

## V.—INTUITIONAL THINKING.

By FRANK GRANGER.

THE attempt to re-establish Reid's theory of sense-perception is one of the most striking events in the recent history of English philosophy. Mr. Joseph's articles in *Mind*\* on the perception of external objects, demonstrate some of the inconsistencies involved in the belief that "ideas" or "presentations"—as something distinct from things and merely in the mind—are that of which we are primarily aware. Mr. Joseph traces back this error through Mr. Bradley, Professor Stout, and T. H. Green, by way of Kant, Hume, Locke, Descartes, and St. Thomas to Aristotle. Leaving on one side every thinker here mentioned except Aristotle, we shall find, I think, that in this one case at least Mr. Joseph has not been just.†

But before we can even begin the discussion we must settle what we mean by intuition. I do not suggest that in intuition the idea of existence is conjoined with other ideas. It is not the idea of existence that is conjoined with the other constituents of a percept or a concept. It is the attribute of existence that is conjoined with the other attributes of the object of sensible or intellectual intuition. And when I say attribute of existence I should like to be allowed to understand that the object in question is a part of the narrative order. The meaning of this will be clear later on. It is not simply a question, therefore, of existence as one of the ideas implied in a

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\* *New Series*, 75, 76.

† I have intentionally avoided the numerous side issues which offer themselves. Hence the use which is made of the classical expositions of Aristotle, who anticipates some of the problems of the present.

concept, but of existence as one of the attributes of a *real* object. Before we proceed to intuitional thinking as distinguished from sensible intuition it will be helpful to consider the latter.

*Sensible Intuition according to Aristotle.\**—When Aristotle says that sense—"awareness" (αἴσθησις) is that which is receptive of sensible (αἰσθητά) forms without their matter, he certainly holds that we are "primarily aware" of the forms (εἶδη) of different things. The soul becomes what it is aware of; it is the dwelling place of the "forms" (τόπος τῶν εἰδῶν).

We must be careful, therefore, that we do not confuse or even assimilate the Aristotelian theory of "forms" with the modern theories of "ideas." For while the modern understands by "idea" a state of mind, by εἶδος or form Aristotle would have us understand something which exists potentially in external objects, and appears in its full reality in the soul. But in so far as the form is more important than matter, the apprehension of the object of sense through the senses conveys to us the more important part of reality. We may paraphrase the distinction between form and matter for our own use in the following way. Form consists of those aspects of reality which have a bearing upon our present purpose. Matter consists of those remaining aspects which are not important for this purpose. Hence our various kinds of "awareness" (αἴσθησις) select out of the various activities of the real, just those which correspond to them.

Let us try to make the matter clearer. The relation of "awareness" to its objects, according to Aristotle, is not to be understood quite in the same way as nowadays we understand the relation of sense-perception to its object. By sensation (αἴσθησις) Aristotle understands each particular sense-process, such as sight; by sensible object (αἰσθητόν), he understands the corresponding object, such as light or colour. This—the light or the colour—is the characteristic object of sight. It is

incidentally that the object, in this case, the object of vision, is become aware of as an individual, as, for example, if yonder white\* is the white of Mr. Smith's shirt front. Mr. Joseph is justified in pointing to the universal character of the perception of white; but Aristotle also affirms that sense-awareness incidentally brings to light the particular object.

Perhaps we shall understand Aristotle better if we contrast his theory with that of the atomist thinkers, according to whom images (*εἰδωλα*) come to the soul from without; they treat the soul and reason as composed of primary and most minute bodies, and when the images fall upon these bodies, sensation and cognition (*νόησις*) take place.

In opposition to them, Aristotle discards the material element in the object of sense, and represents the mind as receiving only the formal element. But he does not, any more than the atomists, and their follower Epicurus, deny the material element. In retaining the formal then, he retains all that is essential in the direct apprehension of the sense-object. It is important to bear this distinction in mind. It is not so certain, as some would have us think,† that Aristotle was retrograde in turning on one side from the Pythagorean tradition. For while the object of sense may be capable of mathematical treatment, it does not follow that the sense-process is capable of similar treatment.

Aristotle regards the external world as a complex object of sense. His attitude to it may be compared to that of a painter of landscape or of portraits. The painter is occupied with light values and colour values, and his eye selects just those elements in the whole light and colour scheme that fall in with his purpose. As the English temperament is naturally incompetent, if left to itself, to understand what should be the

\* As against Mr. Russell, in *Problems of Philosophy*, 154, I must maintain that "white" is in our mind, but not Mr. Smith's shirt front.

† Aristotle is more concerned with continua, than any mathematical school has ever been.

attitude of an observer to a picture, I will quote some words of the great artist, Whistler, of whom I had some glimpses when the whole world of London rejoiced in his temporary ruin.

"The notion that I paint flesh lower in tone than it is in Nature, is entirely based upon the popular superstition as to what flesh really is—when seen on canvas; for people never look at Nature with any sense of its pictorial appearance—for which reason, by the way, they also never look at a picture with any sense of Nature, but unconsciously, from habit, with reference to what they have seen in other pictures. Now in the usual 'pictures of the year' there is but one flesh, that shall do service under all circumstances, whether the person painted be in the soft light of the room or out in the glare of the open."\* With the help of Whistler we can understand a difficult passage of Aristotle. "An object of sense is so called incidentally,† as for example if yonder white object were the son of Diares." Primarily our sense "awareness," like Whistler, is concerned with the colour, only incidentally with the full being of the object to which the colour belongs.

If therefore we wish to understand Aristotle, we must regard the world as a panorama in order to distinguish it from a collection of atomic objects. But there are other aspects of this panorama—this coloured and audible and odorous complex—which each sense perceives along with its proper object: rest, motion, extension, unity. There is a striking likeness between these attributes of the object and Plato's categories in the *Sophistes*.‡

But Aristotle has not worked out for us entirely the unity of sense-perception. He leaves us doubtful sometimes whether to call in "common sense" or reason. But he has done this:

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\* *Catalogue of International Exhibition*, 1899.

† *De Anima*, 418a, 20. Mr. Hicks' translation "indirectly" for "incidentally" is less reconcilable with the Greek.

‡ 250b.

he has distinguished two aspects of the real. I think something is to be gained by treating the real as not yet distinguished into various objects, before we go on to consider the individual object of sensible intuition. And further we can accept provisionally the separation of intuition into sensible and rational.

*The Intuition of the Individual Sense-Object.*—How do we come to perceive individual objects as such? Provisionally we may reply in the terms of Aristotle. There is some process common to all senses by which we recognise the co-existence of different qualities in the same object. This "sensus communis" is called in by Aristotle to objectify the objects of the several senses taken separately.

*How are we to explain Rational Intuition?* Professor Bergson in a manner which is familiar to us all has employed the analogy of the cinematograph,\* only, however, to overthrow some of our oldest and most respectable traditions. But in spite of its temporary popularity, I do not think that the cinematograph is permanently launched as an instrument of abstract thought. There is, however, a philosophic toy—the stereoscope—which may, perhaps, enable us to understand some of the difficulties which meet us. Incidentally with the help of the stereoscope I expect to show that the cinematographic tendencies of the reason have possibly been exaggerated.

Reid, in a passage which is worth recalling,† distinguishes between "logical" and "analogous" illustrations of mental process. I prefer the stereoscope to the cinematograph because the formula for the stereoscope is relatively simple. It may be set forth as "the fusion of elements into one whole in which they are nevertheless distinguished."‡ On the other hand, in

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\* *Évolution Créatrice*, c. IV.

† *Inquiry*, conclusion.

‡ The element of conflict which appears in the stereoscopic view aids the apprehension of a "real" outside us. The irreversibility of the serial order has the same effect.

the cinematograph the pictures are not perfectly presented. For myself I am conscious of a painful flicker in the appearance of the objects presented. They do not blend in the same way as pictures received through the two eyes blend together.

Hence the stereoscope shall serve us, first, in order to illustrate the fusion of sense elements in a sensible intuition, and then we will use it to illustrate rational intuition. The fusion of elements in a sensible intuition must include also the direct apprehension of the thing. We are *incidentally*, yet "*primarily* aware" of the existence of the object. The synthesis of qualities of which Aristotle speaks is therefore a synthesis of "real" qualities. Only secondarily do we become conscious of the attributes of the object, considered as mental states. Only secondarily are we conscious of the fact that we have sense perception. That is to say, introspection is a secondary process.

But I do not intend to maintain that the stereoscopic apprehension of overlapping qualities is an adequate account of our intuition of the thing. In speaking of the fusion of sense qualities into one whole in which they are not entirely lost, we have not exhausted the fruitfulness of the analogy which the stereoscope offers. The stereoscope will suggest also the continuous existence of the object. What is present and future in one intuition the succeeding intuition takes up as past and present.

Without breaking up the unity of the state or process of consciousness, we can synthesise a *moderate* number of correlated elements. For example the definition of a triangle as "a figure bounded by three lines and containing three angles," can be so combined into one process of apprehension that something like a stereoscopic effect arises. Such a process I will take leave to call a conceptual intuition. It does not involve the reality of the object except for thought. The process of which this is an example Bergson characterises as

cinematographic. If there were only this one form of rational intuition, Professor Bergson's criticisms of the intelligence would be unanswerable. Even an infinite series of such aperçus would be inadequate to the real object.

But with the help of the stereoscopic analogy, I propose to show that through the combination of the present with past and future, we have an intuition of the real as in time. This we may call serial intuition. As distinguished from conceptual intuition, of which one character is reversibility, the order of serial intuition is irreversible. There is therefore a genuine correspondence of serial intuition with the current of actual events; a correspondence which, if not complete, is at least the most complete of which we can form any idea.

*Conceptual Intuition and an Instantaneous Present.*—If with Descartes we fix ourselves upon the act of perception without taking account of subject or object, if we say *cogito ergo sum* instead of saying *ego cogito aliquid*, we leave ourselves with something for which there is a name, *cogito*, but to which there answers no process of intuition.

But there is something implied in *cogito* beyond the *ego* and the *aliquid*. There is continuous time. If therefore there is continuous time implied in the process of intuition, in the form under which we shall contemplate it, the cinematographic element on which such stress is laid disappears from reason, except in so far as language through which reason partly expresses itself is of necessity cinematographic.

This we shall now discuss. Augustine\* draws attention to the difficulties with which we have to deal. "Who denies that the present lacks magnitude, because it passes in an instant?" (*Et quis negat præsens tempus carere spatio, quia in puncto præterit?*) The present thus appears as the dividing line without breadth which comes between the past and the future. Hence if we are thinking in the serial order, no accumulation

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\* *Conf.* XI, 28.

of present moments will furnish us with the continuum of which we are in search.

There is doubtless a fallacy here. It consists in this, that we apply an abstract theory of time. This necessarily breaks down when the external experience is present to us in all its fullness. There is nothing, so far as I can find, in the inner experience, which corresponds to the infinitesimal dividing line between present and past or between future and past.

But this fiction of an instantaneous present is necessary for certain purposes of conceptual thought.\* And this fiction is especially necessary in order that the order of conceptual thought may be regarded as reversible. For if the act of thought by which such a conceptual content were apprehended occupied any assignable interval of time, then the order of the conceptual content could no longer be regarded as reversible; because in any time interval, however small, there would usually have been some change. Hence the value of logical and mathematical symbols. They conceal the difficulties which arise if we suppose that the order of any real subject-matter is reversible or completely interchangeable.

*Serial Intuition and Scope of Attention.*—It is on these lines that I should defend against Professor Bergson† the service to thought performed by the Eleatic school. The real cannot be inserted without qualification into the scheme of a concept regarded as apprehended in an instant. Indeed, the description which Bergson gives of the Ideas formulates precisely the functions which these logical expedients fulfil by enriching the comprehensiveness of what is here described as “serial intuition.” The forms, therefore, which the mind isolates and stores up in concepts are only views taken of the changing

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\* Cf. *Problems of Philosophy*, 156. “The world of universals” is subordinate to the serial world. Hence the Ideas of Plato, and the Hegelian Dialectic fall into their places.

*Op. cit.*, p. 339.



reality.\* This expression, however, fails to do entire justice to the office which is actually performed by the Platonic ideas. Owing to the limited scope of the apprehension—a topic which is scarcely regarded enough—only a few elements can be presented simultaneously. Hence a complex idea can never be fully presented. A great part must remain entirely in the background (whatever sense we are to attach to this word), or else it must be represented by symbol. It is a source of serious confusion that the Platonic “Forms” should also be called “Ideas.” We are unconsciously led to think that the few ideal elements which at any moment may be admitted to the focus of consciousness coincide with the entire explication of a Platonic idea. There can be no question, therefore, of the equation of ideas to the fullness of reality. But, for all that, the ideas enable us, in Professor Alexander’s phrase, to contemplate reality, if not to enjoy it. We must surrender the belief that the contents, even of the most disciplined mind, unfold themselves in the same systematic way as the pages of a good text-book. For, perhaps, the pages of a text-book, say, like Euclid’s *Geometry*, may afford to intellectual intuition an illustration of the manner in which language “naturally gives thought an outward form.”

Now the processes of thought become increasingly symbolical or rather *parsimonious*. I prefer the term *parsimonious* because it is being suggested in this paper that the intuitive character of thought is always present even when the symbolical accompaniments seem to overpower it. And by a marvellous economy, or parsimony, as though thought were too valuable to be wasted—a few vivid elements come to represent vast objects.

How is this parsimonious character to be reconciled with the richness of thought? We have just seen, in the first place, that serial intuitions are enriched by concepts.

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\* *Op. cit.*, p. 343.

In the second place, there is a predominance, on the average, of the permanent over the changing elements in our experience. Hence the pressure upon the focus of consciousness is lessened from time to time, even if it is not relieved entirely.

In the third place, this parsimonious character is rendered far more available through the continuity which is made possible by the stereoscopic method of thought. For example, the system  $a\ b\ c\ d$  is successively realised as  $a-b$ ,  $b-c$ ,  $c-d$ . Through practice we gain the power of running rapidly through such a series of experiences until we gain the power of blending the three stages  $a-b$ ,  $b-c$ ,  $c-d$ , into one act.

The cinematograph over-emphasises to a considerable degree the *extent* of our successive intuitions. But if we duly recognise the limitations of our successive intuitions, we shall do them more justice as successive moments in a process. In a word, we can, by abstraction, regard the three aspects of intuition—backward looking, present, forward looking—as if they could be separated. But in truth an intuition is, so to speak, *three-dimensional in time*. To quote Augustine again,\* “The mind both expects and attends and remembers, so that what it expects, passes over into that which it remembers, through that to which it attends.”† The continuity of the future through the present with the past is a dim formula of the progressive evolution which proceeds towards some prefixed ends.

*The Three Dimensions of Serial Intuition.*—Now if I may repeat myself this last statement is incomprehensible if we suppose that the act of perception takes place in an infinitesimal moment of time. If this were the case, then it would require an infinite number of acts of perception to fill any given interval, say five minutes, which is

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\* *Conf.* XI, 28.

† Lodge, *Modern Problems*, c. 11.

absurd. Even the cinematograph is based on the supposition that we view as continuous changes which occur more frequently than one-eighth of a second. It is now, therefore, generally agreed that we cannot perceive moving bodies by a series of separate perceptions. Our perception must be unbroken, as the movement is unbroken. We perceive the moving body as passing continuously out of one position into another. It is only by the photograph which seizes the indivisible moment of time, that we can fix the appearance of the moving object at a given instant. But this appearance usually differs considerably from what we perceive. For example, the horse galloping at full speed is entirely unlike, at any given instant, to the picture which we form of it to ourselves. Hence the application of the notion of the present as an infinitely small moment of time, is inapplicable to our mind. And if our mind does not act in this way, it follows that it is continually reaching out from the past through the present into the future, so that it is possible in a single act of mind to have a relation to the three kinds of time. Hence we must consider the mind as some thing which answers to the course of events amid which it lives, because events are in one direction only, and our distinction of past and future emphasises this fact. As a confirmation of the theory which is here advanced we may note that the present tense is often regarded as continued. What do we mean when we say: I am thinking? We mean something continuing unbroken. The difficulty of the momentary present arises in this way: that we try to seize upon something moving and treat it as if it were fixed. The painter who paints a galloping horse, treats it as if it were standing still to be painted. Yet he succeeds in deluding us into the belief that it is moving through the canvas. The photographer, who is really more true to the actual occurrence, is often less successful than the painter.

*Course of Events as Irreversible.*—Part of the great difficulty

which arises when we try to understand time, is due to the fact that narrative moves in one direction only, whereas when we arrange things in a conceptual scheme, we can move backwards and forwards. An interesting example of this is furnished by chemistry. The chemist can either analyse the same quantity of water into its constituents oxygen and hydrogen, or he can take the same oxygen and hydrogen and synthesise them into water. But it is doubtful whether even here we have a genuine reversal of the original order. For it would be necessary that the same particles of oxygen and hydrogen should, in each particular case, reconstitute the same particle of water. But this is impossible. It is only when we are dealing with purely abstract subjects, that is to say, matters which are not part of the sequence of events, that we can pass backwards and forwards in this way. A convenient illustration is furnished by arithmetic. It is just as true that we can make sixty-three by multiplying seven by nine, as that we can split it up into sevens, if we divide by nine. Here the order is indifferent. At the same time if we take sixty-three real objects, say, sixty-three apples, the case is not quite the same. Even in the small interval needed to perform these two arithmetical operations, the apples will have slightly changed.

Now let us apply this to the mind. The order of our experiences can never be reversed. They are always moving, as Augustine said, from expectation to immediate apprehension and then to memory. So to speak, we meet our experiences as they come. When, therefore, Augustine uses the word *expect*, we had better translate it by the word *await*. Now no one can really understand any operation of the mind if he treats it as being capable of reversal. There is, so to speak, one edge turned towards the past and another turned towards the future. Hence every event which we perceive comes to us first in what I am going to call a stereoscopic manner.

*Intuition as Stereoscopic.*—The intuition therefore of things

implies that we gather into one three aspects: that which has just passed; that which is contemporary with the process of perception at its moment of greatest vividness; and that which we await or expect. I will again repeat that the stereoscopic attitude of intuition is applicable to other aspects of reality, as well as to time.

If I were to take this piece of paper and hold it before you, it would be possible to mark off these three time aspects. You see it now. But you do not feel that it has been thrust upon you. It has come from the past. You expect it to go on to exist.

Or, again, take a piece of music. You do not treat each chord as complete in itself without relation to the past and the future; the chord has its place in a musical phrase.

Or, lastly, when you perceive persons you do not perceive them in an infinitesimal moment of time. You grasp your memory, your present contemplation, your anticipation, into one product, the intuition of the person. Only in this way can we explain how it is that we do not regard our fellow creatures as automata, machines. Descartes, indeed, held that all animals other than man were machines. It is possible therefore that such a conception that other men are machines should be formed in the mind. And, indeed, there are systems of philosophy which leave us unable to infer with certainty that we are not automata of a physical character. The determinism of ancient astrology was not more rigid than modern scientific determinism.

*Application of our Results to Formal Logic.*—We have considered intuition as sensible or intellectual, as concerned with conceptual or serial objects, as limited in scope or continuous, as three-dimensional in time. We shall now consider some of the objects of intellectual intuition. We shall watch the apprehension of concepts, of immediate inferences, of syllogistic inferences.

The concept itself usually arises out of the conflict which is

disclosed, when we have several serial orders proceeding side by side. Since the capacity of intuition is limited, it necessarily follows that the number of serial continua which proceed side by side in our apprehension must be limited. Or rather we have never really doubted a fact so obvious. Every one knows, in practice, that one cannot attend to more than one or two concurrent series, but we must also remember that our apprehension of concepts is also limited. By the law of parsimony one or two leading characters from which the others may be deduced, may and do stand for the whole concept.

*Parallel Series.*—Let us suppose, for example, that the Aristotelian panorama is unrolling itself before our senses, and that by the various susceptibilities of our sense-organs we are enabled to single out for successive apprehension, now this, now that, group of successive occurrences. Perhaps we follow the flight of a bird overhead, or the barking of a dog down the street. Along with the sensation itself, there goes the “incidental” intuition of this, or that, object.

This shall serve to illustrate the way in which the whole panorama of experience, including not only the objects of sensible intuition but also those of intelligible intuition, presents itself to us. Now since only one or two elements in each concurrent series can be apprehended at a given moment, it follows that the few presented elements must represent the whole of that particular stage in the given series. Hence it is of importance that the concept which is thus represented should be organised to the best possible efficiency. This is the meaning of the Platonic world of ideas, or to use a modern analogy, of the well organised system which makes up a science as comprehended by an expert.

*The Function of the Simultaneous Order, i.e., Concepts.*—If we consult everyday experience we shall find that the larger number of persons are occupied in their thoughts with motives and actions of a few of the human beings in their immediate neighbourhood. It is this habit which renders the novel so

usual and effective means of occupation. There is no doubt that by drawing upon their vivid sense experiences, individuals whose minds have not been worn down by abstract reflections, can represent so vividly to themselves the life and adventures even of imaginary personages that for them such personages seem to become real. Now some one will at once raise the objection: "How can you distinguish between the imaginary person and the real person?" If the act of intuition may sometimes lead us to mistaken results, how can we be sure that it will ever lead us to certain results?

Thus it appears that the narrative or serial intuition taken alone leads us into difficulties. But the very fact that we are sometimes dissatisfied with the narrative method, shows that we have supplemented it with another. In order to say that a thing is false, we must have something to compare it with. In other words we set two series of events side by side and compare them. We take the story, say, of King Arthur and compare it with the series of events that made up the life of King Edward. This is to employ the conceptual method, in order to regulate the serial intuition.

Now a very curious thing happens when we do this. When we come back to the narrative from which we started, whether from King Edward to King Arthur or from King Arthur to King Edward, we find our point of view somewhat altered. Our imaginary King Arthur loses somewhat by our not having to deal with real personages. Our real King Edward loses somewhat also. His life has not the rounded completeness that the poets can give to King Arthur's life. Hence we are dealing with the notion of a king that belongs neither to King Edward nor to King Arthur, and yet in some way also belongs to both. How do we behave towards this notion of a king? Do we apprehend it in the same way as we behave towards a real king? We may think that this is an absurd question to put. We might say at once that of course we do not behave to a mere idea as we should towards the real instance. And

yet Plato, in his famous theory of ideas, maintains that the idea or notion or definition in which all the things of the same class share is more real than the individuals, and that it is better to know the idea or notion than the particular instance. It is doubtful, however, whether this attitude of mind is very common. There are some people, I suppose, who love humanity in the abstract and at the same time feel no affection for their fellow men. But in the religious experience the case is altered. A man who does not love his brother, whom he has seen, cannot love God, whom he has not seen.

*Intuition of Abstract or General Concepts.*—It would follow, then, that we can never behave ourselves towards a purely abstract or general idea in the way in which we behave towards particular persons. Now there is one particular kind of general idea which plays a large part in our experience to-day, the idea of general law. For example, there is the law of gravitation; that material bodies tend to fall together in a certain way. Or if we combine all the particular laws of Nature into one, and speak of the reign of law, we might inquire whether we can ever have a full intuition of such a notion as this. Scarcely anyone, I imagine, ever fell in love with the multiplication table. And yet there is a sense in which the laws of Nature can become the object of emotion. If we regard them as embodied in the material world of Nature, they have cast upon them

*The light that never was on land or sea,*

and may even arouse a kind of affection.

But it is with reluctance that I have fallen back upon what Reid would have called an analogical rather than a logical illustration. Let us try to symbolise what happens when we apply the stereoscopic intuition to general ideas. We have already seen that a system  $a b c d$  is apprehended rather as a process than as simultaneously presented. Let us suppose that we invert the arrangement of the system: the order of



apprehension will be from  $d-c$  through  $c-b$  to  $b-a$ . Such a threefold arrangement apprehended successively in the single intuition—past, present, and future in one—has a suggestion of that reality which attaches to the irreversible or narrative order. It is the lack of resistance in the concept that prevents our confusing it with the real object of the serial intuition. And in the case of dreams the fluidity of the components explains why on awaking the dream fabric as a rule disappears.

Perhaps we may deduce from these considerations the charm that symmetrical proportions present. Greek public buildings especially display the most elaborate, although partially hidden, harmonies. The eye can wander to and fro over their elevations and thus combine the serial order of our inspection with the reversible order of the symmetrical harmonies. Hence there attaches a suggestion of timelessness to these ancient masterpieces. Since proportion consists in the most abstract of relations, namely, mathematical relations, it is possible that they furnish what one may almost call a logic of beauty. And sensible intuition which apprehends the relations of architectural features, and again the relations of musical notes, easily passes into that rational intuition which apprehends these objects in and for themselves.

*Creative Reason.*—The effort which is involved in apprehending and formulating the relations of things involves a kind of creation. The artist who composes a piece of music, or designs a symmetrical building, works in the same way as a discoverer who brings order into the scattered elements of a science. Hence it is not inappropriate to give the name of creation to many forms of intellectual process. This even applies to the narrative process. The historian who seizes what is essential in the reports of a course of events and constructs a veritable picture is also a creator. After all, the panorama does not work itself out, as is presumed by some theories of induction.

*Formal Logic.*—We can now understand better the processes of formal logic. They are a mechanism for economising the elements of the intuitional series, and so rendering them more adequate to the presentation of reality in its characteristic or narrative form. On the other hand, the logics of the positive sciences have in view mainly the explication of certain concepts; those, namely, which are involved in the intuition of special series of events.

Hence it will appear that the definition of history is entirely unsatisfactory which describes it “as philosophy teaching by example.” Such a definition removes history from that real or narrative order which declares by organic stages the meaning of the world. Instead, history is identified with a collection of concepts of which the value mainly consists in interpreting the narrative order. Such a definition of history would be more permissible if we were allowed to understand by example the appearance of those personalities whose careers mainly determine the course of events.

There is another aspect of formal logic to be considered. The processes of formal logic are processes also of thought. But we do not regard them simply as such any more than we regard sensible intuitions simply as processes of consciousness only without reference to their objects. Hence for us the formulæ of the syllogism and of immediate inference must be primarily understood as embodied in real instances.

It will be enough for our purpose, if this paper is brought to a close by considering whether the processes of immediate inference and the syllogism are reversible.

*Are Real Propositions convertible?*—The traditional Aristotelian logic, in many cases, misrepresents and distorts the actual meaning of the original texts. In no case is this more deplorable than in the case of the categorical proposition.\* The correct

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\* The Aristotelian proposition implies the reality of S. It is only in secondary instances that S becomes a “*quale*.” Modern criticisms of the syllogism are often beside the mark through failure to take account of

form of stating the proposition is not "S is P," but "P inheres in S." Or, to take an instance already quoted: White pertains to or inheres in the son of Diares. In the panorama, of which mention has been made, various attributes thus are assigned to various objects. The confusion here seems to have arisen from the influence of Plato. Plato, for instance, wants the definition of the just man and he starts with him. Nor is Plato content until he can formulate a proposition in which subject and predicate are interchangeable. For that is demanded by the definition. On the other hand, the Aristotelian proposition is usually inconvertible. Because P inheres in S, it is usually mistaken to suppose that S inheres in all P. Hence, Aristotle treats the identity of S and P as limited. Here we may say that Aristotle is more in harmony with the narrative order of events; Plato is dealing with the conceptual order.

It is impossible at the end of this paper to treat of all the questions which the syllogism suggests. But we may begin by ruling out Jevons' suggestion that reasoning consists in the substitution of similars. Reasoning ultimately deals with continuity in the world-series, and this continuity involves change throughout. Hence the syllogism in its typical form may thus be expressed: P, which inheres in M, therefore inheres in S, for M inheres in S. Or in one phrase PM inheres in S. Unless the process of the syllogism is thus apprehended in a single intuition, it does not enter into the living texture of thought. And this intuition is capable of being used in the stereoscopic process with which we are familiar. It may even happen that the terms of the syllogism are permanent only so far as the argument demands. We catch a glimpse of truths which appear only for a moment. Hence the use of this method in the interpretation of history. For example, William

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Aristotle. Hence the limited assistance which attempts like that of Dr. Mercier can afford.

the Silent was cautious because he was wise. But, under other circumstances, we must say that William the Silent was rash because he was wise. Hence, the syllogism is far more flexible in its application than appears if we confine ourselves to the scholastic method.

Again, we need only state the fourth figure in the Aristotelian manner to see its complete inconsistency with a logic such as that which we are considering. M pertains to P, S pertains to M, therefore P pertains to S. In other words, P, which appears in the premise as an object in which M inheres, appears in the conclusion as an attribute. On the other hand S, which is an attribute in the premise, appears in the conclusion as a subject. This is contrary to the spirit of Aristotelian logic, in accordance with which some subjects, at least, have a real existence.

Deduction which affirms or denies an attribute of groups of objects, *e.g.*, the whole panorama, is not less applicable to reality than induction which begins by affirming or denying attributes of single individuals. To grasp into a single intuition the formula which is stated in the *dictum de omni et nullo* is not beyond that faculty which, as we have already seen, can grasp past, present, and future in one. Moreover, if this formula represents a process of thought embodied in actual objects (and we have seen that this is not impossible), then such a process of thought may become the object of the serial intuition. To carry the application of this a step further, the method of a science may be objectified, as in the case of evolutionary theories such as Mendel's. Strictly speaking, such a method is in one direction only. It is irreversible, and is therefore objectified.

*Is Time Real?*—Certainly, the irreversible direction of change is something which characterises all the real objects which we regard as such. The rate of change in the physical world depends, in many cases, upon the resultant of forces partly or wholly in conflict. But I cannot regard seriously

the attempt made to define reality in terms of time or duration any more than the attempt to define it in other physical terms. The categories at least should guard us against such an error. In the reals with which we have been occupied, their ultimate meaning is found, in so far as they are moments in the process of the world. Hence, although the task at present seems beyond our powers, we must leave it to the philosophy of history to furnish us with standards by which we may measure the different grades of reality, and so enable us also to distinguish the different forms of intuitional thinking.

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