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ON THE  
CONSCIOUSNESS OF THE UNIVERSAL  
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TORONTO



# On the Consciousness of the Universal and the Individual

A CONTRIBUTION TO THE PHENOMENOLOGY  
OF THE THOUGHT PROCESSES

*Thesis approved for the Degree of Doctor of Science  
in the University of London*

BY

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*'In qua laborans mundus jam senuit, in qua plus temporis consumptum est quam in acquirendo et regendo orbis imperio consumpserit Caesarea domus.'*—JOHN OF SALISBURY, *Polycraticus*, vii. 12.

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## PREFACE

### CORRIGENDA

- P. v, l. 8, for Professor Alfred Michotte read Professor Albert Michotte.  
P. 36 note, l. 3, for démonstration, un instrument : read démonstration ; pour vérifier la démonstration, un instrument :  
P. 38, ll. 19, 20, for *De Regulari Directione Ingenii* read *Regulae ad Directionem Ingenii*.  
P. 55, l. 4 and note 2, and p. 246, l. 17, for *Die logische Untersuchung* read *Logische Untersuchungen*.  
P. 56, footnote, for *Erfühlung* read *Ertüllung*.

themselves, and themselves . . . . .  
of investigation. The problem then involved was one of perception—rather than of conception, as in the present study. It was ascertained that the instruction given beforehand to the observers—that they were to perceive pictures of objects, or objects, exposed in the tachistoscope, as (*a'*) individuals or

<sup>1</sup> Notes of this study were published in the *Journal of Psychology*, vol. iv. part ii., September 1911, under the title "The Relation of Thought-Process and Percept in Perception."

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## PREFACE

THE research which forms the subject of the present essay was undertaken on the completion of a previous study, made in the *Laboratoire de Psychologie Expérimentale* of the *Institut Supérieur* of the University of Louvain, upon the function of generalisation.<sup>1</sup> The points established in that previous research, carried out under the direction and with the help of Professor Alfred Michotte, were few in number, but of some considerable interest in themselves, and indicative of further possible lines of investigation. The problem then involved was one of perception—rather than of conception, as in the present study. It was ascertained that the instruction given beforehand to the observers—that they were to perceive pictures of objects, or objects, exposed in the tachistoscope, as (*a'*) individuals or

<sup>1</sup> Notes of this study were published in the *Journal of Psychology*, vol. iv. part ii., September 1911, under the title "The Relation of Thought-Process and Percept in Perception."

( $\beta'$ ) as generals (types)—had a pronounced effect upon the subsequent perception. It was further ascertained that this effect of the instruction can be counteracted, or minimised, by ( $\alpha'$ ) objective causes (character of the stimuli) and ( $\beta'$ ) subjective, or subjective-objective, causes (on the part of the observer). It was abundantly clear, however, that striking differences were to be observed in the structure of the percept, and in the related phenomena of consciousness, in the two cases of individual and general (typical) perception. Hardly a protocol was dictated, out of some 860, that was not clear as to the fact that the picture, or object, shown was seen either as a general or as a particular. There was seldom hesitation in the mind of the observers to assign each experience, whether conditioned by the instruction or not, to one or other of these classes. The research thus indicated a promising field for further investigation, which the work described in the present essay was designed to carry out.

Before, however, describing in detail the experiments made, and analysing the introspective results obtained, it will be well to preface a rough sketch of the history of the problem with which we

are occupied, to outline some of the solutions that have been put forward to meet it in its various phases, and thus to show what an extraordinary and important part it has played in the development of European philosophy.

Our essay is therefore divided into three parts. The first briefly sets out the history of the development of the problem of the 'Universals,' with its metaphysical, epistemological, and psychological implications.<sup>1</sup> The second presents the data of our present research with the conclusions thereon based. The third consists of a short Bibliography of works referred to in the text.

<sup>1</sup> This part is written from a frankly selective stand-point, and is in no sense to be considered an exhaustive, or even a complete statement of the history of the subject. Its main object is to provide a point of view which we wish to adopt in the subsequent treatment of the experimental data afforded by our research ; and for this purpose it is given as a suitable introduction to the main part of our essay.





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PART I  
HISTORICAL INTRODUCTION



## SECTION I

### THE PROBLEM OF THE 'UNIVERSALS' FROM PLATO TO THE RENAISSANCE

THERE are three main aspects noticeable in the development of the problem of the 'Universals'—the metaphysical, the epistemological, and the psychological; and, although the lines of interest in these cross and recross in a perplexing manner throughout the whole course of philosophic thought, we may separate it into three main periods, in which one or other of these interests was predominant. The first period may be designated, on the whole, metaphysical, and considered to embrace the history of philosophy from Plato to the decadence of scholasticism.

The teaching of Plato and of Aristotle with regard to our subject is too well known to necessitate our dwelling at any great length upon it here. For Plato, knowledge was of the Real; but the

real is to be found only in the Idea, which is beyond the world of sense—itself no more than a shadow of the ideal world.<sup>1</sup> This real-ideal world exists, since we discover in consciousness intellectual presentations of objects characterised by universality, necessity, and immutability; since to these intellectual presentations must correspond extra-mental objects having the same characters. The ‘universal’ is a reality to which thought corresponds. This is the epistemological postulate. As did Parmenides, so Plato taught that real being must be universal, necessary, and changeless. This is the object of knowledge. But such being cannot be discovered in the world presented to sense. Here all is in flux; for with Heraclitus, Plato held that this world of shadows of the ideal is a collection of particular, contingent, and instable beings; and, as such, it follows that no true knowledge can be possessed of it. The psychological basis seems to be a datum of introspection. The postulate is that of dogmatic realism. The intellectual presentation corresponds to an idea known to the incorporeal soul in a previous state of existence. It is a memory, awakened anew in it—in its terrestrial banishment and bodily prison—by a sort of occasionalism, on the contact of sense with its object. The idea is not the subjective result of the movement

<sup>1</sup> Plato, *Republic*, vii. 514 D.

of consciousness in the process of abstraction. Plato, in common with all Greek psychologists, was of opinion that the content for ideas must somehow be *given to the Soul*; but he put forward no theory that the activity of consciousness should itself concur in the production of the idea.

Sharply contrasted with this doctrine is that of Aristotle. Where Plato neglected the study of phenomena, as the mere occasion of the revival of connate ideas, Aristotle investigated them for their own sake, as well as for the reason that phenomena alone constitute the original source of all our intellectual cognition. His theory of knowledge is consistent throughout. It is little more than an extension and application of his general theory with regard to vital activity. It is based on the assimilation of unlike to like, on psychical immanence, or intentional inexistence of the object of thought in the thinking subject. The sense, stimulated by its object and intrinsically determined by it, becomes the immanently sensible-in-act. So also the understanding, *potens omnia fieri*, stimulated by its cognitive object reacts in knowledge. The existence of the two orders of content (sensible and intellectual) would seem to be a matter of introspective analysis. But, for Aristotle, the abstract object of the understanding is not found as such in

nature. All that is singular, concrete, obnoxious to change. Whence comes, then, the impulse to which the understanding, naturally passive and indeterminate, yet potentially all things, reacts? The answer to this question is given in the theory of the Active Intellect (*νοῦς ποιητικός*), which renders the sensory image (the intelligible-in-potency) apt to determine the understanding to become the immanently intelligible-in-act; and so to allow of its knowledge being of the universal, the necessary, the changeless. The relations of these two intellects (*παθητικός* and *ποιητικός*) in the theory of Aristotle are obscure, and the difficulties raised numerous and perplexing. It will not be necessary to deal with them in this place, since it is obvious that the theory is a metaphysical one, and supposes a system of epistemology already constructed. Thought, for Aristotle, is a true, if incomplete, reproduction of reality: true, since it reproduces exactly in the intentional inexistence, or immanence in mind of the essence known, that essence or quiddity: incomplete, since the object, being an individual and changing entity, can never be directly known, as it exists in nature, to the understanding. The form in which the essence of the concrete reality becomes psychically immanent is the form of an abstraction. The production of this form is the work of the understanding (*νοῦς*



*ποιητικός*) itself. It does not falsify, though it cannot adequately compare with, the actual, concrete beings from which it is derived.

In the teaching of the Epicureans and Stoics alike sense-perception was explained by the image-theory of Democritus,—a theory that would make of dreams, sensory illusions, and imaginations perceptions corresponding to external reality. Both schools also explained the presence of general concepts, or ideas, by the remanence and combinations in consciousness of the efflux-images that are given off by bodies. Thus the most highly abstract ideas and the most general conceptions not only owe their origin to the images received in the processes of perception, but they are no more than a complex or mechanism of them which becomes fixed in the memory. The grossly sensuous conception of effluxes impinging upon the organism is still a metaphysical one. It is even a reaction from the finer psychological analysis of the Stagyrte. It was drawn out to an epistemological conclusion by the Epicureans, in their doctrine that the ultimate criterion of truth is the feeling of necessity which accompanies perception in consciousness, the clearness or vividness produced by the action of reality on the senses. They appear, as indeed Plato and Aristotle appear, to have envisaged the epistemological problem in

the same manner as the Sceptics,<sup>1</sup> and to have taken refuge in a universal phenomenalism. The Stoics, on the other hand, asserting that truth and falsehood can only be predicated of judgements, denied that in perception either could be involved. Their epistemological criterion is conscious assent, approval, conviction,—a subjective criterion that is not logically connected with their psycho-genetic sensualism.

The schools of the Neo-Platonists contributed little to the metaphysical, less to the epistemological, and nothing to the psychological development of this problem, if we except the implications of the doctrine of Plotinus upon the Categories, as applied analogically to the ideal and sensible world. To his disciple Porphyry, however, the first of the line of neo-platonic commentators of Aristotle, we are able to trace the origin of the problem as it was first presented to the earlier mediæval schools. Its extreme importance in the slow elaboration and growth of the Scholastic system is not lessened by the fact that it came to the thinkers of the middle ages in the form of a purely metaphysical problem, nor because it gave rise to those dry and interminable disputes that have betrayed some scholars into

<sup>1</sup> We do not treat here of the earlier Sceptics ; and refer the reader, for such exposition as we shall give of Scepticism in connection with our problem to our consideration of the Sceptics of the Renaissance, p. 36.

the opinion that scholasticism is no more than an examination of the question of the 'universals.' Though the shifting of the problem from its purely metaphysical aspect to that of psychology was a slow process, dragging on from the tenth to the twelfth and thirteenth centuries, and continuing, as a disputed subject, to be sharply debated until the time of Ockam (as, indeed, it is disputed still), its very tediousness proved to be the unparalleled gain of the growing synthesis of scholasticism. It led, point by point, to a free and matured discussion between the various representative schools of the fundamental theories of metaphysics and psychology. It ended in definite and clear-cut statements which can hardly be said to have been improved upon by more modern metaphysical and psychological speculations.

The problem was set for the earlier mediæval philosophers in the terms of the *Isagoge* of Porphyry. Do the *genera* and *species* exist in nature, or only in the bare intellect? Are they corporeal or incorporeal? Are they separate from the things of sense; or are they found subsisting in these? The reply of the neo-platonist to his own questions was *dicere recusabo*. The challenge of the problem was accepted by the scholars of the earlier middle ages. The first question was the first to be attacked.

It is usual for historians of philosophy to enumerate four epistemological solutions of the problem which have been proposed: Exaggerated Realism, Conceptualism, Moderate or Critical Realism, and Nominalism. Three of these solutions are certainly to be met with in the philosophy of the middle ages. It is, however, extremely doubtful that the nominalistic solution was ever advanced by any mediæval thinker.

Exaggerated realism, as found in this period, is the theory of Plato, with the important modification that the 'universal' is not *χωριστόν*, but in the individual sense-world. Conceptualism asserts the psychological existence of 'universal' concepts. It refers these, not to the individual objects that fall under the observations of sense, but to corresponding 'universal' objects. But it contends that the extra-mental existence of these 'universal' objects is not known by us, any more than we know whether they are—as we conceive them to be—in any way realised in concrete individuals. Critical realism accentuates the distinction between the concept and its object, between the psychological and the metaphysical, and lays the foundations, at least, of a purely psychological treatment of the question. The problem was still, however, a metaphysical one, in the sense that the psychology of mediæval thought was wholly meta-

physical. Moreover, the solution of the epistemological problem, while it seems to be clear that this existed for the scholastics, was rather taken for granted than reached by any adequate criticism.

Nominalism, in sharp contradistinction to such realism as that of Plato (which supposes a world of ideals in conformity to the world of 'universal' concepts), posits a mental world that corresponds to the real world of sense. Both these theories are obsessed by the epistemological postulate that mind must be identified with its object; that thought and things must exactly correspond. Hence, for nominalism, there can be no 'universal' concept, since there exists no really 'universal' thing in nature. What conceptualists and realists find patent upon introspection, it is argued on the strength of this prejudicial postulate, cannot exist at all. Many historians have advanced the theories of such scholastics as Roscelin of Compiègne and William of Ockam as examples of nominalism, and have quoted the opinion of the former—that *genera* and *species* are only '*voces*,' '*flatus vocis*'—in support of their view. But it has been shown<sup>1</sup> that this view is probably incorrect. The point is one of historical interest rather than as bearing vitally upon the subject of our essay. A less disputed form of nominalism will claim our

<sup>1</sup> De Wulf (tr. Coffey), *History of Medieval Philosophy*, p. 160.

attention when we come to the consideration of post-mediæval philosophy.

The early philosophers of the school were also theologians. Theological considerations, the ease with which certain theological tenets seemed to be explained by the help of philosophy, inclined certain of them to adopt the categoric and simplist conclusion of extreme or exaggerated realism. Such men as Fredegis, Remi of Auxerre, Odo of Tournai, St. Anselm (who employed the theory to elucidate the conception of the Trinity),<sup>1</sup> belong to this ultra-realist school.

On the other hand there was opposed to this teaching a strong current of anti-realism—better so designated than by any other term—during this period; in which the sole preoccupation with regard to the ‘universals’ was to frame some reply to the first question of Porphyry. Rhabanus Maur, Roscelin of Compiègne, are the predecessors of Abelard, John of Salisbury, and Alan of Lille. What they contributed to this first agitation of the problem was a destructive criticism, in the name of common-sense, of the reality of the ‘universal’ in nature. They thus paved the way for the second stage of mediæval development, by

<sup>1</sup> “Qui nondum intelligit quomodo plures homines in specie sint unus homo, qualiter comprehendit quomodo plures personae quarum singula perfectus Deus est sint unus Deus?” (*De Fide Trinitatis*, 2.)

suggesting that some other ground was to be sought for than actual, extra-mental 'universals' in order to explain the existence of the concepts. They themselves, however, stopped short of an analysis of the processes of abstraction which might have led them, had they made it, to the subsequently mooted theories of conceptualism and critical realism. At this point the interest was still entirely metaphysical. The question asked was: Do the 'universals' exist in nature or only in the intellect? The reply of Rhabanus and Roscelin was: They do not exist in nature. They are bare intelligibles, mere words. Their criticism was negative. The alternative to real existence was mental abstraction. Since the 'universals' were not things, they were '*nuda intellecta*,' '*voces*,' '*flatus vocis*.'

Exaggerated realism had a period of recrudescence in the early part of the twelfth century. It was put forward in an indefensible form by William of Champeaux until, on account of the attacks of his pupil Abelard, he was forced from the school of Nôtre Dame in Paris for teaching it. William several times modified his view; and ultimately formulated a theory that has all the appearance of anti-realism, while it has not yet incorporated the distinctions of conceptualism or critical realism

that make the metaphysics of mind and matter two separate studies.

At Chartres, also, extreme realism found a home; but, again, in its purely metaphysical aspect. Bernard, Theoderic, and William of Conches were representative realists. The first named inclined to a realism similar to that of Plato. Theoderic and William were pantheists. The anti-realistic theories of this period offer greater interest to us, since it is in their development that the gradually emerging psychological aspect of the problem is to be found. Three of such theories are those maintained by Adelard of Bath, Walter of Mortaigne, and Joscelin of Soissons. The first named asserts that the same being is concrete individual, species and genus according to the aspect (*respectus*) in which it is envisaged. The statement indicates a fruitful psychological point of view; which, however, is not followed up by Adelard. The problem is still metaphysical; and the preoccupations are those of logic.

So also with regard to the theories of Walter and Joscelin. The former proposed an hypothesis in which the individual, the species, and the genus are explained as differing according to states (*status*). The latter maintained that each real essence exists as an individual; that species is the term used for the collection of individuals having the same essence.



The development during this period prepared the way for the "dauntless critic" Abelard of Pallet.

Abelard was the first anti-realist who clearly points to the distinction of psychology and metaphysics. He has been called a nominalist. Ueberweg says of his doctrine on this point, that it was "not far removed from strict nominalism." He has passed also for a conceptualist—a recognition of his psychological ability. As psychologist or metaphysician, it cannot be affirmed that he was either. He begins with the old metaphysical assertion of Aristotle that individuals only exist. He asserts unhesitatingly that we possess 'universal' concepts. It is by the processes of abstraction that we are able to seize upon the common traits of numerically different individuals, and to refer the common-to-all to each and every one of the indefinite multitude of the species in which it is realised. Abelard teaches that the 'universal' exists in the individual alone; thus maintaining the ideal truth of our concepts according to the epistemological postulate. But he falls short of asserting their real validity as advanced by a later metaphysical school, which was bold enough to state that the 'universal' is realised concretely in the individuality of the individual. Abelard failed to develop the solution of the problem set

by Porphyry to its final mediæval form. He failed to show that the psychical 'universal' was justified on the ground of the community of essence (specific identity) in the individuals. But he marks an important point in the spontaneous evolution which scholasticism was undergoing. From him onwards two definite currents of thought are to be distinguished: the one pantheistic, the other making for the more precise statement of moderate or critical realism that is found in the works of John of Salisbury.

As a psychologist this last-named writer keeps the order of sense distinct from that of intellect. All knowledge has its source in the former, in which we are conscious of concrete beings. It reaches its perfection in the latter, where it is of immaterial realities. The epistemological solution is not yet a fully critical one. The problem of the 'universals,' as realities independent of consciousness, loses to a great extent its metaphysical importance. But the great merit of John of Salisbury, and with him of Alan of Lille, was to have made an analysis—*a priori* in large measure, it is true, but still an analysis—of the mind and its powers; which gives once more a definite interest to psychology as a branch of independent investigation and speculation.

The strong current of Arabian philosophy which

flowed into that of the school in the twelfth century is interesting in this connection, mainly in that it bore with it a metaphysical theory which was sharply criticised and rejected by the schoolmen. The obscure and disputed text of Aristotle<sup>1</sup> with regard to the 'two intellects' was interpreted by Averroës in the sense of the Arabian doctrine of Emanation. The real meaning of Aristotle is a source of controversy. Is there only one active intellect for all mankind? Averroës teaches that there is only one. He goes further, and asserts the same doctrine with regard to the possible intellect. There is only one, immaterial, eternal separate human intelligence. By its action upon the sensory images of the individual it enters into accidental union with him, and thus understanding is possible. But the relation of sensitive knowledge to intellectual is not explained.

We shall see that the schoolmen of the thirteenth century refused to allow the question to be prejudiced in this way, either by the metaphysical and mystical exigencies of the Arabian philosophy, or by the ethical and epistemological postulates of Aristotle. For them the problem we are considering already had its due psychological importance. They recognised that it was only by paying attention

<sup>1</sup> Aristotle, *De Anima*, iii. cap. 5. 3: ὁ νοῦς χωριστός, καὶ ἀπαθής, καὶ ἀμιγῆς τῇ οὐσίᾳ ὧν ἐνεργεῖα. . . . ὁ δὲ παθητικὸς νοῦς φθαρτός, καὶ ἄνευ τούτου οὐθὲν νοεῖ.

to it in this aspect that they would find any satisfactory solution of it. There was no more a question of the real existence in nature of the 'universals.' It had become a matter of analysis and classification of mental processes, safeguarded always by the metaphysical presumption of the unity of the individual.

St. Thomas Aquinas is indisputably the typical scholastic of the thirteenth century. His masterly grasp and treatment of the common doctrines—problems and their solutions—which together form the synthesis of scholasticism, make of him the accepted representative of the school. His expositions may be taken as the culmination of a philosophical spirit that, through a long spontaneous development from within, aided later on by the acquisition of the recently translated works of Aristotle, had at length taken definite shape and appeared before the world as a complete and integrated system. Its very integration would warn the student to pause before he undertook an analysis of the philosophy of Aquinas under detailed, and necessarily abstract, heads or aspects. Fortunately, however, he has himself cast his work into sections.

Questions lxxv. to xc., for example, of the *Summa Theologica* form a complete treatise of psychology; and could, without violence to the

text, be published as such apart from the rest of the work. His metaphysical commentaries and lesser treatises are in themselves separate works. He has nowhere in one place given *ex professo* a complete theory of knowledge; though his teaching—penetrating, if in the modern sense to a considerable extent uncritical—can be formulated from his writings as a whole. As the problem of the 'universals' was dealt with in the thirteenth century, these three points of view claim our attention.

i. Metaphysically, the problem was regarded as already solved. The concrete individual alone exists in nature. The 'universal' is formally<sup>1</sup> in the mind alone. But

ii. The 'universal' is *fundamentaliter*, has its ground, in extra-mental reality. This epistemological doctrine can be stated in three postulates, (a') The known object is in the knowing subject as

<sup>1</sup> The terms formally and fundamentally (*formaliter, fundamentaliter*) mark the exact distinctions of this teaching. What is in nature is the individual, and this alone. But the individual is the ground and justification (epistemologically) of the 'universal;' since the latter is realised in the individuality of the former; and can be distinguished from it by abstractive (as opposed to precise) abstraction. Thus, while only Peter, Paul, etc., are real men, while the universal 'man' is not found except in so far as realised in Peter, or Paul, etc., each of these is a 'man.' That fact is looked upon as the foundation of the formal 'universal' as it is discovered in mind. While his manhood cannot be separated from Peter (*abstractio prae-cisiva*) it can be considered apart from all that makes him *this man*. This process (*abstractio abstractiva*) does not falsify the concept. It defines it.

a determination, or mode, of the latter. ( $\beta'$ ) All knowledge consists in an assimilation of the subject to the object. ( $\gamma'$ ) The validity of knowledge depends upon the co-operation of both subject and object in the cognitive act. Although this solution of the epistemological problem is offered in the form of postulates, it is clear from these that stress is laid upon the importance of the investigation of the psychological conditions of knowledge. While Aquinas never seems to suspect that the form of realism which he professes could be strengthened by further criticism, he can in no sense be called a dogmatist. For he insists upon a universal methodic doubt as the preliminary to any discussion of the validity of knowledge;<sup>1</sup> and he proposes as necessary for any solution of the problem a rigorous examination of reason itself and of its nature.<sup>2</sup> To this attitude of mind on his

<sup>1</sup> The scholastics of this period cast their works into the form of a synthetic solution of 'Doubts' proposed. No one practised methodic doubt so completely as the doctors of the school. Aquinas is categorical on the point. "Aliae scientiae considerant particulariter de veritate, unde et particulariter ad eas pertinet circa singulas veritates dubitare; sed ista scientia (Metaphysica) sicut habet universalem considerationem de veritate, ita etiam ad eam pertinet universalis dubitatio de veritate: et ideo non particulariter, sed simul universalem dubitationem prosequitur." (*Sup. Met. Arist.*)

<sup>2</sup> With Kant (cf. *Kritik der reinen Vernunft*, Preface, p. 5 of original edition) Aquinas begins with reason knowing itself and its nature. "(Veritas) cognoscitur autem ab intellectu secundum quod intellectus reflectitur supra actum suum; non solum secundum quod cognoscit actum suum, sed secundum quod cognoscit proportionem ejus

part we owe the keen psychological analysis that he made.

Of greater interest to us is the purely psychological aspect of our problem as viewed by the schoolmen of the thirteenth century, and especially by St. Thomas. Senses and intellect are distinguished as different 'faculties;' but it is of prime importance to remember that Thomistic psychology is *not* a 'faculty psychology' in the usual sense of the term. Man, not the soul, is the subject matter of psychology; and man is one concrete being in nature — not a congeries of separate entities. Hence the 'faculties' are not entities, but *principia quibus*; *i.e.*, a series of potentialities, or potential activities of the conscious individual. They are *in ordine essentiae*, as opposed to that of *esse* and *operatio*. When an analysis is to be made, categories must be discovered for purposes of classification. Here observed elementary psychological phenomena are taken as the basis of this classification; and all other phenomena grouped under the headings of the 'faculties.'<sup>1</sup>

In the psychology of sensation little was added

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ad rem; quod quidem cognosci non potest nisi cognita natura ipsius actus; quae cognosci non potest, nisi cognoscatur natura principii activi, quod est ipse intellectus, in cujus natura est ut rebus conformetur; unde secundum hoc cognoscit veritatem intellectus quod supra seipsum reflectitur." (*De Veritate*, Q. i. a. ix.)

<sup>1</sup> Cf. *Summa Theologica*, Pars 1, Q. lxxvii. a. 3, c.

to the theories of Aristotle, by this time well known, except a distinct assertion of the existence of the (internal) cogitative (or, in animals other than man, the estimative) sense. This assertion was derived from the Arabian commentators. The function of the estimative sense is the cognition of the concrete as useful or harmful. Man, in whom the cogitative sense, *radicatur in intellectu*, can pass from concrete to concrete<sup>1</sup> in a kind of pseudo-syllogistic process, by its operation.

Intellectual knowledge is derived by means of psychical processes from the original sense impressions. It differs from the latter in that all the individualising notes of the object of cognition are purged away by a higher activity than that of sense. The process in which this purging away of individualising coefficients from the mental content (object, as present to mind) is accomplished is abstraction:<sup>2</sup> and the theory of the active intellect is again advanced to account for this process. The theory is no doubt an obscure and difficult one; nevertheless the character of the abstract produced by the active intellect is clearly asserted. This is nothing that can be described

<sup>1</sup> Cf. Newman, *An Essay in aid of a Grammar of Assent*. This work seems to be a treatise on the cogitative sense, rather than a complete psychology.

<sup>2</sup> "Cognoscere vero id quod est in materia individuali, non prout est in tali materia, est abstrahere formam a materia individuali, quam representant phantasmata." (*Summa Theologica*, Pars 1, Q. lxxv. a. 1.)



as a sensorial content; though Aquinas maintains that it is never present in the absence of a *phantasma*<sup>1</sup> or image. It transcends the material from which it is abstracted. It does not shift and change, as do the *phantasmata*; but is immaterial, universal, and necessary.<sup>2</sup> It is this abstract that determines the possible intellect, which, like the sense, is a receptive 'faculty,' to its act of understanding. It is the *species intelligibilis* which transforms its potentiality into act. The understanding then cognises its object and forms in itself the word (*verbum*); which last is what it conceives of the object understood.<sup>3</sup>

We may here notice in passing that the uncertainty with regard to the active intellect in the theory of Aristotle is cleared up by Aquinas in a thoroughly psychological fashion. Where the Arabians interpreted his text to mean that there is only one separated active intellect for the human species, thus advancing a purely metaphysical doctrine, Aquinas teaches that all the principles of thought are internal. For him, as for all the schoolmen, the active intellect is of the nature of a psychological hypothesis put for-

<sup>1</sup> St. Thomas appeals to introspection in support of this observation.

<sup>2</sup> *Loc. cit.*, Q. lxxxiv. a. 1, c.

<sup>3</sup> "Id quod ex re intellecta concipit intellectus." (*Loc. cit.*, Q. xxviii. a. 4, ad 1<sup>um</sup>.)

ward to give some account of the phenomena of understanding.

The important point in the psychology of Aquinas, with regard to the 'universals,' is that he makes the sensorial content necessarily individual; both as a psychical content existing here and now in consciousness, and as the intermediary by which we are put in contact with an individual extra-mental reality. The intellectual knowledge, or thought element, as a psychical element is also individual, transient, here and now. But it is necessary and immaterial, in the sense that it truly expresses intellectually (*i.e.*, intentionally) the nature which by it is known. And that nature, manifested in the concrete objects of the world of sense, is universal and necessary.

Here we have been led back to metaphysics and epistemology; but the psychological chapter could have stood alone. Thought is irreducible to sensorial imagery. The sensorial content is changeable, and has reference to one 'object.' The thought content is invariable, and indifferently referable to many.

There is one inevitable conclusion of this doctrine. The understanding is incapable of a direct knowledge of the individual. Its formal object is the 'universal;' and it is only by a species of (unexplained) reflection upon the *phantasma* that

the individual can be said to be an object of intellectual cognition. To many this has proved to be a stumbling-block in the system of Aquinas: as, *e.g.*, to Scotus, Ockam, Suarez, etc., who claim for the intellect an immediate and intuitive though confused (Scotus) apprehension of the individual.

St. Thomas's conclusion is metaphysical. It is the *universale in re* that is intellectually known in the act of the understanding. It is the concrete individual—the *hoc aliquid, hic et nunc*—with all its individualising characteristics that is the object of the internal sense. Now, the 'universal' in Thomistic metaphysics is the abstraction that is practised on the individual. It does not, as such, exist in nature. It is *formally* universal only in mind. But there is that in the individuals which justifies the abstraction. The nature, understood without its individualising 'accidents,' is common to many.<sup>1</sup> So much for the metaphysical position. But the psychological implication is important; and, from the point of view of psychology, the difficulty would seem to be more apparent than real. It arises from the confusion, always obtrusive in analysis and classification, to which attention has

<sup>1</sup> "Quod est commune multis non est aliquid praeter multa, nisi sola ratione; sicut animal non est aliud praeter Socratem et Platonem, et alia animalia, nisi intellectu qui apprehendit formam animalis expoliata ab omnibus individuantibus et specificantibus." (*Contra Gentiles*, I. cap. xxvi. 4.)

been already drawn.<sup>1</sup> For St. Thomas, it is not the intellect that understands, but man. It is not the peripheric sense that feels, nor the central sense that perceives; but, again, man. The reason why a 'faculty' or *potentia*, capable of understanding the 'universal,' is distinguished from that by which the individual is known, lies in the observable fact that both individual and 'universal' are given, in some form or another, in consciousness. We *know* when one thing is present as the 'object' of our thought; and we *know* when we mean that which is verified alike in a plurality of 'objects' or experiences. But the characters—the this, the here, the now—that determine the one make it formally irreducible to that in which these characters are wanting. Consequently, *on the principle of classification of psychical powers that he adopts*, Aquinas differentiates intellect and internal sense. It is consistent, then, that he should deny to the intellect, which he has differentiated from sense precisely because its formal object is universal,<sup>2</sup> a direct knowledge of the individual. Whatever knowledge of this may be called intellectual must be of such a kind as is compatible with the nature of the power. Hence the knowledge of the in-

<sup>1</sup> Cf. p. 21, also *infra*, p. 35.

<sup>2</sup> "Intellectus noster directe non est cognoscitivus nisi universalium."  
(*Summa Theologica*, Pars I. Q. lxxxvi. a. i. c.)

dividual which we have through intellect is indirect and "*quasi*<sup>1</sup> *per quamdam reflexionem.*" Aquinas gives some indication of the process of this indirect method of knowing by saying that "since the intellect cannot actually understand, even after it has abstracted the intellectual determinants, except when it 'turns itself' towards the images *in which* it understands these determinants, so . . . it understands the individuals of which the sensorial contents are the images, indirectly."<sup>2</sup> Avowedly the Thomistic thought is not without difficulty in this connection: but it is mainly a metaphysical difficulty; since for psychology the point is theoretically gained that thought and image are two irreducible contents of consciousness.

Little or no advance that is of interest to us here was made in the scholastic line of thought after St. Thomas. Having reached the zenith of its movement, a decline rapidly set in; and the unravelling of the triple strand in which the problem of the 'universals' was twisted was not destined to be the work of the schoolmen of the following centuries. The great synthesis that had grown in the hands of so many philosophers towards com-

<sup>1</sup> *Quasi*, in the terminology of Aquinas, usually indicates hesitation to pronounce a decided opinion.

<sup>2</sup> *Summa Theologica*, Pars I. Q. lxxxvi. a. i. c.

pletion ceased to grow. Philosophy, save for a few original thinkers, tended to become a stereotyped repetition of traditional theses. And the 'auctoritas' of him who had taught that an argument based on human authority was of all arguments the most untrustworthy, was at length blindly urged as convincing, in the face of almost patent facts to the contrary. Scholasticism turned in the end to the weapons of the weak. It appealed to antiquated academic statutes and parliamentary decrees, and attempted to silence its enemies with these rather than to refute them by solid arguments. For a time it failed, and ignominiously. It could not withstand the rush of newer scientific thought and the onslaught of newer views. But it failed, as Professor de Wulf points out, "for want of men, not for want of ideas." The psychology of St. Thomas Aquinas is the highest level of mediæval research and speculation.

There was one later scholastic development, however, before the decadence, that merits our attention. This is the Terminism of Ockam. As a result of the excessive formalism of the Scotists, in which the hypostatisation of abstractions had grown beyond all limit, came an inevitable reaction. Already Durandus and Aureolus had denied the reality of the 'universals.' Ockam is more con-

structive in his simplified philosophy. As touching what regards us here, he advances new theories in the domain of psychology. Every cognitive representation is a sign (*signum, terminus*) of that for which it stands. Here are two implications: ( $\alpha'$ ) an epistemological postulate; ( $\beta'$ ) the psychological observation of the cognitive contents of consciousness. Among these contents three are noted: ( $\alpha'$ ) intuitive sense-knowledge; ( $\beta'$ ) intuitive intellectual knowledge of the individual; and ( $\gamma'$ ) abstract intellectual knowledge. This last has no extra-mental reality corresponding to it. It is purely a product of mind.

Upon two counts the doctrine seems to differ from that of Aquinas: intellectual intuition of the individual; absolute non-reality of the 'universal.' And both of these questions are subject matter for epistemology. But if they may be abstracted from their setting and stated in terms of psychology alone, there would seem to be less disagreement. For both teachers the sensorial content differs from the imageless cognition; and, as a consequence, the fundamental division of sense and intellect finds a place in the system of each. For both, the abstract concept is a mental term that has no *actual* counterpart in the extra-mental world. Aquinas calls this the 'universal,' and epistemologically refers it to the *universale in re*. Ockam calls it abstract know-

ledge (*notitia abstractiva*), and assigns as its direct object mental contents.<sup>1</sup> The one is a moderate, or critical realist; the other a conceptualist. Neither was entirely free from metaphysical presuppositions; neither made use of systematic introspection. The obvious fact that we know the individual intellectually caused Ockam, as it had caused Scotus, to assert intuition without hesitation. Aquinas resorted to what seems to be a compromise in order to be consistent. Ockam asserts that the abstract concept is mental, and has no existence other than in mind. St. Thomas maintains that by it we know something that exists extra-mentally in its individualised plurality. The truth of the matter would seem to be that neither doctrine is adequate to meet the facts. The abstract concept, we shall bring evidence to show, is mental, and has no necessary reference to anything other than itself; though it is capable of being referred to one or to many 'objects.' It may, or may not, express an extra-mental 'universal.' That is a question for the epistemologists. But for experimental psychology the concept is a content of intellectual character which forms a complex or fusion with its reference; and so means for us one or several (objective) ex-

<sup>1</sup> ". . . genus non est commune pluribus per identitatem in eis, sed per quamdam communitatem signi, quomodo idem signum est commune ad plura signata." (*Expositio Aurea: Praedicab. de Genere.*)



periences. In this view some reconciliation of the divergent opinions would seem to lie, as well as some explanation of the distinction to be drawn between the 'universal' and the 'individual.'

## SECTION II

### THE PROBLEM OF THE 'UNIVERSALS' FROM THE RENAISSANCE TO THE PRESENT DAY

IN this very rapid survey of the problem of the 'universals,' as it has been presented in various schools of philosophic thought, there is little to claim our attention during the period that separated mediæval from modern philosophy.

Humanism threw no new light upon the question, directly helped in no way to distinguish further the points of view from which it might be envisaged. On the contrary, the intricate and complicated thought movement of the Renaissance served but to complete the work of a decadent scholasticism by thrusting out of sight the solutions that the latter had already allowed to become dead and stereotyped forms. But the revival of classical learning, and with it acquaintance with the original works of ancient philosophers, while it brought about a distinct opposition to mediæval philosophy, was not at once able to break the continuity of

mediaeval thought. As Professor Windelband points out<sup>1</sup> "the whole multiform process goes on within the bounds of ancient and mediæval traditions, and strives in obscure longing towards a goal which is an object rather of premonition than of clear conception." Scholasticism had lost its vitality, but had not yet passed into the stage of complete disintegration. Slowly the new thought forced men back from the received commonplaces and traditional doctrines to a fresh contemplation of nature; so that, when the scientific movement took its rise, it was to emerge from the melting-pot of ancient systems untrammelled by the speculations of the philosophic past.

As the rough and ready observations of the earlier Greeks, the poetic interpretations of the phenomena of nature, the popular myths put forward as explanations of permanence, succession, and change, formed the foundation upon which their first attempts at philosophical superstructure were raised, so the more extended and rigorous examination of the same phenomena was, later on, to prove the starting-point for a new investigation of the perennial problems of philosophy.

It would be useless to attempt to draw any exact parallel between the development of Greek

<sup>1</sup> Windelband (tr. Tufts), *A History of Philosophy*, p. 352.

and post-mediæval thought; and yet, in many points, there seems to be a distinct parallelism. Both began with the naïve realism of Nature-philosophy, and ignored the indirect challenge of the epistemological problem raised by the sceptics. Both at once developed systems of metaphysics; and both elaborated metaphysical psychologies. This should in no way be surprising, since, as has already been said, the problems are common to all philosophical speculation. But these problems were presented in new guise and under a new light which helped to make possible the analytic work that was reserved for modern thought: viz., the complete separation of the three aspects in which the problem of the 'universals' may be viewed; by which Metaphysics, Epistemology, and Empirical Psychology become three distinct and practically autonomous branches of science.

Modern philosophy matured rapidly in a profusion of systems, the preponderating character of which is epistemological and psychological. The development of the former line of thought emphasised the distinction to be drawn later between metaphysics, on the one hand, and psychology as a science on the other.

Although the beginnings were marked with metaphysical prejudices and implications, it will

therefore be convenient to treat the modern period, as far as pertinent to our problem, principally from the point of view of epistemology. We shall adopt this point of view in the present section, and trace the gradual emergence of the purely psychological aspect from it.

It is obvious that the abrupt divisions we are making are to a great extent arbitrary. The categories and abstractions under which the world is analysed and classified in the natural sciences and philosophical disciplines must always, from the nature of the case, be such. It is as impossible to speculate in metaphysics or psychology without some accepted, or tacitly presupposed, theory of knowledge, as it is to attempt to express in language the position of purely empirical psychology without the use of metaphysical terms, and an implied solution of the epistemological problem.<sup>1</sup> With this *caveat* that the exposition which follows is largely artificial in arrangement on account of the method we employ, we may turn at once to the epistemological problem as stated

<sup>1</sup> In current psychology these implications are in the main only verbal, and where more than verbal, provisional. For the writers of the period of which we are here treating, metaphysics was of the essence of their subject. It is consequently impossible to separate adequately and consistently from the outset their metaphysics, epistemology, and psychology, into three sharply marked topics without, at least to some extent, falsifying their more coherent thought.

after the Renaissance, and begin with a very brief account of the attempts made to meet it.

The scepticism of Montaigne, Sanchez, Charron, was the natural outcome of the vigorous clash of opinions that characterised the transition from mediæval to modern thought. "Nature!"—was the cry of the Renaissance—"not categories! Things, not concepts!" But the world was fixed in the old tradition; and immediate adjustment between the slowly changing mentality of the age and its aspirations was impossible. Hence a conflict, not only between opposed systems, but also in the minds of individuals. To the thoughtful a polished scepticism seemed the only attitude to adopt. But it was a scepticism involved in the old metaphysical suppositions; the answer to a problem mistakenly and prejudicially set. Impossible, indeed, to know the correspondence between thought and things, if things are posited before the problem is attacked. Impossible, again, to find a true solution if we start with an *a priori* conception of truth. Impossible to discover the criterion, if the problem is stated, as it was, in the terms of crude realism.<sup>1</sup> Sceptics and

<sup>1</sup> "Pour juger des apparences que nous recevons des sujets, il nous faudroit un instrument judiciaire: pour vérifier cet instrument, il nous y fault de la démonstration; ~~un instrument~~ nous voylà au rouet . . . nous voylà à reculons jusques à l'infiny." (Montaigne.)

1 pour vérifier la démonstration, un instrument:

dogmatics alike approach it with the traditional conviction that truth is the thing-in-itself. How, then, since the subject is shut up within his own knowledge, is it possible to discover the relation<sup>1</sup> between things and thought? Or how possible to accept any criterion by which this relation should be tested? For the criterion must itself be a part of knowledge. And how, in that case, ascertain that it corresponds to reality? So set, the problem is insoluble. But its setting did not prevent a fresh advance towards its ultimate solution. The old attitude of the *ἐποχή*, of suspended judgement, was asserted by Montaigne: "*Que sçay-je?*" and by Sanchez: "*Nescis? At ego nescio. Quid?*" And thus the way was again<sup>2</sup> prepared for the examination of human faculty as the indispensable condition of a theory of knowledge.

It is to be remarked that this scepticism extended to the 'individual' as well as the 'universal'—sense-impression equally with the content of thought.

Setting out from that conclusion as his starting-point, Descartes, with dogmatic purpose, prosecutes his universal methodic doubt. Prejudiced, as it was, by a latent conception of truth (as the thing-

<sup>1</sup> "Adequatio rei et intellectus."

<sup>2</sup> Cf. p. 20, *footnote*.

in-itself, of which knowledge is to be a copy); still further prejudiced by the antimethodic hypothesis of the *malin génie*, Descartes' enquiry took him a step further than the sceptics. There is one thing which admits of no doubt: "*Cogito—Cogito: ergo sum.*" As a judgement it is indefensible, if the method proposed by Descartes is to be observed. Doubt is to be cast methodically even upon the worth of the judging reason. In making a proposition upon the fact of thought, in inferring the metaphysical ego from the phenomenal consciousness, Descartes begs the whole question which he set out to solve, and passes from method to metaphysics. The fact would appear to show that his doubt was neither universal nor real. Nevertheless, in his method he approached the problem from the right side; and so advanced the possibility of its solution. Elsewhere than in the *Discours sur la Méthode* he is more explicit and precise. In his *De Regulari Directione Ingenii*<sup>1</sup> he lays it down that we must examine our understanding, the instrument of our knowledge, since upon this the knowledge of

<sup>1</sup> Regula viii. "Si quis pro quaestione sibi proponat, examinare veritates omnes, ad quarum cognitionem humana ratio sufficiat (quod mihi videtur semel in vita faciendum esse ab iis omnibus, qui serio student ad bonam mentem pervenire), ille profecto per regulas datas inveniet nihil prius cognosci posse quam intellectum, cum ab hoc caeterorum omnium cognitio dependeat, etc. At vero nihil hic utilius quaeri potest, quam quid sit humana cognitio et quousque extendatur." (*Opera*, ed. Adam and Tannery, Tom. x. pp. 395 sqq.)



all else depends. Further we must investigate those other instruments of knowledge, fancy and sense, so that we may learn the limits of possible knowledge.

The method of Descartes, with its rules of procedure, was an imperfect criticism. It scarcely advanced beyond the first steps before it became transformed into a dogmatic realism, hardly less crude and uncritical than any that had preceded it. From the enthymeme standing at the head of his metaphysics (which has logical value only in virtue of the suppressed major premiss—*omne cogitans est*<sup>1</sup>) he at once obtains the criterion of truth. Clear and distinct ideas are replicas of reality, the guarantee of the validity of our knowledge. The ego, further, is an *ego cogitans*:—an assertion of metaphysical dualism that has had no inconsiderable share in shaping subsequent thought, as well in epistemology and psychology as in metaphysics. The assumption that the pineal gland is the organ of the *res cogitans*, the doctrine of reciprocal influx, give place later on, with Malebranche and Geulincx, to a theory of Occasionalism; with Leibnitz, to pre-established harmony. In these latter theories the metaphysical implications of Descartes' original position are developed and made explicit. But nowhere is this more apparent than in the philo-

<sup>1</sup> This involves the universal concept and its relation to reality.

sophy of Spinoza. The cartesian criteriological principle of clear and distinct ideas is here formulated in the well-known axiom: *Ordo et connexio idearum est idem ac ordo et connexio rerum*. But the *first* idea is Being, or Substance. In that idea—God—the irreconcilable dualism of Descartes disappears; and a complete monistic metaphysic is deduced from it in virtue of the criterion advanced. To these consequences the principles of Descartes are drawn by those who came after him. But his first step is unassailable. The instrument of knowledge is to be examined, for upon this the knowledge of all else depends.

This, in turn, was the starting-point of Kant. The knowledge of self (Selbsterkenntnis) is fundamental; and the critical problem is for the first time very exactly stated in the first preface to the *Kritik*. The preface to the second edition shows, however, that its solution was already hedged about by tacit prejudices and presuppositions: notably that all understanding can be deduced from an understanding of reason and its nature. This is an echo of the thought of Descartes.

Kant's work, however, raises once more the problem of the 'universals' in its true form. He is in no sense a subjectivist, as has well been shown by Cohen and Riehl. He does not dream of ques-

tioning the objectivity of knowledge. His hypothesis (which, in the *Kritik*, becomes a thesis to be proved) is that objects conform themselves to knowledge rather than that knowledge is conformed to objects. This hypothesis, he says, "already agrees better with the possibility desired of a knowledge *a priori* of these objects, which will establish something with regard to them before they are given . . . the objects or (what comes to the same thing) the experience in which alone they are given."<sup>1</sup>

This hypothesis would evidently save the science of nature, the experimental knowledge of the world, as built up, in the forms and categories, out of the objects, or experience, given. That this experience is ultimate in itself is granted to Hume, the acquaintance with whose criticism had formed the turning-point in the mental development of Kant. But, while it is denied that the ultimate metaphysical realities—the Ding-an-sich—are objects of possible knowledge (as being beyond the purview of experience), the universal and necessary value of the principles of reason for the world of experience is maintained in Kant's hypothesis. Whatever is transcendent to possible experience is not subject matter for the pure reason. Nevertheless the uni-

<sup>1</sup> Kant, *Kritik der reinen Vernunft*; Preface to second edition, xvi. and xvii.

versal judgements of natural science are justified. The individual objects—as immediate experiences—are admitted. Indeed, no amount of theorising, in any system, is able to explain them away. And the ‘universals’ are accounted for by the forms of synthesis of the understanding. Through these forms experiential perceptions are made objects of conceptual knowledge. What is denied is knowledge of noumena. And in this lies the distinctive part of the Kantian system. Unlike Aristotle, the schoolmen, and Descartes, Kant allows no intellectual (pure rational) knowledge of things-in-themselves; although, by a curious inconsistency, the *forms of knowledge* are known. Unlike Hume, whose stand-point he adopted, he introduces a universalising mechanism in the mind itself for the manifold of experience. What is most noteworthy, however, is the fact that his examination sets out from judgement rather than from the, at least logically, antecedent simple apprehension.<sup>1</sup>

The whole epistemological theory of Kant stands, as do all innatist theories, in opposition to Empiricism. Of this school the most noteworthy professors derive ideologically from Locke. In his *Essay con-*

<sup>1</sup> The research which forms the subject of this essay is concerned primarily with simple apprehension and reproduction, and only secondarily with judgement.

*cerning Human Understanding* Locke investigates the origin, certainty, and extent of knowledge, the grounds of belief, opinion, and assent. His peculiar use of the term,<sup>1</sup> and his doctrine<sup>2</sup> of ideas, together with the fact that he starts from the position that nothing else than sensations is to be found in consciousness, lay the foundations of subjectivism and sensism. But Locke was neither a subjectivist nor a sensist. While denying innate ideas and deriving all knowledge from experience, external and internal, he nevertheless seems to allow a psychical activity that combines sensations into compound and complex ideas. As to the criteriological value of these contents of consciousness, Locke discriminates sensation from reflection. All sensations are simple subjective impressions; but primary and secondary qualities are distinguished; and reality is attributed to the former independently of mind.

As to reflection, this, together with external sensation, yields such ideas as power, unity, and so on; while from it alone is given the idea of essence or substance. Reality is attributed to the sub-

<sup>1</sup> Idea for Locke "being that term which, I think, serves best to stand for whatsoever is the *object* of the understanding when a man thinks, I have used it to express whatever is meant by phantasm, notion, species, or whatever it is which the mind can be employed about in thinking." (*Essay*, Book i. cap. i. § 8.)

<sup>2</sup> Knowledge is perception of agreement or disagreement of *ideas*. (*Essay*, Book iv. capp. i.-xi.)

stantial 'self' and to objective substances in the same dogmatic way as to the primary qualities. These two illogisms of the system are traceable to the influence of cartesianism.

As far as concerns the 'universals,' considerable confusion arises as to how Locke's teaching should be classified. The passage of the *Essay* that treats of this subject *could* be interpreted as a statement of realism. Windelband says that Locke was an adherent of nominalism. But his doctrine of ideas, and especially his statement that particular ideas become general "by considering them as they are in the mind abstracted from all other existences, as time, place, or any other concomitant ideas,"<sup>1</sup> would seem to point to his being a conceptualist. Here we have general ideas formally such<sup>2</sup> only in mind. But if Locke's 'universals'—"ideas taken from particular beings (which have) become general representatives of all of the same class"—are to be understood in the primary sense in which he defines 'ideas,' phantasms, or sensorial contents, then we think that his nominalism is undoubted. What is certain is that those who continued the line of thought which he inaugurated developed nominalism in the exact sense of the word.<sup>3</sup>

<sup>1</sup> *Essay*, Book ii. cap. xi. § 9.

<sup>2</sup> Cf. p. 10.

<sup>3</sup> Locke's work had two important consequences in the development of thought. Its professed aim—to discover the origin, certainty, and extent of knowledge by empiric methods—was an advance on

Berkeley's version of the problem of the 'universals' is well known. His introduction to the *Principles of Human Knowledge* is mainly concerned with a negation of their occurrence even as general ideas; and he claims<sup>1</sup> to have traced what we suppose to be such "to the source from whence they flow, which appears evidently to be Language." Words stand for ideas.<sup>2</sup> "Now, if we will annex a meaning to our words," he says, "and speak only of what we can conceive, I believe that we shall acknowledge that an idea, which considered in itself is particular, becomes general by being made to represent or stand for all other particular ideas of the same sort."<sup>3</sup> . . . A geometrician . . . draws, for instance, a black line of an inch in length: this, which is in itself a particular line, is nevertheless *with regard to its signification* general; . . . And as *that particular line* becomes general by

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the mathematico-metaphysical treatment of Descartes. It brought epistemology definitely into the forefront of important philosophical problems awaiting solution upon empiric lines. It also gave great prominence to empirical psychology, which, from that time onwards, has not ceased to grow in importance (i.) as an independent subject of investigation; and (ii.) as, in the last resort, the ultimate ground of any decisive system dealing with the origin and validity of knowledge.

<sup>1</sup> Berkeley, *Principles of Human Knowledge*, § 21.

<sup>2</sup> Concrete mental pictures. We may therefore *think in words*.

<sup>3</sup> Fraser, in the notes to his edition of Berkeley's *Works*, here asks: "Does Locke intend more than this, though he expresses his meaning in ambiguous words?"

being made a sign, so the *name* line, which taken absolutely is particular, by being a sign is made general.”<sup>1</sup> Berkeley denies objective reality as well to what Locke distinguished as primary qualities as to secondary. He concedes to all the phenomena of reflection no more than a purely subjective validity. The whole world, for him, is no more than a complex of ideas: *esse est percipi*. Illogically, he admits spiritual substance.

His nominalism is not merely epistemological—*i.e.*, nominalism in the old accepted use of the term. It is psychological as well. James<sup>2</sup> has been misled by the altered connotation of the word. Nominalism, such as taught by Berkeley, was not the topic of controversy in mediæval times. It was not “rediscovered” by the Bishop of Cloyne. The confusion arose with the ideological doctrine of Locke, and is here perpetuated. Where for the schoolmen the object of thought was the thing, for Locke and for Berkeley it is the “idea.” Where for the mediæval thinkers the objective content was envisaged by a reflex act—consciousness returning upon itself: intro-, retro-spection—for these philosophers the direct objects of knowledge are ideas and the connection that obtains between them.

Epistemologically considered, the most consistent

<sup>1</sup> *Loc. cit.*, Introduction, § 12.

<sup>2</sup> James, *Principles of Psychology*, vol. i. pp. 468 *sqq.*



and logical representative of this current of thought is Hume, who pushes the consequences of 'idealism' to their utmost and logical limit. He gives, in his *Treatise on Human Nature*,<sup>1</sup> a full assent to Berkeley's doctrine upon general ideas. "A great philosophical thinker," he writes, "has asserted that all general ideas are nothing but particular ones annexed to a certain term, which gives them a more extensive signification. I look upon this to be one of the greatest and most valuable discoveries that has been made of late years in the republic of letters."<sup>2</sup>

Logically consistent with the doctrine of ideas as stated by Locke, Hume denies, with Berkeley, the necessarily objective reality of both primary and secondary qualities. He goes further, in rejecting spiritual, as well as material, substance; and professes to account for our possessing ideas of these, as well as of causality, by a theory of habitual or customary association.

Consistently with his nominalism he frankly admits that the basis of the natural sciences is destroyed, and even the exactness of mathematics impugned. There is neither 'universal' *in re*, nor *in intellectu*. There is no ascertainable relation between facts of consciousness and a world of extra-

<sup>1</sup> Hume, *Treatise on Human Nature*, Part i. sec. 7.

<sup>2</sup> This is a very clear declaration of nominalism.

mental realities.<sup>1</sup> Where conceptualism provides a thought-world in which at least a subjective science is possible, thoroughgoing nominalism of this kind does away even with that possibility. We possess no general notions, even of ideas. There is, consequently, no science of things, nor of thoughts. There is only certainty with regard to actually present impressions or ideas.

His epistemological stand-point, however, was one that proved extremely favourable to the development of empirical psychology; and, as continued by the associationists, may be said to have firmly established the foundations of that science.

The line of English empiricists which we have been following reached its full development in Hume. And Hume's so-called scepticism, in the matter of the natural sciences no less than in metaphysics, is the logical outcome of the doctrines of Locke, whose incomplete sensism admitted illogisms that called for rectification. In France a similar independent development culminated in Condillac. Both philosophers ignore the distinction of sense from intellect; and, denying to the latter several of the operations that had previously been admitted as characteristic of it, build up all mental life out of the rough material of sensations. To

<sup>1</sup> Hume supplements his criticism by a theory of *belief*.

this the new interpretation of the adage *Nihil est in intellectu quod prius non fuerit in sensu* had necessarily led. Where Locke had advanced this scholastic principle in its altered signification, Leibnitz had rejoined, as a corrective to it, *nisi intellectus ipse*. The two interpretations were in presence. The developed systems of the empiricist and the dogmatist, as put forward by Hume and Wolf, came into contact in the mind of Kant, and gave birth to Criticism. The acceptance of the empiric nature of all experience, the desire to safeguard natural science even at the expense of metaphysics,<sup>1</sup> were accorded in the theory of the *a priori* forms and categories. And it is in the light of the two antagonistic lines of thought that the synthesis of the critical epistemology of Kant is to be understood as a return to the old problem of the 'universals.'

The members of the associationist school of psychology who followed the earlier empiricists—notably the positivists Mill, Bain, Sully, Taine, etc.—profess the same doctrine as well in regard to 'universals' as to individual realities external to mind. Their statements, however, are more categorically in favour of the nominalism they profess than convincing in their context of supporting

<sup>1</sup> Which was sacrificed.

arguments. As has been repeatedly pointed out,<sup>1</sup> such writers deny the existence of general concepts, while allowing that "we may really, for a brief interval, have nothing present to our mind but the attributes constituent of the concept" (Mill);<sup>2</sup> or that "we are able to attend to the points of agreement of resembling things and to neglect the points of difference, as when we think of the roundness of round bodies" (Bain).<sup>3</sup> This latter statement is incompatible with Bain's further assertion that "mental separation of one property of a thing from the other properties . . . is impracticable;" and that general ideas have neither a counterpart in extra-mental reality nor mental existence. Few authors, again, have better expressed the distinction between the concrete image and the abstract idea<sup>4</sup> than Taine; and yet it is Taine

<sup>1</sup> Cf. *inter alia*, James, *loc. cit.* vol. i. pp. 470 *sqq.*; Maher, *Psychology*, pp. 272 *sqq.*

<sup>2</sup> Mill, *An Examination of . . . Hamilton's Philosophy*, p. 393.

<sup>3</sup> Bain, *Mental Science*, Book II. cap. 5.

<sup>4</sup> Taine, *De l'Intelligence*, Tom. i. pp. 37 *sq.* "Ainsi entre l'image vague et mobile suggérée par le nom et l'extrait précis et fixe noté par le nom, il y a un abîme. Pour s'en convaincre, que le lecteur considère le mot myriagone et ce qu'il désigne. Un myriagone est un polygone de dix milles côtés. Impossible de l'imaginer, même coloré et particulier, à plus forte raison général et abstrait. Si lucide et si compréhensive que soit la vue intérieure, après cinq ou six, vingt ou trente lignes, tirées à grand'peine, l'image se brouille et s'efface; et cependant ma conception du myriagone n'a rien de brouillé ni effacé; ce que je conçois, ce n'est pas un myriagone comme celui-ci, incomplet et tombant en ruine, c'est un myriagone achevé et dont toutes les

who writes "une idée générale n'est qu'un nom pourvu des deux caractères du signe"—a name which is recalled by perception of any individual of the class, which is able to arouse in us images of individuals of that class only.<sup>1</sup>

It would be possible to multiply instances of similar incongruity, evidently traceable to the wish to reduce the elements of mind to a minimum; which wish leads to the ignoring of the character of elements belonging to another order than that of sensation. It is not, however, necessary to multiply such instances here; for the incongruity becomes greater as psychology develops its material and method. With Sully<sup>2</sup> the sensational basis adopted is frankly opposed by much of his doctrine on 'thinking;' and the composite, typical, or 'generic image' is clearly recognised as something quite different in kind from the general concept properly so called.

It has been pointed out that, with Hume, the criticism of metaphysics definitely made room for the problem of epistemology, which thenceforward can be said to be developed as a science for its own

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parties subsistent ensemble; j'imagine très mal le premier et je conçois très bien le second; ce que je conçois est donc autre que ce que j'imagine, et ma conception n'est pas la figure vacillante qui l'accompagne."

<sup>1</sup> Taine, *De l'Intelligence*, Tom. i. p. 26.

<sup>2</sup> Sully, *Outlines of Psychology*, capp. ix. x.

sake, especially by Kant. An interpretation of the Kantian theory of knowledge, however, especially manifested in France, gave rise to a number of systems and criteria that shifted the basis of the solution from the rational to the moral order. These systems and criteria, to which the general name of 'moral belief' may appropriately be given, are of small interest to us here, except in so far as they may have played a part in shaping the empirical line of thought towards its most recent expressions in Pragmatism.

Pragmatism, as far as epistemology is concerned, is a tendency rather than a definite and clear-cut system. It is of its nature to be provisional, and to suggest final systems that will emerge from it only to overthrow it. It is a *via media*, so professed by James;<sup>1</sup> and, like most attempts of its kind, it is capable of development in opposite directions. On the one hand, consistently followed up, it might lead to solipsism;<sup>2</sup> on the other to dogmatic

<sup>1</sup> James, *Pragmatism*, Lecture i.

<sup>2</sup> *Ibid.* Lecture vii. pp. 248-9. "What we grasp is always some substitute for (reality) which previous human thinking has peptonised and cooked for our consumption. If so vulgar an expression were allowed us, we might say that wherever we find it, it has been *faked*. This is what Mr. Schiller has in mind when he calls independent reality a mere unresisting *ὑλη*, which *is* only to be made over by us." But 'previous human thinking,' 'faked reality,' and so on, are for us realities. Epistemology has no right to assume the truth of the point at issue. Pragmatically it will, of course, 'work.' But to

realism.<sup>1</sup> But, as it stands, it evinces the honest desire of those who have put it forward, in one form or another, as a solution of the problem of truth, to meet the difficulties which beset the modern thinker. Its authors are not to blame if it is merely provisional, if its criterion must inevitably lead to the idea of changing and growing truth. To them, in the face of a world of kaleidoscopic fact, Absolutism must seem as incredible as the Unity-Being of the Eleatics would have appeared to Heraclitus. Life's footsteps must be picked warily in a world so full of dangers as the world of facts is seen to be. Whatever coheres, works, is useful; whatever "we can assimilate, validate, corroborate and verify"<sup>2</sup> is true. The meaning subsequently given to the definition shows that it is not to be understood in the 'intellectualist' sense to which it so readily lends itself. But what is most highly significant is the previous discussion as to what we mean by reality.<sup>3</sup> In all this, as Professor James says, "intellectualists can raise no protest." And in this we find a doctrine, so far as it goes, that is identical with that of moderate realists. We say 'so far as it goes' because it evidently depends upon

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appeal to that criterion is to shut us up again within the confines of personal experience.

<sup>1</sup> James, *Pragmatism*, Lecture vi. pp. 202 *sqq.*

<sup>2</sup> *Ibid.* p. 201.

<sup>3</sup> *Ibid.* pp. 206 *sqq.*

the point of view in which 'realities,' 'objects,' 'things of common sense, sensibly present' are envisaged, whether the conclusion be realist, or conceptualist, or nominalist; because, also, the gloss that is later on put upon the definition precludes the system from being final and makes it one of expediency.<sup>1</sup> As it stands, however, it is an attempt to define truth by, to erect a theory of knowledge out of, and to find a criterion in, the data of psychology. And, as such, it is the last word of the English empirical school.

From Hume and Kant onwards, it will be observed that the epistemological problem has been treated more and more from the psychological stand-point; although the impetus to this treatment was given, still further back, by Locke. This has made possible an examination of our problem from a purely psychological point of view. Just as the epistemological succeeded the metaphysical, so the psychological interest may succeed the former; and we may ask ourselves in what the purely phenomenological mental contents consist when we think 'universally' or 'individually,' without reference to any extra-mental realities of which our thoughts are, or should be, the counterpart.

<sup>1</sup> It is not necessary, in this brief epitome of opinions, to consider any other forms of pragmatism. Professor James' account may be taken as representative. For an admirable treatment of the whole subject, cf. Walker, *Theories of Knowledge*.



Before proceeding to this, however, there is one other epistemological theory, advanced from the stand-point of empirical psychology, that we shall consider. Husserl,<sup>1</sup> in *Die logische Untersuchung*,<sup>2</sup> arranges his theory out of the data of pure phenomenology; and defines truth as a result of, and not as a preliminary to, his examination of the facts of consciousness. We find upon introspection, he observes, a representative activity, and contents between which objective relations obtain; and we express the latter fact by saying that certain judgments are evident.<sup>3</sup> Act, and content with relations, are given in introspection. This is a commonplace of the school, the psychological work of which will be briefly discussed in the following section.

Husserl, however, finds ample reason to admit the existence of universal ideas, which he calls "ideal species." These are not an individual, nor a collection of individuals, nor a simple name, nor a symbol. By direction of intention we regard a universal object. This constitutes an act *sui generis*, based upon intuitive ideas; in the genesis of which Husserl distinguishes two processes—abstraction and generalisation.

<sup>1</sup> Of the Austrian School of Psychologists. With him class Brentano, Messer, Bühler, Ach, Marbe, and Külpe (partially).

<sup>2</sup> Husserl, *Die logische Untersuchung*, Halle, 1900-1 (2 vol.).

<sup>3</sup> Evidence is not a feeling; but objective. The feeling is certainty.

The theory of knowledge that he advances covers both the real and the ideal orders. An object is present to mind with the plenitude of intuition. When we 'think' it, we separate by abstraction various moments that are given in it. We formally abstract, *e.g.*, colour from shape. We may then unite, as we please, the abstracts. We may think a red square, or a blue circle, or a square circle, etc. But these syntheses of moments, or significations, tend towards the plenitude of intuition; *and only certain of them can be fulfilled*. We are not free in the matter of their fulfilment.<sup>1</sup> Thus a simple, or a synthetic signification, tending towards fulfilment, superposes itself, so to speak, upon an intuition; or is incapable of being so superposed. When the plenitude is realised we live it. This is evidence, and founded on truth; for truth is that which permits the superposition of the two, the adequation of the objective sides of the two acts. From this doctrine emerge distinctions as to various kinds of truth. There is the truth of intuition, underlying signification; and truth of signification fulfilled in intuition. The object conforms to thought and thought to the object. There are also synthetic intentions, as judgements, of which similar relations hold. The objective proposition conforms to thought, and thought to it. So also for the 'universal' object which (if we

<sup>1</sup> Erfüllung.

mistake not the thought) conforms to "ideal species" and *vice versa*. This universal object is given in intuition (although intuition presents individuals only) because the individual is the 'universal' *plus* whatever is neglected in it by reason of the process of negative abstraction, and thus made capable of a subsequent generalisation.

The whole theory is built up upon the introspective material furnished by empirical psychology. It is thus to psychology that epistemology turns for the data with which to solve its own problem.

### SECTION III

#### THE PROBLEM OF THE 'UNIVERSALS' IN THE NEW PSYCHOLOGY

WE have now traced the development of our problem, through its metaphysical and epistemological aspects, to empirical psychology. In the present section we propose to give some brief account of the experimental work that has prepared the way for an investigation of the question of the 'universals' from a purely psychological point of view.

All the systems of metaphysics and theories of knowledge to which allusion has been made in the foregoing sections have been based upon some sort of introspective evidence. But systematic experiment, devised to produce mental phenomena in order that they may be examined and analysed for their own sake, is of comparatively recent date. With regard to the problem of the 'universals'—if we except the analogical application of the method of composite portraiture to abstract, or, as he prefers

to call them, "cumulative ideas," made by Galton<sup>1</sup>—systematic introspection cannot be said to have been practised before the enquiry of Ribot.<sup>2</sup> Ribot's work had to do with general ideas. His aim was to discover what is in consciousness when we think, hear, or read a general term. His method was, therefore, to present general terms to his observers, and to classify their introspective accounts as to the contents of consciousness evoked by them. He was thus able to frame the well-known *schema* of 'mental types,' according to the kind of imagery reported by his observers. But many of these observers were unable—as were also many of the recipients of Galton's *questionnaire*<sup>3</sup>—to discover anything at all in consciousness other than the word itself. Notwithstanding this failure to find a content other than the word, Ribot argued that, since it is evident that this alone cannot be all that is in consciousness (for it would then have no meaning), there is *de facto* another content. Here Ribot theorises

<sup>1</sup> Galton, "Inquiries into Human Faculty" (1883); "Generic Images" (in *Proceedings of the Royal Institution of Great Britain*, April 25, 1879). Galton attempted to verify the analogy in his later investigation on Mental Imagery. His opinion seems to be that of Huxley (*David Hume*, 1879), who employs the same photographic analogy to illustrate his associationist teaching upon the point.

<sup>2</sup> Ribot, "Enquête sur les Idées Générales" (in *Revue Philosophique*, 1891, vol. 32); "L'Évolution des Idées Générales," 1897.

<sup>3</sup> Cf. Galton, *Inquiries into Human Faculty*, Appendix E. Galton's words included both general and particular terms.

beyond his observed facts. He asserts that general ideas consist of the word that is clearly in consciousness (perhaps with imagery) *plus* an obscure, unconscious element, which he does not attempt to define. It is surprising that the frequent absence of discoverable imagery did not suggest the probable presence of a third conscious element, involved in the understanding of the words, and irreducible either to word or image—an element which carefully planned experiment and delicate introspective analysis would possibly reveal. But the associationist tradition was still too strong to allow of the hypothesis of a conscious imageless content which had not been actually observed. Experiments in psychophysics and psychophysiology were continued, were devised to explore memory and associative problems; and mental imagery occupied for a time a prominent place in psychological investigation.

But these topics evidently do not exhaust the field of psychological research; and it was not long before a new orientation towards the problems concerned with the higher mental processes took place. Beginning with Marbe's<sup>1</sup> work in Germany, a very considerable number of experimental studies have been made upon the processes of thought, judgement, abstraction, and the like. Many of

<sup>1</sup> Marbe, *Experimentell-psychologische Untersuchungen über das Urteil*, Leipzig, 1901.

these studies have no direct bearing upon the work undertaken in our research; but they have so admirably prepared the way for work of this kind that it will be necessary to refer to them briefly, and to note the main conclusions they establish in so far as they may have an interest for us.

It is clear that psychology is here treated as an independent science in an even more radical way than it was as psychophysics and psychophysiology.

Marbe's research was on judgement; and his general conclusion a negative one: there are no psychological conditions of judgement. But in the course of his work he discovered a certain class of imageless contents (*Bewusstseinslagen*,<sup>1</sup> attitudes of consciousness) which he distinguishes from perceptions and images; and, further, he finds that the perception of a judgement consists in a "Wissen," or knowledge that cannot be reduced to sensation, image, or feeling.

Ach also, experimenting upon will and thought processes,<sup>2</sup> finds contents reported by his observers as knowledge for which no qualitative determinants, in the shape of visual, auditory, or kinæsthetic

<sup>1</sup> A term first used by Mayer and Orth, "Zur qualitativen Untersuchung der Association" (in *Zeitschrift f. Psychologie und Physiologie*, 1901, xxvi. p. 6).

<sup>2</sup> Ach, *Über die Willenstätigkeit und das Denken*, Göttingen, 1905. Cf. p. 210.

sensations, or reproductions, could be discovered. But the fact that none of these are discovered as clearly in consciousness does not, he thinks, negate the fact of their occurrence as tendencies to reproduction. He is of opinion that these tendencies, awakened by the presence in consciousness of an idea with which they are associated, are sufficient to explain the consciousness of the meaning of the idea. If we understand this aright, the opinion is similar to that of Professor James which he advances in his doctrine of the 'fringe' or psychic overtone. Meaning is given by the subexcitation of a mass of tendencies to reproduction: by "the influence of a faint brain-process upon our thought."<sup>1</sup> Both these theories have been criticised—the one by Moore,<sup>2</sup> the other by Hoernlé.<sup>3</sup>

Binet also in his study of the understanding<sup>4</sup> meets with the phenomenon. His investigation dates back to the end of 1900, and is independent of the work done in Germany. He insists upon the importance of employing the methods of experimentation and introspection for the elucidation

<sup>1</sup> James, *Principles of Psychology*, Harvard, 1890. (Cf. vol. i. p. 258, Macmillan's edition, 1908.)

<sup>2</sup> Moore, *The Process of Abstraction*, Berkeley, 1910. Cf. p. 181.

<sup>3</sup> Hoernlé, "Image, Idea, and Meaning" (in *Mind*, New Series, 1907, 16, p. 82).

<sup>4</sup> Binet, *L'Étude expérimentale de l'Intelligence*, Paris, 1903.



tion of those higher mental processes that were found to be excited in experiments having directly only a psychophysical aim. His own experimentation with his children as observers leads him to the conclusion that the complex processes of thought cannot be accounted for by visual images, internal speech, or any combination of these. A further interesting point, supported in a measure by our own experiments, lies in the theory which he advances in his discussion of abstract thought and images, viz., that the latter may be employed to represent either a 'particular' or a 'universal.' The image thus becomes an arbitrary sign, an  $x$ , to which the individual observer gives either an arithmetical or an algebraical value or signification.

The principal conclusion that Professor Külpe draws from his experiments upon abstraction<sup>1</sup> is that the differences caused by the tasks set for his observers<sup>2</sup> affected the apperception rather than the sensation of the stimuli. Entirely in accord with this is a conclusion easily drawn from our own work in the laboratory of Louvain, which we have

<sup>1</sup> Külpe, *Versuche über Abstraction: Bericht über den I. Kongress f. experimentelle Psychologie in Giessen*, 1904; Leipzig, 1904.

<sup>2</sup> To determine the (i.) number, (ii.) colour and positions, (iii.) figure made by the grouping, (iv.) maximal number with position, of four nonsense syllables, in four colours, variously grouped about a fixation point.

not especially underlined in the Notes that we published in the *Journal of Psychology*.<sup>1</sup> Külpe goes on to say that the distinction (between sensation and apperception) must be drawn in something of the same way in which we distinguish physical phenomena and our consciousness of them; and he asserts that "the inner sense with the involved idea of a distinction between the reality of consciousness and objectivity" should be maintained in psychology. This is not the place for criticism; but to this opinion we cannot see our way to give assent. For we take it that sensation, at any rate in the experiments Külpe made upon abstraction, can be no more than an element, reached by analysis, of apperception; that it never occurs alone; and that therefore the two are incapable of introspective comparison. Külpe, however, draws attention to the influence of the task set the observer upon his apprehension of the presented material.

This point was later on investigated by Watt,<sup>2</sup> who modified the old reaction experiments (in which the first word occurring upon presentation of

<sup>1</sup> Aveling, "The Relation of Thought-Process and Percept in Perception" (in *Journal of Psychology*, vol. iv. part 2, September, 1911, p. 213).

<sup>2</sup> Watt, "Experimentelle Beiträge zu einer Theorie des Denkens" (in *Archiv f. die ges. Psychologie*, iv., 1905, p. 289).

a stimulus word constituted the reaction) by determining beforehand the attitude of his observers, and constraining them to certain prearranged kinds of reaction. In his experiments the task set was found to be the principal factor in the determination of the associated term actually reproduced. Theoretically, the closeness of association is regulated by the number of times the associated terms have been present together in the psychical 'now,' by the recency of their simultaneous presence, the degree of attention paid to them, and so on. Actually, the tendencies to reproduction are limited by the predetermined mental 'set' of the observer. This proof of Külpe's observation is of great importance as determining a means ready to the hand of the experimental observer of the more complicated mental processes. The task produces a mental 'set' in which the experimenter has at least the reasonable hope that it will be fulfilled. From the introspective accounts of his observers he can judge as to whether, in particular cases, it really exercised its influence upon the experiments performed or not.

Watt concluded from his research that certain very indefinite images, found by his observers, are capable of functioning as 'universals.' He points out, however, that this fact does not preclude the existence of non-imaginal general ideas. A similar

phenomenon was frequently found in our Louvain research, in which pictures exhibited tachistoscopically with instruction given to the observer to perceive them as types of classes of similar objects, were, when so seen, notably less exact and faithful to the originals than when they were exhibited with the instruction that they were to be perceived as individuals. Our own study was then limited to a very narrow issue; and in the Notes we made of it, we did not draw it out to theoretical conclusions. But while fuller discussion of the point is reserved for the body of the present work, it may here be anticipated by the remark that the group of sensorial contents entering into the complex of the image is perceived *as a type of this or that class*, or as an individual *of this or that kind* (both more or less comprehensive); that, therefore, there is more implied in consciousness than the sensorial elements of the image alone. This Watt would admit; for he allows the presence of word and image and concept in consciousness; nor does he reduce the last to combinations or relations of the two former. The problem is really one of meaning, and is dealt with at length later on.

There is a remarkable continuity in the studies of those psychologists from whose works the conclusions we are noting are taken. Watt was a

student of Külpe at Würzburg, and served as observer in the experiments of Messer, whose research<sup>1</sup> was based upon that of Watt (method of constrained reaction).

Messer also observed in his experiments the 'general image' to which we have just alluded. This is so indeterminate and so ill defined that it can function in consciousness as standing for a whole class. It puts the observer in presence of 'a bird,' for example, just as our Louvain 'type perceptions' did. Messer remarks that there is an inverse variation between the perfection of imagery called up by a word and its generality of signification; but at the same time he contends that signification is not necessarily dependent upon imagery. Indeed, he goes so far as to assert that he has met with no case in his experiments in which the understanding of the stimulus word was evidently dependent upon an image.

In the case of the reaction words, meaning was frequently given in consciousness before a word appeared. Often the word when it came was inadequate to express the meaning. At other times it appeared before its meaning. In all this we have an instance of the imageless thoughts, the existence or occurrence of which is so strongly

<sup>1</sup> Messer, "Experimentell-psychologische Untersuchungen über das Denken" (in *Archiv f. die ges. Psychologie*, viii., 1906, p. 1).

asserted as a datum of consciousness by the school.<sup>1</sup>

By no one, perhaps, is the distinction of imageless thought and imaginal content drawn so clearly as by Bühler<sup>2</sup> whose experiments were planned to study thought as a whole. His conclusions are antithetical to those of the associationists. Thought moves in thoughts, in concepts, not in images. The ultimate elements of thought-processes are thoughts (Gedanken); and to them our thinking is related as is our seeing to visual sensations. Imageless thought, then, is all important—for it alone is thought in which understanding has a place, and in which meaning is known.

The experiments devised by Marbe (Judgement), Watt and Messer (Influence of predetermined task; Constrained reaction), and Bühler (Relations of judgement and thought in general), were repeated in 1908 in the Geneva Laboratory by Bovet,<sup>3</sup> who, in the light of his own experimentation, makes an

<sup>1</sup> Cf. also Schultze, "Einige Hauptgesichtspunkte der Beschreibung in der Elementar-Psychologie. I. Erscheinungen und Gedanken" (in *Archiv f. die ges. Psychologie*, viii., 1906, p. 241).

<sup>2</sup> Bühler, "Tatsachen und Probleme zu einer Psychologie der Denkvorgänge (in *Archiv f. die ges. Psychologie*, viii., 1907, p. 297, and xii., 1908, p. 1).

<sup>3</sup> Bovet, "L'Étude expérimentale du Jugement et de la Pensée" (in *Archives de Psychologie*, viii., 1908, p. 9).

excellent analysis of the work of these psychologists, defends the methods of research they employed, and finds ample corroboration of their conclusions as to the influence of task, imageless thought, individual differences, etc.

The later work and results of the introspective school have also been subject to the severest criticism by Wundt<sup>1</sup> and Titchener;<sup>2</sup> the last named of whom presents in his *Lectures* a long analysis of the methods, experiments, and results claimed to have been established by the Würzburg psychologists. Von Aster<sup>3</sup> and Dürr<sup>4</sup> have also offered criticisms; but on the whole their contention comes to little more than this: that the 'thoughts' (of Bühler) were not actually observed and described by his observers, but only experienced as something indescribable. Von Aster concludes that further work must be done in order to determine the phenomenological characters of 'thoughts;' and

<sup>1</sup> Wundt, "Über Ausfrageexperimente und über die Methoden zur Psychologie des Denkens" (in *Psychologische Studien*, iii., 1907, p. 301).

<sup>2</sup> Titchener, *Lectures on the Experimental Psychology of the Thought Processes*, New York, 1909. This work is especially valuable for the bibliography given, *passim*, in the "Notes."

<sup>3</sup> Von Aster, "Die psychologische Beobachtung und experimentelle Untersuchung von Denkvorgängen" (in *Zeitschrift f. Psychologie*, xlix., 1908, p. 56).

<sup>4</sup> Dürr, "Über die experimentelle Untersuchung der Denkvorgänge" (in *Zeitschrift f. Psychologie*, xlix., 1908, p. 313).

Dürr finds a consciousness of relation as a content of consciousness over and above sensations, to which he does not admit that it can be reduced.

Replies to the criticisms of Wundt and Dürr were made by Bühler himself;<sup>1</sup> and a useful contribution to the controversy is a valuation of the method of introspection in general made by Michotte<sup>2</sup> of Louvain. Perhaps the best of all replies to such criticism is, however, the fact that the method is being adopted so very generally in laboratories of psychology; together with the further fact that, laborious as it must of its nature be, the introspective experimental method seems to be the only one that promises any even approximately exact scientific results.

While from Titchener we have a critical exposition of this new psychology made by an avowed opponent to it, Moore's<sup>3</sup> admirable work on abstraction is prefaced by a section on the literature of his subject, in which he gives an entirely sympathetic and considerably detailed account of the labours of the men who have built it up, in so far as their work is pertinent to his own problem.

<sup>1</sup> *Archiv f. die ges. Psychologie*, xii., 1908, p. 93; and *Zeitschrift f. Psychologie*, li., 1909, p. 118.

<sup>2</sup> Michotte, "A propos de la Méthode d'Introspection" (in *Revue Néo-Scholastique*, November, 1907).

<sup>3</sup> Moore, *The Process of Abstraction* (University of California Publications), Berkeley, 1910.



Moore's experiments were made at Leipzig in Wundt's laboratory and at the University of California. His problem was to investigate the process of abstraction; and for the purpose he employed groups of five geometrical figures (standing for groups of qualities), in which one figure was repeated, in varying position with regard to the others, in each group. These groups were exhibited one after another during a quarter of a second, with intervals of the same length. The observer was told to look for the repetition of a figure, and to stop the exhibition apparatus when he was sure that one had been repeated. Introspections were, of course, taken. The analysis of the material obtained fell under four rubrics: (i.) the breaking up of the group; (ii.) the process of perception; (iii.) the process of memory; (iv.) the process of recognition. With regard to perception, the author maintains on the strength of his data that "a mental picture forms no essential part of our apprehension of a figure." As to the process of recognition, the experimental conclusion is reached that "assured recognition is not dependent upon perfect perception:" indeed, "can take place without the formation of any mental image of the thing that is recognised." It follows that: "A comparison of mental images is not necessary to the process of recognition." Moore

concludes (i.) that "there exist imageless mental contents representative of a visible object. . . . They are the essential elements in the product of perception and abstraction." (ii.) "Perception is a process of assimilating the data of sense experience to their appropriate mental categories."

Finally, in connection with this brief recapitulation of recent psychological research upon the higher processes of thought, mention must be made of the work of Dr. Betts<sup>1</sup> on mental imagery. This work, published in 1909, is of great value as an aid in any research made upon the representative processes; and we have frequently had occasion to refer to it, as well as to Moore's *Process of Abstraction*, in the course of the present essay.

We have now roughly outlined the main historical phases of the problem of the 'universals,' and indicated in what manner it may be treated in a purely psychological way. To sum up: the metaphysical question is, "*Do the 'universals' exist in nature?*" The epistemological problem is, "*Do our universal ideas correspond to reality?*" Our own research is planned to answer a third and independent question: "*What is discoverable in consciousness when we think the 'universal' or the 'individual'?*"

<sup>1</sup> Betts: *The Distribution and Functions of Mental Imagery*, New York, 1909.

PART II  
THE RESEARCH



## SECTION I

### THE SETTING OF THE PROBLEM

THE problem which we set out to solve is a circumscribed one. What is discoverable in consciousness when we think, for example, 'man,' 'this man,' 'all men?' Are there any constantly different factors which determine these three thoughts; and, if so, in what does their distinction lie? The problem, as we have already pointed out, is one of the phenomenology of thought: the research undertaken is qualitative and belongs to descriptive psychology. Out of this apparently simple problem, however, others have arisen; and several of these appeared to be so closely connected with it that some examination of them became evidently necessary. Among these are questions as to the growth of 'meaning,' the nature of abstraction, the thought-element in perception, and the relation of imagery to thought.

The experimentally observed phenomena that bear upon all these points are noted; and the

theoretical conclusions towards which they seem to point are drawn out in the following paragraphs. Considerable light is there thrown upon our main problem, the *ex professo* consideration of which is reserved for Section III. Much corroborative evidence for the conclusions there drawn, however, is to be found in the text and notes of Section II.

In order to obtain suitable introspective material for our undertaking, we attempted to devise conditions, differing as little as possible from those of ordinary life, in which meanings should be formed, and more or less loosely associated with arbitrary nonsense-words. Later on it would be possible, by the use of appropriate means, to cause the nonsense-words to function as 'universals' or as 'individuals' in logical judgements; and so observe the mental complexes corresponding to their expression. In this way we hoped to obviate the difficulty that arises in the attempt to separate its meaning from a word of ordinary language.<sup>1</sup>

It was apparent, almost from the outset, that

<sup>1</sup> "No sooner do we hear the words of a familiar language pronounced in our ears," writes Berkeley, "but the ideas corresponding thereto present themselves to our minds: in the very same instant the sound and the meaning enter the understanding: so closely are they united that it is not in our power to keep out the one except we exclude the other also. We even act in all respects as if we heard the very thoughts themselves." (*Theory of Vision.*) Works (ed. Fraser, 1901), vol. i. p. 151.

we had to do not only with contents expressed by such terms as '*this man*,' '*all men*'; but that a third was certainly to be discovered, viz., '*man*.' For this reason our original problem was extended to the form in which it is stated above; and means were taken that the words corresponding to this concept should also be employed in the experiments. As a matter of fact, however, systematic investigation of this point in the second part of our experiments (Section III.) was rendered unnecessary by its being established on the data obtained during the learning period.<sup>1</sup>

The conditions in which the associations were made between the visual material we employed and the nonsense-words were very simple. The laboratory can never, perhaps, be without its influence on mental processes: the fact that the experiences are systematic and of the nature of experiments has a probable effect in modifying the normal course of psychical events, even when, as was the case with three of our observers, the whole work was carried on in a private study. Further, there would seem little ground for supposing that it is possible to create in adult consciousness a meaning that stands, so to speak, by itself, and is simple and ultimate. We shall have occasion to show that it is always immediately related to an

<sup>1</sup> Cf. Section II.

existing concept, or conceptual system;<sup>1</sup> and to some such system the visual material presented was invariably referred in our experiments, from the beginning of the learning period. The experiments were thus concerned to a great extent with old meanings; any newness these possessed consisting in a re-arrangement or modification of conceptual elements, to embrace the material presented with each nonsense-word, and to limit its meaning to that material. In other respects the conditions were not far remote from those of the natural method of learning languages.

In the second part of the experiments the nonsense-words learned were used as subjects in incomplete sentences, the predicates of which were supplied by the observers. The procedure is given in detail at the beginning of Section III. When anticipatory reference is made to this it will be termed 'Completion of Part-Judgements.'

### § 1. *Material.*

The material employed consisted of ten sets of small pictures and ten nonsense-words of two syllables each. There were five pictures in each set, mostly of ordinary subjects. All in each set were sufficiently alike to be easily designated by

<sup>1</sup> Cf. Section II., par. 2.



some common name ; yet each possessed sufficiently notable characteristics as well, by which it could be singled out from the others. Eight of the sets were made up of chromolithographs, or three-colour-process pictures, such as are found in children's toy-books. These varied somewhat from one set to another in the amount of schematism of general form and of detail, and in correctness of coloration. The two remaining sets were composed of very simple single-line geometrical drawings, washed in with one, and each drawing with a different, colour ; but so chosen that they would not be easy, except perhaps for a geometrician, to generalise. All the pictures and drawings were roughly of about the same size, and mounted upon squares of white cardboard similar to those we used in our research upon perception at Louvain.<sup>1</sup> Indeed, several of the Louvain pictures were included in this material.

The nonsense-words were formed of three consonants separated by two vowels. They were printed on small white cards. Nine of these words were constructed with the intention of avoiding the formation of mnemonics. In one a somewhat obvious possible mnemonic was foreseen ; and allowed, in the hope that it might lead to interesting consequences.

<sup>1</sup> Aveling, *loc. cit.*

With four of our observers the entire material was employed. Two others, with whom we were unable to arrange for the total number of sessions (30), were experimented upon with five of the nonsense-words and their corresponding sets of pictures. The words, with their associated pictures, were the following:—

- A. Ferod : little boys running, jumping, etc.
- B. Tuben : birds.
- C. Funip : circles foreshortened and inclined at various angles.
- D. Digep : fruits of various kinds.
- E. Kumic : flowers.
- F. Robud : torsos of children.
- G. Goral : carpenters' tools.
- H. Lagoc : conic sections other than circles.
- J. Sorab : musical instruments.
- K. Tegam : receptacles for liquids.

### § 2. *Procedure during the Learning Period.*

The observers were divided into two classes: the first comprising those who learned in twenty sessions, the second those who learned in less time and in another manner.<sup>1</sup> To all the nonsense-word was shown together with a picture. The instruction given was to repeat the word aloud while regarding attentively both it and the picture above it. At each session the associations were made

<sup>1</sup> Cf. Table II.

twice. The time allowed for each was, in the first instance, 15, and in the second, 10 seconds. Between them came an interval during which the observer read or conversed with the experimenter on indifferent topics. The observers of the first class were shown at each session seven pictures with their corresponding nonsense-words; other pictures of the series being substituted for the first, at subsequent sessions, according to the following table. The letter in this table indicates the series and the suffixed numeral the member of it.

TABLE I

1st day . . .	A <sub>1</sub>	B <sub>1</sub>	C <sub>1</sub>	D <sub>1</sub>	E <sub>1</sub>	G <sub>1</sub>	J <sub>1</sub>
2nd day . . .	A <sub>2</sub>	B <sub>2</sub>	C <sub>1</sub>	D <sub>1</sub>	E <sub>2</sub>	G <sub>1</sub>	J <sub>2</sub>
3rd day . . .	A <sub>3</sub>	B <sub>3</sub>	C <sub>1</sub>	D <sub>2</sub>	E <sub>3</sub>	G <sub>1</sub>	J <sub>3</sub>
4th day . . .	A <sub>4</sub>	B <sub>4</sub>	C <sub>2</sub>	D <sub>2</sub>	E <sub>4</sub>	G <sub>2</sub>	J <sub>4</sub>
5th day . . .	A <sub>5</sub>	B <sub>5</sub>	C <sub>2</sub>	D <sub>3</sub>	E <sub>5</sub>	G <sub>2</sub>	J <sub>5</sub>
6th day . . .	A <sub>1</sub>	B <sub>1</sub>	C <sub>2</sub>	D <sub>3</sub>	E <sub>1</sub>	G <sub>2</sub>	J <sub>1</sub>
7th day . . .	A <sub>2</sub>	B <sub>2</sub>	C <sub>3</sub>	D <sub>4</sub>	E <sub>2</sub>	G <sub>3</sub>	J <sub>2</sub>
8th day . . .	A <sub>3</sub>	B <sub>3</sub>	C <sub>3</sub>	D <sub>4</sub>	E <sub>3</sub>	G <sub>3</sub>	J <sub>3</sub>
9th day . . .	A <sub>4</sub>	B <sub>4</sub>	C <sub>4</sub>	D <sub>5</sub>	E <sub>4</sub>	G <sub>4</sub>	J <sub>4</sub>
10th day . . .	A <sub>5</sub>	B <sub>5</sub>	C <sub>5</sub>	D <sub>5</sub>	E <sub>5</sub>	G <sub>5</sub>	J <sub>5</sub>

This exhibits the first half of the table used to determine the order of exposition of the pictures. The second half was precisely the same, except that E, G, and J were replaced by the new nonsense-words and sets of pictures F, H, and K. Each horizontal line of the table shows the pictures

learned with the nonsense-words during one session. It will be observed that the various members of the different sets of pictures were not all exhibited the same number of times. The intention of this procedure was to secure varying strengths of association between the nonsense-words and their acquired meanings.

After an interval of about ten minutes, filled by indifferent reading or conversation, the associated nonsense-words of the day were exposed as stimuli 0.75 sec. after a signal "Attention!" The instruction had been given beforehand to react, either by a tap upon the table or by the word "yes," as soon as the meaning of the word appeared in consciousness in any form. The time intervals between the exposition of the stimulus-word and the reaction were taken with a stop watch. An introspective account of the period was then dictated to the experimenter by the observer.

After twenty such sessions, which constituted the learning period for each observer of the first class, ten sessions were given to experiments calculated to make the newly learned words function as 'universals' or 'individuals'—Completion of Part Judgements (Section III.).

For the observers of the second class another order of exposition was adopted during the learn-

ing period. The five nonsense-words employed were associated with four whole sets and one partial set of pictures; but all the pictures used in each set (except two) were given at every sitting. The observers thus learned the five nonsense-words with twenty pictures, in two repetition periods of 15 and 10 seconds. The intervals intervening between the learning of the material represented by each horizontal line of the accompanying table (used to determine the order of exposition) were filled by indifferent reading or conversation with the experimenter. There was no interval between the learning of the nonsense-words and pictures shown in each horizontal line of the table.

TABLE II

1st day . . .	A <sub>1</sub>	B <sub>1</sub>	C <sub>1</sub>	D <sub>1</sub>	E <sub>1</sub>
3rd day . . .	A <sub>2</sub>	B <sub>1</sub>	C <sub>2</sub>	D <sub>1</sub>	E <sub>2</sub>
5th day . . .	A <sub>3</sub>	B <sub>2</sub>	C <sub>3</sub>	D <sub>1</sub>	E <sub>3</sub>
Etc. . . . .	A <sub>4</sub>	B <sub>2</sub>	C <sub>4</sub>	D <sub>1</sub>	E <sub>4</sub>
	A <sub>5</sub>	B <sub>3</sub>	C <sub>5</sub>	D <sub>2</sub>	E <sub>5</sub>
<hr/>					
2nd day . . .	A <sub>1</sub>	B <sub>3</sub>	C <sub>1</sub>	D <sub>2</sub>	E <sub>1</sub>
4th day . . .	A <sub>2</sub>	B <sub>4</sub>	C <sub>2</sub>	D <sub>2</sub>	E <sub>2</sub>
6th day . . .	A <sub>3</sub>	B <sub>4</sub>	C <sub>3</sub>	D <sub>2</sub>	E <sub>3</sub>
Etc. . . . .	A <sub>4</sub>	B <sub>5</sub>	C <sub>4</sub>	D <sub>2</sub>	E <sub>4</sub>
	A <sub>5</sub>	B <sub>5</sub>	C <sub>5</sub>	D <sub>1</sub>	E <sub>5</sub>

At the close of each learning session the observers, having been instructed to react by say-

ing "yes" as soon as they got any meaning for them, were shown the nonsense-words as stimuli. The time elapsing between exposition and reaction was taken with a stop watch. In all cases introspections which covered that period were dictated by the observers to the experimenter.

One of the observers of this second class (R.) had eleven, the other (Fl.) thirteen learning sessions. The experiments in which the nonsense-words learned were caused to function as 'universals' or 'individuals' were similar to those performed with observers of the first class (Completion of Part-Judgements: Section III.).

The learning of the nonsense-words and pictures by the present writer could not well be controlled, as he prepared and exposed the material employed in the research. He never intentionally associated the words with their appropriate pictures, but associations gradually became formed between them. He frequently made casual introspections during the learning period of his observers, which proved of great assistance to him in sorting and classifying the material furnished by the protocols. But his own introspections have not been used as data for any of the conclusions of this part of the research.

### § 3. *Observers.*

The observers who took part in the experiments were : Professor Spearman (Sp.); Rev. A. B. Sharpe, M.A. (Sh.); Miss Beatrice Gadsby, B.A. (G.); Miss Ferguson (F.) (Class I.); Professor Read (R.); C. Flugel, B.A. (Fl.) (Class II.).

We desire to express our gratitude to them, and, in particular, to Professor Spearman for his untiring interest and help in the work undertaken.

The research was carried out in the Laboratory of Experimental Psychology at University College, London, during the session 1910-11.

## SECTION II

### POINTS ARISING DURING THE LEARNING PERIOD

THE period of learning the nonsense-words as the names of the pictures was one of association, of which the effect, according to the laws of the revival of experience, would be a reinstatement in consciousness of the picture, following upon a reinstatement of the nonsense-word. After the first session of the observers of Class I., however, divergent associations were formed with the words of sets A, B, E, J (also, in the second half, with that of set F). After the second session these were formed with the word of set D (also H); and after the third session with the words of sets C and G (as also H).<sup>1</sup> For the observers of Class II. divergent associations, of varying revival value, were formed at the outset of the learning sessions.<sup>2</sup>

<sup>1</sup> Cf. Table I., p. 81, for relative strength of revival value, according to the position of given pictures in the series and number of times of repetition.

<sup>2</sup> Cf. Table II., p. 83.



This process of the gradual formation and strengthening of associations is traceable in the protocols. For some time the nonsense-words function merely as antecedents to the reinstatement of the images, and are not recognised as 'having meaning'<sup>1</sup> by our observers until a later period. They afterwards acquire meaning, and ultimately become class-names for the pictures of the various sets with which they had been severally associated. Between these two cases—mere associative revival consequent upon the exhibition of the stimulus-word and meaningfulness—various intermediary stages occur, the introspective descriptions of which illustrate the growth of the meaning of the words. This point is of sufficient interest in itself to justify a study of our collected material in its regard.

But the process of the growth of meaning is one that is also very intimately connected with the formation of the abstract (specific) concepts of the pictures included in the various sets. And for this reason its study is of very great importance.

Finally, phenomena observed during this learning period throw some light upon the problem of the relation of images to thought. This point is

<sup>1</sup> 'Meaning' is here understood as the consequent reinstatement of the whole, or part, of the associated experience, or experiences, following on the antecedent reinstatement of the nonsense-word.

also intimately connected with the formation and modification of the concepts; and is manifested in the process of the growth of meaning.

The three topics are treated separately in the three following paragraphs:—

### § 1. *The Growth of Meaning.*

With regard to the growth of meaning, it must first be noted that there is no regular and steady advance from protocol to protocol, or from session to session, in which a development from one of the type-cases, noted below, to another is seen to take place. The introspective material differs enormously from observer to observer, and from experiment to experiment. The type-cases that are classified in the present paragraph as last in order sometimes occur comparatively early in the learning period; while those that are reckoned as genetically first occasionally (though very occasionally) crop up in later experiments.<sup>1</sup> The occurrence of mental 'sets' that condition the psychological processes of an entire session, so that one introspection is the replica of another as far as the process of finding a meaning is concerned, render

<sup>1</sup> From the introspections it is difficult to show that these cases do differ essentially from the earlier ones; though this might be inferentially maintained.

any uniform progression from one type-case to another impossible. Add to this that there is apparently no hard and fast line to be drawn between the type-cases. One shades by almost imperceptible degrees into the next; so that it is extremely difficult in many cases, and in some impossible, to decide from the protocol to which type-case the given experience should be assigned.

These facts would seem to vitiate the possibility of any orderly classification. On the other hand, however, it is to be remarked that all the four type-cases, to which we have been able to reduce by far the greater part of our material, are found again and again in the protocols of the observers. They are definite and striking cases, between which varieties and shadings off are admitted to exist. Moreover, it must be admitted that a more or less arbitrary scheme of classification is necessary, unless it is to possess as many heads' as there are experiences to be classified. It may be, of course, that the present classification is incomplete; that important intermediary type-cases are here omitted. But such we have not been able to find. The data of our protocols lead us to offer the following four type-cases as the more striking steps in the process in which a nonsense-word acquires meaning. We omit those cases in which reaction followed

prematurely on a mere feeling of familiarity with the stimulus-word.

*Stage I.: Type-case I.*—There is an associative revival of the picture, or pictures, especially at the beginning of the learning period; the observers sometimes reacting on a judgement, or assent, or feeling of certainty<sup>1</sup> that this picture was exhibited with this nonsense-word. Sometimes they react without such discoverable judgement or assent;<sup>2</sup> though it is obvious that something of the kind is logically implied in the reaction.

<sup>1</sup> "Very faint and confused image, and at the same time a conviction that it belonged to this word. It was equivalent to 'I'm quite certain that that picture was above this name,' Sp. 2".6, i. 1; "Saw that picture of a yellow disc at the moment I saw the word. I think I'm right," F. 2".6, i. 6; "Immediately saw it as a picture. Was sure I was right," G. 2", i. 2; "Visual image at once. I recalled it distinctly. Consciousness that I was right," Sh. 3", v. 3; "Immediately fairly clear visual image of yellow oval. I then thought (judgement) 'that is the meaning of Funip,'" Fl. 2".2, ii. 5; "No confidence. On the whole, I identify that with boys running. The visual images are fading a little. It excites more or less the total experience. My confidence is now increased," R. 8".2, i. 2. [It is to be remembered that Fl. and R. form Class II. of the observers. Cf. Table II.]

<sup>2</sup> "'Goral,' a hammer. I saw it more precisely than yesterday," Sh. 4", ii. 6; "Nothing but this visual image came," Sh. 11", iii. 1; "A faint image of a round reddish-yellow disc. Then I reacted. The sense of purpose to react, if present at all, was very faint. Can't say I felt any definite relation between them," Sp. 1".6, ii. 6; "Just saw the picture and reacted. Did not think at all," F.—, i. 1. "Recalled image of hammer picture," G. 9", i. 1.; "'Funip' brought me the picture; but I did not perceive any connection. The word did not mean the disc," F. 3".6, iii. 2. [We can find no cases of this kind in the protocols of Fl. and R.]

What is prominent at this stage is the revived image, the stimulus-word sometimes falling out of consciousness altogether.<sup>1</sup> But the word does not yet *mean* the revived image or the original percept. Occasionally, however, later on, the observer asserts that the word *meant* the original percept.

*Stage II. : Type-case II.*—The stimulus-word, the revived image, and the meaning (sometimes carried by a normal word) are discriminated in consciousness with (i.) a loose,<sup>2</sup> and (ii.) a

<sup>1</sup> "When image came, I was not conscious of the word," F. 3", ii. 1; "What I had in consciousness was not 'Goral' after I had seen the word," Sh. 5", v. 1.

<sup>2</sup> "Pliers came as a visual image. I said 'This is instruments.' Tried to recall to-day's picture. Very vague visual image of plane arose. Couldn't decide," G. 17", x. 5;

"I had a faint image of a hammer. Idea 'Now I must react'; and perceived a certain relation between 'Goral' and the image—a spatial relation; also a very faint essential relation. 'Goral' almost expressed the representation of the hammer," Sp. 1".6, ii. 1;

"I had a vague image and distinct ideopresentation of a flower. I also had an auditory representation of 'flower.' I *think* it followed some time after the ideopresentation," Sp. 1".2, ii. 5.

"I saw the image of the violin at once, at the same time as I saw 'Sorab.' That gave me the meaning," F. 2".4, ii. 4. [These cases are very rare in F.'s protocols.]

"Came as one definite picture. 'Pincers' came voluntarily to express the picture. But feeling of uncertainty as to what 'Goral' meant," Sh. 10", iv. 1.

"The first thing that came into my mind was a tool. This was present as a vague visual image. It had no shape. The word 'hammer' came spontaneously; as soon as I said it, I recognised it was the wrong word. I made an effort to recall the precise image in order to obtain the right word. Then perceived an image of blue

closer<sup>1</sup> and growing connection. The image is sometimes vague, sometimes deformed or complicated

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pincers, but very indistinctly. What was in consciousness was the idea of pincers, separate from and much more distinct than the visual image," Sh. 4", vi. 1.

<sup>1</sup> "There was a jumble of a very faint image and a meaning and a very faint verbal image of the word 'musical instrument.' Much the clearest cut was the meaning," Sp. 1".6, iii. 1.

"Very faint idea of a coloured disc, yellowish. I can't say if there was an image. It seemed, perhaps, a little nearer to 'Funip' than I've had before—in closer connection; becoming nearer to the meaning of 'Funip,'" Sp. 1".6, iv. 5.

"A vague ideopresentation of an instrument—a hammer instrument. No images to swear by. The ideopresentation seemed in rather close connection with the word. This is the nearest approach yet to the nonsense-word expressing the ideopresentation," Sp. 1".2, v. 1;

"Looked at 'Kumic.' Then said, 'This is the flower whose name I don't know,' and saw the image at the same time. I saw the outline, but no colour—only the markings," G. 1".4, v. 5.

"Saw picture of carnations with buds. Then said, 'This is the word for flowers.' At this the picture disappeared, and an idea of flowers was present simultaneously with the auditory judgement," G. 5", viii. 1;

"'Goral,' after seeing the pliers, meant instruments," G. 2".4, viii. 6;

"I read 'Digep'; and very quickly had image. It meant that picture," G. 2", ix. 2.

"These words all mean the picture," G. 1".6, xii. 4.

"'Pail' came auditorily, and vague picture simultaneously. The image was not of any one of these pails, but a sort of compound of the lot, and more like a pail we have at home," G. 1".4, xiii. 1;

"The word 'triangle' came as a thought, simultaneously with a very clear image of the red triangle," G. 1".4, xiii. 2.

"I had quite a distinct image; but concurrently with it there came into consciousness the head and beak of another bird. But I had no doubt that it was the humming-bird. 'Tuben' means to me always a sort of bird," Sh. 3", xii. 3.

"Distinct visual image—colours very subordinate. It's more the

with elements borrowed from pictures exhibited with the same nonsense-word on previous occasions. It is generally, however, a fairly exact reproduction (making allowance for the individual imaginal reproductive power of the observer) of the picture which was learned on the day on which the introspection was taken.

*Stage III. : Type-case III.*—The meaning of the nonsense-word consciously precedes the appearance of the revived image, which is described by the observers as exemplificative of, or instancing it. It adds nothing, however, to the meaning, which, on the contrary, it sometimes determines and restricts. There are a great many intermediary cases lying between that in which the arising of meaning is separated from the perception of the nonsense-

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*idea* of red cherries. I know they are red. I don't see it," Sh. 8", xiii. 2.

"An incomplete image of which I am conscious that I can at will fill up all the details. It is certainly not an outline, and certainly has no colour. It is not anything that can be defined. [Note] It is my opinion that this is a concept united with a symbol of so vague a character that I cannot specify it without having definitely looked for it. More or less from the beginning I have had a difficulty in saying whether I had or had not a distinct visual image. I think that the explanation is that my consciousness was of the character just described," Sh. 4", xiii. 5.

"I said the word as I looked at it. Visual image of hammer. Knew that was wrong. Tried to visualise. Then image of pincers arose, not very distinctly. Hammer disappeared. 'Goral' meant 1st hammer, 2nd pincers," F. 3".8, v. 5.

"I saw the picture like a red cigar ; but it was floating about—moving. 'Funip' meant that," F. 1". 6, ix. 5.

word by an appreciable interval (which may contain a great deal of psychical process) and that in which no such interval can be discovered. But they are alike in this that the meaning is given before the image arises, though it is consciously discriminated from the nonsense-word; and that this meaning is an ideopresentation of one picture, or a concept which may apply indifferently to any one of the pictures the place of which it has taken. In the second case noted, an association has been formed between an abstract idea and the nonsense-word. This association has been strengthened by repetition, while the visual experiences have disappeared from consciousness either because of mutual inhibition (divergent associations) or on the principle of psychical economy. Since, however, these visual experiences have severally been associated with the nonsense-word and concept, any one of them is potentially revivable, and especially that which was learned with the word during the session at which the introspection was taken. This is consequently the image that is usually, though not exclusively, revived and spoken of by the observers as exemplificative of the ideopresented, or conceptual meaning. The first case of these two is discussed fully below (pp. 148, *sqq.*). The gradual fusion<sup>1</sup>

<sup>1</sup> "Thoroughly fixed associations of psychical elements." (Wundt (tr. Judd), *Outlines of Psychology*, p. 255.)



of concept and nonsense-word is the process by which the latter acquires meaning ; and when this process is complete the word has generally become the more prominent element of the complex of word and meaning.<sup>1</sup>

<sup>1</sup> *Examples of Type-case III.*—"The word seemed not only familiar, but also meaningful. Nevertheless the meaning came to consciousness additionally (not in absolute connection with it), as an ideopresentation of reddish-yellow coloured fruit. Image doubtful," Sp. 1".6, v. 2.

"'Sorab' seemed slightly meaningful. Again had ideopresentation of musical instrument, accompanied by strong conviction that it was correct this time. Doubtful as to whether there was a verbal image : certainly no thing-image. In afterperiod, a visual image of something spread out horizontally, and chequered colouring of a yellow character," Sp. 1".6, v. 4.

"The idea came first then. Then came an image of a dark blue oval disc, very faint, but greatly adding to the determinateness of the idea," Sp. 0·8", vi. 5.

"Ideopresentation preceded very faint auditory image of 'bird.' I *think* I had later a very faint visual image of a fat bird," Sp. 1".4, ix. 5.

"I looked at 'Tuben,' and seemed to know it meant a bird. Then I saw the guinea fowl," F. 17", iv. 5.

"I repeated 'Funip,' and thought of *shape*. No word was present. Then I saw the oval-shaped indigo figure, not very distinctly. Before it had quite gone I saw the green one quite distinctly," F. 4".4, viii. 4.

"'Digep' meant fruit. Then I saw the picture, clearly, of the nectarines localised on the Table," F. 1".6, x. 1.

"The vague image of a brass pail was referred to the already formed idea—which, so far as I can tell, came first," Sh. 1".5, xiv. 1.

"A boy running clearly in consciousness ; but I don't know how . . . 'Ferd' and the image were both in consciousness simultaneously ; but the image came as the result of a search, with slight effort, and not spontaneously," Sh. 4".2, xviii. 7.

"Inhibition, which gave way to a visual image, not very distinct at first, but growing more distinct. It became more visual and less

*Stage IV.: Type-case IV.*—Lastly, in the fourth stage, the type-case is that in which the word ‘carries its meaning:’ *i.e.*, is so closely associated with this that discrimination may, in some cases, be difficult. The meaning is entirely ideational, no visual imagery being discoverable either antecedently or consequently to it; although the frequency with which our observers stated that they ‘felt they could at will call up and elaborate an image’ would lead us to suppose that exemplificative visual contents may always be potentially present. In the conditions in which our experiments were

an idea. I knew the details of the image, but did not see them. In point of fact, have seen them since the reaction,” Sh. 3"4, xix. 3.

[*N.B.* This observer has few cases of this kind in his ‘learning’ protocols. He is a strong visualiser.]

“I read ‘Sorab.’ Nothing came. Then I felt myself holding my breath, and said, ‘This must be the first one—musical instruments.’ Then came visual image. ‘Sorab’ had that meaning—‘musical instrument series,’” G. 9"5, iii. 4.

“The knowledge that ‘Fero’ meant ‘running away’ came first of all. ‘Running away’ was not present except as the meaning of ‘Fero,’ (afterwards) saw picture—wrong picture,” G. 1", iv. 7.

“‘Sorab’ meant ‘musical instruments’ in general before I said it. Then I said ‘musical instruments; but which is the last picture I had?’ Then saw images; violin, then trumpet, then drum,” G. 22", vii. 3.

“I looked at ‘Funip.’ Then I made a judgement that ‘Funip’ meant ‘geometrical shapes.’ This was present as an idea attached to ‘Funip.’ Then I saw picture of green elliptical shape,” G. 2", viii. 7. “I thought—did not see it—of a cornflower; then remembered the peculiar markings that the pansy tribe has, and got a quite clear visual image of the right one,” G. 5", x. 2. [This observer has a tendency to internal speech.]

performed, it would seem probable that examples of this type would very rarely be met with during the learning period—since the picture of the day would tend to appear. Such is, in fact, the case: the examples are here comparatively infrequent. Yet a sufficient number of them was observed to establish—even without reference to the second part of the experiments, where they are of somewhat more frequent occurrence—the stage in which the meaning of the nonsense-word is immediate, ideopresentational or conceptual, and certain. The word expresses the experience, or experiences with which it has been associated. It is in the reflex act of introspection that it is found to do this by reason of its close association with the meaning-concept. This latter is so important, and has so preponderating a rôle in the higher thought processes, that its nature and function are not discussed here, but from the subject matter of the following paragraph on abstraction.<sup>1</sup>

<sup>1</sup> *Examples of Type-case IV.*—“I said ‘Sorab.’ The word ‘music’ came at once. There was no visual image. ‘Sorab’ seemed to mean music,” F. 3".4, v. 4. “I saw the word, and it meant hammer (not the picture) at once. The thought and ‘Sorab’ were united,” F. 1".6, vi. 1. “That meant ‘musical instrument.’ It just seemed to mean it. Then I tried to see a picture, and to-night’s picture came, not very distinctly. It was not localised (as on previous occasions) on the table above the stimulus-word. It was more in my head, I think,” F. 2".2, ix. 3.

“... There is no discoverable content but the meaning of

## § 2. *The Abstract Concept.*

“What is associated now with one thing and now with another tends to become dissociated from

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‘Fero<sup>d</sup>,’” F. 6<sup>o</sup>.6, xi. 5. “‘Dige<sup>p</sup>’ meant cherries—no special kind. I got no image,” F. 2<sup>o</sup>.6, xiii. 2.

“I looked at ‘Tuben,’ and knew it. I did not translate it though I could have done so. The word ‘birds’ was not in consciousness. ‘Tuben’ meant all the things that I call birds” (after the reaction image arose), G. 1<sup>o</sup>.4, xvii. 3. “This time I reacted on simply knowing what ‘Funip’ meant. When reacting, the picture I had to-day with this word—a bluish-green ellipse—came. ‘Funip’ meant all the figures. I knew it in my mind without words or images,” G. 1<sup>o</sup>.6, xviii. 6. “I had a consciousness of what ‘Dige<sup>p</sup>’ meant, and reacted on that. At the time of reaction I had the idea that there were many pictures that I could see. One was prominent; but none were visual images,” G. 2<sup>o</sup>.2, xx. 2.

“I read ‘Fero<sup>d</sup>.’ I knew what it meant. Did not react. Thought I would see one of the pictures. I was just going to begin to see one. A sort of an idea of a picture was present; when I thought, ‘Oh, I know what it means;’ and reacted,” G. 2<sup>o</sup>.8, xx. 4.

“I have no clear visual image. I know ‘Tuben’ is a goldfinch on a branch, its head raised, its beak open. These are ideal reminiscences, and not visual images directly,” Sh. 5<sup>o</sup>, vi. 3.

“I heard ‘Lagoc,’ and knew what it meant—the picture of a purple figure. It was distinctly not in consciousness as a visual image. It came when I willed it. Then I looked at it and saw it. This is absolutely certain,” Sh. 5<sup>o</sup>, xiv. 5. “There was no image in consciousness, just the judgement that ‘Fero<sup>d</sup>’ refers to what I said the other word referred to,” Sh. 12<sup>o</sup>.4, vi. 7.

These are the only examples we can find in Sh.’s ‘learning’ protocols; and there is only one example without images in this observer’s ‘judgement’ protocols. Frequently, however, the image that is found to be present is of so sketchy a character that it certainly cannot constitute the definite meaning spoken of by the observer. Moreover, the image is sometimes a wrong one (of an unassociated experience) while the meaning of the word is correct.

“I had a distinct memory idea of a hammer, with no image and no word. ‘Goral’ was in consciousness at the time, but did not express

either, and to grow into an object of abstract contemplation by the mind. One might call this the law of dissociation by varying concomitants." So

the hammer. They co-existed co-ordinately. The idea of hammer was localised above the stimulus-word," Sp. 1", iv. 3. A similar experience, but the idea "seemed to be nearer localised to 'Kumic'—nearer connected and more spatially localised than any except the last," Sp. 1", iv. 6. "This is the first instance I have of the connection between the ideopresentation and the word being so close that 'Ferod' expressed the ideopresentation. The localisation went down to the word; but I'm inclined to say there was no time coefficient. It did not express a picture of a child, but *child*: not this child. It was just '*child*' of a certain vague description, which does not correspond to any of my old conceptions of children," Sp. 1".4, v. 7. "The word appeared with an extremely vague meaning. No image, verbal or otherwise; and a perfect conviction that I could determine the meaning if I tried to," Sp. 0.8", viii. 3. After some inhibition, etc., "came a novelty for me—a very distinct ideopresentation of the meaning, not followed by any image, verbal or otherwise. The meaning was flower in general, within the range of variation of the experiment," Sp. 1".8, ix. 1. "I had a very general, but still, as far as it went, clear idea, accompanied by a strong conviction of its accuracy. The idea seemed in rather close connection with the word, but not as close as it might be. I can lay emphasis on what I have said as to the combination of generality with clearness. It was not any particular case, but abstracted from, at any rate, several of the previous experiences," Sp. 1", xiv. 1.

"Such meaning as I had was in intimate connection with 'Robud.' It expressed the picture rather vaguely, but like an ordinary word," Sp.—, xx. 5.

Fl. is a strong visualiser. The following examples occur in his 'learning' protocols:—

"First a feeling of familiarity with the word. Then a curious blank in consciousness, followed by a disagreeable feeling of strain as I tried to obtain some meaning. I kept on saying 'Tuben' several times, and a very faint image of a tube arose. Then, quite suddenly, came the meaning 'bird.' I could detect no image of any kind," Fl. 1".8, ii. 2. "I kept on repeating the word 'Kumic.' Feeling of

James,<sup>1</sup> following Spencer, Martineau, Hume, and others, states the fundamental law of abstraction. In our experiments, two processes of association are to be distinguished. The first is that which obtains between the varying and invariable concomitants present in each picture that goes to make up a set of five. The elements in this association would obey the law of abstraction expressed above. The second

blankness, as before, gradually increasing ; and a disagreeable feeling of helplessness. I said to myself, 'I don't know this.' Thereupon the meaning 'flower' came. I think an auditory-motor image came afterwards ; but I'm not sure. There was no visual image of any kind," Fl. 4".6, ii. 3. "Feeling of familiarity with 'Ferod.' Almost immediately meaning 'boy' came, with auditory image—no visual, except (perhaps) in after period," Fl. 0·8", iv. 2.

"Familiarity with word. Repeated it twice. At second repetition meaning 'fruit' came quite suddenly, accompanied by word 'fruit' (auditory-motor) and faint tactile gustatory images," Fl. 1".2, x. 2.

R. has also a tendency to visualisation. Examples from his 'learning' protocols are :

"An abbreviated experience of what I know I've had before—the rejection of a possible error, and consequent identification of 'Funip' with a series of figures of which no definite example—not even a sketch standing for it—presented itself. It's a logical sort of experience. Although I had no image of any sort, I felt confident that I could produce them. I had knowledge," R. 2".6, vi. 4.

"This, again, was a repetition of a former reaction. 'This is that other which was rejected,' was my process, 'and I know what it stands for.' None of the examples were represented. There was a confidence that they could be recovered," R. 1". 4, vi. 5.

"Nothing, except that I knew what it meant." (In after period there arose very vague images), R. 1", vii. 3.

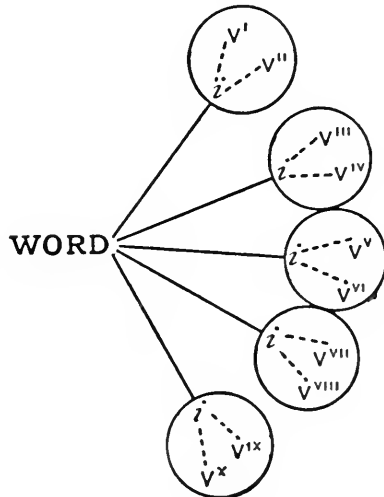
"I had immediate knowledge that it stood for certain objects. No definite image developed ; but I was aware that the guinea-fowl image was nascent," R. 1", x. 1.

<sup>1</sup> James, *Principles of Psychology*, vol. i. p. 506.

is the association which is made between the non-sense - word and the pictures. The words were associated now with one picture and now with another ; but we should not therefore expect that the nonsense-words themselves should tend to grow into objects of abstract contemplation. Rather should we expect that a strong reproductive tendency would be formed between the word and any invariable concomitants constantly present in the five pictures with which it was learned. The varying concomitants would tend to disappear from the second member of the associated terms. These varying concomitants were the elements—colour, form, detail, etc.—of the pictures exhibited with the nonsense-words.

We may express this double process of association by a diagram.

In this diagram the dark lines represent the associations between the nonsense-word and the invariable concomitants (*i*) of the five pictures. The dotted lines express the dissociations from the invariable (*i*) of the varying concomitants (*v*, *v*'', *v*'', etc.) of the pictures.



We have already briefly described the material used in our experiments; but it will not be out of place in this connection to consider one series, by way of example, in greater detail. 'Funip' was associated with the five following single line geometrical drawings:—

i. An orange circular disc ( $C_1$ ).

ii. A reddish-purple spindle-shaped oval, inclined at an angle of  $45^\circ$  towards the left from the horizontal meridian of the card. This would represent a circular disc, inclined, and seen much foreshortened ( $C_2$ ).

iii. A light yellow upright oval (circle foreshortened about  $45^\circ$ ) ( $C_3$ ).

iv. An ultramarine-blue oval, of a breadth midway between  $C_2$  and  $C_3$ , and inclined about  $45^\circ$  to the right from the horizontal meridian ( $C_4$ ).

v. A green oval placed horizontally, and of a breadth slightly greater than  $C_3$  ( $C_5$ ).

The greatest diameter of all these figures was of the same length—about  $31 \frac{m}{m}$ .

The other sets, with one exception, consisted of pictures more complicated than these; and considerations analogous to those of the present paragraph would seem to be in an equal, if not in a greater degree true of them.

What we should have been led to expect, according to the law expressed above, was a



dissociation of the varying concomitants of  $C_1$ ,  $C_2$ ,  $C_3$ ,  $C_4$ , and  $C_5$ .<sup>1</sup> A strengthening of the bond between 'Funip' and any invariable concomitants present in these pictures should also have been secured during the learning period. As a matter of fact, however, during this period the laws of preferential revival generally acted in favouring the sensorial reproduction of that 'Funip' learned on the day on which the introspection was taken.

Now the varying concomitants in the case of 'Funip' were the variations in the particularities of form, colour, size, position, etc.—in fact, of all the sensorial elements—of the five pictures. Had the sole invariable concomitants been the cards on which they were painted, and perhaps the general relation of position the pictures bore to the cards, then 'Funip' should have become associated with a rectangular white card, having a coloured figure lying near its centre; and the forms, colours, sizes, and positions should have neutralised each other. But such a supposition is not borne out by the introspections of our observers. With extremely rare exceptions, the card, etc., is not mentioned.<sup>2</sup>

<sup>1</sup> Cf. Tables I., II., pp. 81, 83.

<sup>2</sup> There are five such exceptions in the total of 102 protocols recorded during the learning period for this word, all of which are found in the protocols of the same observer. No cases of the kind occur with regard to other pictures.

On the contrary, what is evidently striking and is noted in the introspections, is the presence or absence of visual imagery. In every case either a particular 'Funip'—not necessarily recognisable as one of the pictures learned, and not necessarily well defined—arose as a visual image, or an imageless knowledge of the meaning of 'Funip' became present, on the exhibition of the stimulus-word.

This latter case presents especial features of interest. The imageless revival of a 'Funip' or 'Funips,' sometimes preceded by an intermediary process of apparently equally 'imageless' thought, and generally followed by exemplification in reproduced sensorial images, occurred thirty-four times. There were also four other cases in which the time-order of the arising of the imageless knowledge and the image could not be determined. In nine cases there was no image, exemplificative or otherwise.<sup>1</sup>

Here, then, is discoverable an invariable concomitant in the complex of each 'Funip' over and above those to which allusion has already been made. The strong association evidently obtains between the nonsense-word 'Funip' and the imageless thought it arouses. This latter is undoubtedly an important element, both in the perception and

<sup>1</sup> Cf. Table III. on opposite page.

in the subsequent reproduction of the pictures. When an exemplificative visual image follows it, it would appear that the thought has functioned as a strengthening intermediary between the word and the sensorial elements of the image. This is a point to be noted, since the general effort of the observers was to find the meaning of 'Funip' in

TABLE III  
ANALYSIS OF 'FUNIP' PROTOCOLS  
*No. of Protocols analysed, 102.*

Observer.	Image prominent.	Concept discriminated from and preceding Image.	Concept only ; no Image.	Intermediary Process followed by Concept.(*)	Time order of Concept and Image not determinable.	Failures.	Unclassified.	Total.
Sp. . .	4	4	4	0	3	0	5	20
Sh. . .	15	1	1	0	1	1	0	19
F. . .	12	4	2 (a)	2	0	0	0	20
G. . .	9	5	2 (a)	2	0	2	0	20
Total .	40	14	9	4	4	3	5	79
R. . .	1	1	0	6	0	2	0	10
Fl. . .	12	0	0	0	0	1	0	13
Total .	13	1	0	6	0	3	0	23

(\*) Either purely ideational, or consisting of normal words (kinæsthetic-auditory-tactual imagery), or irrelevant imagery, sometimes with judgement of its irrelevancy.

(a) Images developed in the after period.

TABLE IV

ANALYSIS OF PROTOCOLS OF ALL SETS OF PICTURES

*No. of Protocols analysed, 635.*

Observer.	Image prominent.	Concept discriminated from and preceding Image.	Concept only; no Image.	Intermediary Process followed by Concept.(x)	Time order of Concept and Image not determinable.	Failures.	Unclassified.	Total.
Sp. . .	17	42	21	3 (d)	34	6	17	140
Sh. . .	100	2 (a)	2 (b)	3 (d)	3	22	8	140
F. . .	62	37	8	23	0	4	6	140
G. . .	86	22	3	20 (d)	5	1	3	140
Total .	265	103	34	49	42	33	34	560
R. . .	22	9	9 (c)	0	6	2	2	50
F. . .	44	5	2	3 (d)	9	1	1	65
Total .	66	14	11	3	15	3	3	115

(x) Either purely ideational, or consisting of normal words (kinæsthetic-auditory-tactual images), or irrelevant imagery, sometimes with judgement of its irrelevancy.

(a) *Note.*—With regard to the disproportionately low figure in this column for Sh. we may quote from his protocol xiii. 5: “Incomplete image, *i.e.* of which I am conscious that I can at will fill up all the details. It is certainly not an outline; and certainly has no colour. It is not anything that can be defined. I am conscious that I can fill up colour and outline, whichever I please, piece by piece.” In this protocol the description of the object is very complete and exact; but the content is of the nature described. There are many such cases in the protocols of this subject. In one case, entered in this column, an image subsequently appeared after an effort of will to get it.

(b) But there was an imageless intermediary judgement that this imageless meaning was not another that had previously been confused with it.

(c) But two of these cases were modified by “a tendency to produce images which came to nothing, because I had the meaning and was no longer interested in them.”

(d) Kinæsthetic-auditory-tactual images as intermediaries.

the picture presented and learned during that session at the end of which the introspection was taken.<sup>1</sup>

As we have already seen,<sup>2</sup> in the fourth stage of the learning process the nonsense-word comes to 'carry its own meaning'—to function, more or less, like an ordinary word. Introspection shows that this meaning is present as a purely ideational concept. Though 'carried by' the word, it is not the word; which was, in our experiments, present as a sensorial (visual) stimulus. This is not only clear from the fact that the word meant something other than itself; and that the meaning was an imageless presence of 'object' to consciousness. It is also evinced by the fact that the particular stage of the 'growth of meaning' under discussion is the last of a process in which this imageless knowledge gradually comes to be 'carried by' the word. In the previous stages the image tends to be dropped away, and the imageless knowledge to be more intimately bound up with the word. But that the last stage is distinguished from others in which a loose connection becomes

<sup>1</sup> The observers sometimes stated that their 'thought' was 'universal,' 'particular,' or merely 'abstract.' We have no means of determining here the conditions of this differentiation. In the section following, which deals with psychoses determined by the mental 'set' together with the stimulus, we shall have occasion to treat the matter in greater detail.

<sup>2</sup> Section II. § 1, p. 96.

a closer one, is a proof that the word and the meaning are never identified. We have already seen that increasing attention is being paid by a large and growing school of psychologists to imageless thought in general; and that recent work<sup>1</sup> on this subject establishes beyond doubt the existence of these imageless representative contents as irreducible to visual images. This conclusion is supported by our facts as already set forth. Abundance of further data given in Table IV., compiled from all the protocols of the learning period, still further corroborate it.

The imageless concept with which we are dealing must have been abstracted from the picture, or pictures, with which the word was learned. There are, then, given in the perception

<sup>1</sup> Moore (*The Process of Abstraction*, 1910) concludes from his experiments on abstraction that "there exist imageless mental contents representative of a visible object" (p. 180). See also his section (p. 127) on "The Process of Perception." He is able also to assert, as a result of his research, that "the mental image forms no essential part in the apprehension of a figure" (p. 134). Watt (*Experimentelle Beiträge zu einer Theorie des Denkens*, 1905) allows the existence of what we might term the conceptual abstract—the concept-meaning of the word. In his experiments he worked with ordinary words as stimuli; and found that image, word, and concept were discriminable. Messer (*Experimentelle-psychologische Untersuchungen über das Denken*, 1906), working also with ordinary words, asserts that he has observed no cases in which the meaning of the word depended evidently on the arising of a visual image. Schultze (*Einige Hauptgesichtspunkte der Beschreibung in der Elementar-Psychologie*, 1906) is led by his experiments to admit—what he had formerly denied—the distinction to be made between

of the pictures the sensorial (visual) contents—elements and relations—of the percept, *plus* something more which is not itself obviously sensorial. It would follow that we may distinguish two kinds of abstraction. In the one a sensorial element, or concrete group of elements, is taken from other elements and envisaged apart, or at least relatively apart from them. This we may term *sensorial abstraction*. In the other, the ‘something more’—the ideational concept or imageless thought content—is abstracted from the element, or group of elements and relations, for which it may stand in consciousness. This we may call *conceptual abstraction*. The products of both forms of abstraction—the abstracts, sensorial

phenomenal appearances and thoughts of things. Bühler (*Tatsachen und Probleme zu einer Psychologie der Denkvorgänge*, 1907, 1908) is persuaded that what enters into consciousness so fragmentarily, so sporadically, so very accidentally as our mental images cannot be looked upon as the well-knitted, continuous element of our thinking. (*Archiv f. die ges. Psychol.* p. 317, 1907).

Bovet (*L'Étude expérimentale du Jugement et de la Pensée*, 1908). “M. Claparède finds a great number of visual representations, either schematic or symbolic . . . which translate, but *are not*, his thought. . . . We must not forget that many skilled observers state that in a great number of cases any such *schema* is absolutely wanting. This is so in the case of M. Flournoy. The question of imageless thought is not, in our opinion, settled by these remarks. . . . But it is enough that the existence of thought as distinct from the image should be recognised for psychology to undertake the duty of studying thoughts in themselves, independently of their variable concomitants . . .” (p. 37).

and conceptual — may have objective reference. At the moment when the experiment was performed, when the observer discovered the meaning of the nonsense-word, he had before his mind simply 'a Digepe,' 'a Robud,' or else the experience or experiences to which the word referred (*i.e.*, the picture or pictures previously learned with it). He was not then conscious of either image or concept. On introspection, however — or, more properly, on retrospection — he finds that the one or the other was present as a consequent upon the perception of the stimulus-word.

So far we have insisted rather upon the occurrence of imageless knowledge, present as concept. But we would go further than this and maintain, what is indicated in the protocols of the cases in which mental imagery was the prominent feature of the introspection period, that the above conceptual element is always present in the reproductive representative processes which we have studied. This is evident from the fact that the various 'Funips,' 'Digepe,' etc., when they arose as images were at once referred to these concepts by our observers. What was before the mind was, *e.g.*, a running boy (abstract), or *this* individual running boy (concrete). On introspection an image more or less adequately corresponding with the meaning



of the nonsense-word was discovered. The images found on introspection, then, were not 'mere' sensorial contents, but images subsumed under an appropriate concept or concepts.

These concepts varied from case to case even with regard to the same picture, ranging in comprehension from mere entity to considerable specificity, and in extension from individual to universal. This we infer from the fact that we find in the protocols expressions denoting such concepts.<sup>1</sup> But we must point out, with regard to these expressions, that they are almost certainly inadequate, probably in every case. The words used by our observers express best what was found in consciousness; but it is not to be maintained that the expression is a perfect one.

It cannot, however, be objected that these expressions were *ex post facto* descriptions of what was in consciousness as a mere reproduced sensorial content. On the contrary, what the observers

<sup>1</sup> *E.g.*, "Visual image of that *thing* . . . shape of a prune," F. 1".6, vi. 6; "green, egg-shaped object," F. 2".2, vii. 6; "image of orange, or world," G. 3".4, iii. 6; "badly painted orange," Sh. 3".4, ii. 3; "Funip—the blue figure," Sh. 4", vi. 6; "faint image of yellow globe," Sp. 1".4, i. 3; "very faint image of that particular yellow disc," Sp. 1".4, iii. 5; "it—almost wholly indeterminate: quite equivalent to the word 'it,' only the word was not there," Sp. 1".4, xviii. 1; "fairly clear visual image of yellow oval shape," Fl. 2".2, ii. 5; "visual image of oval figure of uncertain colour," Fl. 1".4, v. 4; "came images of flowers and shapes . . . I inclined to put it down to shapes," R. 9", ii. 4.

state to have been present was, *e.g.*, "a green, egg-shaped object," "the blue figure," etc. The words were used to describe as well as possible what was present, *as* it was present; and that is, as a sensorial content subsumed under a concept, or possibly several concepts. This follows from the fact that the reproduced images were in consciousness *as* "green," "egg-shaped," "object," etc. They could only have been present *as* this or that, by reference to this or that. And the this or that to which they are referred is not itself discoverable as an image, or as sensorial.

As we have already noted, with the experimental material at our disposal, it seemed improbable that we should be able to create wholly new concepts, under which the images would be adequately subsumed. At most we could secure the bringing into play of a very varied range of old or modified ones, and the relation of our material to one or more of these. We were able, by the association of several pictures with one word, to modify the earlier abstracts progressively; and so to study the manner in which varied material was grouped under these modified abstracts. But as we anticipated, we are unable to assert on the strength of our protocols that any wholly new concepts were formed. Those that functioned, and were expressed adjectivally and substantively by our observers,

were, then, either acquired during the learning of the images with the nonsense-words, or otherwise in past experience.

But what we would underline are the following conclusions:—

(i.) Even in those cases in which imagery was prominent in the reproduction, the sensorial elements were related to one or more concepts already associated with the stimulus-word and consequently reproduced.

(ii.) In the other cases, in which no imagery was to be discovered—where its absence was definitely asserted by the observers—one of two alternatives would seem to be possible. Either the stimulus-word aroused one or several concepts adapted from past experience; or a new, single, and more or less adequate concept, abstracted from the pictures of a set, came into consciousness as its consequent.<sup>1</sup>

<sup>1</sup> Cf. Betts, *The Distribution and Functions of Mental Imagery*, 1909: “(These) concepts may or may not have an imagery core, are almost always thought in terms of language, yet are possible without either . . .” (p. 91). “The percept, the image, and language in its symbolising capacity, are all secondary and ancillary to meaning, and are ruthlessly abbreviated and eliminated in the mind’s economy in the interests of the ultimate meaning” (p. 92). “That thought can go on without (this) internal speech is evidenced by the many introspective accounts of thoughts which flash into the mind without warning, and consist of nothing but a certain meaning or relation which was being sought. . . . But once meanings are well in hand, the image like the percept plays a smaller role and may finally drop almost entirely out in thinking, which deals chiefly with meanings growing out of relations of the objects of thought” (p. 92).

Either alternative would account for the possibility of relating each sensorial element, or each complex of such elements, under its appropriate concept.<sup>1</sup>

But just as we find concepts together with sensorial elements when imagery is present in the reproductive process, so also we find them involved in perception. When an observer is shown, for the first time, a circular, orange-coloured disc, and instructed to look at it while repeating the word 'Funip,' he perceives the picture as some-

<sup>1</sup> We might speculate as to which of these alternative explanations is the more probable, and weigh the theoretic considerations that might be advanced in favour of the one or the other. But this is not necessary for our present purpose, which is to insist upon the existence of conceptual elements. Apart from the argument we have put forward, based on the expressions of our observers, there are few protocols in which data may be found to support either view. Such data as there are, however, are in our opinion in favour of the first.

“. . . A distinct, startlingly vivid ideopresentation of the meaning, not followed by any image verbal or otherwise. By 'distinct' I mean introspectively so—not 'determinate.' The meaning was 'flower' in general, within the range of variation of the experiment," Sp. 1".8, ix. 1. “. . . The generality of 'bird' was now determined to the class that I've been having in these experiments," Sp. 1".2, vii. 7. “. . . I can lay emphasis on what I've said—the combination of generality with clearness. It was not any particular case—but abstracted from at any rate several of the previous experiences," Sp. 1", xiv. 1. “. . . What was the meaning of 'Ferod' was not any child, but small child. Even this is not coextensive of it. It was child of a certain vague description: a new class. It does not correspond to any of my old conceptions of children," Sp. 1".4, v. 7. These citations from Sp.'s protocols are the clearest and most definite we have. It is not necessary to quote from those of other observers. But it should be noted that the (new or) modified concept occurs relatively late in the learning period.

thing. The sensorial content is present to consciousness *as* a circular, orange-coloured disc, *as* a coloured geometrical figure, at least *as* a 'thing.' What his consciousness would be like were the sensorial content, as such, the only element in it we have no direct means of determining; since, as a matter of fact, whatever we perceive is perceived as something or other. The moving figure in the far distance may be a man. It may be a woman. It may, of course, be neither. But if we can relate the purely sensorial content of the percept to neither of these concepts, we do certainly relate it to some one or other—moving animal, moving body, or (since even the apparent movement may be illusory) at least 'thing.' And so we perceive it.

We would submit, then, that our data<sup>1</sup> have enabled us to establish with regard to this matter the point that perception and reproduction involve concepts in adult human consciousness. These, we have shown, are to be found revived, without the intervention of visual imagery, by a nonsense - word with which they have been arbitrarily associated. And we have shown, further, that where such imagery is present, this also involves the presence of concepts. This would appear to point clearly to the conclusion

<sup>1</sup> To the few examples given in the footnote above, might be added similar expressions from almost all the protocols. Cf. also our Notes in the *Journal of Psychology*, *loc. cit.*

that without what we have called conceptual abstraction, human perception and reproduction cannot be explained.

‘*Blurring of the Image.*’ During the learning period of our experiments it was several times observed that the image reproduced upon exhibition of the stimulus-word underwent a notable change in character as early as the second sitting. It became suddenly “flattened out” (Sp.), blurred, deformed; and, from that sitting onwards, no conspicuous difference was noticeable in it. This phenomenon caused considerable surprise, as it was quite contrary to expectation. One would have supposed, rather, that the sensorial elements of the image would have cancelled each other progressively during the whole learning period, and that a gradual deformation would have been the result. Indeed, from the evidence of our protocols, such a process seems generally to have taken place. But cases certainly occurred in which, after learning the second (or the third, etc.) picture of a set with its nonsense-word, this *notable* breaking down of the image took place. There is, of course, further modification of the image to be traced in the protocols; but, where it occurs, it is not so marked in character as this. The phenomenon is worth examination; and we subjoin selections from the protocols of our observers

in its illustration.<sup>1</sup> What is its significance? We shall consider the case in which it occurs after the

<sup>1</sup> For order in which pictures were exposed see Table I. p. 81. 'Tuben' 1, "What was in my mind was the instruction that I must see a meaning. Instead of that an image of a bird turned up . . . after that a positive conviction that it was the picture that had been connected with 'Tuben.' The image was there in varied colours. There was a blueness. I knew there were other colours; (and) they seemed in very close connection with the image—almost presentational. I am very confident of this," Sp. 2"4, i. 5.

'Tuben' 2, "After a slight pause a very vague image but a distinct idea of a bird—something blue about somewhere. I judged it to be right with only moderate confidence," Sp. 1"8, ii. 3. (The image here seems to have been a vague reproduction of the first 'Tuben.')

In all the subsequent 'Tuben' introspections, whenever an image is mentioned as having been present, it is described as "very faint," "vague," "a ghost of an image."

'Kumic' 1, "A very faint 3 % image of a blue flower. There was at the same time a recollection that I tried to make a mnemonic (when learning)," Sp. 1", i. 2.

'Kumic' 2, "I had an image very vague and a distinct ideopresentation of a flower. I also had an auditory representation of the word 'flower.' I think, but won't be certain, that this followed some time after ideopresentation," Sp. 1"2, ii. 5.

Subsequent images of 'Kumic' are described in similar terms.

'Sorab' 1, "It is the picture of the yellow trumpet. I saw its form and its colour; and I feel that I was right," G. 2", i. 4.

'Sorab' 2, "I don't know this word. Oh! It's the first one. I saw yellow coils—but could not draw picture of it. It's too vague. Saw funnel-shaped end, but not mouth-piece," G. 4", ii. 4. But the phenomenon is best observable here in 'Sorab' 3, "Read word: nothing came. Pause. Oh, this must be the first—'musical instrument' series. 'Sorab' had that meaning 'musical instrument series.' Then came visual image with four strings. I don't know the colour," G. 9"4, iii. 4.

'Tegam' 1, "Recalled image I had just had with 'Tegam'—the low milk pail. I saw the shape very clearly: the colour was blue, but I didn't see it so clearly," G. 2", xi. 1;

'Tegam' 2 (same picture), "Picture of tin enamel pail, clearly: blue, with rim round bottom, one handle with two fasteners, and

learning of the *second* picture of a set. The two divergent associations by this time formed with the

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a white lining. This word 'Tegam' meant that picture," G. 1".6, xii. 4.

'Tegam' 3, "I said 'pail' and a vague image came—not any one of these pails, but a sort of compound of the lot and more like a pail we have at home," G. 1".4, xiii. 1 ;

'Tegam' 2 (same picture as 'Tegam' 1, which had no meaning). "A blue pail with white inside ; and handles. Visual image," Sh. 3".4, xii. 4.

'Tegam' 3, "This is the yellow pail I described with the wrong word. No definite features were there, but merely the consciousness that I had described it, and it was a yellow pail. The image was very vague, yellow, quite indefinite in shape. The characteristic of the visual image is that it was contained in one of these pictures and was, therefore, the corresponding size. This was prominently in consciousness," Sh. 3", xiii. 4.

'Funip' 3 ('Funip' 1 and 2 were same picture), "Orange. The same old orange—exactly as it was before (clear visual image). It was present as a picture, merely as a reference to a former impression. The two coalesce . . ." Sh. 3", iii. 3.

'Funip' 4, "'Funip' is a blue elliptical figure, substituted for the orange in the last set. It had a mean repulsive appearance. I discriminated the two figures at the moment of introspection," Sh. 5", iv. 5.

'Funip' 5 (same picture as 'Funip' 4), "The round oblong blue thing that has taken the place of the orange. It was present primarily not as a blue thing or an orange, but as a substitution. I can't describe this. There was no visual image. Word 'substitution' did not come into mind—I got it now with difficulty . . ." Sh. 3", v. 6.

'Tegam' 1, "'Tegamine' came and with it an image of the milk pail, bluish colour ; not an ordinary shape, but on a sort of stand and attached to it," F. 1".4, xi. 4.

'Tegam' 2 (same picture as 'Tegam' 1), "I saw the picture of the pail, greenish-blue colour and red inside : steel handle with wooden thing to hold," F. 2", xii. 3.

'Tegam' 3, "I heard 'Tegamine' : then I saw, not very distinctly, the picture of the milk pail on the table," F. 1".6, xiii. 4.

The phenomenon does not seem to have occurred in the case of Fl. and R.



nonsense - word would probably to some extent account for it: though as these increase in number in subsequent sittings we should expect to find the stages in the deformation and blurring of the image more noteworthy than they are. On the other hand, we might suppose that the laws of preferential revival of experience would always have strongly favoured the reproduction, in a more or less perfect state, of the second image (*i.e.* image of the picture learned with the word on that day). But this image is not always reproduced at all; and when it is, in the case that we are considering, it is relatively blurred and imperfect. Sometimes the image is of the original first picture; sometimes it is a combination of both first and second; and sometimes a compound introducing features not given in the pictures learned. But in all these cases whatever brilliance and sharpness of definition was observed in it at the first sitting seems to be radically impaired after the second.<sup>1</sup>

We would suggest the following considerations as an explanation of the phenomenon. The brilliance, etc., of the first reproduced image is due to the fact that, in learning, undivided attention was focussed on the individual picture in *all* its sensorial completeness; and the reproduction is accordingly of an individual with its individualising character-

<sup>1</sup> Or third, etc. Cf. Table V. below, p. 123.

istics.<sup>1</sup> These latter, then, tend to become the predominant elements in reproduction. The conceptual, or thought element, is in the background. Little or no attention is paid to it, and interest centres upon the individual. The learner sees, *e.g.* that 'Tuben' is *a* bird; but he looks at, and learns *this* bird. On the other hand, after the nonsense-word has been learned with the second picture of a set, the fact that both pictures learned with 'Tuben' are of birds has been noticed. As often as not the former picture is recalled while learning the second; and the learner has a ready-made concept for both. This concept has now twice been present with the nonsense-word—once prominently. The association between them strengthens; while divergent associations are set up between the word and the individual sensorial elements of the two pictures.

Further, it is in accordance with the law of economy that as much of the original experiences should be dispensed with as compatible with remembering the meaning of 'Tuben;' and the individualising characteristics of the two pictures are, for this purpose, more or less superfluous. This would seem to be true except in one case; and that is the one in which the observer's 'meaning' is an individual. Here images seem always to be necessary in a com-

<sup>1</sup> Cf. pp. 188, 189.

paratively complete state.<sup>1</sup> No instructions were given in the learning period as to whether the meaning sought for was to be individual or general —whether ‘Tuben’ was to be taken as the proper name of the first bird-picture, or as a class name for all. It would appear that our observers understood their instruction in either sense; and reacted, as they were bidden, ‘as soon as the meaning appeared *in any form.*’ Hence, as there was no control to secure ‘individual’ or ‘universal’ meanings during this period, we must turn to the second half of the experiments for facts which will throw light upon the phenomenon we are now considering. And there<sup>2</sup> it will be certainly established that there is a strong tendency to have no images, or poor ones, when the nonsense-word ‘means’ universally; and that an image, generally relatively brilliant and complete, is almost, if not quite, invariably present when the word ‘means’ individually. At one time then, we infer, the nonsense-word called up an ‘individual’ as its meaning; at another a ‘universal’ (or potential ‘universal’);<sup>3</sup> and as a general rule its meaning, after one picture only had been learned, would be ‘individual.’ In the cases where imagery

<sup>1</sup> Except in the case of symbols. A vivid image of a particular beak alone gives one observer (G.) the whole individual bird meant.

<sup>2</sup> Cf. pp. 188, 189.

<sup>3</sup> These meanings might be called respectively *Real Meaning* and *Conceptual Meaning*.

was prominent, we may take it that, as a rule, the observer had got an 'individual' meaning. And this, in some instances during the learning period, was stated to have been the case. On the other hand, poor imagery, or lack of imagery, would indicate a 'universal,' or potentially 'universal' meaning; and statements to that effect were also several times volunteered. We may thus suggest, in the case we are investigating, that a strong contributory condition of the phenomenon of 'blurring' is the universality, or potential universality, of meaning, which arises as soon as the two (or more) experiences are related under the same concept. And where the phenomenon does not occur, we may consider that the brilliance and definition of the image is to a very large extent due to the particularity of meaning associated with, and reinstated by, the nonsense-word.

The following table records the first appearance of the phenomenon of the blurring of the image for all the nonsense-words and all the observers of the first class. It is to be noted that the successive pictures of the 'Tuben,' 'Kumic,' 'Sorab,' 'Fero,' and 'Robud' sets were shown and learned at successive sittings, the 'Robud' set commencing at the eleventh sitting. Each picture of the 'Tegam' set was learned twice consecutively, beginning at the eleventh sitting; and those of the 'Funip,' 'Digep,'

'Goral,' and 'Lagoc' sets as follows: the first picture at three consecutive sittings; the second at three consecutive sittings; the third at two consecutive sittings; the fourth and fifth once each. The learning of 'Lagoc' began at the eleventh sitting.

The first figure in each column shows the number of *different* pictures that had been learned with the same nonsense-word before the imagery underwent the change noted. The second figure (in brackets) shows the total number of times ANY picture of the set had been learned [*e.g.* 'Tegam' = L; L<sub>1</sub> L<sub>1</sub> L<sub>2</sub> is entered 2 (3)].

TABLE V

Observer.	Ferod.	Tuben.	Funip.	Digep.	Kumic.	Robud.	Goral.	Lagoc.	Sorab.	Tegam.
Sp. . .	2	2	2 (5) <sup>(c)</sup>	2 (4)	2	2	2 (4)?	0 <sup>(ac)</sup>	3	2 (4)
Sh. <sup>(b)</sup> .	6	6	3 (7) <sup>(c)</sup>	6 (11)	10 <sup>(d)</sup>	3	2 (6)	2 (4) <sup>(c)</sup>	0 <sup>(a)</sup>	2 (3)
G. . .	3	3	8 (18)	2 (4)	5	3	4 (9)	0 <sup>(a)</sup>	3	2 (3)
F. . .	4	6	6 (11)	2 (6)	4	7	2 (6)	10	3	2 (3)

(a) "0" signifies that the phenomenon of 'blurring' did not occur at all during the learning period.

(b) In every case but that of 'Goral,' 'Lagoc,' and 'Tegam,' Sh's. learning was a comparatively slow process. 'Lagoc' was soon differentiated from 'Funip' (which by the eleventh sitting was firmly associated) and so learned as "the *other* single-line figure." 'Goral' and 'Tegam' are more schematic than the others. With 'Robud' the learning of 'Tegam' also began at the eleventh sitting, when the observer had improved by practice.

(c) Sp. and Sh. reach the 'blurred image' (or absence of image) stage before G and F. This is probably to be explained on account of their greater practice in abstraction.

(d) Up to this, the last sitting for 'Kumic,' Sh. had not learned its meaning at all.

Having established the independent occurrence of concepts and their necessity in the processes of perception and reproduction, it remains for us to discuss their classification among mental phenomena. "To divide and arrange the various and fluctuating modes of consciousness in a distinct and orderly manner, so that each may receive an appropriate name,—this is in itself no small achievement."<sup>1</sup> We may make use of Professor Stout's division of the ultimate modes of being conscious<sup>2</sup> of an object for the purpose of our classification. These are three: the cognitive, the feeling, and the conative attitudes. Under which of these headings—cognition, feeling, will—are the concepts to be placed? They are not to be classed either as voluntary processes or as feelings; although in the total complex of consciousness in which they occur, feeling and conation undoubtedly often—perhaps always—exist as partial constituents.<sup>3</sup>

<sup>1</sup> Stout, *Manual of Psychology*, p. 116.

<sup>2</sup> *Ibid.*, p. 57.

<sup>3</sup> As, *e.g.*, " 'Sorab' meant 'musical instrument.' It just seemed to mean it. Then I *tried* to see a picture," F., 2".2, ix. 3; "Inhibition, because 'Funip' worried me," G., 5", vii. 5; "I feel quite angry when I get this picture—Distaste," G., 1", xiii. 4; "Said 'Flowers'; then, *with a little effort*, I got a picture," G., 6", ix. 5; "Mean, repulsive appearance," Sh., 5", iii. 5; "Disagreeable feeling of strain," Fl., 1".8, ii. 2; ". . . of helplessness," Fl., 4".6, ii. 3; "Agreeable sense of relief," Fl., 1".2, xiii. 2. These are, however, seldom noted in our experiments, except in the case of G. and Fl.; probably because introspection was directed principally upon another point. Feelings

Concepts cannot be called conative because they are, or constitute, as we have shown, representations and perceptions. As such they may, and indeed do, enter into conative processes. We find that conation may involve a previous representation of the end-state of its process; perceptions or representations of the alternatives between which choice is made; perception of the end which, fulfilling the interest or longing that constitutes it, terminates any act of conation. But these representations and perceptions cannot themselves be reduced to any form of self-determining striving. As Stout remarks:<sup>1</sup> "Conation implies relation to an object. We cannot desire without desiring something . . . we cannot will without willing something." We may add: We cannot realise without realising something; or be satisfied without being satisfied with something. We cannot make a choice except it be of one of several somethings. Now all these 'somethings' are in consciousness either as representations or as perceptions. In either case they involve, as we have seen, the presence of concepts, which give to them their representational or perceptual (presentational) character. These abstract

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of strain and effort, conation, almost invariably follow on an inhibition. We have paid no attention here to "feelings" of recognition, conscious situations, Bewusstseinslage. These are characteristically cognitional; and notice of them frequently occurs in our protocols.

<sup>1</sup> *Ibid.*, p. 65.

concepts cannot, therefore, be reduced to conation, since they are or constitute that to which it is related.

Nor can they be classed as feelings. Concepts are not the hedonic tones of consciousness, although these may, and do, depend upon them, either alone or with imagery in consciousness. "Feeling attitude presupposes the existence of cognition."<sup>1</sup> It cannot, therefore, constitute this. Feeling, moreover, has subjective reference; and we have seen that the concept may have objective reference; but have met with no case in which it was said to have a subjective one. Feeling, again, develops, so to speak, along continuous lines in unbroken succession. Concepts appear sporadically as consequents of an exhibited stimulus-word, etc.

Undoubtedly, the hedonic tone varies as the cognitional processes change. The lines along which it develops may be said to be bent, but not broken, as these variations occur. But there is no such continuity in the succession of concepts, or complexes of imagery and concept. In order, therefore, to class them under the heading of 'feelings,' that category would have to be enlarged so as to embrace elements that may have objective reference, and that appear discontinuously in consciousness.

<sup>1</sup> Cf. Stout, *Manual of Psychology*, p. 60.



Even in the cases in which imagery is observed we cannot suppose that feelings are the elements present that give the *plus* of meaning to the image, unless they display these characters. And in that case it is merely a question of terminology. 'Feeling' is an ambiguous term. Such feelings would be cognitional, and should be carefully distinguished from those that are non-cognitional. Those that do and those that do not present or represent objective contents of consciousness should not be confused.

Concepts cannot, moreover, be placed in the same class as mere sensorial contents of consciousness; although both are cognitional elements.

There are a number of psychologists who maintain that all psychological formations can be ultimately accounted for either by sensation and affection (or feeling),<sup>1</sup> or by sensation alone.<sup>2</sup> We have already pointed out that our concepts are not feelings, or complexes of imagery with appropriate feelings—unless these latter be admittedly cognitional. We have now to show that they are not sensations,

<sup>1</sup> *E.g.* Wundt, cited by Titchener as one who "will hear nothing of the thought element," *Experimental Psychology of the Thought Processes*, p. 36.

<sup>2</sup> *E.g.* Condillac, Hume, Hartley, Mill, Bain, Sully, etc., together with the representatives of the Sensationalistic School, as Titchener, Judd, Angell, etc.

“transformed sensations,” vestiges of sensations, or unconscious tendencies towards the reproduction of sensorial contents.

They are not sensations or their complexes, either actual or reproduced. This, as we have shown, is evident from the fact that no actual sensorial content (in our experiments, visual) is ever present without something being perceived. And, as we have said, the perception, or relating of the visual content to one or other concept, is not the actual visual content itself. Further, we have shown that the concept may be discovered reproduced in consciousness with no trace or element of imagery. Clearly, then, it cannot *be* an image, or element of an image such as a single reproduced visual sensation. Moreover, when it is reproduced with an accompanying visual image or element, we have argued that it is not itself imaginal or sensorial in character.

These considerations are sufficient to disprove the extreme sensism of the associationist school, in which all mental states are made to consist in the combination of certain simple and ultimate constituents of consciousness (*viz.*, homogeneous sensations) according to certain associative laws.<sup>1</sup> They leave no place for the theory of ‘mental chemistry,’

<sup>1</sup> Cf. Baldwin, *Dictionary of Philosophy and Psychology*, Art. “Sensationalism.”

according to which "simple ideas (viz., sensations) generate rather than . . . compose the complex ones;"<sup>1</sup> as white—the example is Mill's—is generated by mixing the colours of the spectrum.

It would be inaccurate to confuse such old sensistic theories with the later psychological sensationalism of writers like Professor Titchener. In his *Lectures on the Experimental Psychology of the Thought Processes*<sup>2</sup> he shows clearly in how far the sensationalism of what he terms modern psychology differs from that of the older school. Yet, here again, the considerations that we have advanced would point in the same direction as the results of all the research in this matter of imageless thought contents. They would point to the fact that sensationalism, which Titchener calls "an heuristic principle and not a creed," is insufficient. "The actual problem before psychology is, not the discovery of sensations, but the disentanglement of the mental elements." They can never be disentangled if the fundamental characteristic of one of them is ignored. It is true that "psychology prefers to work with as few tools as possible;" but it is also true that psychology must employ as many tools as are necessary for its task

<sup>1</sup> Cf. Mill, *Logic*, Bk. vi. cap. 4, § 3; cf. also *Examination of Sir William Hamilton's Philosophy*, 1865, pp. 286 sq.

<sup>2</sup> Titchener, *Lectures on the Experimental Psychology of the Thought Processes*, 1909, p. 36.

of analysis. And a complex in which a concept occurs, either with or without an accompanying image or sensation, cannot adequately be analysed by the use of sensation alone.

What has been said above with regard to sensationalism holds good to an equal extent of the 'transformed sensation' theory of Condillac. An excellent criticism of this theory is given by Balmes<sup>1</sup> in his *Fundamental Philosophy*. Condillac supposes a statue endowed with the olfactory sense alone; and asserts that its knowledge could not go beyond odours. He then endows it successively with the other senses; and, building up a consciousness in which the processes of attention, memory, comparison, and judgement have their place, he attempts to account for them all on the ground that they are sensations transformed. Now 'sensation' for Condillac, and for the sensationalists generally, may either mean merely a sensorial element or complex, or a perceived element or complex. If it mean a perceived element, there is something more implied than sensation alone. And if it mean a mere sensorial element, it is not perceived. The theory has generally been interpreted in the latter sense. This is difficult to understand; since all our sensorial complexes

<sup>1</sup> Balmes (tr. Brownson), *Fundamental Philosophy*, vol. ii. p. 6.

and elementary sensations are perceived: otherwise they cannot be present in consciousness at all. An unperceived sensation—a ‘pure’ sensation—can only be conceived of as the limiting case of a series of perceived sensations, the perceptual element connected with which continually decreases. Moreover, a ‘transformed’ sensation is still a sensation, and as such is open to all the objections urged above. In the language of an older psychology, Balmes makes a similar remark: “If, according to the conditions of the supposition, all activity and every faculty be denied to this statue” (except that of smell), “it certainly can have no other idea or sensation; and it may be added that even its sensation of smell will be for it no idea.”

That concepts are not vestiges of sensations is evinced by the fact—applicable in the same degree to the two foregoing paragraphs—that the strength and vividness of the concept does not appear to be correlated in any fixed way with the fulness and completeness, or, on the other hand, with the scrappiness and vagueness, of the image. We find in our protocols many cases in which the concept is not mentioned as found by the observer in his introspection. We have pointed out with regard to these cases, in which the imagery is

strikingly predominant, that omission from the protocol by no means establishes their absence from consciousness; especially when, as we have seen, there are the strongest indications of their presence. And, on the other hand, we also find many cases in which a strong and vivid concept is present as an antecedent, concomitant, or consequent to imagery in all stages of disintegration. Vestigial sensations or complexes cannot be considered, therefore, as synonymous with concepts.

Lastly, the arising of the concept as meaning cannot be explained as the tendency of sensorial contents (images) towards reproduction. This hypothesis is suggested by Professor Ach in connection with the meaning of words.<sup>1</sup>

It is undoubtedly true that there was a tendency towards the reproduction of imagery—principally visual—in our experiments; indeed (as the character of our material and task should have led us to expect) imagery was reproduced with great frequency. Moreover, in some cases in which it did not emerge we find in our protocols such remarks as:

“I was aware of nascent images;” “I felt that I could call up a picture of it;” “Consciousness that I could exemplify it by an effort, if I wished.”

Notwithstanding this, we find also the concepts with no imagery or awareness (in the form of

<sup>1</sup> Ach, *Über die Willenstätigkeit und das Denken*, 1905, p. 217.

nascent images, or the 'feeling' of ability to call them up) of any striving of imagery to enter consciousness.<sup>1</sup> Our observers were perfectly well able to distinguish these cases introspectively.

Now, of course, the absence of concomitants or conditions, which are *ex hypothesi* not in consciousness, cannot be proved by introspection; nevertheless Ach's hypothesis seems to be insufficient; and for the following reasons. In the first place, it is an attempt to account for a qualitative difference (between image and concept) by a quantitative one (degree of stimulation of reproductive tendencies). It may be supposed that vivid imagery is the result of strong stimulation and concentration of reproductive tendencies, and obscure imagery that of weak, and possibly irradiating, stimulation. The weaker and more diffused the stimulation, indeed, the fainter and more obscure would be the imagery, until a point is reached at which the stimulation would be too weak and diffused to produce any imagery at all. At this point, in Ach's hypothesis, we have imageless knowledge of the meaning of the word that has weakly stimulated many reproductive tendencies. But instead of being, as we should expect in the hypothesis, a more faint and obscure knowledge than that present when images were also given, it is quite as clear and vivid as then, if not

<sup>1</sup> Cf. column v. of Tables vi. and vii. pp. 177, 178.

even more clear and vivid. Instead of being phenomenologically similar in character to the image, the concept is qualitatively distinct from this.

In the second place, we would observe that no *tendency* of images or their elements to appear in consciousness could explain what their presence in consciousness cannot elucidate. If we consider what has already been insisted upon, that the presence in consciousness of a purely sensorial element, or group of elements, is incapable of itself of conveying its own meaning, or of giving a meaning which it does not itself possess to the nonsense-word with which it has been arbitrarily associated, we must certainly come to the conclusion that no tendency towards emergence in consciousness which the subconscious sensorial contents (images) may have could function in this manner. It is the perception or reproduction *as* something that gives meaning: not the presence of a meaningless image; still less the tendency of a number of them to arise. This criticism is supported by our data, and the considerations we have already advanced. Perfectly clear imageless concepts, in no way phenomenologically comparable to sensorial contents, are discoverable in consciousness. These concepts give the meaning of the nonsense-words. If an image emerges from the subconscious, it in no way replaces the concept. It is, on the contrary,



still distinguishable from it. The image is subsumed under the concept, recognised as an exemplification of it. If several images so emerge, simultaneously or successively, they are subsumed and recognised in the same way.<sup>1</sup> The meaning

<sup>1</sup> "I saw 'Sorab' only. I knew that it meant a *musical instrument*. This was present just as a knowledge. Then I saw the picture—a clear visual image . . .," F. 1".8, iii. 4. "I knew it meant one of those peculiar shapes; but did not know which. Then I saw the first one I've seen this evening; and the mauve one came on the same card below it. The first then faded away, and I saw the other alone," F. 1".8, xx. 2; "'Kumic' meant flower at once without any image. I then saw picture of the cornflower, and picture of the funny little pink flower came on to the table at the same time. The first faded away and I saw this by itself," F. 2".2. x. 7; "I read 'Goral.' It meant 'instruments.' Then I saw very vaguely the picture of the pliers; then a half-defined visual image came of one I could not distinguish. I then reacted, as it meant 'instruments;,' and I thought that was sufficient meaning," G. 1".4, ix. 3; "I read 'Fero' and took a sort of breathing-space. Then I made a judgement of 'running'—had the idea of 'running.' Then recalled image of the boy with hood. Then, very distinctly, but without any colours except yellow at the bottom of one uplifted foot, and sailor collar, saw the sailor boy running towards the left," G. 6".4, ix. 4; "I said 'Tegam,' as it strikes me, just consciously; and referred it to an impression I had when I saw the pail (in learning). An exceedingly indistinct visual image. This vague image was referred to the already formed idea which—so far as I can tell—came first," Sh. 1".4, xiv. 1; "[ 'Goral' ] a hammer. I don't mean a hammer, but that's the only word I can think of. First, a momentary inhibition. Then idea of a tool, or instrument—a blue one. Another inhibition; and I wanted to say what kind. Then I said 'hammer' [Reaction], knowing it was not the picture I had seen to-day, but that I had associated the hammer with 'Goral' on a previous occasion. I discriminated afterwards, and got the saw," Sh. 3", vii. 1; "I had an ideopresentation of the picture, followed quickly by a 1% image of it," Sp. 0.8", xviii. 3; [I find no case in the learning period in which this observer has *several* exemplificative images arising as

of the images, as of the nonsense-word, is given in the concept. Hence, since the observed mental image is of itself meaningless, and cannot be made meaningful by any combination of similar images, the result of its subconscious tendency to express itself can still less be maintained to be meaningful.

In the strength of these considerations we cannot accept the hypothesis framed by Ach as an explanation of imageless concepts. We maintain that sufficient conscious data are observable to support our contention that concepts must be recognised as mental elements irreducible to imagery in any form. And we submit that no

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consequents to the pure substantive thought. Indeed these cases are more likely to be found in the protocols of Fl. and R. See p. 83, for table of expositions]. "I knew what it meant. Then I had a very vague image which I should say was what I call *the* 'Tuben.' While trying to describe my experience other images occurred. The knowledge at the beginning was a general knowledge. [It evidently persevered and reproduced the other images.]" R. 1".4, viii. 3. "I knew it meant a lot of little figures," R. 1", xi. 2 (in after period: "one or two little figures developed as images, and would have developed fairly clearly if I let them"); "Very curious. A sort of blank: and then I felt that I understood it. Then I had an image of a blue flower. The image, symbolically of others, verified the original knowledge," R. 2".8, x. 5; "In this case there was a sense of 'Funip' having a general reference before any image came. Then came image, as result of an act of example. Then sense of another flower. Then blue image . . ." R. 9", ii. 4; "Familiarity (with 'Fero') which seemed to merge rapidly into the meaning 'running boy.' It was followed by a vague visual image of a boy not running. The meaning was quite general at first; but afterwards it tended to become confined to the running boys I had seen; and the image tended to become symbolical of them," Fl. 0.8", x. 1.

tendency towards imaginal reproduction can be accredited with a representative function for which actual reproduction is insufficient.

For these reasons we are unable to class the concepts with visual imagery, or with any purely sensorial contents. While we admit that both are representational or referable to the processes of cognition, we subdivide the category of representational contents into two. On the one hand we place the representational contents capable *sui juris* of objective reference and conveying meaning. These are the concepts. On the other hand we place those representational contents which *of themselves* can have no such reference and are meaningless. These are the *mere* images and their elements.

### § 3. *The Relation of Mental Imagery to Thought.*

With the introspective data at our disposal we have now some means of investigating the question of the relation of mental imagery to thought. We feel that this should be done, if possible, before we examine the further question as to the manner in which the 'universal' and the 'individual' are present to consciousness. But in treating the question in this place, we necessarily leave unnoticed a considerable amount of striking evidence

in support of the hypothesis here advanced—evidence which is to be found in the protocols of the second part of our experiments.<sup>1</sup> We shall, however, be obliged to quote a certain number of these protocols to illustrate one of the considerations upon which our hypothesis is based; still, with these few exceptions, the evidence that we have already quoted in previous footnotes would seem to be sufficiently strong to justify our contention.

In treating this most important question, however, we must insist once more upon the *caveat* that our enquiry here is a strictly psychological one. We do not intend to go beyond the limits of the phenomenal which we have set for ourselves; nor to indicate any line of metaphysical speculation. We do not wish to presuppose any form of epistemological theory nor to transgress the boundaries of empiric consciousness.

In our experiments the main point at issue was to discover the phenomenological character in consciousness of the 'universal' and the 'individual'—'man,' 'all men,' 'this man.' These, we take it, are what Professor James calls the

<sup>1</sup> We refer the reader to the Tables and excerpts from protocols given in Part III. (pp. 174, *sqq.*), asking him to consider them in the light of the present section.

“substantive parts” of the stream of thought. They are the intuitions, the simple apprehensions, the reproductions of what we designate ‘things.’ We were not directly concerned with the “transitive parts” of the stream; although much data as to judgements, negative and affirmative, particular and general, were afforded by the latter part of our work: of which data we hope to make use in a future paper. The Austrian school of psychologists and their successors, we may suppose, has notwithstanding criticism<sup>1</sup> definitely established the occurrence and *droit de cité* of imageless thought; and discussion is now principally concerned with its theoretical explanation. We have to deal principally in this essay with one aspect—the substantive part—of thought; which, as we have seen, may be imageless. With regard to this, we must distinguish first of all, as a fact proved by other researches than our own, substantive thought as *act* and substantive thought as *content*. In the present essay we propose to confine our considerations to the content.

<sup>1</sup> Cf. Wundt, “The *actus purus* of the thought experiments is no fact of observation, but simply a consequence of defective observation and false presupposition.” (*Psychol. Studien*, vol. iii. 1907, p. 347.) Cf. also Titchener, *Experimental Psychology of the Thought Processes*, 1909; Angell, “Imageless Thought” (in *Psychological Review* (Sept. 1911), vol. xviii. No. 5, p. 295); Von Aster, “Die psychologische Beobachtung und experimentelle Untersuchung von Denkvorgängen” (in *Zeitschr. f. Psychologie* (1908), xlix. p. 56).

The substantive thoughts—"the resting places," says James, always picturesque, "are usually occupied by sensorial imaginations of some sort." We may agree with James that sensorial imaginations are sometimes (perhaps usually) contents of the substantive parts of thought. But this, as we have seen, does not always hold good. And the cases in which it does not obtain seem to us to be the really important ones. In these we discover "resting places" in which no more is to be discovered on introspection than an imageless thought or concept. We have maintained, further, that a concept is always to be discovered, or is easily inferred as having been present, whenever a conscious image or sensation was observed. What is the relation of the image, when it arises in consequence of the nonsense-word, to the concept?

There are three main hypotheses usually put forward to explain the relation of physical and psychical processes; which, although not applicable, as they stand, in this connection, may conveniently be adapted to the present problem. We may consider the relations asserted of the physical and psychical in them, as though they might obtain between the sensorial content and the concept; and thus interpret the psychophysical hypotheses as though they were 'phantastico-noetic.' But

here we must notice once more that a mere sensation is an unperceived sensation; that the purely sensorial part of an image never occurs alone in consciousness. We are obliged, therefore, to begin with the concept—pure substantive thought as content. This is given in consciousness. It also occurs, discriminated from but related to the sensorial part of an image in complex psychoses. The relation of imagery and thought is to be sought for primarily in the normal cases where both are given in the complex; and any theory concerning this relation must then be tested by the exceptional cases in which imagery is absent.

The first of the psychophysical hypotheses that we shall consider is that of epiphenomenalism, as adapted to our problem. It might be thought that the concept was epiphenomenal to the sensorial content. This cannot, however, be the relation, since cases are discoverable in which the supposed epiphenomenon (*i.e.*, concept) occurs without the phenomenon (*i.e.*, image prescinded from the thought that accompanies it). It would be a contradiction in terms to assert the occurrence of an epiphenomenon alone.

Nor can it be urged against this contention that a phenomenon *was* present (in our experiments) in the shape of the antecedent nonsense-word.

This merely functioned as the occasion of an associative revival of experience. The nonsense-word was not a substitute for the percept or percepts with which it had been associated. It was one member of a pair of associated complexes both of which involved the presence of concepts; and as such it revived either a reproduced image, or its thought element (*i.e.*, the concept) alone. These sequences are causal and in accordance with the ordinary laws of associative revival. On this ground we may then conclude that the relation of image to concept is not that of phenomenon to epiphenomenon, and consequently reject the hypothesis in the modified form in which we have used it.

But we may advance a corroborative consideration in this connection. Sensorial contents, aroused by the nonsense-word, may occur in consciousness in relation to a concept which is expressed in words denoting no more than "it," "that thing," etc.<sup>1</sup> This complex may, in turn, give place to a consequent one in which the character of the concept has developed from 'it' or 'thing,' to 'geometrical shape' or 'bird,' without any noticeable variation in the related sensorial contents. It might be argued here that the 'phenomenon,' which is admittedly present, is capable of support-

<sup>1</sup> Cf. p. 111.



ing several 'epiphenomena' in turn: though this would be to admit a considerable independence between the two. But, supposing the admission made that it is so, we have still the cases in which images were noticed by our observers as appearing subsequently to the concept. These cases, to say nothing of those in which the absence of imagery was asserted, would not point to epiphenomenalism, but rather to interaction.

The considerations put forward in the preceding paragraph tell with equal weight against any hypothesis we might frame of phantastico-noetic parallelism. There was, of course, a parallelism, in our experiments, between the antecedent sensorial percept (*i.e.*, stimulus word) and its conceptual character. This was also the case with regard to the consequent, where this arose as an image. But where it arose as a concept with no conscious imaginal element as its parallel, no hypothesis of parallelism is adequate to explain the case. Nor can the antecedent percept (stimulus word) be considered as its imaginal parallel: (i.) because this has its own conceptual element; (ii.) because its perception precedes its associated meaning in consciousness. Even in the cases of the 'learning period' in which the nonsense-word was observed to "carry its meaning" we have no right

to assume that the meaning was synchronous with the perception of the word as stimulus.

The same corroboration of our view may be advanced here as in our former case. Any reproduced sensorial elements when they are present would seem to be capable of functioning as the imaginal parallel to any concept. The enormous variety of the imagery observed in our experiments would seem to indicate the truth of this generalisation. We find the imaginal content described in terms varying from 'something indescribable;' 'mere scratches;' 'vague blue field with vague black lines—vague as to direction, but straight as to character;' to 'clear visual image;' 'I saw, quite distinctly, the picture:' and evaluated at anything from 1 % to 75 %, by reference to what the observer considered would be a perfect visual image (*i.e.*, an actual percept). These sensorial contents, thus changing and fluctuating from experience to experience, are, as far as we have been able to discover, in no way correlated to the clearness and strength of the supposedly parallel concept. From this it would follow that any sensorial content might be substituted for any other. Indeed we found cases in which such contents derived from one set of our pictures were present with concepts belonging to another. But, if a sensorial content has always its own parallel thought element, how is it

that an adventitious concept can, when abstracted from its imaginal complex, become its parallel? It would seem more reasonable to suppose that the antecedent stimulus (word with its own conceptual element) has aroused by means of a reinforcing intermediary (revived image, *i.e.* sensorial + conceptual element) the associated concept which is the arbitrary meaning of the nonsense-word.

The third hypothesis which (modified in the same sense as those we have already discussed) we may apply to the phantastico - noetic relation is that of interaction. Our experiments make it clear that a percept (nonsense-word) can be antecedent to a concept, either with<sup>1</sup> or without<sup>2</sup> intermediaries. They also show that a concept can occupy the position of antecedent to a consequent image. No other general law need be supposed to explain these sequences than that of associative revival. The exact interplay, however, of these mental contents, conditioned principally by the mental 'set,' and doubtless also to a very considerable extent by other factors, is, as far as our experiments furnish us with information, not ascertainable. In certain cases concept follows image; in others image follows concept. What is the particular law express-

<sup>1</sup> *E.g.* stimulus word → image → concept → reaction.

<sup>2</sup> *E.g.* stimulus word → concept → reaction; or stimulus word → concept → image → reaction.

ing the sequence image  $\rightarrow$  concept ; and what is that expressing the sequence concept  $\rightarrow$  image ? These we have not found. All that we are able to do is to point to the fact that the two sequences image  $\rightarrow$  concept and concept  $\rightarrow$  image are given. This looks like a statement of phantastico-noetic interaction.

But such an inference is not the only possible one. A fourth hypothesis might possibly be advanced. It might be supposed that the sensorial part of images was 'epinoumenal' to their conceptual elements ; and that the series of concepts alone showed a causal sequence. The extreme improbability that any content could be present without exerting a modifying effect on simultaneously present or subsequent contents of consciousness would tell against such an hypothesis. An image (purely sensorial content + conceptual element) is not a concept ; and the one can certainly be discriminated introspectively from the other. It is in the highest degree improbable, therefore, that the effect of the occurrence of a concept upon conscious processes should be precisely the same as that of an image ; and we conclude in consequence that the purely sensorial part of an image, no matter how or for what reason it occurs, may exercise its effect upon those processes.

Nevertheless we may advance the following

hypothesis in the light of the data obtained from our experiments.

Thought sequences obtain mainly between conceptual contents. These are the important and only necessary elements of thought, by associations of which thought processes can alone be explained. Where images are revived as contents, in so far as they may be considered as purely sensorial, they are revived by reason of a conceptual element in virtue of which alone they can become present to consciousness as images. The purely sensorial elements may perhaps in many cases be considered as by-products of the conceptual elements with which they occur in consciousness. The main associations manifested in thought processes obtain between pure concepts and the conceptual elements of images.

In this hypothesis we do not deny that associations may also obtain between the sensorial elements of images and any other elements with which they may at any time have been present in consciousness. We assert that such associations are not a necessary condition of the thought process ; and that, on the contrary, concepts are essential, and the associations between them indispensable.

We shall now proceed to develop our hypothesis, and to adduce evidence in its support.

I. *Thought sequences obtain mainly between conceptual contents. These are the important and only necessary elements of thought, by associations of which thought processes can alone be explained.*

We have, first of all, a number of cases<sup>1</sup> in which the thought process apparently proceeds from stimulus to reaction without the intervention of any imaginal content. The whole process, with the exception of the percept (stimulus word) at the beginning and the spoken reaction word at the end, seems to be entirely conceptual in character; and the successive presence of several concepts, or imageless representative thoughts, is observed.

In most of the cases we shall quote our observers make no reference to images. With regard to these cases it might be objected that the fact that the presence of images was not reported is no certain indication of their absence. We would meet such an objection, however, by the following considerations:—

(i.) The absence of mention of images in a very considerable number of protocols of several (four)

<sup>1</sup> These cases are found in the protocols of the *second* part of our experiments, in which the observers were required to complete partially expressed judgments (as, *e.g.*, "All Robud are——") by adding an adjective. The reaction word in the examples cited below is printed in brackets.

observers is to be taken rather as a strong indication of their absence than otherwise; since in other cases images were duly noted and reported by the same observers.

(ii.) If, notwithstanding, it should still be maintained that images were present and not reported, we must suppose that they were so obscure or evanescent as not to be noticed or remembered. And in that supposition we must agree with Bühler<sup>1</sup> that images of such a character cannot be considered as the clear and concatenated content of thought.

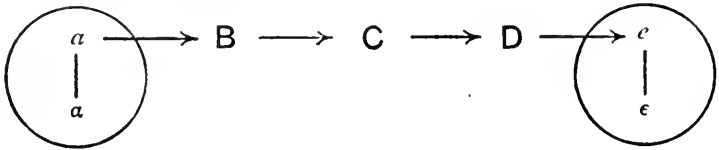
(iii.) But in either case we have shorter thought processes in which the absence of imagery, at any rate with regard to one term of the sequence of contents, is positively asserted.<sup>2</sup> It is permissible to suppose that what can be true of one term can be true of several; and so to maintain that absence of noted imagery in the protocols is good reason for inferring independence of imagery in the thought processes they describe.

Using capital letters to denote concepts, small letters for conceptual elements of images, and Greek letters for their purely sensorial elements, we may

<sup>1</sup> Bühler, *Tatsachen und Probleme zu einer Theorie des Denkens*, p. 319.

<sup>2</sup> Cf. below, pp. 181, *sqq.*

schematise the thought sequences with which we are dealing as follows:—



where  $\begin{pmatrix} a \\ | \\ a \end{pmatrix}$  is the printed stimulus, and  $\begin{pmatrix} e \\ | \\ e \end{pmatrix}$  the spoken reaction word.

It is clear that the thought sequence  $B \rightarrow C \rightarrow D$  is conceptual. We maintain that concepts are therefore the only *necessary* contents of thought; and that the associations between them can alone explain the sequence.

Examples of such sequences are the following:—

Sp. 4", v. 6. *Stimulus*: "No Tuben is (*four-footed*)."  
*Introspection*: "I at once thought of my fat bird. Each of these series has got one representative now. Then I thought that *they* were not quadrupeds. I remember the whole incident of before (*i.e.* a previous reaction). I had idea 'four-footed:' and reacted."

Again, Sp. 1".8, iii. 9.

*Stimulus*: "All Lagoc are (*angular*)."  
*Introspection*: "I understood the sentence. 'Lagoc' meant entity determined to the extent of being a flat geometrical figure; and, I think, slightly contaminated by lake (*lago*). Then a condensed idea of previous experience (iii. 2) arose; and I said with great confidence 'angular,' as satisfying the instruction—'angular' being constituent of that reminiscence."



Again, Sp. iii. 5.

*Stimulus* : "No Goral is (*living*)." 5".2. *Introspection* : "I understood the sentence in the usual way of the word representing an entity. I had the idea 'dead;' and was just about to give utterance to it, when I suddenly had an impulse to consider the meaning of 'Goral' again. Dwelt on idea of 'Goral'—and the idea of musical instrument came out, which suggested to me to say the opposite of 'dead.'"

Again, G. x. 1.

*Stimulus* : "No Tegam is (*living*)." 6".6. *Introspection* : "I knew what 'Tegam' referred to and *thought* of the watering-can that comes in this series, and remembered that we had spoken about it last time. Then I wanted to think whether I should react something stupid, like 'eats.' There was no idea present of *what*, or sensible. Then thought that you always got them so quickly, and something comic. Thought 'whatever I do I must be quick.' The word 'breakable' came (motor) automatically. Rejected because I knew it was not true. Then 'living' came automatically (motor); and I reacted."

Again, G. x. 5.

*Stimulus* : "All Goral are (*made by man*)." 6". *Introspection* : "I recognised the meaning of 'Goral,' and wanted to put words I had used before which came automatically as memories. Then thought of predicating *something* about their connection with prehistoric man. No word came. Then quite automatically came what I said."

Again, F. v. 7.

*Stimulus* : "All Digep are (*eatable*)." 3". *Introspec-*

tion: "'Digep' meant 'fruit' in general. No image. I stopped to think about fruit. Had the idea of food in my head. That gave me the word 'eatable.' At first it came as a thought, I think. Then I reacted."

Again, F. iv. 5.

*Stimulus*: "No Goral is (*small*)." 11". *Introspection*: "The idea I first had was I had had this before. Surprise or displeasure. Inhibition. Then I had the meaning 'carpentering tool;' and I *thought* of 'artistic.' Rejected as having been used before. Then the idea of carpentering tools in my head made me think of size. I realised that none of them, in general, were small. I said 'small.'"

Again, A. iv. 2.

*Stimulus*: "No Funip is (*squiggly*)." 5".6. *Introspection*: "Familiarity with word. Consciousness of tendency to mix up 'Funip' with something else not present in consciousness. Then meaning (of 'Funip') came clearly; then a memory of what you had said in your introspection with regard to 'Funip.' Then idea 'square' came: refused to use it. Then came the idea of the regularity of the figures. Reacted 'squiggly' as being the contrary to this. The 'no' was not in consciousness from an early point in the introspection period (but evidently influenced the reaction)."

Again, A. iii. 9.

*Stimulus*: "All Lagoc are (*difficult for my subjects*)." 9".8. *Introspection*: "I got the meaning of 'Lagoc' at once; and then remembered the reactions of several of my subjects. Then I thought of myself making the pictures on the cards in a very vague, slow way.

‘Difficult for my subjects’ came automatically in spoken words as the reaction.”

In none of the foregoing cases are any images noted between stimulus and reaction.

II. *Where images are revived as contents, in so far as they may be considered as purely sensorial, they are revived by reason of a conceptual element, in virtue of which alone they can become present to consciousness as images. The purely sensorial elements may perhaps in many cases be considered as by-products of the conceptual elements with which they occur in consciousness.*

We have already insisted upon this point. In no case does a ‘pure’ image or sensation occur in consciousness.<sup>1</sup> A ‘pure’ image or sensation is a part of a complex, considered as abstracted from the conceptual element in virtue of which it is consciously an image or sensation. Any one of these complexes is apt, according to the laws of association, to become the antecedent to the revival of any other. Further, any one can function as antecedent to a pure concept; and such a concept can revive either a second concept or an image. What is not here a commonplace of psychology we have shown by the data of our experiments and by

<sup>1</sup> It is perceived. Cf. Külpe, *Bericht über d. I. Kongress f. exp. Psych. in Giessen*, 1904, p. 67. Cf. also Moore, “The Process of Abstraction” (*The Stages of Perception*), p. 132.

immediate inferences therefrom. But since the sensorial elements of an image cannot occur in consciousness alone, it is reasonable to suppose that they are revived by the conceptual element with which they are connected, and which constitutes their meaning. If we allow, as we shall see we have reason to do, that the images in these sequences of images and concepts enter the sequences by reason of their conceptual elements, we shall readily admit that their purely sensorial elements are not directly revived by the preceding concept or image, but are more or less by-products of that conceptual element with which they are connected in consciousness.<sup>1</sup>

III. *The main associations manifested in thought processes obtain between pure concepts and the conceptual elements of images.*

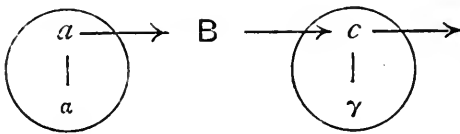
We have already instanced the case of a thought sequence in which concepts alone are reported. In such a case, we have maintained, the main associations evidently obtain between these concepts.

<sup>1</sup> Cf. Betts, *The Distribution and Functions of Mental Imagery*, 1900. “. . . the measure of an individual’s voluntary imagery is no sure measure of the amount of imagery which spontaneously appears in his thinking. We may go still farther and say that the amount of imagery which *appears* in his thinking is not necessarily a measure of the extent to which imagery *functions* in his thinking. For it might very well happen, indeed it is altogether certain, that our associative machinery may bring before the mind many elements which have no function in the thought of the moment, but are only incidents, by-products of the thought process” (p. 64).

Where images also intervene in the sequence we now further maintain that the principal associations are between their conceptual elements and the concepts.

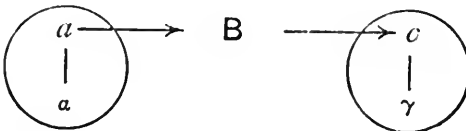
In evidence of this statement we have all the cases in which one term at least of the sequence is a pure concept. In these cases we observe that the complete, and apparently *necessarily* complete sequence obtains between the conceptual elements of the images and the concepts present. The sequence of purely imaginal elements is not necessarily a complete one. We therefore infer that the conceptual sequence is an essential one and the latter unimportant.

Thus, for example, in



This represents: Nonsense-word  $\rightarrow$  concept  $\rightarrow$  exemplificatory image; a frequent case in our experiments. The complete sequence is  $a \rightarrow B \rightarrow c$ ; the incomplete  $a \rightarrow - \gamma$ .

Or, again, in



(Nonsense-word  $\rightarrow$  concept  $\rightarrow$  reaction 'yes.')

Our contention that the main associations in such thought sequences obtain between the conceptual elements of images entering into the sequences and concepts is supported by the following considerations:—

(i.) We have shown that, absolutely speaking, sequences can be discovered which are purely conceptual in character. Hence the conceptual elements would be sufficient to explain those in which images occur.

(ii.) Where at least one pure concept occurs in the sequence it is reasonable to suppose that it is the conceptual elements throughout which constitute the main sequence.

(iii.) Thought processes, and in particular those which we have studied, are concerned with 'objects,' 'meanings,' 'relations,' and 'values.' None of these, as such, are images. Hence the thought processes cannot be explained by the sensorial elements of images which may be present. No image, as we have said, is itself a meaning. It means something other than itself; and it is with meanings that thought deals.

These considerations hold good of thought sequences into which 'natural' (*e.g.*, visual) images enter. Indeed they would hold good also of sequences composed exclusively of such images. Similar observations obtain with regard to those

in which arbitrary images (*e.g.*, verbal) occur. Here, however, we may further remark that if a 'natural' image is not its own meaning, still less can a word with which it has been associated be said to be its meaning. For if the word means the image, then it is the mediate meaning with which thought is concerned. And that mediate meaning is the object, either abstract or concrete, with which thought has to do.<sup>1</sup>

Examples from protocols illustrating our point are the following:—

"I had a distinct memory idea of a hammer with no image and no word. 'Goral' was in consciousness at the time, but did not express the hammer. They existed co-ordinately." Sp. 1", iv. 3.

"Ideopresentation preceded very faint auditory image of 'bird.' I think I had later a very faint visual image of a fat bird." Sp. 1". 4, ix. 5.

"The idea came first then. Then came an image

<sup>1</sup> Professor James seems to have had some such conception in mind when he wrote, "Association, so far as the word stands for an *effect*, is *between* THINGS THOUGHT OF—it is THINGS, not ideas, which are associated in the mind. We ought to talk of the association of *objects*, not of the association of *ideas*" (*Principles of Psychology*, vol. i. p. 554). The language is unusual; and, as it stands, open to misconception. What is probably meant is that objects as present to consciousness are the terms of associations. If so, James has to a certain extent adumbrated our own hypothesis. For the ideas (here *images*) according to James, are not the main terms of the associations. And the objects—the 'things' which, he says, are associated—are the meanings of images or words. These meanings, as we have shown, may be pure concepts. Where images (unassociated ideas) are present, they occur, more or less, as the by-products of associated meanings.

of a dark blue oval disc ; very faint, but greatly adding to the determinateness of the idea." Sp. 0.8", vi. 5.

"The knowledge that 'Ferod' meant 'running away' came first of all. 'Running away' was not present except as meaning of 'Ferod.' (Afterwards) saw picture—wrong picture." G. 1", iv. 7.

"I thought—did not see it—of a cornflower—then remembered the peculiar markings that the pansy tribe has, and got a quite clear visual image of the right one." G. 5", x. 2.

"I repeated 'Funip' and thought of *shape*. No word was present. Then I saw the oval-shaped indigo figure . . ." F. 4".4, viii. 4.

"'Digep' meant fruit. Then I saw the picture clearly, of the nectarines, localised on the table." F. 1".6, x. 1.

"The vague image of a brass pail was referred to the already formed idea, which, so far as I can tell, came first." Sh. 1".4, xiv. 1.

"I heard 'Lagoc' and knew what it meant—the picture of a purple figure. It was distinctly not in consciousness as a visual image. It came when I willed it. Then I looked at it and saw it. This is absolutely certain." Sh. 5", xiv. 5.

"I kept on repeating word 'Kumic.' Feeling of blankness, as before, gradually increasing; and a disagreeable feeling of helplessness. I said to myself 'I don't know this.' Thereupon the meaning 'flower' came. I think an auditory-motor image came afterwards; but I'm not sure. There was no visual image of any kind." Fl. 4".6, ii. 3.

". . . Then, quite suddenly, came the meaning 'bird.' I could detect no image of any kind." Fl. 1".8, ii. 2.



“Nothing except that I knew what it meant.”  
(A visual image arose in the afterperiod.) R. 1", vii. 3.

“ . . . Although I had no image of any sort, I felt confident that I could produce them. I had knowledge.” R. 2".6, vi. 4.

*Application of our Hypothesis to other Phenomena.*—Our hypothesis would seem to cover not only the phenomena observed in our own experiments, but many others also. For instance:—

(i.) It is well known that the reproduction of nonsense syllables is less faithful than that of words having logical meaning, the conditions of learning having been the same in both cases. According to our hypothesis this fact would be explained as follows. The relatively exact reproduction of the words depends upon the associations formed between their meanings; and these associations make a conceptual sequence possible. Since the nonsense syllables have no meaning (other than that of ‘entity,’ ‘nonsense syllable,’ etc., which is common to all of them), a conceptual sequence is relatively difficult to establish in their regard. The nonsense syllables must be learned before they can be reproduced.<sup>1</sup> This ‘learning,’ we suggest, is their subsumption under concepts, or the providing of concepts for them, in virtue of which a conceptual sequence can be formed.

<sup>1</sup> Doubtless, to a large extent mechanically.

(ii.) Although the theory of mental 'types,' in its original form, has been abandoned, there is no doubt that various individuals usually show a predominance of one or another kind of imagery in their thought processes. Some are markedly visual, others auditory, others kinæsthetic in tendency. In our own, as in all experiments upon reproductive representative processes, these typical tendencies, and combinations of them, are noticeable. Now, no matter what sort of imagery is found to have been present—or even if none is reported or discovered—the thought process seems to proceed without break (except, of course, in cases of inhibition) to its end. And the results, in all cases, are similar. The varied character of the imagery seems to have no marked effect upon the conceptual sequence.<sup>1</sup> It is therefore reasonable to suppose that the concatenation of the process is due in the main to the conceptual elements invariably present, and not to the varying concomitant imaginal elements.

(iii.) Our hypothesis would seem to cover the

<sup>1</sup> *E.g.* a visual image of a boy's torso, or of the word 'Robud,' or an auditory or a kinæsthetic image of 'Robud' or 'torso,' or any other form of images or combination of these might be observed to have been present while the meaning of 'Robud' entered into the main conceptual sequence. It is possible, of course, that in making a judgement on 'Robud' the kind of imaginal content might have determined the concept evinced by the reaction word. But it is just as arguable that it was the kind of concept that determined the imagery.

cases of reproduced 'general images' observed by Watt,<sup>1</sup> Messer,<sup>2</sup> and others. In these the sensorial elements are vague, fragmentary, indefinite. In our own experiments such contents were spoken of as "scratches," "vague colours," etc. Yet the conceptual elements present were often enough strikingly clear, complete and definite. It is incredible that these "scratches," "blurs of colour," "ghosts of images," should form the main terms of the sequence of thought, while there are evidently clear and definite focal contents present. Indeed it might be suggested that the 'general image' is no more than the débris of sensorial elements of many percepts or images in constellation with a concept but divergently associated with each other, and vaguely reproduced by association whenever the concept is consciously present.

(iv.) Watt's research<sup>3</sup> (published 1905) definitely established the influence of the task set for his observers upon their subsequent mental processes. This is the principal conclusion Watt draws from his experiments. The chief factor determining the arising in consciousness of a reaction word in fixed relation to the stimulus word

<sup>1</sup> *Loc. cit.*

<sup>2</sup> *Loc. cit.*

<sup>3</sup> Watt, "Experimentelle Beiträge zu einer Theorie des Denkens" (in *Archiv f. d. ges. Psychol.* iv., 1905, pp. 289 *sqq.*).

is the instruction given to and accepted by the observer. The acceptance of the task constitutes a determinant tendency in which the reaction takes place. Now this determinant tendency would seem to be conceptual in character: first of all, since the instruction obviously must be understood before it can be supposed to exert any influence; and secondly, because it conditions the arising of words that are not necessarily sensorially, but conceptually, related to the stimulus word. In our hypothesis the principal associations would obtain between the meanings of the words<sup>1</sup> as determined by the conditioning concept of the instruction.

(v.) In general the facts observed by Henderson in his study of memory<sup>2</sup> appear to fit in very closely with our hypothesis. He finds that assimilation, condensation and modification of details characterise the reproduction by his observers of literary passages read to them. Under the head of 'condensation' he notes that repeated ideas receive only one expression, unimportant words are omitted, etc. 'Modification' includes the fusion of ideas into a new product, the modification of ideas to fit

<sup>1</sup> Which Watt allows to be distinct from the words themselves as sensorial contents.

<sup>2</sup> Henderson, "A Study of Memory, for Connected Trains of Thought" (Monograph Supplement to the *Psychological Review*, vol. v. No. 6, December 1903).

a new context, etc. Now these phenomena would seem to find their best explanation in our hypothesis. The trains of thought followed in the narrative are remembered better, at least, than their sensorial expression. The meanings are connected by the associations formed between them, rather than the words by which those meanings were conveyed to the mind in the first instance, or the images which arose as understanding took place. As forgetting goes on “. . . the contents of the topic dwindle to a few representative details, then forgetting doubtless ceases to impair these save when it sweeps away all except an inarticulate sense of the larger meaning.”<sup>1</sup> This process is “the resolution of the elements into condensed and generalised forms.”<sup>2</sup> Further, “from the testimony of the subjects we are . . . fortified in our notion of the general meaning dominating recall, or better, resolving itself into the details that constitute recall.”<sup>3</sup> Suppose, as we suggest, that the main associations obtain between the concepts involved in connected trains of thought; and we should expect to find all these phenomena to which Henderson alludes. The central concept once aroused would dominate recall. Ideas repeated verbally would be reproduced once. Unimportant words would be omitted; indeed the precise original

<sup>1</sup> *Loc. cit.* p. 84.

<sup>2</sup> *Ibid.*

<sup>3</sup> *Ibid.* Cf. also p. 19.

words would be unnecessary provided the meaning were expressed at all. We should look for fusion of ideas (concepts) and their modification to fit new contexts, rather than for any fusion or modification of verbal forms, or even imaginal contents; though, doubtless, where these are reproduced fusion and modification would also be observed. But we should expect the central concept ("larger meaning") and whatever other concepts arise in connection with it to be comparatively clear and distinct, no matter how modified: and we should look for the washed-out 'general' imagery of which Henderson cites examples, "which plays so important a part in discussions of the general idea."<sup>1</sup>

(vi.) The foregoing instances have been of reproductive processes. Our own Louvain research shows evidence that conceptual preadjustment has a strong influence upon the perceptual process: and Moore has proved that a common diagram ("element") repeated in the groups of diagrams shown to his observers is isolated and cognised as present *before* any imaginal element is to be found in consciousness. "The subject knew," he writes, "(a) that a common element of some kind was present. (b) He then knew that it was circular in form. (c) And finally he obtained the true mental

<sup>1</sup> *Loc. cit* p. 19.

image or at least a mental state that enabled him to reproduce correctly the figure he had perceived.”<sup>1</sup> Moore concludes, as we have seen, that “the mental image forms no essential part in the apprehension of a figure.”<sup>2</sup> This conclusion reached by experiments on perception fits in very exactly with our own hypothesis. Where Moore asserts that imagery is not essential to apprehension, we maintain that it is not essential to reproduction. Indeed, the latter would seem *a potiori* to be true once the former is proved. In neither case, however, are the purely sensorial elements of images excluded from having any function in the processes of thought. As we shall see, images on account of their sensorial character have an exceedingly important part to play in those processes.

(vii.) Lastly, facts observed by Bühler in his experiments upon thought processes<sup>3</sup> seem to be explicable on no other hypothesis. Indeed Bühler, whose work stands in the forefront of all that has been done in this direction, himself explains the continuous thought processes by means of concepts, and refuses to allow that they can be accounted for

<sup>1</sup> Moore, *The Process of Abstraction*, pp. 133 *sqq.*

<sup>2</sup> *Ibid.*

<sup>3</sup> Bühler, “Tatsachen und Probleme zu einer Theorie des Denkens” (in *Archiv f. die ges. Psychol.* ix., 1907, pp. 297 *sqq.*, xii., 1908, pp. 1 *sqq.*).

by images. This is also our own hypothesis, supported not only by the evidence of our present research, but by that of a number of other experimenters, and verifiable by application to other mental phenomena, instances of which we have placed before our readers.

*The Origin of Concepts.*—Two questions of considerable importance remain to be discussed in this connection. How does the concept originally arise? What is the function of the sensorial elements of images? Why have these latter not been dropped away, in virtue of some principle such as that of psychical economy, if thought can go on without them?

The first question raises the problem of the genesis of thought, into which, except in the most cursory manner, we do not here propose to enter; and this mainly because it forces us away from the phenomenological standpoint we have taken up. Nevertheless it is possible for us to indicate a line of speculation, the beginning of which may be found in observed facts.

The thought, or conceptual element, we have said, is present in all perception. In our experiments, it was given in the first picture shown with the nonsense-word of each series. But it is given, not as something entirely novel, in the complex: it



is recognisable as something previously in consciousness. The observer repeating 'Tuben' saw a '*bird-picture*:' with 'Lagoc' he saw a '*single line coloured picture*,' or a '*geometrical shape picture*,' or a '*coloured surface picture*;' and so on. Now this relating of the percept to an apperceptive mass is the subsuming of it under some appropriate concept, already abstracted from previous experience. And it is in virtue of the conceptual element in the image complex that this subsumption is possible.<sup>1</sup> Now this conceptual element varies vastly, in its representative function. It may 'place us before' a 'thing' or a 'goose;' before an 'it' or a 'musical instrument.' Is it, in each case, a simple concept, or a complex one? Is the percept related to one apperceptive mass or to several—subsumed under one or several concepts—in perception? This we have no means of saying. Psychologically considered, the concept is not further analysable. Our observers have discriminated in it no parts or elements, as they were able to do with regard to the sensorial part of the complex. No matter what its logical implications may be, we have so far, from the phenomenological point of view, no data from our experiments which will allow us to

<sup>1</sup> This not only seems to be evident from the considerations we have already advanced, from the experiments of this research, and, in a greater measure, from those of the study we made at Louvain, but it is also proved by the results of Moore's research. Cf. *loc. cit.* p. 127.

analyse it. It *may* be complex. We are not in a position to bring evidence that it is, or is not.

Still, whether simple or complex, as the purely conceptual element in adult perception and reproduction how does it originally arise? According to the hypothesis that we advance, the answer must be that it arises in the first perception.<sup>1</sup> In this, sensation, or sensible percept, is given as content: but neither, as we have seen, is found in consciousness without a conceptual element. No matter what the first perception may be—light, darkness; heat, cold; sweetness, bitterness, etc.—its conceptual element will be of a character that will apply indiscriminately to all. It will be equivalent to the ‘it,’ the ‘that thing,’ the ‘something,’ of our experiments. The second perception will also involve the conceptual element—‘thing;’ but the “transitive thought” of comparison and discrimination—thought as ‘act’—will give to each a certain definition and precision. We are assisting here, in theory, at the birth of differentiated concepts, which develop from the original first perception in virtue of experi-

<sup>1</sup> We say “the first perception.” *Two* cases may be supposed: (i.) that in which one object is present to mind *ab exordio* of mental life; (ii.) that in which no object is so present. In the first case, by “the first perception” we mean the first change of object; since to us an object changelessly present to mind *ab exordio* seems equivalent to no perception. In the second case we mean literally “the first perception.” Cf. Spencer, *Principles of Psychology*, vol. i., p. 147.

ence and “transitive thought.” Under such concepts, where it is possible, further experience will be subsumed, because of its conceptual element. Where this subsumption is not possible, modified concepts will arise; and so on, until we come to the stage which our observers had reached when our experiments were performed; at which it is hard to say if any wholly new concepts were involved at all. Of course this is theory; and takes us beyond observable phenomena. None of us has the consciousness of that first concept. None of us remembers the stages by which it became differentiated. But we have experience, as we have shown, of such concepts, either in complexes with sensorial elements, or subsisting alone in consciousness; and we have also experience of the “substantive thoughts” by which ‘it,’ or ‘something’ is represented.

*The Function of the Sensorial Elements.*—Thought processes according to the hypothesis that we have framed essentially involve the concept, as ‘content,’ and both “substantive” and “transitive thought” considered as ‘act.’ But these processes are *generally* such as to involve also the presence of the sensorial elements of images whenever conceptual “substantive thought” occurs. What is the function of these sensorial elements; and why have they not long since disappeared from the

thought processes? The answer to such a question would seem to lie in the character of the thought process itself and in that of perception.

(i.) With regard to the thought process, the fact that it is a changing process is sufficient to account for the usual presence of the sensorial part of the image complex. Thought is perpetually in process of becoming, in which process it passes beyond itself. It is instable. But the image is a relatively stable formation;<sup>1</sup> and as long as it is present, or can be maintained present in consciousness, its conceptual element will also tend to remain. Its relative stability may be said to confluence into the concept. Thus when close attention to anything is necessary, either an image is reproduced, or a percept is sought for and held in consciousness. Thus also, the concept having once been abstracted and associated with a word, the word is of the greatest use in keeping the concept relatively stable. So we can conceive why, when reading, speaking or hearing language, as a rule no, or poor, visual imagery is consciously discriminated; while, if we stop to ask ourselves what an unfamiliar word means, we generally discover that another word, or an image, is aroused as exemplificative of its meaning.

<sup>1</sup> Cf. James, *Principles of Psychology*, vol. i. p. 243.

(ii.) Secondly, in perception, as a rule<sup>1</sup> the sensorial elements and the conceptual are given together in the complex percept. When, as is usual in ordinary life, this constitutes the representative content, the whole is at the focus of consciousness. It would follow that a strong reproductive tendency must *always* obtain between the concept (whenever and for whatever reason it is reinstated) and the sensorial elements with which it was associated. It would consequently tend to reinstate them.<sup>2</sup> So also, when associated with a word or symbol, a similar tendency would obtain.<sup>3</sup> Finally, if a

<sup>1</sup> We say "as a rule," since Moore's experiments show that the concept can be aroused in perceptual processes without the arousal of sensorial elements.

<sup>2</sup> Cf. Betts, *The Distribution and Functions of Mental Imagery* 1909, "That imagery persists in the degree which it does is undoubtedly in large part due to the permanence of association, which also accounts for the presence of so much imagery which is irrelevant" (p. 92).

<sup>3</sup> Instances of these tendencies are the following:—

"I knew what 'Robud' meant without translating it into anything. I could have reacted on that knowledge; but let picture come, and had a visual image, not very clear, of a boy or girl facing me, with a big hat on. It was before me as a general. The image did not change the meaning," G. 2", xvii. 5.

"A very vague ideopresentation of a bird, as indeterminate, pretty well, as the word 'bird.' It was followed by a few fragments of colour in an image, and a faint auditory presentation of the word 'bird;' and a more definite idea of the *kind of bird*. The generality of 'bird' was now determined to the class that I have been having in these experiments," Sp. 1".2, vii. 8.

"The experience was almost wholly ideopresentational. There seemed to be a trifling admixture of image, but so exceedingly vague and fragmentary that I could not say if it was of the word 'tool,' or of bits of tools. I can't distinguish if it was auditorily or visually present. These bits of imaginal meaning seemed to stick round the meaning like leaves about clothes when one has been in bushes. The meaning was quite general," Sp. 1".4, ix. 2.

"I knew what it was: and had a very vague image which I should say was what I call *the* 'Tuben.' General knowledge," R. 1".4, viii. 3.

"'Digep' meant—I don't know whether 'food' or 'fruit.' It meant one

concept of the same character be abstracted from several percepts, its reinstatement would, according to the laws of preferential revival, reinstate the sensorial elements of one of these percepts, or else a complex, more or less vague, of some of the reinstated elements of many. This last case would be the reinstatement of the 'general,' or 'compound image' mentioned by Watt, Galton, and others.

(iii.) There is a third, and even more important reason, why the sensorial elements of images should usually arise in connection with the concepts. With the conceptual the sensorial elements are given *actually* in experience.

The latter therefore form a basis for existential cognition. Thought mainly is of 'things.' Its objects are usually concrete individuals; and, as we shall see, the presence of an individual to mind is phenomenologically characterised by the sensorial content. We should expect, consequently, to find the sensorial elements of images generally present in connection with the thought processes.

We conclude from these considerations that the relation of imagery to thought is not always a necessary one. We cannot, indeed, explain the genesis

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or the other. Then I heard the word 'fruit.' After that I saw the picture of the apple," F. 2', xvi. 4.

of thought without the presence of a percept with all its sensorial implications ; but we find that, when the concepts are once abstracted, they can appear as terms in a conscious sequence without essentially related sensorial contents. When these latter are found to be present in relation to the concept, we have what is considered as an “exemplificative,” “symbolical,” “illustrative,” image, etc. But the causal relation is one of association ; and the sensorial term of the association obeys the laws of preferential revival.<sup>1</sup> Thinking, as far as content is concerned, involves concepts ; and can take place with concepts alone as contents. The principal functions of the sensorial elements of imagery are to hold concepts relatively stable and to supply the place of the percept in all its sensorial character when an individual is thought.<sup>2</sup>

<sup>1</sup> Which laws may operate in *preventing* sensorial revival.

<sup>2</sup> Cf. pp. 169, *sqq.*

## SECTION III

### FUNCTIONING OF WORDS LEARNED IN JUDGEMENTS

#### § 1. *Procedure.*

THE experiments in which the data that are considered in this section were obtained consisted in the exhibition of uncompleted sentences to the observers, with the instruction that they were to complete them by orally adding a suitable adjective, or word having the grammatical value of an adjective. The subjects of these sentences were the nonsense-words which had been learned with the sets of pictures—‘Funip,’ ‘Robud,’ ‘Kumic,’ etc.—qualified by the adjectives ‘all,’ ‘no,’ ‘the first,’ etc. Cards were prepared with rectangular openings through which the printed nonsense-words appeared; and upon these cards were printed the adjectives and verb which, with them, formed part of the expression of a judgement. We employed, for example, such stimuli as the following :—



All <span style="border: 1px solid black; padding: 2px 10px;">Digep</span> are	No <span style="border: 1px solid black; padding: 2px 10px;">Ferod</span> is
The largest <span style="border: 1px solid black; padding: 2px 10px;">Sorab</span> is	The first <span style="border: 1px solid black; padding: 2px 10px;">Tegam</span> is

The time elapsing between the exposition of the stimulus-card—which was shown 0·75 sec. after a signal “Attention!” had been given—and the completion of the judgement by a spoken word was recorded by the stop-watch. It was arranged that observers of the first class should each complete fifty such judgements with the printed stimuli, and fifty more with the part judgements read aloud to them. The time was taken in this latter case *from* the articulation of the first syllable of the nonsense-word *to* the reaction word. We obtained, however, only 340 completed judgements in all with these observers, since Sp. only had 40 of the second kind, and Sh. none. To these we may add our own 70, and the 85 obtained from the two observers of the second class—in all of which the stimuli were read aloud. The total number of judgements thus secured was 495, distributed as follows:—

[TABLE

Observer.	With Printed Stimuli.	With Spoken Stimuli.
Sp. . . . .	50	40
Sh. . . . .	50	0
G. . . . .	50	50
F. . . . .	50	50
A. . . . .	0	70
Fl. . . . .	0	50
R. . . . .	0	35
Total . . . . .	200	295

When each judgement was completed by the spoken adjective the observer's introspection was dictated. He was particularly asked to note (i.) the phenomenological presence in consciousness of the meaning of the subject of the judgement; (ii.) whether the meaning of the subject had a consciously general or particular reference. This made it possible to ascertain if the part judgement stimulus had really functioned in accordance with the general instruction. There were only a few cases in which an inversion ('individual' judgement with stimulus 'universal' in form and *vice versa*) occurred; and these, except where noted, are placed in the columns headed "Unclassified" in the annexed tables.

§ 2. *Phenomenological Conditions of 'Universal' and 'Individual' Thought.*

Analyses of the protocols were made under two

main heads: (i.) the phenomenological presence of the meaning of the (grammatical) subject; (ii.) the phenomenological presence of the meaning of the (grammatical) predicate.

TABLE VI

PHENOMENAL PRESENCE OF THE MEANING OF GRAMMATICAL SUBJECT IN 'UNIVERSAL' AFFIRMATIVE JUDGEMENTS

*No. of Protocols analysed, 154.*

I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.
Observer.	Image prominent.	Concept discriminated from and preceding Image.	Time Order of Concept and Image not determinable from Protocols.	Pure Concept; no Image.	Intermediary Process followed by pure Concept.	Failures.	Unclassified.	Total No. of Cases Analysed.
G. . .	24% <sup>(a)</sup>	36%	0	40%	0	0	0	25
F. . .	20% <sup>(b)</sup>	32% <sup>(d)</sup>	0	44%	0	0	4%	25
Sp. . .	4%	16%	32%	40%	0	4%	4%	25
Sh. . .	30% <sup>(c)</sup>	0	37%	4%	0	30%	0	27
A. . .	0	5%	11% <sup>(e)</sup>	84%	0	0	0	19
Fl. . .	65% <sup>(f)</sup>	0	35%	0	0	0	0	20
R. . .	31%	0	69%	0	0	0	0	13
Average	25%	13%	26%	30%	0	5%	1%	...
Total .	24%	14%	23%	31%	0	6%	1%	154

(a) In three cases the image was preceded by an inhibition. Cf. p. 191.

(b) In two cases the image was preceded by an inhibition.

(c) In five cases, however, the concept, though not mentioned by Sh., seems clearly to have been present.

(d) In two cases image arose as a 'contrary instance.' Cf. p. 195.

(e) The images here were verbal, not visual.

(f) Although concept is not mentioned in the protocols of Fl., it is clearly to be inferred as present in most of these cases: and Fl. states that, as a fact, it generally *was* present. If we classified, therefore, the major part of these cases in column IV. it would reduce the disproportionate figure in column II.

Under the first head the protocols fall naturally into three groups: (i.) those in which the affirmative 'universal' (or potentially 'universal'), as indicated

TABLE VII

PHENOMENAL PRESENCE OF THE MEANING OF GRAMMATICAL SUBJECT IN 'UNIVERSAL' NEGATIVE JUDGEMENTS

*No. of Protocols analysed, 112.*

I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.
Observer.	Image Prominent.	Concept discriminated from and preceding Image.	Time Order of Concept and Image not determinable from Protocols.	Pure Concept; no Image.	Intermediary Process followed by pure Concept.	Failures.	Unclassified.	Total No. of Cases Analysed.
G. . .	9%	48%	0	39%	0	4%	0	23
F. . .	17%	61%	0	17%	0	4%	0	23
Sp. . .	8%	13%	29%	42%	0	0	8% <sup>(d)</sup>	24
Sh. . .	40%	0	40%	0	0	20%	0	5
A. . .	15%	5%	15%	65%	0	0	0	20
Fl. . .	10%	80% <sup>(a)</sup>	10%	0	0	0	0	10
R. . .	56%	29% <sup>(b)</sup>	0	14% <sup>(c)</sup>	0	0	0	7
Average	22%	34%	13%	25%	0	4%	1%	...
Total .	16%	35.5%	11.5%	33%	0	2.5%	1.5%	112

(a) The image, in one case, followed upon an inhibition.

(b) The image, in both cases, followed upon an inhibition.

(c) This (one case) is a "memory."

(d) These cases belong doubtfully to column IV.

by the stimulus words, had been consciously present (154 protocols: Table VI.); (ii.) those in which the negatively 'universal' judgement had

been completed (112 protocols: Table VII.); (iii.) those in which the particular ('individual') had been consciously present (229 protocols: Table VIII.).

TABLE VIII

PHENOMENAL PRESENCE OF THE MEANING OF GRAMMATICAL SUBJECT IN 'INDIVIDUAL' JUDGEMENTS

*No. of Protocols analysed, 229.*

I. Observer.	II. Image immediately present and prominent in Consciousness.	III. Concept of Abstract without Image followed by Individual Meaning with Image.	IV. Concept of Abstract with Image followed by Individual Meaning with Image.	V. Concept of Abstract without Image followed by Individual Meaning without Image. <sup>1</sup>	VI. Individual Meaning immediately present without Image. <sup>1</sup>	VII. Unclassified.	VIII. Total No. of Protocols Analysed.
G. . .	63%	29%	4% <sup>(b)</sup>	2%	0	2%	52
F. . .	38%	52%	0	6%	2%	2%	52
Sp. . .	69% <sup>(a)</sup>	14% <sup>(a)</sup>	2%	2%	0	12% <sup>(c)</sup>	42
Sh. . .	56%	0%	17%	0	0	28% <sup>(d)</sup>	18
A. . .	52%	26%	6%	6%	6%	3%	31
Fl. . .	40%	50%	5%	0	0	5%	20
R. . .	64%	21%	14%	0	0	0	14
Average	55%	25%	7%	2%	1%	7%	...
Total .	55%	30%	5%	3%	1%	6%	229

<sup>1</sup> The cases included in these columns are dealt with at length in an appendix. Cf. p. 249.

- (a) In one case preceded by a mnemonic.
- (b) In both cases said to be "typical images."
- (c) Of these three remained abstracts: task not fulfilled.
- (d) Task not fulfilled.

The analysis of these protocols was made twice; and the results are presented in two sets of tables. In the first set (Tables VI., VII., VIII.) the

presence of the 'universal' (or potential 'universal') affirmative and negative, as well as that of the 'individual,' is considered with regard to its connection with imagery. In the second set (Tables X., XI.) these are considered as consciously 'universal' or 'individual.'

The results of the analysis of the phenomenological presence of the meaning of the predicate, in 'universal' affirmative, 'universal' negative, and 'individual' judgements, are displayed in three further tables (Tables XII., XIII., XIV.).

We have now to investigate the circumstances in which "substantive thought" as content is present in consciousness as 'universal' or 'individual.'

In paragraphs ii. and iii. of section ii. we noticed the presence of concepts, or imageless "substantive thought" contents; and upon this data we based our considerations as to conceptual abstraction and the hypothesis that we advanced as to the relation of imagery and thought. We there found (cf. Table IV.) that concepts occurred during the learning period with no mention of sensorial contents in 45 cases (7 % of the total). They occurred and were discriminated by our observers from accompanying sensorial contents in 226 cases (35.5 %). Thus, in connection with and in the absence of sensorial contents such concepts were observably present in

42.5 % of the total number of reactions (635) of the 'learning period.'

These figures are strongly corroborated by the data from our experiments on the completion of the part judgements. Here we find that: (i.) the meaning of the subject of 'universal' affirmative judgements in 31 % of the total number of cases is reported as a concept,<sup>1</sup> while in 37 % this was

<sup>1</sup> Examples of meaning of subject given as concept without imagery in 'universal' affirmative judgements.

"'Tuben' meant birds in general. I saw no pictures: I *thought* of birds in general. Then I *thought* feathered: and said it aloud," F. 2".2, viii. 6.

"'Sorab' meant musical instrument. There was no image. The word 'noisy' was then present as a mere recollection that I had used it before in connection with 'Sorab.' I reacted 'tuneful,'" F. 3".6, iv. 8.

"I read this (stimulus) and then *knew what it meant*. No image. Then I had the words 'hard to learn,' 'sonorous,' 'harmonious;' I rejected all those and said again to myself 'All Sorab are,' and waited. Then I had an idea, to which I did not put any words 'have a civilising tendency,' . . ." G. 3" iv. 8.

"I recognised the meaning of 'Goral,' and wanted to put words I had used before which came up automatically (as a memory). Then I *thought* of predicating something about their connection with prehistoric man. No word came. Then quite automatically I reacted 'made by man,'" G. 6", x. 5.

"I recognised the word 'Tegam,' and same moment recognised that it was what I'd said for 'Lagoc' . . . Considered that to say 'what I meant by "Lagoc"' would fulfil the instructions. Accepted (this) as a sufficient account of the whole matter. There were *no* images, except 'Lagoc' auditorily (just before the reaction)," Sh. 7", i. 10.

"I read through sentence without completely understanding, *i.e.* 'Robud' did not contribute its part. When I tried to make it do so, it seemed obstructed by the fact that it seemed singular. When I

observed and discriminated from accompanying sensorial elements.<sup>1</sup> (ii.) The meaning of the subject of 'universal' negative judgements is reported as a

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managed to make it plural, the sentence at once became completely understood. It was quite universal. There was an ideopresentation, but no images," Sp. 5".6, ii. 3.

"I had a collective idea quite distinct; not a trace of any image. At the same time the idea was not in as close connection with 'Tuben' as in ordinary language. There was, after the sense of familiarity, this meaning, 'birds,'" Sp. 2".2, i. 1.

"Familiarity with the word 'Funip,' but could not get its meaning at all. Consciously tried to differentiate it from that of another word which I could not get. Then got meaning of 'Funip.' The word 'all' was then prominent in consciousness. Thought of single-line figures and coloured figures: rejected these, . . ." A. 8", iii. 2.

"Meaning of 'Robud' developed gradually as a general. The idea came 'cut in half' (no image or word). Then word 'torso' came auditively with memory, . . ." A. 8", iii. 2.

R. has only cases of pure substantive thought FOLLOWED BY imagery.

"Again the mnemonic intervened. I was aware of it without its being internally articulated. Word 'edible' then occurred to me *after* which two specimens (of 'Digep') became visible, . . ." R. 11".4, vi. 1.

"There I had to think in order to determine 'Kumic' as against 'Funip.' This was done before any image occurred. None of 'Funip' did occur. *Then* I had *exemplificative* sketch-images of two specimens of 'Kumic,' . . ." R. 11", vii. 5.

"The first thing that occurred to me was 'either a boy or a girl.' This was a *thought*. Next thing was 'coloured'—*thought*. Too flat: and I'd given it before . . . My thought was 'actively employed.'" [Reaction word *active*], R. 6".2, vi. 4.

<sup>1</sup> Examples of meaning of subject given as concept concomitant with imagery, but distinguished from it, in 'universal' affirmative judgements.

"'Goral' *meant* hammer first; and with that meaning I saw the picture of the hammer . . . meaning 'carpentering instrument' came, image still there, . . ." F. 6", v. 5.



"I read (stimulus) and with a vague image of a hammer, which was clearly *understood* as a general" (*i.e.* all carpentering tools), "I had word 'useful' (kinæsthetic). Then said 'I've used that before.' Then 'handy' came (kinæsthetic) with same meaning as useful, . . ." G. 3".2, i. 5.

". . . Not quite sure which of two sets of figures this word meant; but chose the moving figure, which was in my consciousness as a very vague image of dark floppy moving legs, with knickerbockers, etc., hanging about them. Had idea of moving, simply—which I expressed by reaction word," Sh. 8".4, v. 2.

"I had a 1% image and a very clear idea (but not determinate) of a chubby-faced boy. For instance, he was side-faced, but I couldn't say which side. The judgement was made with strong conviction that 'rosy' applied to them all, although only that one was determinate. I suspect that it derived from several," Sp. 2".4, v. 3.

"Had 2% image of speckled yellow bird and idea that it was illustrating a whole class of my experiences. A conviction that all . . . were plump," Sp. 2", viii. 6.

"The meaning came confused with the auditory image 'bird,' and the word 'alike' arose auditorily. Was rejected consciously because it would do for any set . . . 'Bird' was symbolic, I think, and the generalisation was consciously made from a typical idea," A. 4".4, ii. 6.

"I got it at once. The word 'hammer' was in consciousness (? auditorily). It had a conscious symbolical value of them all. It did not mean 'hammer'; and it did not give me the meaning, as far as I can tell. It meant 'tools' absolutely in general—not the five pictures shown," A. 3".2, v. 5.

"Took some time to get the meaning of 'Ferod.' It arose very gradually, *with* a confused mass of visual images, . . ." Fl. 5", i. 4.

"Understood first 'Tuben' as abstract, with very vague visual image, then the whole sentence. Dwelt rather on the meaning 'all Tuben:' there were then *no* images. Very vague visual image came back again—only a vague mass of brownish feathers. Word 'bird' arose, . . ." Fl. 2".6, viii. 3.

"I saw two or three of them. There was a confident knowledge there without a survey of all the individuals. I knew that 'youthful' would describe them all," R. 3".6, iv. 4.

concept<sup>1</sup> in 33 % of the total number of cases ; and in 47 % this was observed and discriminated

<sup>1</sup> Examples of meaning of subject given as concept without imagery in 'universal' negative judgements.

"I *thought* 'Nuisance, it's a negative one again. Then *thought* that I must be careful to predicate something that does not belong to 'Kumic.' Blank in consciousness—quite a blank. No anxiety. After a time the *idea* (no image) of nastiness came. Then I had to *think* 'was it true?' and read 'No Kumic is nasty.' I decided it could be true. Then I translated 'Kumic' into 'flowers' to test again," G. 14", ii. 5.

"I knew what 'Tegam' referred to and thought of the watering-can . . . series and remembered that we had spoken about it last time . . ." (no images), G. 6".6, x. 1.

"I read this; and I just took a second to stop—to realise what 'Robud' means. Then I knew what it meant (without images), and recalled the adjective I last had for it. . . . Then I saw the pictures of two of them, just vaguely, . . ." G. 4".4, iii. 3.

"'Lagoc' just meant the series of those peculiar figures. The meaning had reference to all. I *knew* that none of them were round," F. 2".6, viii. 9.

"The *idea* I first had was that I'd had this before. Surprise or displeasure . . . Then I had the *meaning* 'carpentering instrument,' 'tool,' and I *thought* of 'artistic,' . . ." F. 11", iv. 5.

"I was *thinking* of shape of 'Funip' as soon as I saw stimulus, before I was very clear as to meaning of 'Funip.' Words 'circular' and 'curve' came into consciousness as *ideas*, . . ." F. 7".6, iv. 2.

"I at once thought of a little boy. Then I thought 'no Ferod is female,'" Sp. 1".8, iv. 10.

"I at once thought of my 'fat bird.' [Each of these things has got one representative now.] Then I thought that they were not quadrupeds. Remembered the whole incident of before. Had *idea* 'four-footed.' Reacted *four-footed*," Sp. 4", v. 6.

"I understood the sentence in usual way of word representing mere entity. I had the *idea* 'dead:' was just about to give utterance to it, when I suddenly had impulse to consider the meaning of 'Goral' again. Dwelt on *idea* of 'Goral.' Came out the *idea* of musical instruments which suggested to me to say the opposite," Sp. 5".2, iii. 5 (Goral=tool).

"Got the *idea* 'Lagoc.' Word 'black' came with knowledge that there was a black one. Knowledge that they were all coloured, . . ." A. 4", v. 9.

"Familiarity with word. Consciousness of tendency to mix up 'Funip' with something else not present in consciousness (except as something else). Then meaning came clearly. Then a memory of what you have said in your introspection with regard to 'Funip.' Then the *idea* 'square,' which I refused to use. Then *idea* of the regularity of the figures. Reacted 'squiggly' as being contrary to this *idea*," A. 5".6, iv. 2.

"I saw and heard the stimulus. Familiarity with 'Tegam' before I got its meaning. Then prominence of 'no.' Then a very fleeting review of first three 'Tegams'—if visual images not discernible; but I think I detect eye movements. Knowledge of what they were for," A. 3", iii. 1.

"Meaning arose gradually, first 'Kumic,' then 'no Kumic.' Search for attribute not possessed by any 'Kumic.' Words 'large' and 'small' arose and persisted. Rejected as inappropriate. Fluctuating visual image of 'Kumic'—attention gradually changing from form to colour. White and cream colour were the most prominent. Suddenly the *meaning* 'brown' occurred with visual and auditory image, . . ." Fl. 10", viii. 5.

from accompanying sensorial elements.<sup>1</sup> (iii.) The meaning of the subject in 'individual' judgements was *dubitably* given without imagery in 4 % of the total number of cases.<sup>2</sup> Concept with sensorial

"Some time fully understanding sentence. Understood, first 'Funip,' then 'Funip is,' then 'no Funip is.' Period of confusion, owing to absence of set. Recalled task. Series of visual images: auditory image of word 'nice' became very prominent, though it appeared to have no connection with the other contents of consciousness. Inhibited tendency to react 'nice.' *Thought* 'Nice' must refer to 'Digeip' rather than 'Funip,' . . ." Fl. 3<sup>o</sup>.2, x. 2.

"There I clearly knew the meaning of 'Ferod' before I saw any images: and the discovery of the adjective was mediated by a recollection of a former question in the opposite sense (every Ferod is). When this question was given that memory saved me the trouble of going through the series of mnemonics. I don't think I saw one of them before I reacted," R. 12<sup>o</sup>, vii. 4.

"At first great uncertainty as to what 'Kunic' meant. Then I decided (on what grounds I am unable to say—by that state of judgement by which you feel sure). After the decision there was a series of images. I hesitated to reply, because I wasn't sure the list was complete, . . ." R. 60<sup>o</sup>, iii. 5.

<sup>1</sup> Examples of meaning of subject given as concomitant concept discriminated from accompanying imagery in 'universal' negative judgements.

"I knew what it meant *and* saw a picture I'd made up for myself—a sort of type of Lagoc, . . ." G. 8<sup>o</sup>.8, viii. 9.

"That gave me the meaning of fruit *and* I saw the picture of the apple quite distinctly," F. 6<sup>o</sup>.8, ii. 7.

". . . I dwelt on 'Funip;' and two ideopresentations came. One was accompanied by a 1 % image of a vertical oval. The other was of very indeterminate character, but different from the oval. Then I had the *thought* 'at any rate none of them is square,'" Sp. 3<sup>o</sup>.2, i. 2.

"Clear idea and 2 % image of a reddish fruit," Sp. 4<sup>o</sup>, vi. 7.

"I *know* they have no legs: but I *see* they have hats. The actual figures (i.e. visual images) are too vague to particularise. The only feature at all definite is a large tan o' shanter hat which keeps changing colour and position, . . ." Sh. 3<sup>o</sup>.2, iv. 9.

"There was certainly knowledge of 'Robud' in general and what one might call a visual image of the first 'Robud,' extremely vague and absolutely nowhere. It was symbolical and did not mean itself," A. 3<sup>o</sup>, vi. 3.

"Meaning of 'Sorab' developed gradually, with a vague visual image of the trumpet. There was present knowledge that this was yellow—and that none of the individual 'Sorabs' was white, . . ." A. 3<sup>o</sup>.4, ii. 8.

"Very vague visual image of apple seemed to appear almost before the *meaning* of 'Digeip,' some time before the meaning of the sentence, . . ." Fl. 3<sup>o</sup>.2, ix. 1.

"I had one or two images—not all, and *very* indistinct. Which was enough to tell me that they were all running, or walking, or pulling something. That excluded the passive attitude," R. 2<sup>o</sup>.6, ii. 4.

<sup>2</sup> These cases are discussed below. Cf. Appendix, p. 249.

elements (image) occurred in these judgements 35 % times.<sup>1</sup> We have also to record the presence

<sup>1</sup> Examples of meaning of subject given as concept in connection with imagery in 'individual' judgements.

"This immediately suggested the violin *and* the picture of the violin, . . ." G. 21".4, x. 8.

"I knew what it meant (general or universal) first. Thought I did not know the relative sizes—that, in the pictures, they were more or less equal. Then saw some of the pictures rather distinctly—particulars to my mind. Decided goose was rather the largest, . . ." G. 14".4, x. 6.

"There I knew 'the first Kumic' immediately—a memory, I think it was. I did not see it all—or bother to see it all. *I only saw the little calix* . . . It was particular from the beginning," G. 3".4, x. 4.

"I had the idea of shape: then I saw the shape of the black 'Lagoc' and the mauve one, one above the other. I compared the two: and the mauve seemed to be the largest," F. 3", x. 9.

"I got the meaning of 'Digep' as fruit; but could not understand what 'this Digep' means. Then heard the word 'cherries' and had visual image of apple, . . ." F. 34", i. 7.

"I had a very distinct idea . . . and a very distinct 3 % or 4 % image of the black 'Lagoc,'" Sp. 4", vi. 9.

"Momentary inhibition. I could find no meaning. Clear visual image of a hammer—colours and lines; lines very prominent. No other images. Meaning at once," Sh. 7", v. 3.

"Meaning of 'Digep' came fairly clearly. Then very slowly developed the apple, one of the cherries, and the peach . . . all located in space and very faint visual images," A. 10".8, iv. 7.

"Understood first 'Ferod:' surprise at word 'cloaked' of stimulus. Some little time realising its meaning. As soon as I got it, had vivid visual image of a 'Ferod,' with blue cloak, striding," Fl. 2".4, viii. 4.

"Meaning of sentence arose very gradually. Understood first 'Tuben,' then that it referred to a single 'Tuben;' for a moment, with visual image of this, that it referred to the largest 'Tuben;' and finally, 'the brightest.' Search for brightest coloured. Obtained image of it, . . ." Fl. 9".8, iv. 3.

"I knew what 'Kumic' was very distinctly before anything appeared—but not instantly. It took an appreciable time. Then

of imagery noted by our observers as giving the meaning of the subject in all three forms of judgement. This phenomenon occurred in 24 % of the 'universal' affirmative judgements, in 16 % of the 'universal' negative judgements, and in 55 % of the 'individual' judgements. We have already set forth our reasons for maintaining that, even in these cases, concepts were *de facto* present and operative; but they were not reported by our observers.

Two striking and highly significant points are apparent in the figures just given. First, in relation to the subjects of 'individual' judgements, we notice an extraordinarily marked falling off in the percentage of concepts reported as not accompanied by sensorial contents. The 31 %<sup>1</sup> and 33 %<sup>2</sup> (reached on totals of 154 and 112 protocols respectively) for the 'universal' affirmative and negative judgements, dwindles to 4 %<sup>3</sup> (on 229 protocols) for the 'individual' judgements.

Indeed, it may be maintained that there is *no*

two or three specimens occurred . . . a blue one, a yellow one. One seemed to be a rose which was red, . . ." R. 20", vi. 5.

"It was certainly a universal, as the word 'Digeþ' first occurred to me—and at first was not connected with the mnemonic. Then, as the sentence referred to a particular 'Digeþ,' I called up the images . . . yellowish-red nectarine-like body against a green leaf, . . ." R. 16".6, v. 1.

<sup>1</sup> Cf. Table VI., column V.

<sup>2</sup> Cf. Table VII., column V.

<sup>3</sup> Cf. Table VIII., columns V. and VI.

certain instance of an 'individual' being thought without a connected imaginal or sensorial content; for the protocols of all the cases that give us the 4 % seem to be dubitable. We shall discuss these cases at length in an appendix,<sup>1</sup> and advance considerations to show that they are to be explained either as descriptions of judgements that were not 'individual,' or as 'individual' judgements in which unreported faint sensorial contents actually occurred in connection with the concepts.

If this conclusion be accepted, we have no single case of an 'individual' judgement in which the meaning of the subject arises in consciousness in the absence of a connected sensorial content.

Secondly, in 'individual' judgements, experience associated with the subject as meaning was present in consciousness prominently as an image, no reference being made to accompanying concepts, in 55 %<sup>2</sup> of the total number of cases. In the 'universal' judgements this phenomenon is found in only 20 %<sup>3</sup> of the total number of cases.

A comparison of these percentages clearly indicates and justifies the following conclusions.

(i.) There is a tendency for the meaning of the subject in 'universal' judgements to be phenomeno-

<sup>1</sup> Cf. p. 249.

<sup>2</sup> Cf. Table VIII., column II.

<sup>3</sup> Cf. Tables VI. and VII., column II.

logically present as a concept without sensorial content. The concept, associated with the subject, is revived by the 'universal' form of the stimulus.

(ii.) *At the very least* there is a tendency for the meaning of the subject in 'individual' judgements to be phenomenologically present with a distinctly imaginal character. The 'individual' form of the stimulus revives an associated complex of sensorial content and concept, of which the conceptual element is, so to speak, in the background.

In other words, when we think 'man,' 'all men,' 'no man,' there is a tendency to have imageless "substantive thoughts" or pure concepts. When we think a particular, definite, individual man, there is *at least* a tendency to have an image prominent in consciousness. These conclusions seem to be completely established by the introspections of our observers.

We have not made a detailed analysis of the relative perfection and brilliancy of the imagery noted in columns III. and IV. of Tables VI. and VII., and compared these characters with those of the imagery noted in the same columns of Table VIII. That would be a labour of great delicacy and difficulty; and we doubt if any analysis based upon the information given in our protocols would be very satisfactory. Nevertheless the general

tendency seems here also to be towards relatively good images for the subjects of 'individual' judgements; and towards incomplete, vague, fleeting blurs, 'scratches' and suggestions of images for the subjects of the 'universal' judgements.

We may ask ourselves the question why these tendencies do not produce constant sequences—why the 'universal' form of the stimulus part judgement is not constantly followed by imageless concepts, and the 'individual' form by prominent images. To answer such a question we must look for indications of complicating circumstances in our protocols of the cases in which the tendencies are not observed. We must find the conditions present which interfere with their operation: other constant sequences, or laws, which annul them.

(i.) We discuss at length in an appendix<sup>1</sup> the exceptional cases in the 'individual' judgements. There we conclude that these judgements either were not in fact individual, or that some reproduced sensorial content or actual sensation was present and directly connected with the concept.

(ii.) In regard to exceptional cases in the 'universal' judgements, we have found at least three conditions that may account for them.<sup>2</sup>

<sup>1</sup> Cf. p. 249.

<sup>2</sup> There is a fourth condition which need not be illustrated from



(a) Images (visual, verbal, etc.) almost invariably follow upon inhibitions in *either* type of judgement 'universal' or 'individual.' We might call this the *law of inhibition*. Wherever an inhibition is evident in the 'universal' protocols we may therefore expect to find imagery noted. We submit excerpts from all classes of protocols in support of this statement.<sup>1</sup> The fact has already been observed

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our protocols. Imagery had a greater tendency to emerge *throughout* (i.e. in all forms of judgements) when the stimuli were read aloud than when they were exhibited in a printed form.

<sup>1</sup> (a) Images following on inhibitions in 'individual' judgements. *Stimulus*: "The closed Goral is (*useful*)." (Goral = carpentering tools.) *Introspection*: "Goral meant some kind of utensil. I was puzzled by the word 'closed.' Had a visual image of the concertina. Concentrated attention on meaning of 'Goral.' I heard, then, the word 'hammer.' That suggested 'carpentering tool.' Thought of the plane. Tried to apply 'closed' to that and saw the picture of the plane not very distinctly. Then I saw the chopper, not distinctly; after that the closed pincers, distinctly; and they would not go away," F. 26", vii. 5.

*Stimulus*: "The largest Kumic is (*red*)." (Kumic = flowers.) *Introspection*: "First idea was, what a horrible nuisance it was that stimulus was 'the largest,' since I can't see the pictures well. Then I saw vaguely the first picture (cornflower); then a yellow sort of flower. Then I thought of the rose and saw it . . . then came picture of the apple: and that *would* stick, though I quite knew 'Kumic' didn't mean 'apple.' Then, with the picture of the apple, which I quite determined to think of as a rose, I wondered what to state that would not be contrary to instructions," G. 29".6, viii. 4.

*Stimulus*: "The first Kumic is (*I can't remember*)." (Kumic = flowers.) *Introspection*: "I couldn't trace any meaning in 'Kumic,' except mere entity. It meant 'something.' Then I had the idea and, I think an auditory image of the word 'comic.' Then I twice had an idea with a 2% image of a ruddy fruit, accompanied by a more or less confident conviction that that was not 'Kumic,'" Sp. 25", i. 4.

*Stimulus* : "This Funip is (*pointed at both ends*)." (Funip = fore-shortened circles. *N.B.*—Stimulus beginning with 'this' always caused inhibitions ; and, after being employed several times, was discarded.)

*Introspection* : "Frightful confusion of different images—of various images—successive, refused to be simultaneous. I tried to recall something of the nature of a *memoria technica* associated with the last letter of 'Funip' and the last letter of another word. Frightful confusion. By an effort of will, seized upon one of the images, viz. a blue elliptical figure. In doing so I got a fresh visual image, not in consciousness before, of a yellow elliptical figure, . . ." Sh. 38", iii. 8.

*Stimulus* : "The first Funip is (*red*)." *Introspection* : "Consciousness of familiarity of 'Funip'—absolutely no meaning. I repeated the sentence, auditory motor, three or four times. Meaning seemed to grow and I think I had a faint auditory image of the word 'triangle.' It appeared with quite clear knowledge that it was *not* a triangle. Consciousness that I had got the first of a series, but doubt as to correctness. Repeated 'Funip ;' and the faintest possible auditory image—'flowers'—arose. Inhibited this. Then a black triangular patch came, considerably larger than the little red figure which it meant. Reacted '*red*,' A. 12".4, ii. 2.

*Stimulus* : "The largest Digep is (*reddish yellow*)." (Digep = fruits.) *Introspection* : "There was a momentary difficulty in understanding the word 'Digep.' At first it was confused with the meaning of 'Tuben' (birds). Then the mnemonic occurred to me, and with it some images, . . ." R. 9", vii. 1. But images are found in all our *certainly* particular judgements.

(β) Images following on inhibitions in 'universal' judgements.

*Stimulus* : "All Funip are (*geometrical*)." *Introspection* : "I knew what it meant ; then saw some vaguely . . . I wondered if I might reach 'all Funip are not—:' decided no. Then I thought it was hopeless. I reverted to the negative—how much easier it would be to get something negative. Again I decided I wouldn't do it. Then, in despair, I saw them again very vaguely : and thought 'I must say something.' Idea 'geometrical' came ; then word 'geometrical,'" G. 36", ix. 2.

*Stimulus* : "No Sorab is (*enormous*)." (Sorab = musical instruments.) *Introspection* : ". . . Inhibition. Wondered if I would find a word or not ; and how difficult they were. Then I saw a sort of vague picture that might be any musical instrument. . . ." G. 17".6, iii. 8.

*Stimulus* : "All Funip are (*circular*)." *Introspection* : "I could not at first remember what 'Funip' were at all. Then I saw the various

pictures ; not the first one, but the red one very persistently, then the green one, then the first orange one. Then I was hung up for a word. I knew there were others besides those I saw ; and consciously applied the meaning 'curved' to the lot. It suited them, . . . " F. 15".8, iii. 2.

*Stimulus* : "No Tuben is (*eating*)." *Introspection* : " 'Tuben' meant 'bird' this time. Somehow or other *meaning* 'fruit' came with 'bird.' Then I saw the picture of the grapes. Then came idea of eating, . . . " F. 4", iv. 6.

Sp. had only one inhibition in 'universal' affirmative judgements ; and completed that by reacting "unknown to me," Sp. 7" vi. 4. We find also only one inhibition—"emotional shock"—in this observer's 'universal' negative judgements. This is followed by an ideopresentation (with no images) of the quality expressed by the reaction word—"No Robud is (*harsh*)." Sp. 4" iii. 3.

Sh. nearly always has visual images ; but after inhibitions they are generally described as "vivid." *Stimulus* : "All Lagoc are (*plane figures*)" (Lagoc = conic sections). *Introspection* : "I had first of all an inhibition : could recall no picture. Then I had *distinctly* the flat dirty-yellow figure, shaped like the top of an egg, as a visual image, . . ." Sh. 13".4, iii. 2.

*Stimulus* : "No Kucic is (*black*)." *Introspection* : "Had an inhibition of an obstinate kind. Then had a visual image of the green flowers, . . ." Sh. 14".6, iv. 1. This observer's almost constantly present imagery may possibly to some extent be due to inhibitions. Reference to the table given in Sec. II. § 4, p. 123, shows that Sh.'s learning was a comparatively slow process. Indeed, he seemed to be forgetting the meaning of the nonsense-words during the judgement experiments ; and to call it up by effecting an image.

*Stimulus* : "All Tegam are (*breakable*)." (Tegam = receptacles for liquid.) *Introspection* : "On seeing stimulus, attention immediately concentrated on 'Tegam.' Vague knowledge of meaning came and developed. Then came word 'pail' auditorily. Rejected because not an adjective. 'Pail' all alone in consciousness. I knew that 'pail' did not only mean 'pail,' but stood for other things of which I remembered three or four. They were not in consciousness as 'things.' Inhibition caused by desire to react. 'Tin' came auditorily—so 'breakable,'" A. 11".6, ii. 1. There is apparently no case of this kind in A.'s 'universal' negative judgements. As already noted, he is a very poor visualiser ; and, having made and exhibited the pictures and words to all other observers, knew them very well indeed.

and insisted upon by Dr. Betts.<sup>1</sup> "There are two points in our thinking," he concludes from his experiments, "at which imagery has the greatest tendency to emerge. (1) At points where our thinking is baffled; (2) at points where percepts would be of great assistance."

Betts's 'first point' coincides with what we have stated. Images follow upon inhibitions. Exceptions to this rule are extremely rare in our protocols. We have not found, as did Betts, many cases in which such imagery is irrelevant; but that is no doubt due to the material and method we employed.

*Stimulus*: "All Kumic are (pretty)." *Introspection*: "Understanding of sentence followed by thought that I had had this sentence before and had found it difficult. Set to task with some misgiving. Series of two or three visual images, *various features of which I passed in review*, . . ." Fl. 14".2, v. 5.

*Stimulus*: "No Funip is (large)." *Introspection*: "Some time fully understanding sentence . . . Period of confusion, owing to absence of 'set.' Recalled task. Series of visual images, auditory image of word "nice" became very prominent, though it appeared to have no connection with the other contents of consciousness, . . ." Fl. 3".2, x. 2.

Fl. is, throughout these experiments, a fairly strong visualiser.

The cases of inhibition in R.'s 'universal' judgements present no features that differentiate them from the non-inhibited cases in which imagery appears. This observer has references to washed out, "scratchy" imagery in most of his protocols.

<sup>1</sup> George Herbert Betts, Ph.D., *The Distribution and Functions of Mental Imagery*, New York, 1909, p. 94. "Imagery may and often does serve as a familiar background for the meaning with which we are dealing, but it cannot be said to be essential to meaning, except to the extent that meaning may inhere in a given percept *as such*." Cf. p. 170. Cf. also Pillsbury, "Meaning and Image" (in *Psychological Review*, vol. xv. p. 150).

When "thought is baffled" by the non-appearance of the meaning of a nonsense-word recently learned with pictures, the fact of its association with them would sufficiently account for their images rather than others arising.

( $\beta$ ) Images nearly always appear in our 'universal' judgements when there is a picture of the set which will not fit in with the conceptual meaning of the stimulus word or of the reaction word (or concept) which arises. The image of this picture crops up as a sort of 'contrary instance.' This phenomenon is not of frequent occurrence, as when our observers obtained an idea or word expressing the meaning of the nonsense-word, or when they got a common attribute of the pictures associated with it, this was almost always applicable. Most of the observers had learned the meaning of the words well, and had several systems of conceptual abstracts to which they could readily refer them. Those most practised in abstraction made no, or few mistakes in completing the part judgements; and in their case, obviously, no or few images could arise as 'contrary instances;' since all would be included under the concept that actually arose. We may take it that the five male observers are more habituated to abstract thought than the two ladies who assisted in our experiments, even if they

commonly employ, as does Sh., symbolic imagery, or imagery in the shape of printed words. And we find on reference to the accompanying Table (IX.), displaying the distribution and character of this phenomenon, that most of the cases are observed by G. and F.

TABLE IX

Observer.	Contrary instance image causes rejection of concept.		Contrary instance image causes rejection of word with meaning.		Contrary instance image possible but does not arise.		Total.
	Aff.	Neg.	Aff.	Neg.	Aff.	Neg.	
G. . .	3	1	3	0	1 <sup>(a)(b)</sup>	1 <sup>(b)</sup>	9
F. . .	4	2	3	0	0	0	9
Sp. . .	0	0	0	0	1 <sup>(c)</sup>	0	1
Sh. . .	0	0	0	0	0	0	0
A. . .	0	0	0	0	0	0	0
Fl. . .	1 <sup>(d)</sup>	0	0	1 <sup>(d)</sup>	0	0	2
R. . .	2 <sup>(e)</sup>	0	0	0	0	1	3
Total .	10	3	6	1	2	2	24
	13		7		4		

(a) Of this: "I knew it wasn't true," G. iii. 10.

(b) Neither of these ideas were in any way expressed by the reaction word when it came.

(c) Present as an idea—not image.

(d) In both cases the original meaning was given with imagery; but image also emerged here on wrong reaction idea arising.

(e) We cannot determine if word was present or not. In one case an image was present.

We have gone through the 266 protocols with a view of finding the exact number of times an idea which (or word, the meaning of which) did not include all the pictures of each set arose. There

are 24 such cases. In 20 of these the observer rejected the meaning on account of the emergence of an image which could not be subsumed under it. In four cases the phenomenon is not noted. This gives us 83 % of the total possible number of times a 'contrary instance' image could have arisen, in which it did arise. The data on which this statistic is based are, of course, very scanty; but they would seem, none the less, to point towards the existence of a law, which we might call *the law of contrary instance*.<sup>1</sup>

<sup>1</sup> E.g. *Stimulus*: "All Robud are (*young*)."  
*Introspection*: "'Robud' meant little children. The idea of that made me want to say smiling, which was present as an idea only. That made me see the picture of the first one—his back turned to me. I rejected the idea of smiling. Then I heard the word 'children:' was conscious of instruction, and rejected it as it was a noun, . . ." F. 16", v. 3.

*Stimulus*: "All Funip are (*coloured*)."  
*Introspection*: "'Funip' meant all those figures, and in particular I had an idea of shape of the red one. I wanted to react pointed; but remembered the round one. With this I had idea of yellow colour and I saw it. That gave me the idea of colour for the rest of them, . . ." F. 13", ix. 2.

*Stimulus*: "All Funip are (*oval*)."  
*Introspection*: ". . . said oval, thinking it would apply to all, as I saw nothing to contradict it. As soon as I said it, I saw a distinct picture of the circular one," F. 7", v. 2.

*Stimulus*: "No Kumic is (*growing*)."  
*Introspection*: "'Kumic' at once meant flower. Then I saw the picture of the card with the japonica on it, and noticed that the stem at the bottom is torn. That gave me the idea that it was very much a picture, . . ." F. 6", v. 4.

*Stimulus*: "'Tegam is (*for containing things*)."  
*Introspection*: "The idea of useful at tea-time came to me. I've had the association of 'Tegam' and tea-time before." (One of the 'Tegams' was a milk-jug.) "This was in consciousness. This I rejected as not universal enough; saw jug, pail, then other pail," G. 2".4, vii. 1.

(*γ*) In our experiments images tended always to characterise the thought processes of certain individuals; and undoubtedly with the very great majority of concepts the sensorial elements of images are connected in normal life. We think in pictures or in words as a rule, we may suppose; for words by constant use have become fused with their meanings, have long since reached the stage of carrying them. With difficult or unusual words,

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*Stimulus*: "All Tegam are (*useful*)." *Introspection*: ". . . Thought of adding 'round,' which was present kinaesthetically. Then I wanted to test if it were true. I discarded it when I saw the milk-jug, . . ." G. 11", i. 1.

*Stimulus*: "All Lagoc are (*fascinating*)." *Introspection*: "First came the feeling of the idea of the word, then the word came (*fascinating*). While saying it, I saw a bit of the black geometrical figure, quite clearly, no detail," G. 3".2, iii. 9.

*Stimulus*: "All Kumic are (*pleasingly coloured*)." *Introspection*: ". . . I was inclined to say 'brightly coloured.' Then a dark-blue flower presented itself (as an image), . . ." R. 6", v. 5.

*Stimulus*: "All Tuben are (*heavy on the wing*)." *Introspection*: "No, that's not true: not *heavy on the wing*. Image (of another). I had an image of the guinea-fowl and an awareness of one or two others. There were one or two nascent images. Evidently the reaction was determined by the guinea-fowl," R. 4".8, iii. 3.

*Stimulus*: "All Ferod are (*masculine*)." *Introspection*: ". . . Fluctuating visual image of the boys. Tendency to react 'running,' when suddenly I noticed in visual image that one was *not* running. The blue cap of this one attracted attention, . . ." Fl. 6".2, vi. 4.

*Stimulus*: "No Ferod is (*sitting*)." *Introspection*: ". . . Rapidly changing visual image of boys seen. . . . Was about to answer 'standing,' when 'sitting' occurred as more distinctly opposed to what they were actually doing. Fairly distinct visual image of one of the 'Ferods' *sitting* as I reacted," Fl. 2", ii. 2.

[*N.B.*—None *was* sitting; but one, intended to represent *skipping*, is in a posture that could be taken as sitting.]



however, we are able to discriminate stages in which (i.) we read them ; (ii.) recognise them ; (iii.) reach their meaning ; and (iv.) finally perhaps get a visual image. In our experiments the nonsense-words were usually separated in consciousness from the arising of their meaning by so appreciable a time interval that this latter could be easily observed on its own account, as connected with the sensorial elements of images or not ; and, of course, being associated with definite pictures, we were enabled with some exactness to find out by their use in judgements whether they really functioned as 'universals,' potential 'universals,' or 'individuals.' This, we take it, would be more difficult even with unusual words of ordinary language.

What is evident, however, from our protocols is that some of our observers almost invariably get an image—visual, verbal, etc.—concomitantly with meaning. Others get meaning antecedently to image, or without imaginal content altogether. There is no absolute constancy in type for any one of our observers ; but there are certainly predominances of type to be seen in some of them. Sh. notably is extremely inclined to have visual images, either of the pictures learned or of printed words. A. commonly has auditory images, perhaps connected with kinæsthetic. Sp. in the majority of his protocols reports visual imagery 1 %–5 % in

strength, and occasionally notes verbal (auditory) images valued by him as high as 40 %. R. has rather poor visual images—"obscure presentations almost too imperfect to be called images"—awareness of nascent imagery, etc.; but no other sort than visual appears in his protocols. He is "a visualiser for whatever can be visualised." In Fl.'s introspections all sorts of imagery—kinæsthetic, olfactory, gustatory, tactual, etc., but principally auditory and visual—are mentioned. G. was strongly visual in type during the learning period. Gradually she became less so, and developed a verbal (auditory-kinæsthetic) tendency; but she had also olfactory and gustatory images occasionally. F. "sees pictures," but also "hears" words—the former predominating.

The presence of imagery, then, differing in its character, is to some extent dependent upon the general type (or temporal 'set?') of the individual, as well as upon the particular kind of mental operation involved. This we might call the individual tendency to imaginal preference. This would mean preference for meaning by way of image. It might also mean preference for a certain kind of imagery. To a very large extent the material of our experiments would explain the general tendency for visual imagery; and the total past experience and mental habit of the observer

the preference for meaning *with image*. But that meaning—imageless “substantive thought” or concept—may arise as a consequent to an antecedent nonsense-word is in any case clearly established: and the facts that this imageless content is strongly favoured by the ‘universal’ form of the stimulus, and that imaginal contents are the consequents of the ‘individual’ form are, we submit, proved by the evidence we have been able to adduce from our experiments.

We may thus sum up the results of this analysis in the observation that the ‘universal’ is phenomenally present in consciousness, or tends to be so present, *as pure concept or imageless “substantive thought;”* while the individual is present in consciousness *as an image*.

### § 3. *Conceptual ‘Overknowledge.’*

In the data of our experiments a second point with regard to the phenomenological presence of the meaning of the nonsense-words, when these were used ‘universally’ or ‘individually’ in judgements, is also apparent.

We have already seen that this meaning may arise in consciousness in varying stages of connection with sensorial contents (imagery) or simply as an imageless concept. The protocols we have quoted contain descriptions of cognitive contents

which range from vivid and prominent imagery, through image and concept in indiscriminable time order of arousal, up to concept alone without a trace of imagery. We may suppose—indeed, for reasons pointed out above, we consider it necessary to suppose—that the conceptual element is present in all representative states of mind at all stages, even those in which imagery is most striking and the concept apparently absent: that cognition, in the absence of concept, would be impossible. We have shown that the only *essential* content in thinking is the purely conceptual one; and explained the presence of imagery—so frequent, so varied, and so easily observable—in conceptual thought sequences mainly by the fact that sensorial elements have always been associated with the concept in perception; and therefore tend, at least to some extent, to emerge whenever a concept is in presence.

No matter, however, what the representative content of consciousness may actually be—an imageless concept, a concept discriminable in introspection from its sensorial context, or an image in which the sensorial character is so obtrusive that the concept is obscured—we find also an “overknowledge” present to the effect that our observers in judging meant or intended either the ‘individual’ or the ‘universal.’<sup>1</sup>

<sup>1</sup> This overknowledge was also observed in the protocols of the earning period; but we have made no analysis of them in this connection.

This overknowledge in the 'individual' judgements is simply an awareness that the individual is thought, or present to mind. It is not necessary to give any table of these cases; but excerpts from protocols showing the overknowledge of individuality are cited below.<sup>1</sup> With regard to these judgements we have already noted that the meaning of the subject as 'individual' seems to have been automatically recognised upon, and essentially conditioned by, the emergence of an image.<sup>2</sup> But whether the overknowledge is conditioned by the arising of the sensorial elements of the image, or, *vice versa*, the imaginal character of the content conditioned by an overknowledge aroused by the grammatical form of the stimulus, we have no means of determining. It is reasonable to suppose, however, that the image is the consequent of an antecedent overknowledge that comes into consciousness as the general meaning of the prefixed adjectives. And it is certain that the total stimulus (*e.g.*, "The first Tuben," "The largest Lagoe," etc.) is the antecedent in 'individual' judgements to both overknowledge and image—the mutual relations of which we are at present obliged to leave experimentally undetermined.

<sup>1</sup> Cf. footnote to p. 213, *sqq.*

<sup>2</sup> This seems certainly to be so in all cases except those dealt with in the appendix. The explanation given there would make the statement in the text above of universal application.

With regard to the overknowledge present in the 'universal' judgements, the expressions used by our observers vary considerably; and the phenomenal complexes with which it is connected still more. We have nevertheless been able to analyse the protocols and to group them into three classes.

(i.) The first class contains cases in which the overknowledge is to the effect that there is *no* conscious reference to one or more 'things'—*i.e.*, prior or possible experiences.

(ii.) In the second class are placed the cases in which there is a conscious inclusion of, or reference to, *all* the possible things that could be 'Tubens,' 'Lagoes,' etc.

(iii.) In the third class are those cases in which reference to all, or some of the actual pictures associated with the nonsense - word used was asserted.

Tables X. and XI. display the whole mass of the 'universal' judgement protocols classified under these heads. A footnote to them shows as well the number of "conscious generalisations from one or more examples." Unclassified cases and failures for each observer are also recorded. In this classification we have paid no attention to the presence or absence of imagery. Our justification for this method of procedure is our theory of

thought as already stated,<sup>1</sup> and the fact that this overknowledge is given in the introspections of our observers in either of these cases. If an image was observed it was not what the nonsense-word meant; and the overknowledge added something, not to the image, but to the meaning.

(i.) Where the observer did not state that his thought was actually 'universal,'<sup>2</sup> or consciously applied to several, or all, of the associated pictures, we have gone carefully through each protocol with a view to ascertaining from the expressions used whether it could be included in either of these classes. Whenever there was any doubt as to the presence of overknowledge of this sort, we have included the case in column 1 of Tables X. and XI., as "without reference to one or more." We have thus in this column cases in which the absence of reference to one or more has been consciously noted and asserted by the observer and cases in which no reference was mentioned. Together these give 35% (affirmative judgements, 29%: negative judgements, 41%) of the total number of protocols (266). In all these cases the judgement is based upon the essential or *quasi*-essential meaning<sup>3</sup> of the nonsense-word. This meaning is ideal, not real:

<sup>1</sup> Cf. p. 147.

<sup>2</sup> Cf. below, p. 208.

<sup>3</sup> The essential meaning, *e.g.*, of "Lagoc" is "conic section:" its *quasi*-essential meaning might be "coloured patch" or "single-line figure."

and the content which gives it is the conceptual abstract. With the exception of the experimenter and Sp., there seems to have been no suspicion in the minds of the observers that these judgements

TABLE X

## CLASSIFICATION OF FORMS OF OVERKNOWLEDGE IN 'UNIVERSAL' AFFIRMATIVE JUDGEMENTS

*No. of Protocols analysed, 154.*

Observer.	Negative Overknowledge: no Reference to one or more.	Positive Overknowledge: Conscious Reference to all possible.	Positive Overknowledge: Conscious 'Collective' Reference. <sup>1</sup>	Unclassified.	Failures.	Total.
G. . . . .	16%	36%	36%	12%	0%	25
F. . . . .	28%	28%	28%	8%	8%	25
Sp. . . . .	36%	8%	36%	8%	12%	25
Sh. . . . .	11%	11%	44%	0%	33%	27
A. . . . .	53%	21%	26%	0%	0%	19
Fl. . . . .	35%	0%	60%	0%	5%	20
R. . . . .	39%	8%	53%	0%	0%	13
Average . . . . .	31%	16%	40%	4%	8%	...
Total . . . . .	29%	17%	39%	4.5%	9.5%	...

<sup>1</sup> Of the percentages shown in this column the following represent the cases of conscious generalisation from one or more examples: G. 20%, F. 8%, Sp. 0%, Sh. 0, A. 10%, Fl. 25%, R. 30%.

were not actually (*i.e.*, psychologically) 'universal.' Logically, of course, they are so, in the sense that they hold good for all the individuals potentially included in the concept. But logic is not psychology ;



and this case is introspectively distinct from that in which “conscious reference to all possible” occurs.<sup>1</sup> In it there is simply an absence of reference, which

TABLE XI

CLASSIFICATION OF FORMS OF OVERKNOWLEDGE IN ‘UNIVERSAL’  
NEGATIVE JUDGEMENTS

No. of Protocols analysed, 112.

Observer.	Negative Overknowledge : No Reference to one or more.	Positive Overknowledge : Conscious Reference to all possible.	Positive Overknowledge : Conscious ‘Collective’ Reference.(a)	Unclassified.	Failures.	Total.
G. . . . .	30%	22%	30%	13%	4%	23
F. . . . .	43%	9%	44%	4%	0%	23
Sp. . . . .	45%	12%	16%	12%	4%	24
Sh. . . . .	0%	0%	0%	100%	0%	5
A. . . . .	65%	20%	10%	5%	0%	20
Fl. . . . .	40%	0%	60%	0%	0%	10
R. . . . .	29%	14%	57%	0%	0%	7
Average . . .	36%	11%	31%	19%	1%	...
Total . . .	41%	14%	31%	13%	2%	...

(a) Of the percentages shown in this column the following represent the cases of conscious generalisation from one or more examples : G. 26 %, F. 22 %, Sp. 4 %, Sh. 0 %, A. 5 %, Fl. 50 %, R. 43 %.

is sometimes noticed and reported. We might call this *negative overknowledge*.

<sup>1</sup> Cf. James, *Principles of Psychology*, vol. i. p. 473. “The conception of an abstract quality is, taken by itself, neither universal nor particular. . . . Properly it is, in this state, a singular—I have ‘singled it out ;’ and when, later, I universalise or individualise its application . . . I am . . . forming two new conceptions.”

(ii.) In the cases placed in the second class what might be termed a *positive overknowledge* occurs. There is an average of 15.5 % (affirmative judgements 17 %: negative judgements 14 %) of these cases. The observer is aware that his thought extends to all possible cases in which his concept could be realised. In some sense all those possible cases are present to consciousness. But how? In what does this positive overknowledge consist? We suggest the following explanation. First of all there is phenomenologically present the conceptual element, or the imageless concept, which gives merely the essential meaning of the word. Then there is the coefficient of universality. This is the knowledge, or memory, that the concept has been frequently actual, has been met with in experience, and the anticipation that it is to be met with again. It is the consciousness that whenever in the past or in the future an individual is consciously present, this can be subsumed under the concept. But all this, evidently, is not clearly and explicitly in consciousness. It has long since sunk to the level of a condensed knowledge, and thus presents all the difficulties of analysis which arise in connection with such simplified contents.<sup>1</sup>

<sup>1</sup> Some explanation of overknowledge, we suggest, may perhaps be found in the phenomena of condensation, noted by Henderson. "The

(iii.) *A positive overknowledge* is observable also in the cases grouped together in the third class. Of these we have an average of 35 % (affirmative judgements, 39 % : negative judgements, 31 %). They are those in which an individual, or several individuals, as such, were imaginally present to consciousness. But in these cases there was further an overknowledge to the effect that other individuals were meant or intended, and that only a limited number was so meant. Here the judgement, properly speaking, was not universal but collective. A collection of individuals was intended; and in so far as these were consciously meant, the judgement was evidently a collective one. It is perhaps difficult to conceive how 'others' could have been present to consciousness without as many images. Again making use of the hypothesis of condensation we suggest that

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meaning into which a group of connected ideas coalesces is often spoken of as a general idea of them. The expression is not inappropriate. It is a composite general idea, a product of the generalisation of its details, whether blind or intelligent, systematic or chaotic. Such a composite idea is not so different from an abstraction as we might think. When we eliminate differences and are left with identities, we have abstractions. But the consciousness of such ideas need not be a barren thing. Indeed what makes the abstraction worth while is that it comes to us entangled in a mesh of experiences which it serves to systematise. The most valuable of general ideas is, therefore, the concretest of abstractions in the richness of the material which springs into the mind attentive to it." Henderson, *A Study of Memory for Connected Trains of Thought* (Monograph Supplement to the *Psychological Review*, vol. v., No. 6, Dec. 1903, p. 87).

the content really was: (i.) an image, or images; *plus* (ii.) overknowledge referring the conceptual element of the images to several 'objects,' or prior experiences, which are generally and perhaps always revivable, or believed to be revivable in consciousness *as individuals*. The observer may not have all the specific pictures of a set actually before him; but he generally knows, or believes, that he can call up images of them. He knows that he remembers them, and could recognise them again, etc.<sup>1</sup> Indeed definite statements are found in the protocols to the effect that the observer knew there were other individuals which he often felt he could call up, and restricted his thought to them. The following examples make this clear:—

“No other image in consciousness at all; but consciousness that I could produce others at will,” Sh.

“The three pictures stood for all the five, and I was conscious that my thought extended to the rest,” F.

“I was aware that I could develop images,” R.

“Then I saw the round red picture very clearly, and some ellipses. They would all have been there if I had wanted them to be,” G.

“This (vague image) was clearly understood as a general; (but) I feel I could get all the others,” G.

“On realising full meaning of the judgement, tendency to react '*birds*' inhibited; and I tried to

<sup>1</sup> Best of all, obviously, if they became present as percepts. Cf. Betts, *The Distribution and Functions of Mental Imagery*, p. 94.

pass the 'Tubens' in review. Had difficulty in getting more than two," Fl.

"Knowledge of the whole series of coloured symbols, with a sort of mental movement, as if passing them in review. No visual or verbal images—but probably equivalent eye-movements," A.

"Idea that (a 2 % image) was illustrating a whole class of my experience; and a conviction that all the rest were plump," Sp.

"I knew there were others besides those I saw and consciously applied the meaning 'curved' to the lot," F.

In these excerpts from protocols we see that overknowledge is phenomenologically described as a "consciousness," an "awareness," a "knowledge," or an "idea," etc. All these expressions have been used before in connection with the description of "imageless thought;" and the experience which our observers were recounting in the introspections from which the above examples were taken seems to have been remarkably like that of the well-known imageless by-thoughts, or by-remarks, so frequently noticed by other experimenters.

In any case, what we have called overknowledge is, we submit, entirely conceptual in character, whether it occur in 'universal,' 'collective,' or 'individual' judgements. Further evidence in support of the fact is to be found in the excerpts from protocols printed in the foot-notes.<sup>1</sup>

Now this conceptual overknowledge may be

<sup>1</sup> Cf. footnote on p. 213, *sqq.*

regarded either as act or as content. We consider it here, as we have considered meaning, concept, etc., from the point of view of content—"imageless thought" as in any sense representative of what we call a 'thing.' Thus the mental complex, in the case of negative overknowledge, is the concept representative merely of entity *plus* certain determinations and abstracted from *hic et nunc*, etc. There is in this case no necessary objective reference; and the concept is no more than the ideal meaning of the nonsense-word subject. When, on the other hand, the overknowledge has a positive character, the content represents, or refers to 'the first Robud,' or 'the five Funips,' or 'All Lagocs,' etc., as the case may be.

The overknowledge, at any rate in the experiments we have made, determines the "substantive" concept; and it determines it substantively. The concept, or conceptual element of an image, with positive overknowledge simply represents an essential, or *quasi*-essential meaning, consciously applied to one, several, or all possible similar experiences.

Is overknowledge then, we may ask, a separate conceptual element, forming a complex or a fusion with the concept that expresses essential meaning? Or is it a mode of the concept? Our observers knew perfectly well to what their thought referred.

One, whose words we have already quoted, speaks of his overknowledge in several of his protocols as “coefficient of universality,” “coefficient of individuality” (Sp.). They find ‘universal’ thoughts becoming particularised, and ‘individual’ thoughts generalised; and they note as descriptively as possible the changes consciously occurring during these processes.<sup>1</sup> But there is rarely any categoric

<sup>1</sup> Excerpts from protocols showing descriptively the process of generalising from individuals.

*Stimulus*: “All Kumics are (*soft*).” *Introspection*: “. . . Regarded (blurred image of *one* of the ‘Kumics’) trying to find some attribute in which to reply: thinking, *what I find here will probably be true of all ‘Kumics,’* if I take a little care in choosing. . . . Suddenly had tactile image of a flower. Softness of it impressed me. Thought, *‘nearly all flowers are soft like this.’* Reacted without any further reference to ‘Kumics,’ but with conviction that answer was suitable,” Fl. 5".6, vii. 5.

*Stimulus*: “All Lagoe are (*angular*).” *Introspection*: “A ghost—I can’t say there wasn’t an image. That’s all I can say. Clear idea of a figure with two angles at the bottom and one at the top. On this occasion I felt that what was true of that, at least in this respect, was true of all the other figures,” Sp. 2".4, iv. 9.

*Stimulus*: “All Funips are (*circular*).” *Introspection*: “I had a 2 % image of an oval changing from something else which I can’t remember. Neither of that pair coincided with my meaning, which was much more general and existed in the shape of a fairly distinct idea beside these images. The idea was very certainly collective. I think the collective aspect was facilitated by there having been a change from the one to the other. It meant more than two, and not particularly those two. I distinctly conceived them as being curved. I had the idea of several individuals; and from that it spread to all in an inductive manner,” Sp. 3".4, i. 8.

*Stimulus*: “A Tuben is (*winged*).” *Introspection*: “I saw one or two specimens and observed its character in all of them. The images (which came at once—there was no time for a *thought*-meaning before

evidence in our protocols as to there having been anything which might be considered as a second

they came) weren't very distinct. . . . but distinct enough for me to say that the predicate was determined by a comparison of things seen, just as if the objects were before me, . . ." R. 6", v. 3.

*Stimulus*: "No Sorab is (*white*)."  
*Introspection*: "Meaning of 'Sorab' developed gradually with a vague visual image of the trumpet. Knowledge that *this* was yellow. Knowledge that no one of the individual 'Sorabs' was white. 'White' came automatically after 'yellow'—both auditorily, . . ." A. 3".4, ii. 8.

*Stimulus*: "A Lagoc is (*yellow*)."  
*Introspection*: "I thought I could not tell what the word meant. A visual image of the arched yellow figure. The very faint implication of other figures in a set which it represented. *This* did not amount to a visual image. I wanted to describe the figures, but had no word for it. I knew that I was generalising from a particular instance. 'Yellow' was *general*," Sh. 3".2, v. 7.

"A Tegam is (*for containing things*)."  
*Introspection*: ". . . Idea of 'useful at tea-time,' with association of 'Tegam' and Tea-time in consciousness, rejected as not general enough. I then saw jug, then pail, then other pail. Then idea came of containing things, with the reaction words," G. 25", vii. 1.

*Stimulus*: "All Tegam are (*empty*)."  
*Introspection*: "Tegam meant a receptacle for milk, and I saw picture of milk-jug and afterwards of the first 'Tegam.' The idea of milk was present. I could not think of the other 'Tegams;,' then I remembered all the five were empty," F. 3".8, i. 8.

Excerpts from protocols showing descriptively the process of particularising from a 'universal.'

*Stimulus*: "The smallest Ferod is (*striding*)."  
*Introspection*: "Understanding of meaning of 'Fero' . . . unaccompanied by images of any kind. Then visual image of one of them in a blue cape, with knowledge that this was the smallest, . . ." Fl. 5".2, iii. 4.

*Stimulus*: "The sweetest Sorab is (*stringed*)."  
*Introspection*: "I thought that time of musical instruments as being the meaning of 'Sorab.' A coefficient of universality came in. Originally, on reading the sentence it was apparently understood as an individual. Then I



conceptual element complicated, or fused with the first, and certainly distinguished from it introspectively. Sometimes, however, this does seem to have been the case.<sup>1</sup> We are therefore inclined

had an image, 2 %, of the harp, then another one of a concertina. Puzzled as to how these were sweet, and doubting if 'Sorab' meant musical instrument at all. Stuck to my guns. Thought 'sweet' could be applicable to the harp," Sp. 7".8, viii. 8.

*Stimulus*: "The first Digepe was (*reddish-yellow*)." *Introspection*: "It was clearly a universal. . . . Then, as the sentence referred to a particular 'Digepe,' I called up the images, and tried to recall the order in which I had met with them, . . ." R. 16".6, v. 1.

*Stimulus*: "The blue Kumic is (*the first*)." *Introspection*: "Gradually the meaning of 'Kumic' came as a general. It was narrowed to 'the blue Kumic' by the appearance of a quasi-visual image. Thought of its jaggedness in consciousness. Suddenly the words 'the first' came, with certainty," A. 4", vii. 6.

*Stimulus*: "The second Goral is (*closed*)." *Introspection*: "I had to put out of the way the *idea* 'musical instrument.' Then I saw the picture of the pliers, and felt sure that was the second one, . . ." G. 15".6, viii. 3.

*Stimulus*: "The moving Tuben is (*small*)." *Introspection*: "Tuben meant 'bird' in general, with reference to the five 'Tubens.' From 'moving' I got the *idea* of flying. With that I saw a very distinct image of the humming-bird. Reacted," F. 2".6, ix. 6.

<sup>1</sup> Excerpts from protocols exhibiting overknowledge as a separate thought element complicated with pure "substantive thought" (or with image). This comes out best when the particular meaning is reached from a 'universal' and *vice versa*.

"Understanding of meaning of 'Ferod' . . . unaccompanied by images of any kind. Then visual image of one of them in a blue cap, with knowledge that this was the smallest. He was given to me as the smallest, . . ." Fl. 5".2, iii. 4.

"Familiarity as I heard 'Tuben.' Knowledge that I could bring its meaning to consciousness. Then visual image of the *large brown bird* arose, followed immediately by knowledge that 'Tuben' stood for 'these birds,' of which the brown one was one; and the brown one thereupon became symbolical of them all. 'Brown' immediately occurred as an answer," Fl. 1".8, ii. 4.

"Immediately on hearing 'Kumic' had a visual image of a small white or yellowish flower, which gradually became symbolical of flower in general. Recalled task; and became satisfied that the *flower seen* was the smallest one,

to the opinion that we have in this phenomenon a separate thought element; and to explain the fact that it is not more frequently distinguished by our observers from the central concept giving meaning, on the ground that such distinction

although I obtained no images of the other flowers; nor could I think of what they were like," Fl. 3", i. 5.

" . . . I felt that what was true of that at least in this respect (triangularity) was true of the other figures," Sp. 2".4, iv. 9.

" . . . very distinct coefficient of universality." There was present a 1 % image with ideopresentation of 'a' fat boy," Sp. 2", vi. 3.

"There again at first some confusion with meaning of 'Kumic.' Then it became clear to me what 'Funip' were; and I had obscure presentations, almost too imperfect to be called images—elements of colours and partial lines. This enabled me to know that all 'Funips' were bounded by curves: though I didn't see one of them completely figured," R. 18", vii. 2.

"There was confident knowledge there without a survey of all the individuals" (that 'youthful' would describe all 'Ferods'), R. 3".6, iv. 4.

"Undoubtedly individualised by the selection" (of the smallest 'Kumic' from among three or four images)," R. 15".4, i. 5.

"Tendency to get the general idea of 'Digeç.' Then 'this' became prominent in consciousness, followed by the idea of apple and its leaves. This was localised in time and space, a 1 % visual image. It was followed by a somewhat stronger image of a peach, which took its place. These two oscillated, . . ." A. 6".2, ii. 7.

"A very vague knowledge of meaning of 'Lagoc.' Then 'the smallest came into field of attention prominently. Immediately 'Lagoc' meant the small yellowish parabola, accompanied by a vague visual image. It was localised in space and now, . . ." A. 3".4, ii. 9.

" . . . I tested 'resonance' (reaction word) by the application of it to visual images of those two particular instruments; and a general application, without any particular image, or particular reference to all possible musical instruments, came. The idea prominent in mind was vibration," Sh. 17".8, iii. 3.

" . . . meant distinctly an individual"—a clear image of an apple, Sh. 5".6, v. 4.

"I thought that I did not know the relative sizes: that in the pictures they were more or less equal in size. I saw some of the pictures rather distinctly, and decided that the goose was rather the largest. It was a particular to my mind; but the image afterwards became symbolical of goose in general, . . ." G. 14".4, x. 6.

"I knew first what 'Tuben' means, and what I had to do with regard to it. The meaning was general. Then I cut it down by adding the meaning 'moving,' . . ." G. 19".6, ix. 6.

" 'Robud' meant a child—indeterminately. I had an image then of the first one. This referred it to one of the pictures—the first. I don't know how to describe it," F. 8", ix. 3.

would be of very great introspective difficulty.<sup>1</sup> In the cases in which we find the two to some extent distinguished, the meaning of the nonsense-word and that of the adjectives ('all,' 'no' 'the first,' etc.) seem to have consciously occurred in two separate and chronologically distinguishable moments. This is notably so with regard to the observer Fl. In other cases the two meanings seem either (i.) to have arisen, as far as could be determined by introspection, simultaneously; or (ii.) the meaning of the prefixed adjective seems to have vanished from consciousness, along with the consciousness of the adjective itself, before that of the nonsense-word arose. In the first case the distinction would not be easy to establish by introspection; and in the latter it would seem to be even less so.

With regard to this second case we may suggest that it is the effect in consciousness of the previous presence of the meaning of the adjective that conditions the arising of the meaning of the nonsense-word as 'individual' or 'universal,' etc. Together with the general instruction to complete the part-judgement, these words condition the total reaction. But, unlike the nonsense-words, the prefixed adjectives are exceptionally familiar.

<sup>1</sup> It does not follow from this statement, as we shall see, that overknowledge may not also in a certain sense be regarded as a mode of the central concept.

They are among the commonest words of ordinary language. May it not be supposed that, although they are not as is the general instruction the antecedents to a determinant tendency (in the usual understanding of the term), yet they function by perseveration, when neither they nor their meaning is consciously present, in much the same way? Thus the meaning of the nonsense-word would arise qualified by a reference to experience, or to possible experience; and the complex would prove difficult of, if not entirely refractory to introspective analysis.

Or it is possible that the familiar adjectives with their meanings would pass from the position of focal to that of marginal contents, while the meaning of the less familiar nonsense-word arose focally. Here again the meaning of the adjectives might appear to constitute a sort of setting or background in which that of 'Kumic' or 'Fero,' etc., develops. This might seem, perhaps, to be a mode of the central concept—concept qualified by reference. But *de facto* the representative content would be a complex or fusion resulting from concept *plus* a conscious reference.

The obvious analogy here is that of tonal fusion. Overtones frequently cannot be discriminated in the compound clang; yet the experience of this is fundamentally different from

that of a pure tone. But the analogy must not be pushed too far. The elements of the clang are simultaneous. In the suppositions we advance, those of our conceptual fusion are not. The perseveration, or background, is already there for the meaning of the nonsense-word to develop in.

The analogy, however, shows us how overknowledge may perhaps be regarded as a mode of the central concept; since, in a certain sense, a tone fused with indiscriminable overtones might be regarded as a mode of the pure tone. But the conceptual elements seem to be far more plastic or fluid than any sensorial ones; and the completest possible fusion apparently takes place between them.<sup>1</sup> Genetically, therefore, overknow-

<sup>1</sup> As an instance of such conceptual fusion we might take the meaning of any one of our nonsense-words. 'Feroð,' for example, means a moving boy. Let us suppose an observer got this meaning 'moving boy' with negative overknowledge. That was his unique conscious meaning. But 'Feroð' has also an enormous number of other meanings, as *e.g.*, clothed boy, boy, animal, thing, etc. These meanings are implicit. They were not actually observed contents of consciousness. Any one of them might have been; but *de facto* none was. They are not found introspectively to have been present as meaning; but they are logically analysed out of the meaning that was present. How is this logical analysis possible? Only, we suggest, on the hypothesis that they are all fused, like overtones with its fundamental but far more intimately, with the meaning that was observed. The concept 'moving boy' is genetically built up out of an enormous amount of past experience in the shape of different concepts. It is like a chord with the overtones of its notes. And as the overtones are capable of being analysed out of the sum total by the use of resonators, so the fused concepts may be analysed out by logical processes.

ledge may be said to be a conceptual element over and above the central concept. By intimate fusion it appears rather as a mode of this latter.

This overknowledge is a further corroborative evidence for our theory of thought.

When meaning is given by the arising of an imageless concept, there is, of course, no question of imagery; since the overknowledge is as imageless here as the concept itself. And when the sensorial part of an image complex is so prominent in consciousness as to depress the conceptual element to a minimum of observability, the "coefficient" overknowledge, we maintain, is still non-imaginal. It is not, as we have seen, the image; nor can it, although it is connected with this, be easily supposed to be a function of the sensorial elements as such. To understand this we have only to consider the analogous case of the symbolic image, frequently observed. There is more than the sensorial elements in consciousness here. There is the conceptual element. There is also the symbolisation. Is this latter a function of the sensorial elements? Or is it a coefficient, an overknowledge of the concept with which the sensorial part of the complex occurs? The latter would certainly seem to be the preferable hypothesis; since it is capable of covering all the cases

—those as well in which only an imageless central concept is given.

We conclude, then, that what we have termed overknowledge is conceptual in character; and that it, with the concept giving essential meaning, constitutes the represented 'object' as present to mind.

§ 4. *Phenomenological Appearance of the Predicate in Logical Judgements.*

Our experiments were planned with a view to ascertaining only the manner in which the meaning of the nonsense-word subjects was present to consciousness in 'universal' and 'individual' judgements. These words, as we have seen, were sufficiently well known to have meaning, and at the same time sufficiently unfamiliar as to be separated by a time-interval from the arising of that meaning in consciousness. This allowed of the examination of the meaning as a phenomenon on its own account. We have drawn attention in the preceding paragraphs to the connection of the meaning with imagery, and to the presence of overknowledge, by which conscious universality or individuality is secured. And there our task, as originally contemplated, might have ended; for we gave no special instruction to our observers to

take notice of the mode of presence of the predicates with which they reacted. Indeed, it seemed that such an instruction would be rather prejudicial to the results hoped for than otherwise; for the main endeavour of the research was to observe, with the greatest possible attention, a meaning which had been created, and more or less loosely connected by association with the nonsense-word. It was held that attention paid to more than this one point would render its observation less accurate; and it was supposed that the words employed by the observers as reaction predicates, being normal words, would be with great difficulty, if at all, discriminated from their meanings.

Nevertheless an examination of the protocols shows that, even with regard to the predicates, meaning and symbol (word) were not always so closely united as to be indiscriminable. Indeed the meaning to be expressed in the reaction word often arose in consciousness before the symbol. We are therefore able at once to divide our material roughly into two groups. In the first are the cases in which the meaning of the reaction word consciously preceded the appearance of the latter in consciousness.<sup>1</sup> In the second are the cases in

<sup>1</sup> Excerpts from Protocols showing presence of meaning (concept) antecedent to word more or less adequately expressing it.

*Stimulus*: "The first Lagoc is (*sandy coloured*)." *Introspection*: "I saw the picture there at once, not very clearly; more the colour than the picture. The *idea* of pyramid then came: then the *idea* of sand. I reacted," F. 5", vii. 9.



which meaning and word appear together; or, at any rate, are not chronologically distinguished by the observer.

Both these groups can be still further analysed. The first gives us two sub-groups. The first sub-group embraces those cases in which the predicate meaning arises without a concomitant word, and is followed by a reaction word which is more or less

*Stimulus*: "The best Digepe is (*I know quite well*)." *Introspection*: "I was pleased that it wasn't 'Sorab,' which I expected. Felt I did know something about it. Visual images of the apple and the grapes; but quite apart from seeing the pictures, I judged that the peach was the best. Saw the peach . . . wanted to react something about its softness. Rejected that idea, and thought I'd react something about its skin. I meant 'velvety,' G. 14".6, x. 7.

So G. uses :

"Turned back" for the concept "having its back to me;" "quite departed" for "colourless," etc.

*Stimulus*: "No Lagoc is (*quite round*)." *Introspection*: "I had usual image of black thing with corners at base. Then I remembered that they were distinguished from the other class by having corners. Then the idea that they weren't round seemed to follow without further mediation," Sp. 3".8, viii. 9.

*Stimulus*: "The smallest Fumip is (*visible*)." *Introspection*: ". . . recurred then to the idea that had first presented itself: and the word visible hadn't occurred first, but had been implied in the general notion of seeing it under a microscope in its most minute form," Sh. 25".6, ii. 3.

*Stimulus*: "All Digepe are (*endowed with*)." *Introspection*: ". . . the words 'eatable,' 'luscious,' came. I would not use them. Then I thought of the amyl series. The word was not in consciousness, but the meanings 'organic ethers' and 'fruit sugars' were; and I was going to say 'endowed with these ethers and sugars,' but could not get the right word. The meaning of 'Digepe' was clearly there, but generalised, I think, from meaning of apples and grapes," A. 11".2, v. 7.

So A. uses :

"Blasphemous" for a concept—meaning "not flowers."

*Stimulus*: "The first Digepe is (*purple*)." *Introspection*: "Tendency to react cherry inhibited because it was a noun. I determined to answer with a colour. Could not find a name for colour for some time. Then obtained name 'purple' auditory-motor; but some hesitation as to its appropriateness (*e.g.*, if the colour were not too blue). Pushed this aside voluntarily, and reacted 'purple,'" Fl. 10".6, iv. 1.

So, again :

". . . The smallness and narrowness of the flowers impressed me; and I answered 'small,' really meaning 'small-flowered,'" Fl. 4".8, iv. 5.

*Stimulus*: "The smallest Ferod is (*playing with a rope*)." *Introspection*: "He hasn't got a rope in his hands; but about to haul himself with it. . . ." R. 10".7, iii. 4.

appropriate; *i.e.*, which more or less adequately expresses the meaning. The second sub-group contains the cases in which the predicate meaning arises as before, but is followed by a reaction word which is recognised by the observer as entirely incongruous; *i.e.* which does not express the meaning.<sup>1</sup>

The second group of cases also admits of two sub-groups. In the first are placed the cases in which the aroused word is noted by the observer as appropriate because of its meaning and consciously applied to the subject of the judgement before he reacts. He knows on introspection that this conscious application occurred.<sup>2</sup> In the second

<sup>1</sup> One or two examples are given in the previous footnote.

<sup>2</sup> Excerpts from Protocols showing concomitant predicate word and meaning consciously applied to subject before reaction.

*Stimulus*: "The largest Lagoc is (*mauve*)." *Introspection*: "I had the idea of shape. Then I saw the shape of the black 'Lagoc,' and of the mauve one—one above the other and slightly coloured. I compared the two; and the mauve seemed the largest," F. 3", x. 9.

*Stimulus*: "All Funip are (*coloured*)." *Introspection*: "'Funip' meant all those figures; and in particular to the idea of shape of the red one. I wanted to react 'pointed;' but remembered the round one. . . . With this I had the idea of yellow colour. That gave me the idea of colour for the rest of them. 'Colour' had a general reference," F. 13", ix. 2.

*Stimulus*: "All Robud are (*different sizes*)." *Introspection*: "I read this and had a sort of doubt as to whether I knew what it meant. . . . Then I saw one picture clearly and another behind it not clearly. Then this became clear and the other vanished. . . . Then I had the idea, for which no word came, of how they went in descending order of magnitude, and tried to think of one word for that idea. I reacted as above. It was perfectly universal for all those pictures," G. 24", v. 3.

sub-group are the cases in which the observer is unable to discriminate any conscious application of

So “. . . apropos of nothing, the word ‘eatable’ came motor. I tested it—put it into sentence and said it. I thought it was true of all but absurd,” G. 9".4, iii. 5.

*Stimulus*: “All Robud are (*rosy*).” *Introspection*: “I had a 1 % image and a very clear idea (but not determinate) of a chubby-faced boy—individual, as an illustration rather than a symbol. I had that; and I thought of others too. He was side-faced, for instance, but I couldn't say which side. Judgement made with strong conviction that it applied to them all, although only that one idea was determinate,” Sp. 2".8, v. 3.

*Stimulus*: “No Lagoc is (*rounded*).” *Introspection*: “I completed the sentence with a thought *plus* a 1 % image of a thing with two angles and a base. Then I predicated rounded of ‘No Lagoc’—not merely of that one. I did not first say ‘that one is not rounded,’ and ‘the others are not,’” Sp. 3".4, v. 9.

*Stimulus*: “All Lagoc are (*single line figures*).” *Introspection*: “I had an image—a yellow figure, roughly semicircular. I knew there were other figures: could not recall any of them. At the same time I *knew* that they were all contained by a single line,” Sh. 9", ii. 8.

So “. . . I waited to make sure *that it was a quality of general application* and decided to accept it,” Sh. 4", i. 1.

*Stimulus*: “All Robud are (*fat*).” *Introspection*: “. . . ‘Fat’ came auditory-motor, with meaning ‘chubby.’ I don't know why, but I tried to inhibit it. Thought that ‘fat’ would probably apply to the lot of them. It persisted a considerable time, and loomed large in consciousness. At last I reluctantly reacted,” A. 7".4, ii. 3.

So also: “. . . recognition that ‘metallic’ was not quite what I meant, but that all tools are at least partially metal—at least in that series. This was all *idea*, . . .” A. 4", ii. 5.

*Stimulus*: “All Ferod are (*swift*).” *Introspection*: “. . . Recalled instructions. Word ‘swift’ arose auditory-motor. Seemed applicable to all, as I reviewed images and noted each was quickly-moving,” Fl. 6".6, ix. 4.

So also: “. . . thought; ‘Yes, but they *all* have some colour or other,’” Fl. 3".2, vii. 2.

the predicate to the subject. Yet he is sure, we may suppose, that the predicate applies to the subject, since he reacts without hesitation. These are cases in which the predicate word seems to express merely an aspect of the subject—to be read off, so to speak, from a subject already present as an image.<sup>1</sup> These cases are most frequent in connection with ‘individual’ judgements. The results of this analysis are set forth in Tables XII., XIII., and XIV.

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*Stimulus*: “All Ferod are (*youthful*).” *Introspection*: “I saw two or three of them: and knew that that would describe them all. There was a confident knowledge there, without a survey of all the individuals,” R. 3".6, iv. 4.

So also “. . . obscure presentations, almost too imperfect to be called images . . . enabled me to know that all ‘Funips’ were bounded by curves: though I don’t see one of them completely figured,” R. 18", vii. 2.

<sup>1</sup> “A quite definitely located in time and space quasi-image of a little brown tub. . . . Reacted ‘brown’ with considerable confidence, . . .” A. 5".4, iv. 1.

“. . . Its bright plumage attracted my attention—and I reacted automatically,” Fl. 3", ix. 3.

“. . . I had twice a 1 % image of a yellow, I think vertical, shape, which I now believe not to be the correct one. I suddenly realised I had to react by predicating, and said yellow,” Sp. 2".8, ii. 2.

“Visual image after an inhibition of a bunch of pale green flowers. Felt it was not right. Perfectly clear image. Nothing else. So reacted (pale green),” Sh. 13", iii. 6.

“‘Sorab’ meant ‘musical instrument’ indeterminately. Image of violin came. I described it” (Reaction ‘four-stringed’), F. 5".2, viii. 8.

“. . . I saw the picture very definitely, going to the right . . . then noticed the little mountain-climbing hood. Reacted (‘hooded also’),” G. 5".4, viii. 10.

It is to be noticed that in order to separate out the predicate from the subject, as two conscious contents, the protocols were divided at the point where the predicate actually used in the reaction

TABLE XII  
PHENOMENOLOGICAL OCCURRENCE OF THE PREDICATE OF  
'UNIVERSAL' AFFIRMATIVE JUDGEMENTS

(No. of Protocols analysed, 154)

Observer.	Meaning (imageless) followed by reaction word.	Meaning (imageless) followed by incongruous word.	Reaction word with meaning consciously applied.	Unclassified.	Failures.	Total.
G. . . . .	36% (a)	20%	40%	0%	4%	25
F. . . . .	36%	8%	44%	0%	12%	25
Sp. . . . .	40%	0%	32%	28%	0%	25
Sh. . . . .	37%	7%	30%	0%	26%	27
A. . . . .	37% (a)	0%	58%	0%	5%	19
Fl. . . . .	60% (a)	0%	30%	5%	5%	20
R. . . . .	61%	0%	39%	0%	0%	13
Average . . . . .	44%	5%	39%	5%	7%	...
Total . . . . .	40%	8%	38%	5%	8%	...

(a) Several times preceded by reproduced sensations (for A, 5%; for Fl. 15%; for G. 12%).

first came, in any form, to the consciousness of the observer. This was done in all cases except those in which the reaction word was incongruous; and in these cases the division was made at the point

where the meaning that failed to be expressed in reaction arose.

TABLE XIII  
PHENOMENOLOGICAL OCCURRENCE OF THE PREDICATE OF  
'UNIVERSAL' NEGATIVE JUDGEMENTS

(No. of Protocols analysed, 112)

Observer.	Meaning (imageless) followed by imageless negation of this meaning and then by word.	Meaning (imageless) followed by word negating it.	Meaning (imageless) followed by word expressing it.	Word with meaning followed by word negating it.	Reaction word without conscious reference to the subject.	Unclassified.	Failures.	Total.
G. . .	26%	26%	4% (b)	9%	30% (b)	0%	4%	23
F. . .	48%	13%	22% (b)	0%	13% (b)	4%	0%	23
Sp. . .	54%	4%	4% (b)	4%	13% (b)	17%	4%	24
Sh. . .	80% (a)	0%	0%	0%	0%	0%	20%	5
A. . .	30%	0%	0%	30%	35% (b)	5%	0%	20
Fl. . .	60%	0%	10% (b)	20%	10% (b)	0%	0%	10
R. . .	86%	14%	0%	0%	0%	0%	0%	7
Average	55%	8%	6%	9%	14%	4%	4%	...
Total .	46%	10%	7%	10%	19%	5%	3%	...

(a) In these four cases images were also present with and in addition to the meaning.

(b) This word *de facto* contradicts the image or idea, or some element of the image or idea which was its immediate antecedent in consciousness; but the observer does not record consciousness of having contradicted it.

This procedure is necessarily arbitrary; for the mental process so divided is in reality a continuous one. It may be objected that the thought element

or meaning of the predicate may, in fact, have been given in the presence of the subject; as, *e.g.*, in the image, which in many cases, accompanied the

TABLE XIV

PHENOMENOLOGICAL OCCURRENCE OF THE PREDICATE OF  
'INDIVIDUAL' JUDGEMENTS

(No. of Protocols analysed, 229)

Observer.	Meaning (imageless) followed by word expressing it.	Word with meaning describing image.	Reaction word without conscious reference to the subject.	Unclassified.	Failures.	Total.
G. . . . .	44%	33%(a)	13%	2%	6%	52
F. . . . .	0%	15%	77%(a)	4%	4%	52
Sp. . . . .	12%	14%	45%(a)	12%	17%	42
Sh. . . . .	6%	73%(b)	0%	11%	11%	18
A. . . . .	0%	19%	71%	6%	3%	31
Fl. . . . .	0%	75%(c)	25%	0%	0%	20
R. . . . .	0%	7%	79%	7%	7%	14
Average . . .	9%	43%	44%	6%	7%	...
Total . . . .	13%	29%	46%	6%	7%	...

(a) The reaction word here describes the image, which had a meaning antecedently to the occurrence of the word. Sp. in one case notes that the word was "predicated analytically in the Kantian sense."

(b) Perhaps words were present, but the observer makes no mention of them in his protocols.

(c) In three cases preceded by reproduced olfactory or gustatory images.

arising in consciousness of the meaning of the subject. But even here the meaning expressed by the predicate develops subsequently to the appear-

ance of the subject. It may be an aspect of the subject; but, if so, it is singled out, and its degree of consciousness heightened. The implication is that it is subsumed under a conceptual abstract. Moreover, except in the few cases in which the instruction "to react with an appropriate *adjective*" was not observed, the meaning of the predicate never *coincides* with that of the subject.

We feel, therefore, that we were justified in arbitrarily dividing the protocols at the point stated, and in constructing our tables from this analysis.

Perhaps the most interesting result of this analysis is to be found in the relative distribution of the cases in which reaction word and meaning occur simultaneously, and those in which the meaning consciously precedes the word. The meaning consciously precedes the word, expressing it in our 'universal' affirmative judgements 48% times: (*Table XII., columns 2 and 3*) and in the 'universal' negative judgements 63% times. (*Table XIII., columns 2, 3, and 4.*)<sup>1</sup> Averaged together,

<sup>1</sup> It will be noticed in Table XIII. that the cases in which the meaning of the reaction word, or the meaning negated by the reaction word, arises before the word-symbol, are entered in three separate columns. We do not propose to make any detailed examination of the nature of negative judgements at present; but it is interesting to note that in these judgements we have apparently two types. In the first type (cases entered in columns 2, 3, and 5 of Table XIII.) an imageless meaning, or a word with meaning, which is only applicable affirmatively,



these 'universal' judgements show this phenomenon 55·5 % times. The same phenomenon occurs in the 'individual' judgements 13 % times (*Table XIV., column 2*). The advantage, in this respect, of the 'universal' over the 'individual' judgements is seen to be of the value 42·5 %.

Again, the reaction word arises with its meaning in the 'universal' affirmative judgements 38 % times (*Table XII., column 4*); and in the 'universal' negative judgements 29 % times (*Table XIII., columns 5 and 6*). The average of these percentages is 33·5 %. The same phenomenon occurs in the 'individual' judgements 75 % times (*Table XIV., columns 3 and 4*). Here the advantage is 41·5 % in favour of the 'individual' judgements.

occurs first. This is then followed by a meaning, or a word negating it. The following is an example of this :

*Stimulus*: "No Goral is (*extraordinary*)." *Introspection*: "I got the meaning almost at once. Word 'singular' came: rejected as inappropriate. The idea of the opposite of ordinary—usual—came. I let that rest in my mind until 'extraordinary' came explosively in reaction. No images," A. 9<sup>o</sup>.2, iii. 5.

In the second type, a meaning or a word negatively applicable to the subject occurs without any intermediary (cases entered in columns 4 and 6 of *Table XIII.*). An example of this type is :

*Stimulus*: "No Robud is (*harsh*)." *Introspection*: "I understood the sentence. Felt myself on the point of saying a negative right away. Emotional shock. The negative did not develop. Ideopresentation of 'harsh.' Then I said harsh—very like the well-known test of opposites," Sp. 4<sup>o</sup>, iii. 3.

Again :

*Stimulus*: "No Goral is (*a sentient being*)." *Introspection*: "I knew what it meant. Thought, 'Oh, this is jolly. I can react anything.' I had then idea of useful; and felt that the whole wretched series of reaction words was going to come. All of a sudden as a delightful flash the words 'a sentient being' came—just came," G. 3<sup>o</sup>.2, ix. 5.

We can suggest no other reason for these discrepancies than that the more prominent presence of the sensorial elements of the image given with the meaning of the nonsense-word subject in 'individual' judgements, tends to have an effect upon the subsequent occurrence and prominence of verbal imagery. There is logically, so far as we can see, no reason for it. The fact that in 13 % of the 'individual' judgements the attribute appeared first as an imageless meaning, or concept, shows that the immediate occurrence of the predicate in a verbal form is not necessarily a feature of judgements of this sort. And the further fact that the predicate arises in verbal form in 33·5 % of the 'universal' judgements shows that they are not necessarily characterised by concepts occurring antecedently to reaction words.

We suggest that the effect of the antecedent sensorial elements is due to confluence. The sensorial part of the subject content perseverates and conflues over into the predicate concept, thus in some way strengthening the tendency of its associated word-symbol to appear concomitantly with, or at least chronologically and introspectively indistinct from it. The more prominent the previous sensorial elements, the more indistinct would be the predicate concept from its symbol. This would explain the cases in column 6 of Table

XIII., and in column 4 of Table XIV. In these the reaction word occurs immediately; *i.e.*, without a discovered antecedent concept or meaning, and without a reference to the subject to test its applicability. It is 'read off' the subject. It expresses something seen in the image. This is reasonable enough in the case of 'individual' judgements, where, as we have seen, comparatively good images usually appear. And as a matter of fact, we have the largest percentage for this phenomenon entered in the 'individual' judgement Table. The 19% in Table XIII. is easily explained on the same grounds: only the reaction here denies the predicate of the subject—'reads something off' which is *not* seen. This is like the well-known test of finding opposites. Further than this suggestion, we have no evidence in our protocols upon which we can base any definite conclusion as to this point.

We have next to ask whether the predicates of our judgements were 'universals;' and, if so, in what sense. We have seen that they first occur as imageless meaning, or as words with meaning. There is no evidence in the protocols of the 'individual' judgements to show whether they were 'universal' or not, other than logically. We may consider, for example, the following fairly typical case:—

*Stimulus*: "The blue Funip is (*thin and oval*)."

*Introspection*: "The word 'blue Funip' excited a 3% or 4%<sup>1</sup> image of a deep blue, oval, thin figure; and I nearly predicated 'thin and oval' at once. Qualms as to whether it were all right. Concluded it was; and reacted with conviction," Sp. 6", vi. 2.

In this case two concepts, 'thin' and 'oval,' are at once aroused with the reproduced image as qualities perceived. The sensorial elements are subsumed under both concepts; just as a percept is subsumed under concepts in the act of perception. But are 'thin' and 'oval' to be considered psychologically as 'universals?' They are not, apparently, recognised as being *actually* so; though it is evident that, if other images of 'thin' and 'oval' figures were also present, they would all be referable to these same concepts, under which they might be subsumed. This subsumption would be the condition of their recognition as 'thin' or as 'oval.' We are inclined to think that the logical requirements of the predicate are here verified, but not the psychological requirements of the true 'universal.' The concepts, or concepts *plus* words expressing them, are phenomenologically present in the same way as the 'universal' meaning of the nonsense-word subjects when negative overknowledge is observed. These concepts giving meaning are *potentially* 'universal,' in the sense that they can apply to every individual of the class. They

<sup>1</sup> A very high percentage for Sp.

mediate the essential, or *quasi-essential* meaning of the nonsense-word. And that is all that is, logically, required of them. For a true psychological 'universal' more than this is necessary. We must have the positive overknowledge of 'universal' reference. And this we find noted by our observers in the protocols, though only occasionally, and that in 'universal' judgements. For example:

*Stimulus*: "All Goral are (*useful*)."  
*Introspection*: "The sentence was understood. 'Goral' had a confused mixture of 'Gorilla' and 'Coral.' Then I stopped and dwelt on the word, and got up the idea of—I think it was—a hammer. . . . Thought (reminiscence) that there had been other 'tools.' Thought for an adjective to suit 'tools.' Reacted," Sp. 9<sup>7</sup>.2, v. 5.

Here it seems to be fairly evident that the "adjective to suit 'tools'" must have been consciously referred to all possible: *i.e.* must have been the true psychological 'universal'; though, on the other hand, the concept 'useful' *may* have been referred quite simply to the concept 'tool.' From other evidence given in the foot-notes we conclude, however, that the psychological 'universal' was *de facto* sometimes observed, as a positive overknowledge, or coefficient of universality, given with the concept expressed by the predicate.<sup>1</sup> But of 'universal' predicates in the logical sense—'useful,'

<sup>1</sup> Cf. p. 208.

*e.g.* as potentially applicable not only to 'tools,' but to all actual and possible useful things *universally*—we find no trace in the protocols. Nor did we expect to find it.

As a conclusion to this paragraph on the predicate we have, lastly, to present three tables. In the first of these (Table XV.) are recorded the number of cases in which there was no imagery of any kind reported in connection either with the predicate or the subject of the judgement. The mental process, beginning with the perception of the stimulus part-judgement and ending with the spoken reaction word, contains no imagery either visual or verbal. The following gives the percentages of these cases with their distribution for each observer and for either form of 'universal' judgement.

TABLE XV

Observer.	Universal Affirmative.	Universal Negative.	Average Total.
F. . . . .	32%(a)	17%	25%
G. . . . .	16%(b)	17%	17%
Sp. . . . .	16%	33%	25%
Sh. . . . .	0%	0%	0%
A. . . . .	32%	30%	31%
Fl. . . . .	0%	0%	0%
R. . . . .	0%	14%	7%
Total Average	14%	14%	15%

(a) There are also two doubtful cases not included in this number.

(b) One doubtful case not included.

The next Table (XVI.) shows the cases in which only verbal imagery intervened between the perception of the stimulus part-judgement and the reaction word. Such imagery consisted either in (i.) irrelevant words, or (ii.) appropriate words which were not used as predicates, or (iii.) words naming the subject (*nouns*).

TABLE XVI

Observer.	Universal Affirmative.	Universal Negative.	Average Total.
F. . . .	16%	0%	8%
G. . . .	24%	22%	23%
Sp. . . .	20%(a)	13%	17%
Sh. . . .	4%	0%	2%
A. . . .	53%(b)	50%(c)	52%
Fl. . . .	0%	0%	0%
R. . . .	0%	0%	0%
Total Average	17%	12%	15%

(a) There are also three doubtful cases not included in this number.

(b) Nearly all cases of rejected but appropriate words for reaction.

(c) In three cases words naming the subject (*nouns*).

Since, in all the cases shown in this Table (except those in which the meaning of the subject was expressed by naming it) the meanings of the subject and predicate employed in reaction come to consciousness without images, we may neglect the intermediary verbal images. They, with their meanings, may be links in the chain of mental process. They may be reinforcing intermediaries.

But the two important meanings—that of subject and predicate of the judgement—arise conceptually.

Moreover, in the act of applying the predicate to the subject all the process intervening between the two seems to be *de facto* neglected by the observers. The necessary elements of the judgement are put together. Predicate-meaning is asserted of subject-meaning.

We may, therefore, not unreasonably combine the figures of Tables XV. and XVI. with the following result :—

TABLE XVII

Observer.	Universal Affirmative.	Universal Negative.	Average Total.
F. . . . .	48%	17%	33%
G. . . . .	40%	39%	40%
Sp. . . . .	36%	46%	41%
Sh. . . . .	4%	0%	2%
A. . . . .	85%	65% <sup>(a)</sup>	75%
Fl. . . . .	0%	0%	0%
R . . . . .	0%	14%	7%
Total Average	30%	26%	28%

(a) We have omitted the three cases mentioned in note (c) to Table XVI. in order to get this figure.

And we may conclude from the percentages of these three Tables, not only that a thought-process such as judgement may occur as a pure thought-process containing concepts only as contents, without the admixture of imagery of any kind, but



also that processes of this character have a tendency to take place when the thought is abstract; that the 'universal' form of the Stimulus is their antecedent. For while we find an average of 28% of cases of this character in Table XVII,<sup>1</sup> we notice that they all occur in 'universal' judgements. There is no column in these last Tables for the inclusion of similar cases found in the protocols of 'individual' judgements, since in these no such cases were discoverable.<sup>2</sup>

<sup>1</sup> *I.e.* 15 % of Table XV. + 15 % of Table XVI.—the three cases mentioned in note (c) to Table XVI.

<sup>2</sup> Excerpts from Protocols showing Pure Thought Processes :—

*Stimulus*: "All Lagoc are (*angular*)."  
*Introspection*: "I understood the sentence. 'Lagoc' meant entity determined to the extent of being a flat geometrical figure; and, I *think*, slightly contaminated by 'lake' (*lago*). Then a condensed idea of a previous experience arose; and I said with great confidence 'angular,' as satisfying—'angular' being constituent of that reminiscence. No images observed," Sp. 1".8, iii. 9.

*Stimulus*: "No Goral is (*living*)."  
*Introspection*: "I understood the sentence in usual way of word representing an entity. I had the idea 'dead'; and was just about to give utterance to it, when I suddenly had impulse to consider meaning of 'Goral' again. Dwelt on idea of 'Goral:' came out the idea of 'musical instrument;' which suggested to me to say the opposite," Sp. 5".2, iii. 5.

*Stimulus*: "No Tuben is (*fourfooted*)."  
*Introspection*: "I at once thought of my fat bird. . . . Then I thought that *they* were not quadrupeds. Remembered the whole incident of before. Had idea 'fourfooted;' and reacted," Sp. 4", v. 6.

*Stimulus*: "All Digepe are (*eatable*)."  
*Introspection*: "'Digepe' meant fruit in general. No image. I stopped to think about fruit. Had the idea of food in my head. That gave me the word 'eatable.' At first it came as a thought, I think. Then I reacted," F. 3", v. 7.

*Stimulus*: "No Goral is (*small*)."  
*Introspection*: "The idea I first had was that I had had this before. Surprise, or displeasure,

§ 5. *General Conclusions: Summary of Results.*

We may now summarise as follows the general

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Inhibition. Then I had the meaning 'carpentering tool;' and I thought of 'artistic.' Rejected as having been used before. Then idea of carpentering tools in my head made me think of size. I realised none of them, in general, were small. Said 'small,'" F. 11", iv. 5.

*Stimulus*: "No Funip is (*squiggly*)." *Introspection*: "Familiarity with word. Consciousness of tendency to mix up 'Funip' with something else not present in consciousness. Then meaning of 'Funip' came clearly; then the memory of what you had said in your introspection with regard to 'Funip.' Then idea 'square' came. I refused to use it. Then idea of the regularity of the figures. Reacted 'squiggly,' as being the contrary to this. The 'no' was not present in consciousness from an early point in the introspection-period—but evidently influenced the reaction," A. 5".6, iv. 2.

*Stimulus*: "All Lagoc are (*difficult for my subjects*)." *Introspection*: "I got the meaning of 'Lagoc' at once; and then remembered several of the reactions of my subjects. Then I thought of myself making the pictures on the cards in a very vague, slow way. 'Difficult for my subjects' came automatically in spoken words as reaction," A. 9".8, iii. ix.

*Stimulus*: "All Goral are (*made by man*)." *Introspection*: "I recognised the meaning of 'Goral;' and wanted to put words I had used before, which came automatically as a memory. Then I thought of predicating *something* about their connection with prehistoric man. No words came. Then, quite automatically, I said 'made by man,'" G. 6", x. 5.

*Stimulus*: "No Tegam is (*living*)." *Introspection*: "I knew what 'Tegam' referred to, and thought (no images) of the watering-can that comes in this series and remembered that we had spoken about it last time. Then I wanted to think whether I should react something stupid like 'eats.' There was no idea present of what—or sensible. Then thought that you always got them so quickly—and something comic. Thought—whatever I do, I must be quick. Then word 'breakable' came automatically, motor. Rejected because I knew it was not true. Then 'living' came automatically, motor. Reacted," G. 6".6, x. i.

conclusions that we have drawn from the analysis of the data afforded by our experiments.

1. Nonsense - words (nouns) acquire general meaning gradually by a process of association with the objects denoted by them. In this process a concept is abstracted from the objects and associated with the word ; or the objects are subsumed under an appropriate concept previously abstracted from experience which is associated with the word. This concept, which may or may not be accompanied by sensorial elements, when revived by the word gives the latter its meaning.

2. At a particular stage in the process of association of word and objects, the image revived by the word tends to become fragmentary and obscure ; though the associated concept is unimpaired, and the meaning is given as certainly, or more certainly, than before the phenomenon was observed.

3. Images are not necessary as contents for thought ; but thinking always involves concepts as contents. The sensorial elements of images function in holding concepts relatively stable in consciousness. They tend to appear as consequents of inhibitions, as "contrary instances" of

inexact judgements, and, with some observers, habitually.

4. The 'universal' is phenomenologically present, or tends to be present, to consciousness as a concept or imageless substantive content. We think, or have a tendency to think, 'man' or 'all men' without images.

5. The 'individual' is phenomenologically present to consciousness as a concept in connection with sensorial contents (image). When we think 'this man' we have imagery of some sort. The image best securing 'individual' thought is the direct image, or percept.

6. There is an 'overknowledge' content to the effect that a thought is of the 'universal,' of the 'individual,' or of a collection of 'individuals.' This 'overknowledge' is frequently a condensed knowledge. It is conceptual in character.

7. The meaning of the predicate of a judgement (attribute) may occur chronologically separable from the word that expresses it; and it may appear in consciousness as a concept, or imageless thought.

8. A thought process, such as judgement, may continue from stimulus to reaction as a pure thought process, involving only imageless concepts as contents.

9. Where images are involved in such processes their sensorial elements are to be accounted for on grounds of association.



## PART III

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## APPENDIX

EXAMINATION of the Protocols in which no imagery was reported in connection with the meaning of the subject in 'individual' judgements.

There were altogether ten cases in which the meaning of the subject in 'individual' judgements ('individual' or real meaning) may have been given without any connected sensorial element. All these cases were classed as if this phenomenon had occurred, seven of them being included in column v., and three in column vi., of Table VIII. G. and Sp. have one case each; F. and A. four. Together they make 4 % of the total number of 'individual' judgements analysed.

With regard to these cases we would first of all draw attention to the fact that they are very few in number. Further, some of them are almost obviously false reactions; and, if these had been classed as 'failures,' the 4 % would have been still lower. Now 4 % or less is not a sufficiently large figure to warrant us in supposing that the margin of introspective error, inaccuracy and omission (always possible factors in psychological investigations of this kind) is eliminated. We are

justified on this ground alone in refusing to admit the occurrence of the phenomenon ; and in concluding that, in the absence of further evidence, an image or sensorial content connected with the concept is always present when the 'individual' is thought.

But even if we were unable to make use of this summary consideration, a detailed examination of the protocols concerned will show us ( $\alpha'$ ) either that the mental process expressed in the judgement was entirely conceptual in character, and no true 'individual' was thought ; ( $\beta'$ ) or an 'individual' was thought, but sensorial contents connected with the concept were overlooked, or not dictated, in the introspection.<sup>1</sup> We shall

<sup>1</sup> The point with which we here deal makes it necessary for us to define what we mean by 'individual.' The common-sense point of view divides mind from the objective universe. Everything that exists in the world of reality is individual, including mind itself and each phenomenon of mind. The 'universal' is the substance or nature of the individual considered apart from its individualising characters. Thus it is in nature as the essence concretely realised in each individual ; and in mind as the abstract idea of that essence. Now here we prescind altogether from the question as to whether things do or do not exist outside mind. We are interested only in the phenomenology of mental processes. And from this point of view we may state that whatever is actual is 'individual,' and only the actual can be so. Thus a percept (or any part of a percept separated from the rest by what we have called sensorial abstraction), an image, etc., being actual is individual. This will readily be admitted by all. But the concept, as such, is not actual. As a mental process here and now it is indeed an actual and individual mental process ; but considered as concept it is distinctly non-actual. The thought 'man,' *e.g.*, whether it be pure or accompanied by imagery, is a concept precisely because it is abstracted from actuality. It is not, as are percept and image, in a time and space perspective. It is neither 'this' nor 'that man,' but simply 'man.' In order that thought should be 'individual,' the concept requires a substrate of actuality as given by a connected sensation or imaginal content. What such connection may be we are

therefore examine the protocols in detail; and first consider the cases in column v.

*Case I.*—*Stimulus*: “The best Digep is (*hard*).” *Introspection*: “‘Digep’ meant *any apple*. With meaning ‘apple’ I had the idea of fruit. Then I went back to the idea of ‘best.’ I was thinking more of the fruit I like best than of the apple (which *is* the fruit I like best). ‘Hard’ came as an idea; and I reacted,” F. 3”, x. 7.

*Case II.*—*Stimulus*: “The first Digep is (*red*).” *Introspection*: “‘Digep’ meant fruit in general. I couldn’t remember which was the first of the series. Then I remembered I had used apple last time for ‘Digep.’ Tried to think of it as the first; but it didn’t seem to be the first. Couldn’t remember any other, so decided it would do,” F. 10”, ix. 7.

*Case III.*—*Stimulus*: “The first Kumic is (*red*).” *Introspection*: “‘Kumic’ meant *any japonica*.—Idea of red came. There was no image (and no consciousness of reference),” F. 3”, x. 4.

In these cases it is to be noticed that the meanings at any rate were not *at first* individual, but potentially universal — “*any apple*,” “*any japonica*,” “fruit in general.” In the first and third case we are strongly inclined to suppose that true ‘individual’ judgement

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unable to say; but we suggest that the individuality of the sensorial element *conflues* (to use a well-known expression) over into the concept. We must suppose some such process as confluence in this case to explain the fact that a sensorial element may be present with the concept and yet the thought be ‘universal,’ or potentially ‘universal.’ The ‘individual’ is then an actual content, or a content which is actualised by some sort of connection with, or confluence of actual contents. We have reached this conclusion partially on logical grounds and partially on psychological; but mainly upon the latter. The data of our experiments seem to point to it, no less than the necessity of explaining the apparent exceptions treated in this Appendix.

was not made at all; indeed, in the third case, this seems to be evident, "red" being predicated of "japonica" essentially.

In the second case we have a condensed memory of a previous experience without images (frequently met with in our experiments). We are of opinion that this case is to be classed with the next two we shall examine and explained as they are.

*Case IV.*—*Stimulus*: "The largest Kumic is (*I don't know*)." *Introspection*: "First I had usual 'comic'; and at the same time remembered the whole experience of your showing me the flowers. Dwelling on that I developed it into vague ideas of images and flowers. Was unable to remember any as being larger than the others. Tried hard. Struck one that I was just about to *infer* about their largeness. Then the previous experiment came into my mind; and it struck me how different was the experience of inference from that of simple reminiscence. Came back; and, to settle the matter, reacted as I did," Sp. 17", viii. 4.

Here we have ( $\alpha'$ ) ideas of images and flowers (concepts); ( $\beta'$ ) idea of largeness; ( $\gamma'$ ) inception of an inference ("transitive thought"); ( $\delta'$ ) condensed ideopresentation of previous experience; ( $\epsilon'$ ) consciousness of experiential difference between inference and reminiscence; ( $\zeta'$ ) reaction.

*Case V.*—In its main features G.'s case is similar to this. *Stimulus*: "The first Ferod is (*running*)." *Introspection*: "I read this (and knew in foreperiod that it was 'Fero-d.' Was quite pleased to think it was, and had thought of word as applicable, *e.g.*, 'comic.' 'Comic' came as stimulus was exhibited). Then I thought that was not necessarily appli-

cable to the first one. Then tried to recall image of the first one; couldn't. But *knew* he was running—that all were running, except one, and that one not the first. And so, since I could not recall image, reacted with knowledge that 'running' applied to the first. I got it as an individual from the general, although I could get no visual image," G. 7".8, i. 10.

Here we observe in order: ( $\alpha'$ ) concept (inferred as present as meaning of 'Ferod'); ( $\beta'$ ) thought of the 'first,' or percept of the words 'the first' of the stimulus, and doubt as to applicability of 'comic;' ( $\gamma'$ ) conation towards image; ( $\delta'$ ) concept (expressing a common attribute); ( $\epsilon'$ ) syllogistic conclusion ("transitive thought").

We would again hold that in these two cases the mental process was of a purely conceptual character; and that actual or potential universals alone are concerned in it as concepts. In other words, we are of the opinion that Sp.'s inchoate judgement and G.'s completed one were not true individual judgements.

Our own first case from column v. is the following:

*Case VI.—Stimulus*: "The first Ferod is (*walking to right*)."  
*Introspection*: "I had a sort of half perseveration and expectant attention. I knew that the idea would be easily awakened when I saw the word; and I got the idea of 'Ferod' when it was shown. 'The first' was in consciousness; and my general idea changed instantaneously into the idea of a boy whom I could recognise walking to the right—doubt if it were not to the left—with a yellow coat and a red scarf. Reaction without much certainty that it was the first—doubt that it might be the last. But it was certainly an individual localised in space and now," A. 4".8, ii. 10.

We are quite confident that this case, together with our own two cases entered in column vi., is to be explained by the presence of kinæsthetic sensations, which we have frequently observed in ordinary life as giving 'individual' meaning to words. We are able to detect these sensations, *e.g.*, in reading or thinking "Wales." They are localised in the eyes and neck, principally, as if both were turning to the left. Indeed head and eyes actually do sometimes so turn. Now our own visual imagery is so faint and poor that we are nearly always doubtful as to whether we have images of this sort or not; and it is plausible to suggest that these kinæsthetic sensations are substitutes for them. When we read, therefore, "idea of a boy, whom I could recognise, walking to the left . . . individual localised *in space and now*;" or

*Case VII.* "again a localised direction towards an individual blue 'Funip' which was inclined on a card," (vi. 2); and

*Case VIII.* "*clearly localised intention.* The black 'Lagoc' very clearly in consciousness. Idea of its size. Clearly, quite clearly, individual," (vi. 9). We strongly suspect the presence of these kinesthetic factors.

*Case IX.*—Our second case from column v. is as follows:—*Stimulus*: "The first Kumic is (*blue*)." *Introspection*: "A period of waiting for meaning to develop. Developed the meaning 'flower'—ideal. This was certainly general. Followed a sort of mental movement in which idea of cornflower was got. Very clear idea of its shape and size. Knowledge that this was the first flower. 'Blue' came quite automatically," A. 4", ii. 4.

This case might be interpreted in two ways. The



“sort of mental movement” might indicate kinæsthetic sensation or imagery. Or the “idea of cornflower” may have been a potential universal and not an ‘individual.’ We are persuaded, on account of a note made on the protocol at the time, that the latter interpretation is more probably the correct one; and for that reason we should explain this case in the same way as those of Sp. and G. and F.

*Case X.*—If the explanation given of these nine cases be correct, there remains but one (F. x. 2) in which an individual is ‘present to mind’ without an image. The protocol is as follows:—

*Stimulus:* “The yellow Funip is (*round*).” *Introspection:* “‘Funip’ just meant the round object on the card. I didn’t see a picture of it; but I seemed to remember something about ‘yellow Funip’ before. But no words came into my mind,” F. 3”, x. 2.

In this case, “I seemed,” says F., “to remember something about ‘yellow Funip’ before.” Now, as a fact, “The yellow Kumic is ——” was the Stimulus in ix. 4, where the reaction word of this observer was “large.” We have here a condensed ideopresentation of a previous experience in which comparatively good images were obtained. This apparently gives the meaning of ‘Funip.’ But how, or why (since the ideopresented experience was not a ‘Funip’ one, nor was the same reaction word used) we have no means of ascertaining.



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