

BIOLOGICAL PRINCIPLES UNDERLYING THE FIELD OF EDUCATION

BY

C. E. MONTGOMERY

Northern Illinois State Teachers College, DeKalb, Illinois

The average teacher of biology has come to look upon the field of education as one distant from his own with few or no connections of any worth. In some instances this feeling has grown into an attitude which holds that educational material is of no value to the general student. On the other hand, education outside the field of biology has come to look upon the processes of life as casual without ever realizing that they are the only activities of the human machine.

Psychologists speak of the types of energy in the various mental processes but with little or no understanding of its real meaning. The work of the physiologists has shown without doubt that the work of the nerve cells is the result of the expenditure of energy just as in muscles and other organs. This energy releasal process is initiated by some energy disturbance in the environment, directly or indirectly, such as light, sound, pressure, etc., all of which are called stimuli. It has its effect in some muscle, gland or nerve reaction. The nature of this final reaction is determined by the intensity of the stimulus and chemical set up in the responsive machinery. Space does not permit any discussion of the factors in the chemical set up but it may be sufficient to say that so far as education of the individual goes it is about the most important feature involved. The problem of the weak student is not a lack of proper environmental influences so much as it is a non-receptive chemical machine on the inside. The bright student is just the reverse. He not only is able to release an abundance of energy when provoked by stimuli, but can direct it into useful channels. The subnormal child is more a medical than a psychological problem. Initiative and genius are expressions of mental machines that are aroused by stimuli which do not reach the common person.

Volumes have been written covering the various phases of the mental activities, but to the average beginning student and teacher there is nothing but a misty haze of technical terms to confuse them. Much stress is placed upon training of leaders and thinkers without any question as to the possibility of doing either. Urges, emotions, reflexes and all other psychological acts have a chemical basis. Learning, therefore, is not a mere matter of being exposed to certain environmental relations but an actual releasal and usage of mental energy. The individual who may have a good mental machine and does not use it, is little or no better off than the person who may have a poor one. The successful teacher is the person who can arouse and inspire individuals to a definite and positive mental action.

Modern educational research has done a great deal to improve the work in the field of instruction but at the present stage it has not reached the bottom of the problem. Researchers in education will have to meet the biologist and, together they may be able to move forward in their work. Education is a biological adaptation. If the average thinking person can be brought to this level of understanding, the study of problems in all phases of human adjustment will be placed on a much saner foundation. Every teacher should have a clear knowledge of the importance of heredity and its early environmental relations. It is probable that more damage is done to the pre-school child than to the child in school. Many teachers in zoology and biology do not recognize the importance of this phase of their work.