

Intellectual and Practical Studies

1. The Opposition of Experience and True Knowledge

As livelihood and leisure are opposed, so are theory and practice, intelligence and execution, knowledge and activity. The latter set of oppositions doubtless springs from the same social conditions which produce the former conflict; but certain definite problems of education connected with them make it desirable to discuss explicitly the matter of the relationship and alleged separation of knowing and doing.

The notion that knowledge is derived from a higher source than is practical activity, and possesses a higher and more spiritual worth, has a long history. The history so far as conscious statement is concerned takes us back to the conceptions of experience and of reason formulated by Plato and Aristotle. Much as these thinkers differed in many respects, they agreed in identifying experience with purely practical concerns; and hence with material interests as to its purpose and with the body as to its organ. Knowledge, on the other hand, existed for its own sake free from practical reference, and found its source and organ in a purely immaterial mind; it had to do with

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spiritual or ideal interests. Again, experience always involved lack, need, desire; it was never self-sufficing. Rational knowing on the other hand, was complete and comprehensive within itself. Hence the practical life was in a condition of perpetual flux, while intellectual knowledge concerned eternal truth.

This sharp antithesis is connected with the fact that Athenian philosophy began as a criticism of custom and tradition as standards of knowledge and conduct. In a search for something to replace them, it hit upon reason as the only adequate guide of belief and activity. Since custom and tradition were identified with experience, it followed at once that reason was superior to experience. Moreover, experience, not content with its proper position of subordination, was the great foe to the acknowledgment of the authority of reason. Since custom and traditional beliefs held men in bondage, the struggle of reason for its legitimate supremacy could be won only by showing the inherently unstable and inadequate nature of experience. The statement of Plato that philosophers should be kings may best be understood as a statement that rational intelligence and not habit, appetite, impulse, and emotion should regulate human affairs. The former secures unity, order, and law; the latter signify multiplicity and discord, irrational fluctuations from one estate to another.

The grounds for the identification of experience with the unsatisfactory condition of things, the state of affairs represented by rule of mere custom, are not far to seek. Increasing trade and travel, colonizations, migrations and wars, had broadened the intellectual horizon. The customs and beliefs of different communities were found to diverge sharply from one another. Civil disturbance had become a custom in Athens;

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the fortunes of the city seemed given over to strife of factions. The increase of leisure coinciding with the broadening of the horizon had brought into ken many new facts of nature and had stimulated curiosity and speculation. The situation tended to raise the question as to the existence of anything constant and universal in the realm of nature and society. Reason was the faculty by which the universal principle and essence is apprehended; while the senses were the organs of perceiving change, - the unstable and the diverse as against the permanent and uniform. The results of the work of the senses, preserved in memory and imagination, and applied in the skill given by habit, constituted experience.

Experience at its best is thus represented in the various handicrafts - the arts of peace and war. The cobbler, the flute player, the soldier, have undergone the discipline of experience to acquire the skill they have. This means that the bodily organs, particularly the senses, have had repeated contact with things and that the result of these contacts has been preserved and consolidated till ability in foresight and in practice had been secured. Such was the essential meaning of the term "empirical." It suggested a knowledge and an ability not based upon insight into principles, but expressing the result of a large number of separate trials. It expressed the idea now conveyed by "method of trial and error," with especial emphasis upon the more or less accidental character of the trials. So far as ability of control, of management, was concerned, it amounted to rule-of-thumb procedure, to routine. If new circumstances resembled the past, it might work well enough; in the degree in which they deviated, failure was likely. Even to-day to speak of a physician as an empiricist is to imply that he lacks scientific training, and that he is proceeding simply on the basis of what

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he happens to have got out of the chance medley of his past practice. Just because of the lack of science or reason in "experience" it is hard to keep it at its poor best. The empiric easily degenerates into the quack. He does not know where his knowledge begins or leaves off, and so when he gets beyond routine conditions he begins to pretend - to make claims for which there is no justification, and to trust to luck and to ability to impose upon others - to "bluff." Moreover, he assumes that because he has learned one thing, he knows others - as the history of Athens showed that the common craftsmen thought they could manage household affairs, education, and politics, because they had learned to do the specific things of their trades. Experience is always hovering, then, on the edge of pretense, of sham, of seeming, and appearance, in distinction from the reality upon which reason lays hold.

The philosophers soon reached certain generalizations from this state of affairs. The senses are connected with the appetites, with wants and desires. They lay hold not on the reality of things but on the relation which things have to our pleasures and pains, to the satisfaction of wants and the welfare of the body. They are important only for the life of the body, which is but a fixed substratum for a higher life. Experience thus has a definitely material character; it has to do with physical things in relation to the body. In contrast, reason, or science, lays hold of the immaterial, the ideal, the spiritual. There is something morally dangerous about experience, as such words as sensual, carnal, material, worldly, interests suggest; while pure reason and spirit connote something morally praiseworthy. Moreover, ineradicable connection with the changing, the inexplicably shifting, and with the manifold, the diverse, clings to experience. Its material is inherently

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variable and untrustworthy. It is anarchic, because unstable. The man who trusts to experience does not know what he depends upon, since it changes from person to person, from day to day, to say nothing of from country to country. Its connection with the "many," with various particulars, has the same effect, and also carries conflict in its train.

Only the single, the uniform, assures coherence and harmony. Out of experience come warrings, the conflict of opinions and acts within the individual and between individuals. From experience no standard of belief can issue, because it is the very nature of experience to instigate all kinds of contrary beliefs, as varieties of local custom proved. Its logical outcome is that anything is good and true to the particular individual which his experience leads him to believe true and good at a particular time and place. Finally practice falls of necessity within experience. Doing proceeds from needs and aims at change. To produce or to make is to alter something; to consume is to alter. All the obnoxious characters of change and diversity thus attach themselves to doing while knowing is as permanent as its object. To know, to grasp a thing intellectually or theoretically, is to be out of the region of vicissitude, chance, and diversity. Truth has no lack; it is untouched by the perturbations of the world of sense. It deals with the eternal and the universal. And the world of experience can be brought under control, can be steadied and ordered, only through subjection to its law of reason.

It would not do, of course, to say that all these distinctions persisted in full technical definiteness. But they all of them profoundly influenced men's subsequent thinking and their ideas about education. The contempt for physical as compared

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with mathematical and logical science, for the senses and sense observation; the feeling that knowledge is high and worthy in the degree in which it deals with ideal symbols instead of with the concrete; the scorn of particulars except as they are deductively brought under a universal; the disregard for the body; the depreciation of arts and crafts as intellectual instrumentalities, all sought shelter and found sanction under this estimate of the respective values of experience and reason - or, what came to the same thing, of the practical and the intellectual. Medieval philosophy continued and reinforced the tradition. To know reality meant to be in relation to the supreme reality, or God, and to enjoy the eternal bliss of that relation. Contemplation of supreme reality was the ultimate end of man to which action is subordinate. Experience had to do with mundane, profane, and secular affairs, practically necessary indeed, but of little import in comparison with supernatural objects of knowledge. When we add to this motive the force derived from the literary character of the Roman education and the Greek philosophic tradition, and conjoin to them the preference for studies which obviously demarcated the aristocratic class from the lower classes, we can readily understand the tremendous power exercised by the persistent preference of the "intellectual" over the "practical" not simply in educational philosophies but in the higher schools.

2. The Modern Theory of Experience and Knowledge

As we shall see later, the development of experimentation as a method of knowledge makes possible and necessitates a radical transformation of the view just set forth. But before coming to

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that, we have to note the theory of experience and knowledge developed in the seventeenth and eighteenth centuries. In general, it presents us with an almost complete reversal of the classic doctrine of the relations of experience and reason. To Plato experience meant habituation, or the conservation of the net product of a lot of past chance trials. Reason meant the principle of reform, of progress, of increase of control. Devotion to the cause of reason meant breaking through the limitations of custom and getting at things as they really were. To the modern reformers, the situation was the other way around. Reason, universal principles, a priori notions, meant either blank forms which had to be filled in by experience, by sense observations, in order to get significance and validity; or else were mere indurated prejudices, dogmas imposed by authority, which masqueraded and found protection under august names. The great need was to break way from captivity to conceptions which, as Bacon put it, "anticipated nature" and imposed merely human opinions upon her, and to resort to experience to find out what nature was like. Appeal to experience marked the breach with authority. It meant openness to new impressions; eagerness in discovery and invention instead of absorption in tabulating and systematizing received ideas and "proving" them by means of the relations they sustained to one another. It was the irruption into the mind of the things as they really were, free from the veil cast over them by preconceived ideas.

The change was twofold. Experience lost the practical meaning which it had borne from the time of Plato. It ceased to mean ways of doing and being done to, and became a name for something intellectual and cognitive. It meant the apprehension of material which should ballast and check the exercise of reasoning. By the modern philosophic empiricist and by his

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opponent, experience has been looked upon just as a way of knowing. The only question was how good a way it is. The result was an even greater "intellectualism" than is found in ancient philosophy, if that word be used to designate an emphatic and almost exclusive interest in knowledge in its isolation. Practice was not so much subordinated to knowledge as treated as a kind of tag-end or aftermath of knowledge. The educational result was only to confirm the exclusion of active pursuits from the school, save as they might be brought in for purely utilitarian ends - the acquisition by drill of certain habits. In the second place, the interest in experience as a means of basing truth upon objects, upon nature, led to looking at the mind as purely receptive. The more passive the mind is, the more truly objects will impress themselves upon it. For the mind to take a hand, so to speak, would be for it in the very process of knowing to vitiate true knowledge - to defeat its own purpose. The ideal was a maximum of receptivity. Since the impressions made upon the mind by objects were generally termed sensations, empiricism thus became a doctrine of sensationalism - that is to say, a doctrine which identified knowledge with the reception and association of sensory impressions. In John Locke, the most influential of the empiricists, we find this sensationalism mitigated by a recognition of certain mental faculties, like discernment or discrimination, comparison, abstraction, and generalization which work up the material of sense into definite and organized forms and which even evolve new ideas on their own account, such as the fundamental conceptions of morals and mathematics. (See ante, p. 61.) But some of his successors, especially in France in the latter part of the eighteenth century, carried his doctrine to the limit; they regarded discernment and judgment as peculiar sensations made in us by the conjoint

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presence of other sensations. Locke had held that the mind is a blank piece of paper, or a wax tablet with nothing engraved on it at birth (a tabula rasa) so far as any contents of ideas were concerned, but had endowed it with activities to be exercised upon the material received. His French successors razed away the powers and derived them also from impressions received.

As we have earlier noted, this notion was fostered by the new interest in education as method of social reform. (See ante, p. 93.) The emptier the mind to begin with, the more it may be made anything we wish by bringing the right influences to bear upon it. Thus Helvetius, perhaps the most extreme and consistent sensationalist, proclaimed that education could do anything - that it was omnipotent. Within the sphere of school instruction, empiricism found its directly beneficial office in protesting against mere book learning. If knowledge comes from the impressions made upon us by natural objects, it is impossible to procure knowledge without the use of objects which impress the mind. Words, all kinds of linguistic symbols, in the lack of prior presentations of objects with which they may be associated, convey nothing but sensations of their own shape and color - certainly not a very instructive kind of knowledge. Sensationalism was an extremely handy weapon with which to combat doctrines and opinions resting wholly upon tradition and authority. With respect to all of them, it set up a test: Where are the real objects from which these ideas and beliefs are received? If such objects could not be produced, ideas were explained as the result of false associations and combinations. Empiricism also insisted upon a first-hand element. The impression must be made upon me, upon my mind. The further we get away from this direct, first-hand source of knowledge, the more numerous the sources of error,

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and the vaguer the resulting idea.

As might be expected, however, the philosophy was weak upon the positive side. Of course, the value of natural objects and firsthand acquaintance was not dependent upon the truth of the theory. Introduced into the schools they would do their work, even if the sensational theory about the way in which they did it was quite wrong. So far, there is nothing to complain of. But the emphasis upon sensationalism also operated to influence the way in which natural objects were employed, and to prevent full good being got from them. "Object lessons" tended to isolate the mere sense-activity and make it an end in itself. The more isolated the object, the more isolated the sensory quality, the more distinct the sense-impression as a unit of knowledge. The theory worked not only in the direction of this mechanical isolation, which tended to reduce instruction to a kind of physical gymnastic of the sense-organs (good like any gymnastic of bodily organs, but not more so), but also to the neglect of thinking. According to the theory there was no need of thinking in connection with sense-observation; in fact, in strict theory such thinking would be impossible till afterwards, for thinking consisted simply in combining and separating sensory units which had been received without any participation of judgment.

As a matter of fact, accordingly, practically no scheme of education upon a purely sensory basis has ever been systematically tried, at least after the early years of infancy. Its obvious deficiencies have caused it to be resorted to simply for filling in "rationalistic" knowledge (that is to say, knowledge of definitions, rules, classifications, and modes of application conveyed through symbols), and as a device for lending greater

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"interest" to barren symbols. There are at least three serious defects of sensationalistic empiricism as an educational philosophy of knowledge. (a) the historical value of the theory was critical; it was a dissolvent of current beliefs about the world and political institutions. It was a destructive organ of criticism of hard and fast dogmas. But the work of education is constructive, not critical. It assumes not old beliefs to be eliminated and revised, but the need of building up new experience into intellectual habitudes as correct as possible from the start. Sensationalism is highly unfitted for this constructive task. Mind, understanding, denotes responsiveness to meanings (ante, p. 29), not response to direct physical stimuli. And meaning exists only with reference to a context, which is excluded by any scheme which identifies knowledge with a combination of sense-impressions. The theory, so far as educationally applied, led either to a magnification of mere physical excitations or else to a mere heaping up of isolated objects and qualities.

(b) While direct impression has the advantage of being first hand, it also has the disadvantage of being limited in range. Direct acquaintance with the natural surroundings of the home environment so as to give reality to ideas about portions of the earth beyond the reach of the senses, and as a means of arousing intellectual curiosity, is one thing. As an end-all and be-all of geographical knowledge it is fatally restricted. In precisely analogous fashion, beans, shoe pegs, and counters may be helpful aids to a realization of numerical relations, but when employed except as aids to thought - the apprehension of meaning - they become an obstacle to the growth of arithmetical understanding. They arrest growth on a low plane, the plane of specific physical symbols. Just as the race

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developed especial symbols as tools of calculation and mathematical reasonings, because the use of the fingers as numerical symbols got in the way, so the individual must progress from concrete to abstract symbols - that is, symbols whose meaning is realized only through conceptual thinking. And undue absorption at the outset in the physical object of sense hampers this growth. (c) A thoroughly false psychology of mental development underlay sensationalistic empiricism. Experience is in truth a matter of activities, instinctive and impulsive, in their interactions with things. What even an infant "experiences" is not a passively received quality impressed by an object, but the effect which some activity of handling, throwing, pounding, tearing, etc., has upon an object, and the consequent effect of the object upon the direction of activities. (See ante, p. 140.) Fundamentally (as we shall see in more detail), the ancient notion of experience as a practical matter is truer to fact than the modern notion of it as a mode of knowing by means of sensations. The neglect of the deep-seated active and motor factors of experience is a fatal defect of the traditional empirical philosophy. Nothing is more uninteresting and mechanical than a scheme of object lessons which ignores and as far as may be excludes the natural tendency to learn about the qualities of objects by the uses to which they are put through trying to do something with them.

It is obvious, accordingly, that even if the philosophy of experience represented by modern empiricism had received more general theoretical assent than has been accorded to it, it could not have furnished a satisfactory philosophy of the learning process. Its educational influence was confined to injecting a new factor into the older curriculum, with incidental modifications of the older studies and methods. It introduced

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greater regard for observation of things directly and through pictures and graphic descriptions, and it reduced the importance attached to verbal symbolization. But its own scope was so meager that it required supplementation by information concerning matters outside of sense-perception and by matters which appealed more directly to thought. Consequently it left unimpaired the scope of informational and abstract, or "rationalistic" studies.

3. Experience as Experimentation

It has already been intimated that sensational empiricism represents neither the idea of experience justified by modern psychology nor the idea of knowledge suggested by modern scientific procedure. With respect to the former, it omits the primary position of active response which puts things to use and which learns about them through discovering the consequences that result from use. It would seem as if five minutes' unprejudiced observation of the way an infant gains knowledge would have sufficed to overthrow the notion that he is passively engaged in receiving impressions of isolated ready-made qualities of sound, color, hardness, etc. For it would be seen that the infant reacts to stimuli by activities of handling, reaching, etc., in order to see what results follow upon motor response to a sensory stimulation; it would be seen that what is learned are not isolated qualities, but the behavior which may be expected from a thing, and the changes in things and persons which an activity may be expected to produce. In other words, what he learns are connections. Even such qualities as red color, sound of a high pitch, have to be discriminated and identified on the basis of the activities they call forth and the

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consequences these activities effect. We learn what things are hard and what are soft by finding out through active experimentation what they respectively will do and what can be done and what cannot be done with them. In like fashion, children learn about persons by finding out what responsive activities these persons exact and what these persons will do in reply to the children's activities. And the combination of what things do to us (not in impressing qualities on a passive mind) in modifying our actions, furthering some of them and resisting and checking others, and what we can do to them in producing new changes constitutes experience. The methods of science by which the revolution in our knowledge of the world dating from the seventeenth century, was brought about, teach the same lesson. For these methods are nothing but experimentation carried out under conditions of deliberate control. To the Greek, it seemed absurd that such an activity as, say, the cobbler punching holes in leather, or using wax and needle and thread, could give an adequate knowledge of the world. It seemed almost axiomatic that for true knowledge we must have recourse to concepts coming from a reason above experience. But the introduction of the experimental method signified precisely that such operations, carried on under conditions of control, are just the ways in which fruitful ideas about nature are obtained and tested. In other words, it is only needed to conduct such an operation as the pouring of an acid on a metal for the purpose of getting knowledge instead of for the purpose of getting a trade result, in order to lay hold of the principle upon which the science of nature was henceforth to depend. Sense perceptions were indeed indispensable, but there was less reliance upon sense perceptions in their natural or customary form than in the older science. They were no longer regarded as containing within themselves some "form" or

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"species" of universal kind in a disguised mask of sense which could be stripped off by rational thought. On the contrary, the first thing was to alter and extend the data of sense perception: to act upon the given objects of sense by the lens of the telescope and microscope, and by all sorts of experimental devices. To accomplish this in a way which would arouse new ideas (hypotheses, theories) required even more general ideas (like those of mathematics) than were at the command of ancient science. But these general conceptions were no longer taken to give knowledge in themselves. They were implements for instituting, conducting, interpreting experimental inquiries and formulating their results.

The logical outcome is a new philosophy of experience and knowledge, a philosophy which no longer puts experience in opposition to rational knowledge and explanation. Experience is no longer a mere summarizing of what has been done in a more or less chance way in the past; it is a deliberate control of what is done with reference to making what happens to us and what we do to things as fertile as possible of suggestions (of suggested meanings) and a means for trying out the validity of the suggestions. When trying, or experimenting, ceases to be blinded by impulse or custom, when it is guided by an aim and conducted by measure and method, it becomes reasonable - rational. When what we suffer from things, what we undergo at their hands, ceases to be a matter of chance circumstance, when it is transformed into a consequence of our own prior purposive endeavors, it becomes rationally significant - enlightening and instructive. The antithesis of empiricism and rationalism loses the support of the human situation which once gave it meaning and relative justification.

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The bearing of this change upon the opposition of purely practical and purely intellectual studies is self-evident. The distinction is not intrinsic but is dependent upon conditions, and upon conditions which can be regulated. Practical activities may be intellectually narrow and trivial; they will be so in so far as they are routine, carried on under the dictates of authority, and having in view merely some external result. But childhood and youth, the period of schooling, is just the time when it is possible to carry them on in a different spirit. It is inexpedient to repeat the discussions of our previous chapters on thinking and on the evolution of educative subject matter from childlike work and play to logically organized subject matter. The discussions of this chapter and the prior one should, however, give an added meaning to those results.

(i) Experience itself primarily consists of the active relations subsisting between a human being and his natural and social surroundings. In some cases, the initiative in activity is on the side of the environment; the human being undergoes or suffers certain checkings and deflections of endeavors. In other cases, the behavior of surrounding things and persons carries to a successful issue the active tendencies of the individual, so that in the end what the individual undergoes are consequences which he has himself tried to produce. In just the degree in which connections are established between what happens to a person and what he does in response, and between what he does to his environment and what it does in response to him, his acts and the things about him acquire meaning. He learns to understand both himself and the world of men and things. Purposive education or schooling should present such an environment that this interaction will effect acquisition of those meanings which are so important that they become, in turn,

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instruments of further learnings. (ante, Ch. XI.) As has been repeatedly pointed out, activity out of school is carried on under conditions which have not been deliberately adapted to promoting the function of understanding and formation of effective intellectual dispositions. The results are vital and genuine as far as they go, but they are limited by all kinds of circumstances. Some powers are left quite undeveloped and undirected; others get only occasional and whimsical stimulations; others are formed into habits of a routine skill at the expense of aims and resourceful initiative and inventiveness. It is not the business of the school to transport youth from an environment of activity into one of cramped study of the records of other men's learning; but to transport them from an environment of relatively chance activities (accidental in the relation they bear to insight and thought) into one of activities selected with reference to guidance of learning. A slight inspection of the improved methods which have already shown themselves effective in education will reveal that they have laid hold, more or less consciously, upon the fact that "intellectual" studies instead of being opposed to active pursuits represent an intellectualizing of practical pursuits. It remains to grasp the principle with greater firmness.

(ii) The changes which are taking place in the content of social life tremendously facilitate selection of the sort of activities which will intellectualize the play and work of the school. When one bears in mind the social environment of the Greeks and the people of the Middle Ages, where such practical activities as could be successfully carried on were mostly of a routine and external sort and even servile in nature, one is not surprised that educators turned their backs upon them as unfitted to

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cultivate intelligence. But now that even the occupations of the household, agriculture, and manufacturing as well as transportation and intercourse are instinct with applied science, the case stands otherwise. It is true that many of those who now engage in them are not aware of the intellectual content upon which their personal actions depend. But this fact only gives an added reason why schooling should use these pursuits so as to enable the coming generation to acquire a comprehension now too generally lacking, and thus enable persons to carry on their pursuits intelligently instead of blindly. (iii) The most direct blow at the traditional separation of doing and knowing and at the traditional prestige of purely "intellectual" studies, however, has been given by the progress of experimental science. If this progress has demonstrated anything, it is that there is no such thing as genuine knowledge and fruitful understanding except as the offspring of doing. The analysis and rearrangement of facts which is indispensable to the growth of knowledge and power of explanation and right classification cannot be attained purely mentally - just inside the head. Men have to do something to the things when they wish to find out something; they have to alter conditions. This is the lesson of the laboratory method, and the lesson which all education has to learn. The laboratory is a discovery of the condition under which labor may become intellectually fruitful and not merely externally productive. If, in too many cases at present, it results only in the acquisition of an additional mode of technical skill, that is because it still remains too largely but an isolated resource, not resorted to until pupils are mostly too old to get the full advantage of it, and even then is surrounded by other studies where traditional methods isolate intellect from activity.

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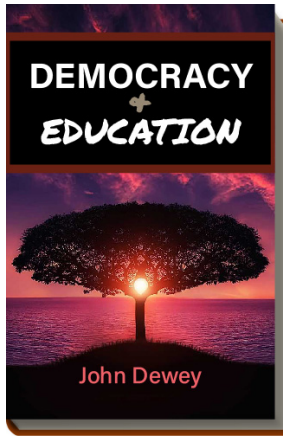
Summary

The Greeks were induced to philosophize by the increasing failure of their traditional customs and beliefs to regulate life. Thus they were led to criticize custom adversely and to look for some other source of authority in life and belief. Since they desired a rational standard for the latter, and had identified with experience the customs which had proved unsatisfactory supports, they were led to a flat opposition of reason and experience. The more the former was exalted, the more the latter was depreciated. Since experience was identified with what men do and suffer in particular and changing situations of life, doing shared in the philosophic depreciation. This influence fell in with many others to magnify, in higher education, all the methods and topics which involved the least use of sense-observation and bodily activity. The modern age began with a revolt against this point of view, with an appeal to experience, and an attack upon so-called purely rational concepts on the ground that they either needed to be ballasted by the results of concrete experiences, or else were mere expressions of prejudice and institutionalized class interest, calling themselves rational for protection. But various circumstances led to considering experience as pure cognition, leaving out of account its intrinsic active and emotional phases, and to identifying it with a passive reception of isolated "sensations." Hence the education reform effected by the new theory was confined mainly to doing away with some of the bookishness of prior methods; it did not accomplish a consistent reorganization.

Meantime, the advance of psychology, of industrial methods,

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and of the experimental method in science makes another conception of experience explicitly desirable and possible. This theory reinstates the idea of the ancients that experience is primarily practical, not cognitive - a matter of doing and undergoing the consequences of doing. But the ancient theory is transformed by realizing that doing may be directed so as to take up into its own content all which thought suggests, and so as to result in securely tested knowledge. "Experience" then ceases to be empirical and becomes experimental. Reason ceases to be a remote and ideal faculty, and signifies all the resources by which activity is made fruitful in meaning. Educationally, this change denotes such a plan for the studies and method of instruction as has been developed in the previous chapters.



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