GENERAL REVIEW AND SUMMARY

INSTINCT, IMITATION, PLAY

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The study of instinct in recent years may be said to have followed four general lines: (1) Attempts to analyze instinctive activities and to develop a mechanical or psychological theory to explain them; (2) proposed classifications of instincts; (3) studies of particular instincts in man and the brutes; (4) comparison of the relative strength of the various instincts.

1. Swindle (19) analyzes the nest-building activities of birds into an interplay of "instinct groups." Instinct groups are defined as "series of innately associated activities of an organism." The instinct group thus affords the unit, and it is comparatively invariable in nature. Such an activity as nest-building, however, Swindle finds to be far from unvarying. On the contrary, it involves a great number of movements which, though instinctive, are frequently ill adapted to the situation as a whole. Each instinct group may be in itself suggested by the appropriate stimulus, but the successive groups are not coördinated in an economical and efficient manner. Material brought to the nests may be dropped and not recovered. Nests may be left half built. Even outside the mating season birds may partially build nests. Multiple nests may be constructed, as fast as one is completed another being begun. Good nest builders have greater "excess of useful over useless movements" than poor ones. Further, Swindle (20) finds in the activity of peristalsis a basis for the instinct group, which in this connection he defines as "a number of qualitatively very similar movements which are innately associated and which accordingly induce or condition one another in the particular temporal order in which they occur." Such a group maintains its identity in different environments because it occurred more frequently as a whole than as fragments of a whole. It may thus be transferred from one situation to another, appearing in a variety of complexes. The method of the raven in cleaning its beak was probably, Swindle (18) thinks, transferred from the method and rhythm of tugging and

jerking the beak to right and left when it is tearing the flesh from the body of its prey.

Bock (1) makes a study of what happens when his subjects beat out certain rhythms under the control of marginal attention. The beats fall in groups. The numbers of beats in the larger groups are multiples of those in the smaller ones, or they are related to each other as are small integers. A similar relation holds among the tempos of the different beatings. However, the tempos and the number of the beats in the groups vary independently. Instinctive activities similarly involve, Bock thinks, two variables, while reflexes involve only one.

These studies may be said to be concerned in the mechanical analysis of the instinctive activity. Craig (4), on the other hand, emphasizes the importance of an inner psychical factor, appetite or aversion, in guiding the progress of the instinctive activity. In consequence of this guidance it is not merely a chain reflex. Appetites or aversions are satisfied by final consummatory reactions. Such consummatory reactions may be provoked by the intensity of the appetites in conditions where they can not successfully be completed. Thus one may start eating movements from hunger though food be absent. In that event the consummatory reaction will be only half executed, but its initiation is evidence that the instinctive activity is not, like the reflex, purely under external control. Inner control rather than mere chance "excess of useful over useless movements" as suggested by Swindle may lie back of successful nest building.

Internal control of combinations of instinct groups is obviously, however, far from being conscious of its ends, or even a steady and certain influence toward realizing them. Such revealing experiments as those of Fabre (8) bring out the blindness of the insect in following the suggestions that provoke the successive reflexes which make up instinctive activity. The caterpillar known as the pine processionary follows the leader by picking up the trail of thread left by it. Thus they travel in processions. Such a procession was noted by Fabre to get started about the rim of a palm vase. When the circuit was completed the leader encountered the original trail and became a follower of it. Thus the procession was started on an endless path. For days it kept on the circuit though at times frost and hunger threatened to disintegrate the procession. It is notable that the stimulus of a warm day rather than the discouragement of cold and hunger ultimately provoked a

more daring spirit and a wandering from the circle so long pursued. The burying beetles, thought by some to possess a power of dealing with new situations approximating nearly to reasoning, are shown by Fabre's experiments to be confined pretty closely to purely reflex responses to a narrow range of stimuli.

2. In reference to the classification of instincts Watson and Morgan (23) hold that, while Thorndike is "too prodigal in his list of original reactions, Freud is too parsimonious." The Freudians put sex instinct in the dominant position. Watson and Morgan would make fear and rage equally important. They distinguish four original stimuli of fear and seven native reactions to it. For rage they discover only one natural stimulus and five or six reactions. All other seeming reflexes except those of love they regard as conditioned reflexes—*i.e.*, reflexes aroused not by their original stimuli but by conditions associated with these. Thus the larger part of the great list of original instinctive reactions suggested by Thorndike they regard as developed by education. Similarly Burnham (3) lays great stress on the conditioned reflexes. That the natural reflexes should be brought under the control of the proper stimuli, and that they should not be aroused where they are not in place he holds to be a prime condition of mental health. The ability to form conditioned reflexes is a good test of intelligence and the proper control of them a leading aim in education.

The importance of recognizing the various instinctive tendencies and of determining their consequences and their force is apparent when we deal with any practical phase of life where the drive of these tendencies constitutes the cause with which we have to deal. Hence applied psychology, whether it treats of pathological, legal, commercial and industrial, or educational problems, must needs distinguish the instincts and how they can be utilized and controlled for the better realization of the ends it has in view. Thus Hollingworth and Poffenberger (12), Strayer and Norsworthy, (17) Gordon (11), and Freeman (9) give us classifications of original tendencies and formulate views in regard to them which get their bias from the problems which these writers are concerned in solving. All agree with Thorndike that it is in the interest of clarity to substitute for older classifications of instincts a detailed list of the original sensori-motor reactions which a species can make, yet all, either with apologies for the imperfection of our knowledge, or, perhaps, with some attempt at justification of their procedure go on to give lists of instincts of the old-fashioned sort. Strayer and

Norsworthy, while not attempting to give a catalogue of all the native tendencies, distinguish a number of special importance in education. These are the tendencies to physical and mental activity, manipulation, collecting, rivalry, fighting, gregariousness, motherliness, kindliness, approval and scorn. Gordon adds sleep to the list of instinctive tendencies, and treats as of special importance in education fear, collecting and play. Freeman distinguishes between life-preservative instincts—including feeding, defense, mating, home-building and care of young—and secondary instinctive activities which are of special educational value. These are play, which includes manipulation, curiosity and social responses. The latter comprise imitation, competition, social cooperation and the like. Out from these secondary instinctive activities grow the social, artistic and intellectual impulses which make up the motives of the educated man. Later these are supplemented by the vocational impulses which are fostered by the contact of youth with adult life.

Any one dealing with any aspect of dynamic psychology finds it not only convenient but necessary to group instinctive activities in these larger classifications based upon their functions. This is because the transformations which the teacher, the psychiatrist or the salesman wishes to make consist in breaking up original sensori-motor connections and the formation of new conditioned reflexes and habits. The motives that guide the process must be found within the one subjected to it. They are instincts, cravings, or fears, the appetites or aversions of Craig, the second variable of Bock. The significance of these may be vague or clear to their possessor, yet none the less they constitute a controlling force over him. They are the internal factor which prompts the instinctive act and without which, as Jennings long ago demonstrated, the incitement of the external stimulus would ordinarily be of no avail. When instinctive reactions to these cravings fail, new ones are sought. When we have analyzed the inherited behavior of the individual into an enormous number of specific sensori-motor reactions, there remains the study of the inner demands which these activities satisfy. Such functional cravings constitute the guidance to the process of learning. The observations of Swindle on nest-building show that this guidance may be very fitful and may be upset by external distractions very easily. Yet its presence would seem the only explanation of that "excess of useful over useless reactions" which we can scarcely ascribe merely to chance.

On this matter Freeman's view is of interest. He holds that we may gain from classifying together all the forms of activity that gain a common end. His reason therefor is in part because they "come to be classed together more or less closely in the mind of the person who acts, when he becomes conscious of the goal which is unconsciously aimed at in the simple, mechanical, instinctive responses." If this end is "unconsciously *aimed at*," it plainly guides the process by which the apparently mechanical activities of original nature are transformed into the consciously adaptive activities of the trained adult.

Another interesting characteristic of the treatment of original nature on the part of those interested in applications of psychology is their tendency to follow Woodworth in recognizing the capacities of sensation, attention, memory, muscular activity and the like as themselves a source of "drive" akin to what we have called the instincts. It is instinctive to crave to use any power one may possess, and education flourishes because of this source of energy.

Finally, on the question of classification we may note Warren's (22) preliminary outline of an arrangement to be later used in a book on *Human Psychology*. He attempts a complete catalogue to human reflexes, instincts, instinctive tendencies, emotions, and dispositions. The reflexes are classified from the point of view of presence or absence of control by experience. The instincts are divided into nutritive, reproductive, defensive, aggressive and social. The emotions and dispositions are similarly classified, except that for nutritive is substituted expressive, and a sixth special class added in each case. The instinctive tendencies include play, imitation, curiosity, dextrality, esthetic expression and communication. The author offers his table for criticism.

3. Among special instincts that have been treated we find most attention paid to fear. According to Bonnier (2) fear, which is the instinct of preservation, is merely an outgrowth of the striving to last which is the essence of living matter. From this primal tendency, as life becomes individuated, springs the fear of individual death, involving the distinction between undying spirit and matter which is subject to change. The fear of individual death is, however, somewhat pathological, since the individual is by nature mortal, and living matter as such alone undying. Similarly phobias develop in reference to various organic functions of the individual. Freud (10) looks upon the hostility to death as springing from resentment at the death of kindred, since we can not imagine our own

extinction. To compensate for the fact of death we develop the idea of spirit, which is supposed not to die. However, in the future life spirit may suffer worse than in this. Hence to kill is felt to involve blood guilt. Civilization thus cloaks over the fact of death in others, and we refrain from speaking or even thinking of it. War removes these restraints. We kill without sense of blood guilt and familiarly talk and think of death. Dupuis (7) attacks the view of Dugas, Nietzsche and others that bashfulness springs from a desire for more complete sympathy, and maintains that it is a form of fear, especially fear of ridicule.

The great war has provoked much discussion of herd instincts. Trotter (21) analyses all instincts into four groups. Three are pre-social—self-preservation, nutrition and sex. The other, gregariousness, evolves with society. Herd life favors the gregarious individual, who displays homogeneity with his fellows, who is more insensitive to experience than he is to group opinion, and who is hostile to all opposition to the herd tendency. However, the opposition of herd interests to the earlier instincts and also the progress of intelligence create conflicts. There are two classes of men with reference to these conflicts. One, the mentally stable, reconcile themselves with the herd life by ignoring or explaining away all opposing considerations. The other, more unstable, are skeptical about herd suggestions. Our society is governed by the mentally stable. The unstable, however, while less forceful, are more adaptable, and the herd should find some way of utilizing their sensitivity to conflicts without driving them into extreme and helpless opposition. Thus only can stagnation be avoided. The social habit in man is still very imperfect—indeed, grossly inefficient. War, so far from being biologically necessary, prevents progress by destroying the numbers and the variations which are indispensable to progress. Three types of herd life exist, the defensive herd, the aggressive herd, and the socialized herd. Germany is an aggressive wolf-like herd—not an enduring kind. England tends more to the socialized bee-like type, which if properly developed has promise for the future.

Howerth (14) like Trotter sees in patriotism an instinctive herd emotion which leads nations to unite in the presence of danger. Herds are kept together by instinct rather than by reason. They are susceptible to suggestion and are docile in the hands of leaders. In the great war all nations showed the herd characteristics, although there were individual differences—Germany, for example, being

dominated by militarism. The only basis for world unity Howerth finds in reason rather than instinct.

Mrs. Hollingworth (13) contributes an interesting study of the bearing of echolalia in idiots upon instinctive imitation. It has been contended by some, notably Thorndike, that the sensori-motor association involved in imitation is probably acquired, not inborn. In echolalia the patient does not answer words addressed to him but repeats them. Such echoing may persist in spite of punishment. Hence, Mrs. Hollingworth surmises, it may be due to inborn auditory-motor associations which remain strong in the idiot even when education does its best to root them out. Barr's imbecile could echo words in nine different languages with none of which he was familiar. The unlikelihood that the associations that lead to echolalia are acquired is strong evidence for instinctive imitation.

(4) When we consider the importance of the instincts as affording the "drive" in mental life we may expect that the new applied or dynamic psychology should be interested not only in analyzing out these sources of energy, but also in measuring their force. Moore (15) essays the task of finding their relative strength. He declares that current tests of mental ability are not a proper measure of the efficiency of the individual because they study only power of discrimination, memory, reasoning and the like, and neglect the instinctive forces which are quite as important a factor in achievement. To measure the strength of the instincts he uses the methods of association and distraction. Taking ten of the instincts in McDougall's catalogue he compiles lists of words relating to each. These words are used as cues in association tests, and the relative strength of the various instincts is determined from both the character of the words that are suggested and the reaction times. In the distraction experiments (16) problems are set and the distracting effects upon their solution of stimuli exciting fear, anger, embarrassment, sex interest, and repulsion are estimated. The relative effect of these various stimuli as distractions was in the order in which they have just been enumerated. Individual differences were greatest in reference to anger and embarrassment and least with sex interest and repulsion.

On the subject of play Curtis (6) has gathered together the experience of many years in a book characterized mainly by its excellent discussions of the ways in which play can be utilized in education. The rise of the play-ground movement is sketched and

explained. Five play movements are distinguished: (1) to provide play-grounds, particularly for city children; (2) to introduce organized play as a regular feature of school life, as in the Gary system; (3) to afford adequate opportunities for out of door play for children below school age; (4) to give the public generally more opportunity for free recreation; (5) to develop a wholesome play spirit among the people.

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SPECIAL REVIEWS

Logic. BENEDETTO GROCE (Trans. by Douglas Ainslie.) New York: Macmillan, 1917. Pp. xxxiii + 606. \$3.50.

This book forms the third volume in Groce's *Philosophy of the Spirit*, the *Æsthetic* and the *Philosophy of the Practical* having preceded it. In the opinion of the translator "this Logic will come to be recognized as a masterpiece, in the sense that it supplants and supersedes all Logics that have gone before, especially those known as formal Logics. . . . Indeed, one of the chief boons conferred by this book will be the freeing of the student from that confusion of thought and word that is the essence of all formal Logic."

This book is not a text in logic for the undergraduate but a critique of logic for the mature student of philosophy. Logic is defined as the science of the pure concept, and by the pure concept is meant a universal idea, or a true generalization. The treatment is inexcusably abstract, yet, in spite of this defect, the merits of the book are so great that no student of philosophy can afford to overlook it. Groce has already entrenched himself in the front lines of philosophical thought and this book materially strengthens his position.

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Schriften zur Anpassungstheorie des Empfindungsvorganges. Erstes Heft: Hypothesenfreie Theorie der Gegenfarben. J. PIKLER. Leipzig: Barth, 1919. Pp. viii + 104.

This volume is one of a series of writings which offer a restatement of the entire theory of sensation in terms of modes of active adjustment (*Anpassung*) of the organism to stimulus situations, replacing the current interpretation of sensation as a passive consequence of "excitation." The conceptions which are employed are of a general, psycho-biological nature, but probably are best regarded as referring to central nervous processes. The reasoning is always ingenious but seldom convincing, since it completely neglects the data of modern nerve physiology and draws but little