehended at t stretches back from t to $t - \tau$. (This is because of the finite duration of the specious present.) Therefore, provided that $\tau > d/c$, the *earlier* phase of the prehensum will overlap in time with the *later* part of the period during which O is emitting the light which evokes the prehension at t. This will be quite clear from the diagram below.



So, provided that d/c is small in comparison with τ, there is no objection to identifying the *earlier* phase of the prehensum which is prehended at t with the physical object as it was during the *later* part of the period throughout which it was emitting that train of waves whose cumulative effect was to evoke the prehension at t.

Again, it is alleged that the light-stimulus must have been of the *same nature* throughout the period σ if the percipient is to 'ascribe to what he perceives *existence* in the sense in which physical objects are said to exist'. (I take this to mean 'if he is to see the object, not as a mere coloured flash, but as a material thing, such as a table'.) On that assumption there is no objection in principle to assuming that the characteristics which the prehensum is prehended at t as having are the same as those which the physical object had throughout the period which ends at $t - d/c$.

I feel sure that this must be the kind of argument which Marc-Wogau has in mind in the very condensed and rather obscure passage on pages 63 to 64; but it is possible that he would not accept my reconstruction in detail. It will be noticed that, in my account of the argument, I talk of an instantaneous act of prehending, whilst Marc-Wogau says that a finite duration must be ascribed to any act of prehending. I do not think that there is any real difference of opinion here, or that the argument has been prejudiced in any way. I agree that any actual experience is a *process* and takes time, and that 'instantaneous acts' (like 'the position of a moving body at an instant') are fictions. But that is no reason why one should not consider a cross-section of such a process at a certain instant, as I have done. I do not think that it is at all easy to give an intelligible account of the doctrine of the specious present except in terms of such a cross-section.

It will be noted that a condition for the applicability of this counter-argument is that the time d/c, taken by the light to travel from the object to the percipient, shall be less than τ, the duration of his specious present. Marc-Wogau says, quite truly, that this condition is fulfilled in the case of all objects in the percipient's neighbourhood. He adds that these are the only objects to which the argument which he is trying to refute applies. I cannot understand why he believes this. I should have thought that we identify (or, better, fail to distinguish) the visual prehensum and the seen physical object in the case of the sun, *e.g.*, where the condition certainly does not hold.

(ii) Marc-Wogau's second counter-argument consists in questioning the premiss that the act of prehending and the prehensum are exactly contemporary. He says that he sees no reason why there should not be a 'certain vanishingly small time-difference between the two' without the experience ceasing to be perceptual and taking on the character of memory.

I have two comments to make on this. (*a*) If we allow for the

finite duration of the specious present, both the premiss about simultaneity in the original argument and Marc-Wogau's exception to it will need to be stated more carefully. The premiss can be restated as follows. 'If an instantaneous act of prehension takes place at t and its prehensum has the duration τ, then t is situated either at the last moment or the first moment of τ or at some moment intermediate between these two.' Marc-Wogau's contention is that the last moment of τ may precede t by a small finite amount. (*b*) My second comment is that in many cases a vanishingly short gap will not help Marc-Wogau to answer the argument. *Cf.* again the case of seeing the sun.

(iii) Marc-Wogau's third counter-argument consists in questioning the premiss that, if the characteristics which the prehensum is prehended as having correspond to those of the physical object seen, they correspond to those which it *had* when the light left it, and not (except by chance) to those which it *has* when that light reaches the percipient.

In the argument, as stated by me above, this premiss appears as the result of two others, *viz.*, (α) that the characteristics which the prehensum is prehended as having depend on the nature of the light which calls forth the act of prehending it; and (β) that the nature of that light is a causal descendant of the characteristics which the physical object had at the moment when the light was emitted from it. Of course a third premiss is also tacitly assumed, *viz.*, (γ) that the nature of the light has not changed during the process of transmission. Marc-Wogau's counter-suggestion is that, although no events in O *after* the instant $t - d/c$ are causally relevant to the occurrence at t of the *act of prehension* in the percipient, yet the *prehensum* of that act may have characteristics which correspond to those which O *has at* t, and not to those which it had at $t - d/c$.

As regards this suggestion I can only say that, taken in isolation, it is logically possible; but that there is a large mass of very varied empirical facts which would be very hard to reconcile with it and which all fit neatly into the premisses of the original argument. I have dealt with some of these, *e.g.*, the phenomenon of aberration, in my *Scientific Thought*. In general, I think that Marc-Wogau's counter-arguments here have the air of desperate special-pleading. If I knew the Swedish equivalent of the English saying 'Pigs might fly!', I should be tempted to quote it to him. To my mind these counter-arguments do little, if anything, to weaken the effect of the argument against which they are directed.

SECTION IV. MARC-WOGAU'S ATTITUDE TO PHENOMENALISM.

The last chapter of the book, entitled *Sense-data and Philosophical Analysis*, is devoted to an examination of Phenomenalism. It begins with an elaborate critical account of the pronouncements of Moore, Miss Stebbing, Wisdom, Ayer and Duncan-Jones on the nature of Philosophical Analysis. It will suffice for me to mention one point which Marc-Wogau makes on the way and the conclusion which he eventually reaches.

(A) *Philosophical Analysis in General.* He thinks that he can detect in several of the writers whom he discusses a tendency to hover uncertainly between the two following views of the nature of what Wisdom calls 'new-level analysis'. (1) That we start with a fact F_1 (or with a sentence S_1 which expresses it), and then show that it is in a certain sense 'equivalent to' *another fact* F_2 (or to a sentence S_2 which expresses F_2). (2) That we start with a sentence S_1 which is a *less* clear and adequate expression of a fact F_1, and then substitute for it another sentence S_2 which is a clearer and more adequate expression of *the same* fact.

He finds it difficult to reconcile the first alternative with the contention that the result of such an analysis is to give the *meaning* of the original sentence. Suppose, *e.g.*, that S_1 is a sentence containing a nation-name, *e.g.*, 'England'. Suppose that S_2 is a sentence which contains personal names, *e.g.*, 'Churchill', 'Attlee', 'Bevin', etc., but no nation-name. If there is both a nation-fact and an equivalent person-fact, surely the former is the meaning of S_1 and not of S_2 and the latter is the meaning of S_2 and not of S_1.

Suppose, on the other hand, that we accept the second alternative. Then it must be admitted that nation-names are 'superfluous', in a quite definite sense, in comparison with personal names. For every fact which is expressed by a sentence which contains a nation-name can be expressed more accurately by one which contains no nation-name and does contain personal names; whilst there are facts which can be expressed by sentences which contain personal names and cannot be expressed by sentences which contain nation-names.

In that case, Marc-Wogau holds, Philosophical Analysis is not something radically different from the old notion of analysis as the definition of certain fundamental ideas. It merely makes that notion more precise in certain respects. In particular we find that 'definition' must be extended to cover what logicians call 'definition-in-use'. This is essential when we are concerned

with terms which are logical constructions out of other terms. The three kinds of analysis which Wisdom distinguishes under the names of ' same-level material ', ' same-level formal ', and ' new-level ' analysis can all, under certain circumstances, be part of the subject-matter of philosophy ; and they must all be regarded as instances of what the earlier philosophers called ' analysis of ideas '.

(B) *Equivalence, Identity of Content, and Sameness of Meaning.* It is contended by Phenomenalists that every sentence which contains a physical-object name, such as ' penny ', can in some sense be ' translated into ' a conjunction of sentences which do not contain any such name but do contain names or descriptions of sensations. This immediately raises the question : ' What is the relation between two sentences S_1 and S_2 which Phenomenalists have in mind when they say that the former can be translated into the latter ? '

Marc-Wogau distinguishes three symmetrical relations which may hold between two sentences, *viz.*, *equivalence*, *identity of content*, and *sameness of meaning*.

Two sentences have the *same meaning* if and only if ' each refers in the same way to the same aspect of the same fact '. Thus, *e.g.*, the two sentences ' Tom and Dick are brothers ' and ' Tom and Dick are male children of the same parents ' have the same meaning ; but the two sentences ' This is an equilateral triangle ' and ' This is an equiangular triangle ' do not.

Two sentences are *equivalent* if they are either both true or both false. An example of two sentences which stand in this relation would be ' Cambridge is bigger than London ' and ' New York is the capital of Sweden '.

The notion of *identity of content* is ascribed by Marc-Wogau to Carnap. I find Carnap's account of the matter, as reported by Marc-Wogau, somewhat obscure ; largely because I cannot make out whether it is a matter of entailment only or of both entailment and material implication. As the whole notion seems to me quite ridiculous on the second alternative, I shall assume that only entailment is involved. I shall also assume that the notion is primarily concerned with singular propositions. Both these assumptions may be wrong ; but, if we make them, the notion of identity of content may be explained as follows.

Consider any singular proposition p. We might define the '*formal* content ' of this as the class of all those propositions which are entailed either by p alone or by the conjunction of p with any one or more *necessary* propositions. The following would be an example. The proposition that the square of

1·414 is not equal to the ratio of 2 to 1 is part of the formal content of the proposition that 1·414 is a rational fraction. We might define the '*material* content' of p as the class of all those propositions which are entailed by the conjunction of p with any one or more *true contingent universal propositions*. Thus, *e.g.*, the proposition that Mr. Churchill is mortal is part of the material content of the proposition that Mr. Churchill is human, but it is not part of its formal content. We might define the '*total* content' of p as the logical sum of its formal and its material content. I should suppose that two propositions which had the same formal content would necessarily have the same material content, and therefore the same total content. But one sees no reason why two propositions which had the same material content should not have a different formal content.

If p and q mutually entail each other, it follows that they have the same formal content. If p and q have the same formal content, and if we use 'entail' in such a sense that every proposition entails itself, it follows that p and q mutually entail each other. (So far as I can see the second consequence would not follow from the hypothesis that p and q have the same formal content without the proviso which I have added.)

Two *sentences* S_1 and S_2 would have the same formal content if the proposition which S_1 means and the proposition which S_2 means have the same formal content. Obviously this will be fulfilled if both sentences have the *same* meaning. But Marc-Wogau points out, quite rightly, that it may be fulfilled if they have different meanings. The following would be an example. The two sentences 'This is an equilateral triangle' and 'This is an equiangular triangle' quite obviously have different meanings; they 'refer either to different facts or to different aspects of the same fact'. But, assuming that 'this' denotes the same particular in both cases, the formal content of what is meant by the first is the same as the formal content of what is meant by the second.

Now, so far as I can understand, Marc-Wogau maintains the following propositions about the conditions under which one sentence is 'translatable into' another in the sense required by Phenomenalists. (i) The two sentences *must* be identical in formal content, but *need not* have the same meaning. (ii) If a sentence S_2 is, in this sense, a translation of two different sentences S_1 and S_1', then those two sentences must have the *same meaning*. (iii) It follows from (ii) that identity of formal content between two sentences is *not sufficient* to ensure that one shall be a translation of the other in the sense required. For suppose

that two sentences S_1 and S_1' have the same content but different meanings. Then any sentence S_2 which had the same content with either of them would have the same content with both of them. Therefore, if identity of content were a sufficient condition for one sentence to be a translation in the sense required, S_2 would be a translation of both S_1 and S_1'. But this is impossible, in accordance with Proposition (ii), since S_1 and S_1' by hypothesis have different meanings.

Marc-Wogau does not profess to say what more than identity of content and less than sameness of meaning is needed to make one sentence a translation of another in the sense required. That he is right in thinking that identity of content is insufficient seems to me to be plain from the following consideration. Identity of content is a symmetrical relation. But, when Phenomenalists say that a sentence containing a physical-object name can be 'translated into' a conjunction of sentences which contain no such name but only names or descriptions of sensations, they are thinking of a relation which is asymmetrical. For they would not say that the former is a translation of the latter in the sense in which the latter is a translation of the former.

(C) *Is Phenomenalism possible?* Marc-Wogau uses the term 'M-sentence' to denote any sentence which contains the name of a physical object or class of such objects, *e.g.*, 'There is a table in my room now'. He uses the term 'S-implication' to denote a sentence of the following form. 'If certain conditions (ultimately expressible entirely in terms of sensation) had been fulfilled in the past, certain sensations would have followed immediately and therefore would have occurred in the past or would be occurring now. And, if these conditions were fulfilled now or should be fulfilled in future, certain sensations would follow immediately and therefore would occur in the future'. (Marc-Wogau does not state the meaning of 'S-implication' nearly so elaborately; but I think that at least this amount of elaboration, and probably a great deal more, is needed.) He takes Phenomenalism to be the doctrine that every M-sentence can be 'translated into' a conjunction of S-sentences.

Since identity of content is at any rate a necessary condition for one sentence to be translatable into another, any doubt as to whether an M-sentence is identical in content with any conjunction of S-sentences is *ipso facto* a doubt about the possibility of Phenomenalism.

Marc-Wogau embarks on an elaborate critical discussion of the arguments and counter-arguments used by a number of philosophers who have debated this question. The most

important of these objections fall under the following heads. (1) That the attempted translation is *circular*, because the S-sentences always contain or imply references to observer's *bodies*, *i.e.*, to certain physical objects, which cannot be completely resolved into statements about actual and possible sensations. (2) That the attempted translation involves a vicious *infinite regress ;* because the identity of content holds only on the supposition that the sensations are *non-hallucinatory*. This condition can be resolved at any stage into statements about the sensations which certain other observers would have or would have had ; but these sensations must in turn be supposed to be non-hallucinatory. (3) That the phenomenalist analysis is incapable of dealing with the *dispositional properties* in general, and the *causal* properties in particular, which are an essential part of the notion of a physical object. (4) That, if the ' implication ' in the S-implications be taken to be *material implication*, all sorts of absurd consequences follow because of the fact that a false proposition materially implies every proposition. On the other hand, the ' implication ' cannot be entailment ; and it is very difficult to give any satisfactory account of an intermediate meaning that it might have. (It has always seemed to me that persons who claim that Phenomenalism is completely ' empirical ', with no *a priori* nonsense about it, should address themselves to giving an empiristic account of the notion of the *consequences of unfulfilled conditions*, which plays so important a part in Phenomenalistic translations of M-sentences.)

As Marc-Wogau merely summarises and criticises the arguments and counter-arguments of others, I shall not go into further detail about this part of his work. I think that his main conclusions may fairly be stated as follows. (1) Even if every M-sentence can be translated into a conjunction of S-implications, the two do not have the same *meaning*. They refer to different facts or to different aspects of the same fact. (2) Some of the arguments put forward to show that no M-sentence is even *identical in content* with any conjunction of S-implications are invalid, and some rest on presuppositions about causation which Phenomenalists cannot be expected to accept. (3) It is doubtful, however, whether any Phenomenalist has in fact produced a translation of M-sentences which gets rid of tacit or explicit reference to the bodies of observers ; and, until someone has done this, it remains doubtful whether it can be done. (4) No satisfactory answer has been made to the difficulties based upon the condition that the sensations referred to in the S-implications must be non-hallucinatory, and none has been made to the

difficulties based on the paradoxes of material implication. So Marc-Wogau is very doubtful whether Phenomenalism is even possible.

(D) *The relative Certainty of M-propositions and S-propositions.* The last question which Marc-Wogau discusses is this. Let us suppose, for the sake of argument, that for every M-sentence there is a conjunction of S-sentences with the same content as it. Why is it thought to be specially desirable to make such a translation ? One reason that is often given is that the S-propositions which enter into the phenomenalistic translation of an M-proposition are always more certain than the latter. This doctrine sometimes takes the special form that S-propositions are *indubitable*, whilst it is always possible to doubt any M-proposition ; but it might be held by a person who did not admit that S-propositions are indubitable. So Marc-Wogau discusses the two questions (1) Are S-propositions completely certain ? (2) Even if they are not, are the S-propositions which enter into the phenomenalist translation of an M-proposition always more certain than the latter ?

I think that the results of a long and complicated discussion may fairly be summarised as follows. (i) If any kind of S-proposition could be claimed to be indubitable, it could only be a *singular categorical* S-proposition, *viz.*, one such as would be expressed by the sentence ' I am having such and such a sensation now '. But it is certain that no M-proposition can be translated into a conjunction of such S-propositions. If the translation can be made at all, the S-propositions involved are *conditional and general, i.e.*, they are about the sort of sensations which *any* person *would* have had or would be having or would have *if* certain conditions had been or were now or should in future be fulfilled. (ii) Marc-Wogau is not convinced that even singular categorical S-propositions are indubitable. But, even if they were, this would be irrelevant to the question at issue, for the reason just given. (iii) He admits that any singular categorical S-proposition is more certain than any M-proposition. But it does not follow, and he does not admit, that every conditional and general S-proposition which enters into the phenomenalistic analysis of an M-proposition is more certain than the latter.

CONCLUSION.

I hope that I have now managed to give a fair and tolerably clear and accurate critical account of the main points in Marc-Wogau's book. In spite of the great length of this paper, there

remain many interesting matters which I have left untouched. Whether or not one accepts Marc-Wogau's own arguments and conclusions or his criticisms on those of other philosophers, there can be no doubt that he has written a very valuable book. I hope that it will be read by many philosophers in England and the U.S.A. It is particularly useful for us to have an opportunity to see ourselves and our theories through the eyes of a very learned, intelligent and sympathetic stranger, brought up in a philosophic tradition which is different from, but not hopelessly alien to, our own.

I will end by mentioning the few misprints which I have noticed in addition to those recorded on the last page of the book. They are as follows. Page 74 n., for *Johnsson* read *Johnson*. Page 154 n., for *acht* read *Acht*. Page 261, l. 11, for *Lichreflex* read *Lichtreflex*. Page 320, l. 8, for *Späre* read *Sphäre*. Page 403 n., l. 3, for *Intuitiv* read *Intuitive*. Page 431, l. 11, for *bezweifel* read *bezweifelt*.