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I.—MEDIATE ASSOCIATION.

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THE process of associative reproduction of ideas, as it is ordinarily stated, is one in which one idea calls up another either by virtue of a direct and immediate resemblance between them, or through the fact of their having formed directly contiguous portions in some previously experienced psychical continuum. But the question may be raised whether the relations between the ideas must have this immediate character, or whether it is possible that an idea may be able to act upon another merely through indirect resemblance or indirect contiguity, and thus by Mediate Association form the occasion of its appearance in consciousness.

That there is such a Mediate Association among ideas was first asserted by Hume, though Hamilton has perhaps given the greatest prominence to the theory. In the *Treatise of Human Nature*¹ we read: "That we may understand the full extent of these relations, we must consider, that two objects are connected together in the imagination, not only when the one is immediately resembling, contiguous to, or the cause of the other, but also when there is interposed between them a third object which bears to them any of

¹ Bk. i. pt. i. § 4.

these relations". It is obvious that such a theory has an important bearing upon the question whether there are "*frei steigende Vorstellungen*," i.e., ideas whose appearance in consciousness is not explicable in terms of the laws of association.

It is to Scripture that the merit belongs of having first attempted to give an experimental proof of the theory of Mediate Association; according to him the results of the experiments went to prove that this factor was operative in determining the course of ideas in consciousness. On the other hand Münsterberg, at the end of a research begun with the object of determining the extent of its operation, came to the conclusion that there is no Mediate Association among ideas. The experiments of which I wish to give an account in this paper were carried out with the view of throwing further light on this question.

The method used by Scripture was of the following character. By means of an apparatus which enabled him to present visual objects in succession, and for any length of time that was desired, a number of cards were shown to an observer, each card bearing a word and some kind of sign or figure; both words and signs were in each case different. Then another set of words was shown: the words differed in character from those first presented, but each possessed one of the signs used in the first set. These two sets together made up a complete series. Lastly, one of the words was again presented, this time without the accompanying sign, and the observer was asked to name any other word in the series which occurred to him. It is evident that, if in a very large number of cases the word named by the observer had possessed the same sign as the word presented to him, while at the same time this fact was unknown to him, there would be good ground for supposing that the sign had formed an unconscious or "unapperceived" mediating element in the process of associating the two words. In a large number of the experiments carried out by Scripture no trace of Mediate Association could be found. Its presence seemed to be proved only in one group of experiments in which one half of the words in a series were German, the other half Japanese, the mediating sign being a Japanese character. It is these experiments alone which are analysed in detail. The number of observers who took part in the experiments of this group was six. Out of a total of 185 experiments there were only 79 cases in which words were associated which belonged to the same series; obviously these cases alone have any bearing on the question in

dispute. When all these cases were taken into account the ratio of those in which the words possessed the same sign to those which did not was 47 to 32. When those cases were excluded where some immediate connexion between the words was suspected, the ratio was 46 to 23.¹

It is clear that even if these figures be accepted the total number of cases is too small to give a sufficient proof of the theory of Mediate Association, especially if we take into account the number of observers. But from a perusal of the record of his experiments, which Scripture had prepared for the Leipzig Institute for Experimental Psychology where the research was carried out, I came to the conclusion that certain sources of error had not been sufficiently taken into account in the analysis of the results. In certain cases it seemed possible that owing to some peculiarity in a word, or to its prominent position in the series, the attention, apart from any other influence, might have been directed to it and thus have increased its chance of being recollected. Another source of error lay in the fact that Scripture's observers were called on to give an association to each word in turn in the two halves of a series. If the observer gives an answer in each case when called upon, then he must repeat some of the associations already given; when given a second time an association cannot be accepted as having an independent value. Yet such cases seem to have been accepted by Scripture as free from suspicion.

Münsterberg's experiments, as he himself remarks, were much more extensive than those of Scripture in regard to the number of cases which are recorded, the number of observers, and the variety of the experiments carried out. As his conclusions were entirely negative it is only necessary to indicate briefly the nature of the work done by him. In the first set of experiments the objects to be associated were intelligible words read aloud to the observer, the mediating element being a syllable which was also read aloud. In the next group notes given by a musical instrument connected the two halves of a series. Then followed experiments in which sensations of smell, touch and colour formed the mediating elements. Visual objects alone were next employed in the construction of the series. In the first of these experiments photographs of paintings were connected by strips of coloured paper. The last set was intended to be an exact repetition of the experiments of Scripture: in one half of a series the words were German, in the other half

¹ *Philosophische Studien*, vii. p. 82.

Japanese; the two halves had small complicated figures as accompanying signs.¹

In order to estimate properly the value of these experiments in relation to Scripture's results, we must remember that according to the latter author Mediate Association is operative only under favourable circumstances. Now it could be argued that only experiments carried out under similarly favourable circumstances could be brought forward as evidence against Scripture's conclusion. Münsterberg himself points out that only in the last two sets of experiments were the methods closely followed which were used in the previous research. But it seems clear that photographs of pictures must arouse extraneous ideas and shades of feeling in various degrees of distinctness which will inevitably tend to obscure any influence of Mediate Association. As to the last set of experiments, where the mediating object was a small complicated figure, it has to be noted that in Scripture's experiments the corresponding Japanese characters were neither specially small nor specially complicated—a fact which Münsterberg had no means of knowing. If Mediate Association be really operative, its influence must in any case be very small, and only by the most careful arrangement of experiments could a decisive result be expected. It seems then that Münsterberg's experiments hardly justify the absolute statement that there is no such thing as Mediate Association.

The present research was begun in Leipzig under the direction of Prof. Wundt, and carried out during 1892-1893. I had the assistance of a number of exceedingly competent observers, who were chosen after trial on account of their fitness for the purposes of this investigation. One of the observers, Prof. Külpe, had previously assisted Scripture in his research on this subject, and I am glad to have this opportunity of acknowledging the valuable help he gave me in carrying on the experiments.

No attempt was made to work with ideas other than those derived from the sense of sight. In this way one had the advantage of using objects which most persons can associate without difficulty, and which allow of great scope for variations. Besides it seemed fairly certain that if the influence of Mediate Association could not be discovered in the train of visual ideas it would hardly be demonstrable in any other way. For reasons, which will be apparent later, only association by contiguity was investigated. During the whole course of

¹ *Beiträge zur experimentellen Psychologie*, Heft 4, pp. 1 ff.

the investigation the observers were carefully questioned in every case of association as to the content of their consciousness at the time, so that the presence of extraneous disturbing influences might at once be detected. No doubt such questioning is liable to the danger that it may bring out a half-fictitious theory of the process of association, instead of an exact description of the state of mind at the time. But the opposite danger of allowing important elements in the process to escape notice was the one which was actually most to be guarded against in the present investigation. In order to obtain material for the experiments a large number of German words of one or two syllables were printed in a type which allowed the words to be read without difficulty. When unintelligible words were needed the words already printed were usually cut up and the syllables rearranged. Each word was printed on a separate card: a space was left above the word on which the various kinds of signs could be placed which were to serve as mediating objects.

I. GROUP.

The object of the experiments in this group was to present the words between which the associations were to be formed for a very short time and in rapid succession. It might be supposed that in this way the observer would have less tendency to reflect on, and consciously relate what was presented to him. In order that the disturbing influence of conscious reflexion might be further eliminated, the observers during almost all the experiments of this group, remained in complete ignorance of the problem which was being investigated. By means of a pendulum apparatus¹ the words were shown for a time which varied very slightly but was at most half a second in length. The observer, who sat at a short distance, looked through a tube at the slit in which the word appeared during the passage of the pendulum. All the words in each series were presented twice, the second time in a somewhat different order. When a word was presented the third time and the observer requested to give an association, the sign which accompanied the word was covered over, so that the word alone was directly perceived.

At first experiments were tried in which all the members in each series were intelligible words (*cf.* Münsterberg's first set of experiments). It was found, however, that too

¹This apparatus is described in Wundt's *Grundzüge der physiologischen Psychologie*, 4th ed., ii. p. 335.

much opportunity was in this way given for the formation of "inner" or intelligible relations between the words. For this reason, and also because it seemed advisable to lighten the task of the observer by informing him that the associated words must belong to different halves of the series, the words out of which a series was composed were almost always one half intelligible, one half meaningless. Further it was found that the intelligible words, even when no inner connexions were found between them, were much more easily retained in the memory than the meaningless ones. Hence the meaningless word was in most cases used as "stimulus" to the association, the observer being then required to name an intelligible word. The number of cards bearing signs as well as their order was arbitrarily varied, in order that the observers might not in any way be led to form disturbing relations among the words, or to discover the object of the experiments.

In presenting only one half of the words used in a series when the time came for the observer to form associations, Münsterberg's procedure had a distinct advantage over that of Scripture, who, as before remarked, requested the observer to give an association to each word in a series in turn. But when only one half of the words are employed there is a danger that after the first associations the words named may be given because there are no others left to give. Even when fewer are employed similar difficulties may arise. In order to lessen this danger, as far as possible, only three associations were requested in the present group where a series included in all ten words. Afterwards, when the extent of a series was lessened, the number of associations was, as a rule, correspondingly diminished. By doing so one has only a relatively small total of experiments to record. On the other hand there is the advantage that the value of the recorded cases is considerably increased.

Since in the case of all the observers the results with slight variations were similar, it is unnecessary to do more here than present the total numbers in each set of experiments. In the experiments of the first set, *a*, an intelligible word was given as "stimulus" to the association; in the second, *b*, an unintelligible, and in the third, *c*, arbitrarily an intelligible or unintelligible word was given. In these three sets the two kinds of words were mixed together when first presented. In the following experiments, *d*, *e*, the two kinds of words were brought together into separate halves. In the last set, *f*, the mediating object was a coloured strip of paper, while in all the previous sets it was a sign or a figure copied from a

Japanese newspaper. In the table given below, n denotes the total number of cases in which the association satisfied the conditions of the experiment, r the number of cases that remain after revision and exclusion of cases where some disturbing influence destroyed the value of the experiment; under ma is given the number of the revised cases, r , in which the associated words possessed the same sign. In the column under o are given the numbers of the observers who took part in the experiments.¹

TABLE I.

	n	r	ma	o
a	121	49	16	8
b	19	9	8	2
c	27	16	2	2
d	88	54	11	8
e	92	67	17	8

Considerable difficulty was experienced in analysing the various cases of association, and in deciding which cases should be rejected. The principle which was relied on in the analysis was that an experiment was unobjectionable only when the ideas, "Vorstellungen," could be regarded as being, apart from Mediate Association, equally liable to be reproduced, or as being, so to speak, in a state of equilibrium. Since the value of the results of such an investigation depends largely on the care with which the various cases are analysed, it will not be out of place to indicate in some detail the character of the various associations which had to be rejected.

Obviously all those associations had to be rejected where the mediating object was consciously present as the bond of connexion between the associated words. In the first

¹ A detailed analysis of the results together with an account of minor details in the methods will be found in the paper "Zur Frage der Mittelbaren Association". Inaug. Dissertation, 1894. Leipzig.

group, however, owing to the way in which the objects were shown to the observers, the number of cases which had to be rejected on this ground was not large. It is equally plain that when the observer remembers that the two associated words were contiguous when the series was first presented the experiment must be excluded. Owing to the large number of cases where the associated words had been contiguous, although there was no recollection of the contiguity, these associations were also excluded.

Besides those instances where the nature of the process of recollection could be exactly specified there were others in which the word named by the observer had remained more or less distinctly in consciousness after being presented the first time, or had spontaneously reappeared before the experiments were made. The latter process was specially prominent in the experiments made with one observer; while the later members of a series were being presented, words from the earlier part tended involuntarily and without any assignable reason to reappear in consciousness. In order to check this tendency he often occupied the pauses which necessarily occurred during presentation of a series by softly humming or beating time; the tendency became lessened when he knew the purpose of the experiments, but it never entirely disappeared. When all the words in a series had indistinctly reappeared before the experiments were made, or where the self-observation seemed somewhat uncertain, the associations were accepted on the ground that the disturbance was not sufficiently great in any particular case to warrant its rejection. One may classify those cases also as due to a disturbing activity of memory where the word named had been recalled to memory by a previous association, and where a word given a moment before was again reproduced.

It is impossible to draw any sharp line between the facts already mentioned and those of another class in which the essential factor seemed to be a heightening of the attention given to an object at its first appearance. A special emphasis may be lent to a word through its having a certain interesting or striking character. Or if a meaningless syllable recall some extraneous intelligible idea this will lead to its making a deeper impression than otherwise would be the case. Some observers showed the latter tendency very strongly; a complex of familiar or interesting ideas would be woven involuntarily and immediately round the word presented. In spite of efforts made to check it the tendency to form an intelligible complex of ideas out of what was

unfamiliar or meaningless remained operative. A similar associating process showed itself in the fact that some observers could not help connecting in some intelligible manner the word with the mediating sign attached to it, however unconnected the two at first sight might seem.

Another factor which resulted in a heightening of the attention was the formation of an intelligible connexion between the words. They were of course always chosen with the view of excluding such relations, but in some cases where the imagination seemed specially active, a connexion was still found. That this process resulted in a special emphasis being given to the words was a fact insisted on by one of the observers. Lastly come two facts of which the explanation is very simple. In the first case the word makes a greater impression through its prominent position at the beginning or end of a series; in the second a word when first seen is read with difficulty, and when at last understood is remembered without difficulty.

Since the observers were directed always to combine associatively words differing in character, associations due to an inner resemblance of the ideas connoted by the words could be formed only where an unintelligible syllable was transformed into something intelligible by the process already referred to: such a complicated activity was, however, seldom met with. Similarity in the structure of the words was the reason given by one observer for a very large number of the combinations which he formed; according to him it was the sound of the word and more especially the sound of the vowels which was the mediating element.

II. GROUP.

In the next group of experiments the attempt was made to remedy certain defects which the method employed in the first group carried with it. The visual objects were presented in such a way that the observer was not disturbed by the exertion demanded for the perception of the words, and had every opportunity of gaining a clear and distinct impression of what was presented to him. During the experiments he sat in a small dark room; in one wall there was an aperture where cards could be inserted without allowing light from the outside to enter. Below the aperture on the inside stood a small electric lamp, by means of which the experimenter, who stood outside the room, could illuminate the cards for any length of time. The duration of the presentation was varied with each person to begin with, and the time chosen which seemed to the observer just sufficient to give a distinct per-

ception of the object: on the average it lasted about three seconds. A series was presented once only; those cards which possessed similar signs very rarely occupied similar positions in the two halves of the series, and those words with similar signs which were to be used in the subsequent experiments never occupied positions at the beginning or end of the two halves.

The mode of classifying the experiments differs somewhat from that of the first group. In the first set, *a*, there were ten members in each series, in the second set, *b*, there were eight. These series were constructed on exactly the same principle as those in the first group; in many cases the old words and signs were used, but always in new combinations; various kinds of mediating signs were employed, letters, figures, numbers and colours. In the third set, *c*, the mediating object was an intelligible word, the intention being to try the associating effect of words which were easily retained and reproduced. The objects which had to be associated were mostly figures, letters and unintelligible words: sometimes there were eight in a series, sometimes six. In the last set, *d*, a series contained only six members which were similar to those of the first and second sets. In some cases the number of experiments was small. Towards the close of the research the experiments were not carried far as the different modifications of method did not seem to secure any new result.

TABLE II.

	<i>n</i>	<i>r</i>	<i>ma</i>	<i>o</i>
<i>a</i>	91	60	14	4
<i>b</i>	63	29	4	6
<i>c</i>	78	42	18	7
<i>d</i>	34	13	3	1

III. GROUP.

The following experiments were devoted to testing the value of a suggestion offered by one of the observers. The

intention was to see whether the influence of Mediate Association would not show itself more readily, when all the objects presented were familiar as well as uninteresting, and were thus capable of being reproduced without difficulty and without rousing other disturbing ideas. After preliminary trials ten objects were chosen and employed in all the experiments. One half of these were cards with coloured spaces on them; the colours being red, green, grey, white, black; in the other half the Greek letters α , δ , π , σ , χ , were used, the mediating objects being Japanese characters like those used in the next group. For each new series the various objects were rearranged. The apparatus and mode of presentation of the objects were the same as those of the previous group. The results confirmed the supposition that the influence of disturbing ideas would be eliminated. Very few of the associations had to be discarded, although the connexions of one series showed a slight tendency to interfere with those which followed. The total number of unobjectionable associations given by six observers was 111. The number of cases possibly due to Mediate Association was 22.

IV. GROUP.

It will be noted that the experiments which have already been described were in no case exactly similar to those of Scripture, though following in general the method initiated by him. In this group the most essential features of some of Scripture's experiments were reproduced. The words and the Japanese characters which formed the mediating objects were the same as those used by him, and they were given in the same order; the only difference was that both words and characters were smaller, though they were still seen with perfect distinctness. In several cases the time during which each word was exposed was the same. Two series with eight members and three with six members were thus reproduced. Here, as in Scripture's experiments, the observer was requested to give an association to each word of a series in turn. The results of the experiments made with four observers were as follows. The total number of the associations was 88; the number of unobjectionable cases was 37, while the number of cases which could be ascribed to Mediate Association was 8.

V. GROUP.

In his volume *Über das Gedächtnis* Ebbinghaus asserts on the ground of his experiments that "there seems to

exist an association not merely through immediate, but also one through mediate succession". The method employed in the last experiments which were made is in one respect similar to that of Ebbinghaus. While in the previous experiments the associative connexions between the various objects were formed during an act of perception which, however distinct and intense, lasted but a short time, the attempt was now made to investigate the effect of relatively firm and permanent associations between the objects. The various series employed were constructed on the following plan. Two sets of words sometimes intelligible, sometimes meaningless, were prepared and written on separate slips of paper, each word being accompanied by a sign, letter, figure or number, as in the previous experiments. The number of members in a series varied from ten to twenty-four. The observer learned the two halves of a series at different times until he knew the connexions in each half almost by heart. After several days cards, each bearing a word from the series which had lately been memorised, were laid before him, and he was requested to sort the cards into pairs. The associations thus formed by five observers may be divided into three classes: (1) those where there was distinct recollection of the mediating object; (2) those formed by a partial and indistinct reproduction of the connexions between the words and mediating objects; (3) those which were the result of arbitrary selection or guessing. Of the associations in the first class 24 were correct and 5 wrong; in the second 10 were right and 12 wrong, while in the third only 3 cases were right (*i.e.*, the words associated had possessed the same sign) as against 42 which were wrong.

It seems clear, that owing to the character of the facts with which we are dealing, any exact mathematical analysis of the results would be out of place. The factors which as we have seen enter into and influence the train of ideas are so numerous, and so difficult to trace with any exactness, that the existence of Mediate Association could be regarded as proved only if the number of cases in which it could serve as a valid explanation exceeded to a large extent and with a certain constancy what might be expected had the associations appeared spontaneously, and, so to speak, accidentally in consciousness. No one supposes that in reality ideas occur accidentally. But where we have excluded, as is done above, the cases where the influence of a definite factor is traceable then we have a right to treat the appearance of an

idea as accidental until some feature in our results forces us to introduce a new hypothesis. If then we treat the results according to the theory of probability¹ the conclusion we must come to is that in none of the groups have we such a surplus of cases, where the associated objects possessed a mediating link, that we are compelled to search for a special hypothesis for their explanation. The highest number reached, in column *a*, Table I., can be explained on the ground that inasmuch as in this set of experiments very many cases were excluded on the ground of association by contiguity, the number of available words in each series was really less than ten. Other variations which occur, sometimes positive, sometimes negative, call for no special remark.

The results of the various investigations may consequently be summed up as follows. In a large number of the experiments made by Scripture the result was purely negative; those which he brings as positive evidence are too ambiguous and too small in number to form a decisive proof. Münsterberg's results were entirely negative; so are those of the present research.² It can still, of course, be said that in none of these researches has the right method been adopted, or the investigation been carried far enough. And it is quite clear that theoretically an unlimited experience would be necessary to prove the statement that Mediate Association is in no case operative. On the other hand one has a right to ask for some positive reason for further accumulation of negative evidence.

We must, however, consider in this connexion the statement of Ebbinghaus that his results prove the existence of association through mediate succession. The experiments carried out were, shortly stated, of the following nature. When a series of sixteen meaningless syllables of the form $l_1 l_2 l_3 \dots$ had been learned by heart and then afterwards, the same syllables being employed, the labour required to learn a new series which had a regular form, *e.g.*, $l_1 l_2 l_3 \dots$ was compared with that necessary to memorise a series in which the order of the syllables was quite irregular, it was found

¹ This treatment is applied both by Scripture and Münsterberg. In the former case unfortunately no explicit statement is given as to the length of the series employed: as a matter of fact they varied in length from six to twelve words.

² After the paper had been prepared an account of experiments by Howe (*American Journal of Psychology*, vi. p. 289) came under the notice of the writer. The methods used were similar to those of Scripture and Münsterberg, and the results were completely negative.

that where the transformed series had a regular form the labour of memorising it was much less than that required when the order in the series was quite irregular. The objection raised by Münsterberg,¹ that in reading over a series of syllables the observer might have seen several at the same time and in this way associated those which did not stand immediately beside each other, was taken account of by Müller and Schumann in their recent research on Memory ;² it was found by them that where this source of error was excluded the association by mediate succession was still operative.

It will however be noted on closer consideration that the method of Ebbinghaus presents one important peculiarity. While in the other researches the connexions between the objects were in most cases formed by allowing the observer passively to receive a distinct impression of what was presented to him, in the experiments carried out by Ebbinghaus the series of syllables was read aloud in regular rhythm by the observer as often as was necessary to enable him to repeat it by heart. The element of motor activity was evidently much more prominent in the experiments carried out according to the latter method than in any of the other experiments. We may in fact with good ground call the associations in the first case predominantly motor ; the latter, on the other hand, are predominantly sensory.

A sufficiently exact knowledge of the function of motor activity in the train of ideas has not yet been acquired. Stricker in his *Studien über die Sprachvorstellungen* pointed out the importance of the activity of the organ of speech in the formation of certain of our ideas. Pathological cases like that reported by Sommer,³ where the patient could recollect properly only when allowed to perform certain movements with hand, foot or tongue, serve to illustrate the same point. And I may be allowed to refer here to the results of some experiments on the relation of attention to association which seem to show that motor activity of the hand, and in particular of the organ of speech, disturbs to a greater or less extent the power of forming associations between visual objects.

The hypothesis suggested by these facts is that the association through mediate succession is due to the con-

¹ *Zeitschrift für Psychologie und Physiologie der Sinnesorgane*, i. p. 101.

² *Ibid.*, vi. p. 140.

³ *Ibid.*, ii. p. 143.

nexions formed between the successive activities of the organ of speech exerted in memorising a series. Just as any mechanical activity can be practised until the conscious ideas and volitions which at first are necessary disappear with advancing ease of execution, so a series of syllables repeated aloud until they can be said without a mistake will tend gradually to occupy less and less of consciousness, with the result that the connexions between the different members of the series tend to become mechanical and automatic. And it is quite conceivable that in the formation of a new series of motor activities it is not a matter of indifference whether they come in an entirely new and irregular order, or in an order which has definite and regular relations to a series which had already attained a large degree of mechanical perfection. In this way we may perhaps explain the association by mediate succession of which Ebbinghaus speaks. And the reason why in the other researches on Mediate Association no trace of its influence could be found would lie in the fact that the connexions dealt with were mainly sensory; the associations possessed no definite serial order according to which the objects must recur in a given irreversible succession. And where such an order is wanting it is intelligible that, among the many associations which an object can call forth, only those would be effective which were strong enough to rise into consciousness.

One more point remains to be dealt with. Hume states that ideas can be indirectly related not merely on the principle of contiguity, but also on those of resemblance and causation. If, however, we treat these three principles analytically and reduce them, as he does, to contiguity and resemblance, then as we have already discussed association by simultaneous and successive contiguity, it only remains to discuss the relation of resemblance. As regards this relation, it is evident that if the ideas directly resemble each other in some respect, however slightly, the connexion can still be considered as immediate. On the other hand it may be only through the interposed third object that the ideas are connected, while between them there is no connexion at all. Taking the ordinary interpretation of association by resemblance as applied to the reproduction of ideas we would then have a conscious idea. A acting by resemblance on the unconscious or at least entirely "un-apperceived" idea *a*: this idea would call up an idea *b* of a similar degree of latency which in its form would introduce the new idea *B* into consciousness. It may be asked if the reproduction of the new idea in this way is not a more

complicated and more unlikely process than any hitherto discussed. We have, however, a right to reject this complicated process and abandon the quite unnecessary theory that in association by resemblance the new idea, though similar, is a quite new creation, and in no way identical with that which went before. What we would have then would be an idea A, which persists in consciousness for a time, losing meanwhile its old associates, the complex of ideas which previously surrounded it, but at the same time becoming surrounded by a new ideal complex in which B gradually comes to take the prominent part. It is obvious, however, that on this account of the matter, we have simply a substitution of new elements for old in the complex surrounding A, the appearance of the new ideas being due to direct and immediate association by contiguity.