

JOHN LOCKE
and
FORMAL DISCIPLINE

A THESIS

Presented to the General Faculty of the
University of Virginia
in partial fulfilment of the requirements for the degree of
Doctor of Philosophy

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I. Preliminary Statement.

Modern education is no exception to that law of development by which the new must be entered through the medium of the old. Classicism had to yield to naturalism and realism, as scholasticism had given way to the renaissance. But progress ever comes through readjustment and it was in the effort to readjust classical training to the demands of the renaissance, that the doctrine of formal discipline was brought forth. This doctrine, in its broader form, held that mental activity leads to mental power and power so gained may be used on any kind of subject matter with equal facility. The aim of education, therefore, should be the learning process, not the thing learned.¹

It is not the purpose of the present paper to engage in polemics over this already much belabored dogma. Our aim is to attempt a reinterpretation of the views of one, who, although he prepared the way for the overthrow of formal discipline, has, notwithstanding, often been classed by educational writers as a leading promulgator of it. There are, in fact, but few men who have been used as the scape-goat for so many varying theories, as John Locke. In the words of Professor Adams;²

1. Monroee's "Text-book in the Hist. of Ed." p506.
2. "Herbartian Psy. applied to Ed." p 32.

"Almost every philosopher who writes a book feels compelled to dispose of Locke first: **** Though they spend all their introductory chapters in showing how Locke went wrong, philosophers do not seem to be able to get along without him."

It has thus come to pass that Locke stands identified with many opinions which are contrary to the whole tenor of his thinking. It, also frequently occurs that what was intended by him merely as a side-light, or as illustrative material, has been used as his central thought. A few of the many interpretations of Locke by leading educational writers will serve to show the difference in opinion concerning his classification.

Oscar Browning¹ divides educators into three schools; humanists, realists, and naturalists, and puts Locke in the **last** class.

Quick² notes two classes, utilitarians and mental trainers. He places Locke with the latter, inasmuch as he is not so much concerned with results in a practical way, as with discipline.

Compayre³ finds the opposing classes in realists and formalists, and places Locke with the former class.

Paul Monroe⁴ sees in Locke traces of the realist ^{and} the naturalist, but above all the chief representative of the disciplinary conception in education.

1. "Educational Theories" p 83.
2. "Educational Reformers" p 284 ff.
3. "History of Pedagogy", Tr. by W. H. Payne, p 211
4. "Text-book in Hist. of Ed." p 503 ff.

Williams¹ finds in him a "pronounced utilitarian"; and S. S. Laurie² an incomplete humanist.

Amid these varying estimates there seems to run but one common thought, the disciplinary character of education according to Locke. Compayre is apparently the only exception to this. But, in his case, the classification is more of a choice between realism and formalism, than an attempt to free Locke from the dogma attributed to him by the other writers.

The question of correctly interpreting Locke does not differ much from the same problem with relation to any other writer, except in degree. With him individual statements mean, possibly, less, and the entire system, more, than with most writers. This has been clearly expressed by Lewes,³

"There is no excuse for not understanding Locke. If his language be occasionally loose and wavering, his meaning is always to be gathered from the context. He had not the lucidity of Descartes or Hobbes; but he was most anxious to make himself intelligible, and to this end he varied his expressions, and stated his meaning in a variety of forms. He must not be taken literally. No single passage is to be relied on, unless it be also borne out by the whole tenor of his speculations. Any person merely 'dipping into' the Essay, will find passages which seem very contradictory; any person carefully reading it through will find all clear and coherent."

1. "Hist. of Modern Ed." p 194

3. "Biographical Hist. of Phil."

2. "Educational Opinion from the Renaissance" p 233.

Vol 2. p 534.

It will be the aim of this paper to interpret Locke's educational views in harmony with his philosophy. Indeed we are convinced that only by so doing can his real meaning be made manifest. He was primarily a philosopher, and his greatest work, "The Essay Concerning ~~the~~ Human Understanding", is a statement of his philosophical views. Of the three works written by him, with which we shall be principally concerned, the "Essay" is the only one that may be called a finished product. His "Thoughts Concerning Education", was written to a friend, concerning the education of his son. The "Conduct of the ~~Human~~ Understanding", from which most of Locke's formal discipline is culled, was an after-thought which Locke intended ~~as~~ an additional chapter to the "Essay". It was never put in final form by him, and was first published in a volume of posthumous works.

Professor Paul Vonrce says of "Thoughts Concerning Education" ¹ "It is entirely one-sided to formulate Locke's educational ideas from this one treatise, the more so since it contains advice written to a friend concerning the education of his own sons and it is specifically stated by Locke that much of it has only this special application." Again he says;² "Though it is impossible to enter into details here, it must be borne in mind that Locke's philosophical and psychological views do not always accord with his views on education."

1. "Text-book in Hist. of Ed." p518.

2. Ibid.

The discrepancy here mentioned is apparent under the traditional interpretations of Locke's philosophy and education. Under such a reinterpretation as that mentioned above, however, the differences might, in a large measure, be reconciled. With this end in view, we are now ready to proceed with the investigation.

II. Locke's Historical and Philosophical Background.

The educational doctrine which based the curriculum on the supposed disciplinary value of studies, was, in its earlier days, part of the educational system known as Humanism. During its first period, from the middle of the fourteenth to the middle of the fifteenth centuries, Humanism represented a real revival of learning. "It was, however, inevitable," says Laurie,¹ "that in seeking for an expression of Life and Art, the more active minds should be drawn to what was ready-made, but had been forgotten. Latin literature and, subsequently, the study of Greek, accordingly, were the two great occupations of the Humanists." From the ancient classics they sought to revivify the Socratic teaching that "knowledge is virtue."

Petrus Vergerius (1349-), a thorough Humanist, in writing of liberal studies, says;² "We call those studies liberal which are worthy of a free man; those studies by which we attain and practice virtue and wisdom; that education which calls forth, trains and develops those highest gifts of body and of mind which ennoble men."

Between these views and those of the later Humanists there is a very decided difference. The first century of Humanism had breadth of view and the spirit of real scholarship. They turned to the classics because these had meaning for life; they refused to be bound by scholasticism with its vapid show of reason, its acceptance and confirmation

1. "Ed. Opinion from the Renaissance" p. 6.

2. "De Ingeniis Moribus" Tr. by Woodward in "Vittorino Da Feltre and

of received doctrines, and its perfect contentment with its own educational status. "In this difference", says Woodward,¹ "is implied a constant process in which the ideal of the greater Humanists was slowly narrowed and hardened till it reaches the pedantry which rouses the scorn of Montaigne. It is not merely that the Latinity of Vergerius or Guarino was freer and less artificial, nor that with them literature was something more than a sequence of model passages: the scholars of the first half of the Quattrocento had a far broader grasp of the true content of education, and with it a more sincere conception of the relations between the antique and the modern world."

"The narrowing of the educational aim and the return to mere verbalism was, in truth, not long of coming. If it be the essence of Humanism in its larger meaning that it was an opening of men's eyes afresh to nature and life, the exhaustion of the new movement can be easily understood. For it is given to few men, and those chiefly of poetic temperament, to keep their eyes open for long. There is an instinctive craving for dogma and form; for without these there is no intellectual repose."²

By the sixteenth century, this tendency toward intellectual repose and dogmatism had obscured the early Humanistic aims: "that which was at first merely a means came to be considered as an end in itself. The term humanities came to indicate the languages and literature of

1. "Vittorino Da Feltre and other Humanist Educators": Intro. p. viii.

2. "Ed. Opinion from the Renaissance" p. 28.

the ancients. Consequently, the aim of education was thought of in terms of language and literature instead of in terms of life; the educational effort was directed toward the mastery of this literature. That portion of these literatures which was superior from the formal standpoint became the center of educational effort. Consequently, the formal instead of the content or literary side of these writings was considered to be of the greater importance. This change, though a gradual one, resulted in the formulation of a type of education distinct from and inferior to the liberal education out of which it grew."¹

Educational thought became centered in the trivium and quadrivium of Scholasticism, and, even the studies included in these were taught for their value as mental disciplines rather than for anything contained in them.

During the Middle Ages and the early period of Humanism, Latin had not been studied for its cultural value alone. It had also a practical, utilitarian value.² It was the key that unlocked every door. It was the language of all education. Woodward has emphasized this. He says;³ "But apart from the broader effects of classical culture it was held that on nearly every side of practical life the best guidance attainable was to be derived from the study of ancient books. Aristotle's Politics is the soundest manual of statecraft; Vegetius and Caesar are the best guides to the Art of War;

1. Monroe's "Brief Course in the Hist. of Ed." p170.

2. Cf. Jos. Payne's "Lectures on the Hist. of Ed." Vol2, p35.

3. "Vittorino Da Feltre and other Humanist Educators" p184

Vergil, to agriculture. In ruling a household, Cicero, Plutarch, Upon Education, and Francesco Barbaro, whose work De Re Uxoribus was regarded as worthy of a place in the noble company, could be safely relied upon. In all departments of government, in war, justice, council, and domestic policy, Literature is the one sure source of practical wisdom."

At this early day there was no distinction between the elements that made for culture and those that made for utility. But when the scientific awakening of Bruno and Bacon, of Copernicus and Galileo, ushered in a thousand insistent demands for practical scientific training, the whole system of educational values was changed. The classics could no longer fulfill the demand for practical values, and Humanism began to urge their cultural values.

The claim of the classics to cultural values was not founded upon demonstration, but upon authority. Studies which had produced such civilizations could not be called in question. Even if they were inadequate in content, no exception could be taken to them as mental trainers. Therefore, if a man would excel in science, let him first develop his power of judgment through the classics, and in this way will he best prepare himself for any field of investigation.

Hegius, who presided over the College of Deventer in Holland, the first school in the North to adopt the study of Greek after the capture of Constantinople, said;¹ "If anyone wishes to understand grammar, rhetoric, mathematics, history or Holy Scripture, let him learn Greek.

1. Jos. Payne, "Lectures on the Hist. of Ed." Vol. II, P 37.

"We owe everything to the Greeks." This idea rapidly became the dominant one, and formal discipline intrenched itself in authority.

But the sixteenth century saw this dependence upon authority assailed on every hand. "The movement away from authority and toward freedom, which found expression in the experimental science of Bacon and the pedagogy of Comenius, made itself felt in all the departments of human life, especially in religion and politics. In religion, it produced the Reformation; in politics, that persistent tendency to ignore the divine right of kings, and to place the seat of authority in the people."¹ Finally through the brilliant work of Rene Descartes (1596-1650) and John Locke (1632-1704), philosophy threw off its yoke. These two men, although so much opposed in the general character of their philosophy, have, nevertheless, one point in common. They both refuse to be bound by authority. Descartes makes truth to rest upon clearness and distinctness of ideas, while Locke bases it upon experience; both deny authority as a valid test. The two types of philosophy thus promulgated—rationalism and empiricism—were continued respectively; on the continent by the mathematical rationalists, Spinoza and Leibniz; in England by Berkeley and Hume. In Locke, however, are to be found elements which point forward to the final reconciliation in Kant.

In the same measure as that with which formal discipline has clung to authority, it has likewise eschewed all metaphysical alliances.

But, while belonging to no particular system of philosophy, there are some systems better adapted to its claims than others. Thus, the faculty

psychology of Aristotle formed a very convenient psychological background for it. If the value of the classics lay in their disciplinary powers, power so gained in any particular faculty would be beneficial in all exercise of that faculty. In fastening upon Locke as an exponent of this dogma, modern writers have failed to take into consideration the question of its adaptability to his philosophy. We have already noted the statement of Paul Monroe concerning the lack of agreement between his philosophy and education, but no attempt is made to reinterpret them.

Of the two great philosophies of Locke's time, empiricism and rationalism, the latter offers the best basis for the dogma of formal discipline. The whole tendency of empiricism is against it, and has ~~prepared~~ ^{prepared} the materials for its overthrow. Against formal discipline, empiricism sets up the doctrine of specific experience. On the other hand, there is a presupposition of mental discipline in the fundamental doctrines of the mathematical rationalists. Mathematics, they hold is the perfect and, therefore, the pattern science, and all others should be cast in the same mould. Spinoza wrote his Ethics under the title "Ethica more geometrica demonstrata." Each book begins with definitions and axioms; propositions and proofs follow. According to this type of philosophy, mathematics furnished the discipline required for ethics and, in fact, for all the sciences.

Paulsen has shown¹ that, "even the cogito ergo sum of Descartes, together with the deduction therefrom of the existence of God, which in

turn is to form the basis or the certainty of all scientific knowledge, is an afterthought' deduced from certain generalizations on mathematics as a perfect and, therefore, a pattern science. It was probably only due to his craving for mathematics, that Descartes substituted mathematical for classical discipline. The difference is in content and not in form or method.

To what extent Locke was influenced by the Humanism that pervaded Oxford while he was a student there, it is impossible to say. There is some evidence that he revolted at the narrowness and dogmatism of the curriculum. "I have often heard him say," Lady Masham reports, 'that he had small satisfaction in his Oxford studies, as finding very little light brought thereby to his understanding; that he became discontented with his manner of life, and wished that his father had rather designed him for anything else than what he was there destined to.'¹ Again she writes; 'the first books, as Mr. Locke has told me, which gave him a relish of philosophical things were those of Descartes. He was rejoiced in reading these, because, though he very often differed in opinion from this writer, yet he found that what he said was very intelligible; from whence he was encouraged to think that his not having understood others had possibly not proceeded from a defect in his understanding.'²

It may well have been that the center of attraction for Locke in

1. Fraser's Ed. of Locke's "Essay Concerning Human Understanding"-
Prolegomena, -p. xix.

2. Ibid. p. xx.

the writings of Descartes, was that freedom from authority, which has already been mentioned as characteristic of both these men. There is certainly much evidence that Locke detested the narrowness and constraint of the curriculum of his day. In his "Thoughts Concerning Education" he says;¹ "But under whose Care soever a Child is put to be taught during the tender and flexible years of his Life, this is certain it should be one who thinks Latin and Language the least Part of Education;" and again;² "When I consider what ado is made about a little Latin and Greek, how many Years are spent at it, and what a Noise and Business it makes to no Purpose, I can hardly forbear thinking that the Parents of Children still live in fear of the School-masters Rod, which they look on as the only Instrument of Education; as a Language for two to be its whole Business." Locke did not advocate the abolition of the classics from the schools. He thought they were necessary for a gentleman's son, but that altogether too much attention was paid to this limited sphere.

1. § 177.

2. § 147.

III. Sources for Locke's Educational Doctrines.

The sources for the study of Locke's educational views are the "Essay Concerning Human Understanding"; "Thoughts Concerning Education;" "Conduct of the Understanding;" and a short posthumous essay "Of Study".

The "Essay Concerning Human Understanding" was the greatest and most careful piece of work of his life. In an introductory chapter he details the events that started him upon this inquiry. A few friends having met in Locke's chamber, probably during the winter of 1670-71 became involved in a discussion which could only be settled by a criticism of the knowing faculty. After some eighteen years of labor he published the first edition in March, 1690. This was followed by **three** other editions during the remaining fourteen years of his life. It gave to the world a new philosophy.

"Thoughts Concerning Education" was first published anonymously, in 1693. It was translated into French by Pierre Coste, who supplied the name of the author. In later editions, Locke signed his own name to the dedicatory letter. S. S. Laurie says;¹ "I would apologise for the large space I have given to Locke did I not think that his "Thoughts read along with his "Conduct of the Understanding" is, in spite of some obvious faults, the best treatise on education which has ever appeared with the (doubtful) exception of Quintillian."

1. "Educational Opinion from the Renaissance", Prefatory Note.

Quick gives the following account of Locke's purpose in writing "Thoughts".¹ "One of Locke's friends in England, Mr. Edward Clarke, of Chipley, near Taunton, was anxious for advice about the bringing up of his son; and as this problem had been much in Locke's thoughts, the philosopher wrote from Holland a series of letters on the subject, which, four years after his return to England, he was induced to publish as: Thoughts Concerning Education". No doubt the letters were more elaborate than they would have been but for a notion in the ~~writer's~~ ^{writer's} mind that they might some day be used as material for a treatise.**** As he afterwards found no time to work up these letters into a regular dissertation, he was content to publish them as Thoughts."

The "Conduct of the Understanding" was originally designed as an additional chapter to the "Essay". It, however, failed to appear in the fourth edition, although previous to the publication of this, the author had written his intentions concerning it to William Molyneux. In fact, this treatise was never published nor even revised by Locke, but first appeared in the "Posthumous Works of Mr. John Locke," edited anonymously, though probably by Peter King, in 1706. Of this collection the editor says in general that, "For the most part they received not the authors last hand, being in a great measure little more than sudden views, intended to be afterwards revised and farther looked into, but by sickness, intervention of business, or preferable enquiries, happened to be thrust aside and so lay neglected."²

1. "Locke on Ed." Intro. pxxxvi.

2. Fowler's "Locke's Conduct of the Understanding" Intro. pxxii.

IV. The ESSAY and Formal Discipline.

In his introduction to the "Essay,"¹ Locke states that his purpose is to "inquire into the original, certainty, and extent of human knowledge." Insofar as he finds the "original" of knowledge in "ideas" which are obtained either through sensation or reflection, his problem is a psychological one. But insofar as it has to do with the validity of knowledge and its extent, the problem is epistemological.

We have already endeavored to show that such a doctrine as that of formal discipline could be more readily adapted to some epistemologies and psychologies than to others. It remains for us to ascertain whether the epistemology and psychology of Locke furnishes us with any Grundlehre for such a doctrine. If so, then no inconsistency can be said to exist between his philosophy and educational theory. But if not, we may well look for some better interpretation of those passages in his other writings which are interpreted as setting forth this dogma.

In the first book of the "Essay", Locke's purpose is a negative one; i. e.; to show by reason and a fund of observed facts, that none of our ideas may be called innate when such term would indicate their origin in the mind apart from experience. He holds this as evident because they must either be in the mind at birth, or dawn upon it later. That the former is not true is evident, because, to be in the mind

must obviously imply consciousness of them, and we know that children are not conscious of many of the so-called innate truths, such as mathematical axioms, the law of identity, etc. But, if, on the other hand there is merely a capacity for these truths and they themselves dawn later, then, not only a part of the things we come to know are innate, but all are, and the term as applied to a restricted class of ideas loses its distinction.

While the limits of this investigation do not include the primary question at issue in the First Book of the Essay, yet there are in this question epistemological implications that have direct bearing on our problem. Friedrich Paulsen says:¹ "Epistemological inquiries culminate in two questions: What is the essence, and What is the origin of knowledge? What is knowledge, and How is knowledge acquired?" Locke is here concerned with the question of the origin of knowledge.

Granting, for the moment, the existence of innate ideas, such ideas would necessarily be both general and abstract, which would posit the existence of general truths in the mind prior to particular facts. Locke's basic contention contradicts this. For him, "the ideas first known are not general axioms and abstract concepts, but particular impressions of the senses."² "The senses at first let in particular ideas, and furnish the yet empty cabinet, and the mind by degrees

1. "Intro. to Phil." Tr. by F. Thilly, Bk. II p 341.

2. Falkenberg's, "Hist. of Modern Phil." Tr. by A. C. Armstrong, Jr. p. 156.

growing familiar with some of them, they are lodged in the memory, and names get to them. Afterwards, the mind proceeding further, abstracts them, and by degrees learns the use of general names." This makes all general truths arise from particular experiences by means of abstraction.

It will be, furthermore, apparent that under the system of innate ideas, the original endowment of ideas will form both the basis for the acquisition of specific experiences, and the interpreting medium of them. Truth and certainty will be attained only by reference of each experience to some one of these innate truths. But the number of these original ideas must necessarily remain limited. Martineau and others have attempted to catalog them. If, then, the number of experiences may be indefinitely increased while the number of general ideas to which they are referred, remains static, there will be of necessity, an extension of the general truths over the varied matters of experience. Such an extension of ^{the} application of general truths is formal discipline.

This theory of an original mental endowment in ideas, differs but little, ~~from~~ Lockes point of view, from the theory of an original endowment of mental faculties. In fact, the two theories go hand in hand; the first, however, being more of an epistemology by nature, and the latter a psychology. ^{The doctrine of} innate ideas involves a discipline of material elements, while the faculty psychology involves a discipline of formal elements. The former makes necessary the extension of the application of general truths, the latter extends the application of mental powers.

A criticism of innate ideas from the standpoint of their disciplinary application as general truths, is, likewise, a criticism of the faculty psychology from the same standpoint.

Now, while it is true that Locke has not criticised innate ideas because of their disciplinary conception involved in their application to the particular facts of experience, he has done even more than this, by taking away the very ground on which the system stands. 'The mind is at first a blank.' There is no knowledge prior to experience.' The mental order is from the particular to the general.' Such is the system of specific experience that he sets up against, or in place of, that of innate ideas. This doctrine of specific experience as the basis of knowledge does away with both the need for, and the possibility of formal discipline. The difference in theory is not merely a difference in the order in which general and particular notions are acquired, but it is a fundamental difference in the conception of the nature of knowledge. The theory of innate ideas, as also the faculty psychology, conceived of the elements of knowledge as static and fixed. Locke conceives of them as dynamic, and, while he often uses the term faculty for want of a better, we shall later show that he did not use it in the limited sense in which it has become best known.

The difference in the nature of these two systems of knowledge is clearly pointed out by Weber. He says;¹ "The fact is, if truth is native to the mind, it is useless to search for it outside by observa-

1. Weber's, "Hist. of Phil." Tr. by Frank Thilly, p. 271.

tion and experimentation. Then we may, by means of a priori speculation and meditation and reasoning, revolve it from our own inner consciousness, as the spider spins its web out of itself. This hypothesis Descartes consistently carries out when he "closes his eyes and stops his ears," and abstracts from everything acquired by the senses; but he ceases to be consistent when he assiduously devotes himself to the study of anatomy and physiology. Indeed, the favorite method of the metaphysics of the monasteries and universities was to close one's eyes to stop one's ears, and to ignore the real world. This method prevailed as long as the conviction existed that our ideas have their source within us. Hence, it was necessary, in order to make the philosophers "open their eyes to the real world," to prove to them that all our ideas come to us from without, through the medium of sensation: it was necessary to demonstrate that our ideas are not innate but acquired."

Having found nothing in Locke's epistemology that warrants the attribution to him of the doctrine in question, we are now ready to examine his psychology. Enough has been said already, to show the connection that exists between the dogma of formal discipline and the faculty psychology, and we have also endeavored to show that Locke's philosophy was such as to prohibit him from holding consistently to the faculty psychology. Notwithstanding this, it is often attributed to him, either because he is commonly accepted as an advocate of formal discipline, and the one implies the other; or because of Locke's frequent use of the term, "faculties".

Mr. Adams, while paying the highest tributes to Locke, voices the commonly accepted view of his psychology. He says;¹ "The English philosopher got rid of innate ideas, but he could not free himself from innate faculties. What Locke did for innate ideas Herbart did for innate faculties. Burdened by his assumption of successive states, Locke could not get his ideas to work upon each other in order to produce complex actions and reactions. He was therefore driven to invent or assume certain powers of the mind which he called faculties, and which were credited with all the work that went on within the mind. When a certain process was discovered, by the act of introspection, to take place in the mind, Locke and his followers gave this process a name, and then assumed a faculty corresponding to that name. A certain process called abstraction is discovered to go on within the mind. This gives the introspectionist no trouble. It is only a matter of baptizing another faculty, and we have the "faculty of abstraction." Against this short and easy method Herbart made a vigorous protest, and swept away forever from his Philosophy the whole brood of faculties."

On this point, Locke displays his usual good sense and one cannot help but feel that his resolution of the difficulty, avoiding as it does all metaphysical speculation, is infinitely preferable to that of Herbart. To say the least, Locke, more than a century before Herbart, did free himself from what Mr. Adams above terms "innate faculties" and in doing so opened a path for the rest of the thinking world.

¹ "Herbartian Psychology Applied to Education", pp 47.

We will let Locke argue his own case. He says;¹ "For, if it be reasonable to suppose and talk of faculties as distinct beings that can act, (as we do, when we say the will orders, and the will is free,) it is fit that we should make a speaking faculty, and a walking faculty, and a dancing faculty, by which these actions are produced, ***** And we may as properly say that it is the singing faculty sings, and the dancing faculty dances, as that the will chooses, or that the understanding conceives; or, as is usual, that the will directs the understanding, or the understanding obeys or disobeys the will: it being altogether as proper and intelligible to say that the power of speaking directs the power of singing, or the power of singing obeys or disobeys the power of speaking.

"This way of talking, nevertheless, has prevailed, and, as I guess, produced great confusion. For these being all different powers in the mind, or in the man, to do several actions, he exerts them as he thinks fit: but the power to do one action is not operated on by the power to do doing another action. *****

"The attributing to faculties that which belonged not to them, has given rise occasion to this way of talking: but the introducing into discourses concerning the mind, with the name of faculties, a notion of their operating, has, I suppose, as little advanced our knowledge in that part of ourselves, as the great use and mention of the like invention of faculties, in the operations of the body, has helped us in the knowledge of physic. Not that I deny there are faculties, both

1. "Essay" Bk. II. Ch. xxi. §17-20.

in the body and mind: they both of them have their powers of operating, else neither the one nor the other could operate. For nothing can operate that is not able to operate; and that is not able to operate that has no power to operate. Nor do I deny that those words, and the like, are to have their place in the common use of languages that have made them current. It looks like too much affectation wholly to lay them by: and philosophy itself, though it likes not a gaudy dress, yet, when it appears in public, must have so much complacency as to be clothed in the ordinary fashion and language of the country, so far as it can consist with truth and perspicuity. But the fault has been, that faculties have been spoken of and represented as so many distinct agents. For, it being asked, what it was that digested the meat in our stomachs? it was a ready and very satisfactory answer to say, that it was the digestive faculty. What was it that made anything come out of the body? the expulsive faculty. What moved? the motive faculty. And so in the mind, the intellectual faculty, or the understanding understood; and the elective faculty, or the will, willed or commanded. This is, in short, to say, that the ability to digest, digested; and the ability to move, moved; and the ability to understand, understood. For faculty, ability, and power, I think, amount to this much;—That digestion is performed by something that is able to digest, motion by something able to move, and understanding by something able to understand. And, in truth, it would be very strange if it should be otherwise; as strange as it would be for a man to be free without being able to be free."

It would be difficult to conceive of a more complete refutation of the old faculty psychology, than the above. It is the thought of the philosopher put in the language of the plain man, and there is no reason for stumbling. If Herbart, a century later, in overthrowing the faculty psychology took away the ground on which formal discipline rested; Locke did so no less in the passage above quoted. He holds fast to the doctrine of specific experience, and to the power or ability to have any particular experience, he gives the name faculty. It is evident then, that insofar as formal discipline rests on the faculty psychology, the empiric psychology of Locke offers no foundation for it.

V. Logic and Mathematics as a Discipline of the Reasoning Power.

We are now ready for a reinterpretation of some ~~points~~ passages especially those in Locke's "Conduct of the Understanding", which have been often quoted as evidence of his disciplinary idea of education. Under the faculty psychology the reasoning faculty held highest place, and it was believed to be developed best by logical and mathematical training. His position on the question of the disciplinary values of these subjects should, therefore, be decisive as to his doctrine, and especially so inasmuch as the passage most often quoted to show his disciplinary conception, is on the subject of mathematics.

The scholastics were strong advocates of Logic ~~as~~ as a means of training the reasoning power. It had held an honored place in the "trivium". We will let Locke's estimate of logical values speak for itself. In the Introduction to the "Conduct" he says:¹

The logic now in use has so long possessed the chair, as the only art taught in the schools for the direction of the mind in the study of the arts and sciences. that it would perhaps be thought an affectation of novelty to suspect that rules that have served the learned world these two or three thousand years, and which, without any complaint of defects, the learned have rested in, are not sufficient to guide the understanding." Here he quotes from Lord Verulam who says:

1. Fowler's Ed. "Conduct of the Understanding", p4.

"They who attributed so much to logic perceived very well and truly that it was not safe to trust the understanding to itself, without the guard of any rules. But the remedy reached not the evil; but became a part of it: for the logic which took place, though it might do well enough in civil affairs and the arts which consisted in talk and opinion, yet comes very far short of subtilty in the real performances of nature, and, catching at what it cannot reach, has served to confirm and establish errors, rather than to open a way to truth."

In the Fourth Book of the "Essay", under the chapter on "Reason", the author enters into an elaborate discussion of the syllogism. He here sets forth that anyone, in reasoning on every-day matters does not put his reasoning in syllogistic form. He does not deny that the "syllogism is made use of, on occasion, to discover a fallacy hid in a rhetorical flourish, or cunningly wrapt up in a smooth period; and stripping an absurdity of the cover of wit and good language, show it in its naked deformity."¹ But the fallacy, in this case, is apparent only to those who have thoroughly studied modes and figure, owing to the artificial form into which it must be put. "All" ^{the} ~~the~~, he continues, "who have so far considered syllogism, as to see the reason why in three propositions laid together in one form, the conclusion will be certainly right, but in another not certainly so, I grant are certain of the conclusion they draw from the premises in the allowed modes and figures."

1. "Essay" Bk. 22. Ch. xvii, § 4.

But they who have not so far looked into those forms, are not sure by virtue of syllogism, that the conclusion certainly follows from the premises; they only take it to be so by an implicit faith in their teachers and a confidence in those forms of argumentation; but this is still but believing, not being certain. Now, if of all mankind those who can make syllogisms are extremely few in comparison of those who cannot; and if, of those few who have been taught logic, there is but a very small number who do any more than believe that syllogisms, in the allowed modes and figures do conclude right, without knowing certainly that they do so: if syllogisms must be taken for the only proper instrument of reason and means of knowledge, it will follow, that, before Aristotle, there was not one man that did or could know anything by reason; and that, since the invention of syllogisms, there is not one of ten thousand that doth.

"But God has not been so sparing to men to make them barely two-legged creatures, and left it to Aristotle to make them rational. i.e. those few of them that he could get so to examine the grounds of syllogisms, as to see that, in above three score ways ~~to~~ that three propositions may be laid together, there are but about fourteen wherein one may be sure that the conclusion is right; and upon what grounds it is, that, in these few, the conclusion is certain, and in the other not. God has been more bountiful to mankind than so. He has given them a mind that can reason, without being instructed

in methods of syllogizing: the understanding is not taught to reason by these rules; it has a native faculty to perceive the coherence or incoherence of its ideas, and can judge them right, without any such perplexing repetitions. I say not this in any way to lessen Aristotle, whom I look on as one of the greatest men amongst the ancients."

He next shows that the syllogism is based on an act of the mind which we call inference, but inference really precedes the making of the syllogism; for it is evident that the logician sees the connexion of each intermediate idea with those it stands between, (on which the force of the inference depends;) as well before as after the syllogism is made, or else they do not see it at all. For a syllogism neither shows nor strengthens the connexion of any two ideas immediately put together, but only by the connexion seen in them shows what connexion the extremes have one with another. But what connexion the intermediate has with either of the extremes in the syllogism, that no syllogism does or can show." He, therefore, shows, that before ^{the} logician can put propositions into syllogistic form he must first have seen the connection between the middle term and the other two terms, and, when this is seen, the reasoning is passed upon as either good or bad; so the syllogism comes too late to settle the matter. It is right at this stage that Locke discovers the presence of a

power which he has previously called by the name, "Sagacity". The same word is used in the same connection, by Wm. James in his justly celebrated chapter on "Reasoning".¹ Locke defines it as a "quickness of the mind to find out and apply intermediate ideas";² and again as the "faculty which finds out while inference sets in order the intermediate ideas in the chain of truth".³ Logical acumen, therefore, for Locke depends upon the sagacity of the logician in seeing the connection between his terms, before putting them together. But sagacity is not a disciplinary result of the study of logic. It is first of all a natural endowment, but capable of development, in a manner which we shall soon demonstrate.

If, then, the perception of logical relations depends upon sagacity, and is not to be had from practice in the construction of logical syllogisms, of what use are syllogisms? He answers;⁴ "Their chief and main use is in the Schools, where men are allowed without shame to deny the agreement of ideas that do manifestly agree; or out of the Schools, to those who from thence have learned without shame to deny the connexion of ideas, which even to themselves is visible."

Notwithstanding this severe arraignment of the syllogism, in his "Second Vindication of the Reasonableness of Christianity", published in 1697, he says that; "If he (Mr. Edwards) can but find arguments to prove his ~~speculative~~ propositions that will bear the test of setting

1. "Psychology", Vol II. p 331. 4. *ibid.* Ch xvii, § 4.

2. "Essay", Bk IV. Ch. 2, § 3.

3. *Ibid.* Ch. xvii, § 2.

down in form, and will so publish them, I will allow myself to be mistaken. Nay, which is more, if he or anybody, in the 112 pages of his Socinianism Unmasked, can find but ten arguments that will bear the test of syllogism - the true touchstone of right arguing - I will grant that that treatise deserves all those recommendations he has bestowed upon it."¹

This makes it evident that Locke did not discredit the syllogistic logic per se, but, as indicated above, it was its use in the schools coupled with the extravagant claims made for it as a mental discipline that opened the way for his attack. He saw clearly the artificiality of the system and the need of a more vital training in the reasoning than that offered by the schoolmen. Their logic was a mere thing of rules, of figure and mode; it was abstract and neither sought nor found living relationship with concrete existence. He showed the necessity for such a relation. The logic that lacked concreteness was worthless. It was in this respect that mathematics was put forth by him as a concrete embodiment of logical principles.

That Locke was a firm believer in education by concrete experiences rather than by abstract laws, is evidenced by the following passage from "Thoughts Concerning Education".² "I have seldom or never observed anyone to get the Skill of Reasoning well, or speaking handsomely, by studying those Rules which pretend to teach it: And therefore I would have a young Gentleman take a view of them in the shortest

1. Vide, G. Fraser's Ed. "Essay", note p 397, Vol II.

2. § 188.

Systems could be found, without dwelling long on the Contemplation and Study of those Formalities. Right Reasoning is founded on something else than the Predicaments and Predicables, and does not consist in talking in Mode and Figure it self. But 'tis beside my present Business to enlarge upon this Speculation. To come therefore to what we have in hand; if you would have your Son reason well, let him read Chillingworth; and if you would have him speak well, let him be conversant in Tully, to give him the true Idea of Eloquence; and let him read those Things that are well writ in English, to perfect his Style in the Purity of our Language."

Just as Locke would use Chillingworth as for examples of reasoning in the concrete, so he would use mathematics. He says in the "Conduct of the Understanding",¹ "Would you have a man reason well, you must use him to it betimes, exercise his mind in observing the connection of ideas and following them in train. Nothing does this better than mathematics, which therefore I think should be taught all those who have the time and opportunity, not so much to make them mathematicians as to make them reasonable creatures; for though we all call ourselves so, because we are born to it if we please, yet we may truly say nature gives us but the seeds of it; we are born to be, if we please, rational creatures, but it is use and exercise only that makes us so, and we are indeed so no farther than industry and application has carried us. And therefore, in ways of reasoning which men

1. Fowler's "Locke's Conduct of the Understanding" p. 20.

have not been used to, he that will observe the conclusions they take up must be satisfied they are not at all rational." In connection with this last sentence he proceeds in the next paragraph to say; that men who are reasonable in some things are frequently not at all so in others; and, also men 'who may reason well in one sort of matters today, may not do so at all a year hence.' This recognizes that reasoning is specific, and not generalized.

In the following section he continues the same subject, and referring to the above quotation. **says;** ¹ "I have mentioned mathematics as a way to settle in the mind a habit of reasoning closely and in train; not that I think it necessary that all men should be deep mathematicians, but that having got the way of reasoning, which that study necessarily brings the mind to, they might be able to transfer it to other parts of knowledge as they shall have occasion. For, in all sorts of reasoning, every single argument should be managed as a mathematical demonstration, the connection and dependence of ideas should be followed till the mind is brought to the source on which it bottoms and observes the coherence all along."

A sympathetic interpretation of this would be; that Locke would have all men study mathematics because of a certain method there used. This method, he claims, is indispensable to all correct reasoning in that it ^{exhibits} the connection and dependence of ideas.

In this same connection he goes on to elaborate the benefits to be

¹ Ibid. p. 23.

derived from the study of mathematics: "The study of mathematics would show them the necessity there is, in reasoning, to separate all the distinct ideas, and see the habitudes that all those concerned in the present enquiry have to one another, and to lay by those which relate not to the proposition in hand and wholly to leave them out of the reckoning. This is that which in other subjects, besides quantity, is what is absolutely requisite to just reasoning, though in them it is not so easily observed nor so carefully practised. In those parts of knowledge where it is thought demonstration has nothing to do, men reason as it were in the lump: and, if, upon a summary and confused view or upon a partial consideration, they can raise the appearance of a probability, they usually rest content."

Turning now to the "Essay" we find in the chapter on Reason, already referred to, the very core of his preference for mathematics over logic as a developer of the reason. He says;¹ "We may in reason consider these four degrees; the first and highest is the discovering and finding out of truths; the second, the regular and methodical disposition of them, and laying them in a clear and fit order, to make their connexion and force be plainly and easily perceived the third is the perceiving their connexion; and the fourth, a making a right conclusion. These several degrees may be observed in any mathematical demonstration; it being one thing to perceive the connexion of each part as the demonstration is made by another; another to

perceive the dependence of the conclusion on all the parts; a third, to make out a demonstration clearly and neatly one's self; and something different from all these, to have first found out these intermediate ideas or proofs by which it is made." He then goes on to demonstrate that 'syllogism serves our reason in only one of the four degrees mentioned; i.e. by showing the connexion of proofs in any one instance, but in no more.'

Locke's preference for mathematics, as a mental trainer, may be summed up in the following points: 1. It separates the ideas to be reasoned about, thus, avoiding confusion; 2. It arranges the truths to be used in order, so that their connection may be readily seen; 3. It exhibits the relation of the conclusion to all the parts; and 4. It furnishes a concrete demonstration of logical inference. So far, then, as mathematics supplies a method of reasoning, which may be used in reasoning upon other things, it is not at all necessary that its value be construed as disciplinary.

VI.—Reinterpretation of Locke's Views.

Practically all the modern writers against the theory of formal discipline admit in one form or another, that while the emphasis in education must be placed on the specific character of mental training, yet, there are some generalized benefits to be derived. In a recent work, in which the views on this subject are summarized, Professor Heck gives the views of a number of leading educational writers, as to how such general benefits are to be gained:¹ "Bagley says through 'a general ideal of work'; Bennett, through 'knowledge or ideal consciously generalized'; Lewis, through 'educating the will by inculcating some general principle or motive of conduct'; Horne, through 'ideas and principles of action'; Thorndike, through 'identity of procedure'; Ruediger, through 'identity of aim'."

Heck sums up these general benefits under the term, "Concepts of Method". Of them he says;² "A general benefit can be derived from specific training in so far as the person trained has consciously wrought out, in connection with the specific training, a general concept of method, based upon the specific methods used in that training. The building of such a concept follows the same laws as does the building of other concepts. The common elements in a number of specific methods are abstracted and bound together in a general concept

1. "Mental Discipline and Educational Values", p 89.

2. Ibid. p 94.

of method, a general rule or principle of how to do, how to act, in situations of a certain general type. These concepts may be held in the mind in one or more sentences, in a single phrase or a single word, in a metaphor or a line of poetry or some traditional maxim, in a formula of mathematics or chemistry or engineering. In all cases the symbol stands for a method of activity, be it in the realms of pure or applied natural science, of social science or practical civics, of business or professional life, of personal manner or social relations. The mind stores up by means of this symbol the rules and directions to guide its activity in adjustment to those phases of the environment to which such an activity seems applicable."

Under such a principle we have placed Locke's treatment of mathematics. There seems, however, at first glance to be but little difference between the older dogma of formal discipline and these newer theories of educational values. The differences appear to be as follows:

1. The older theory attributed disciplinary values to mental activity on abstract data. The new insists that such values are only to be had in concrete exercises.
2. The old theory was that of a general discipline of the mental powers—an act of judgment increased the power of judgment. The new makes all discipline specific—there are judgments, but no judgment.
3. There is a difference in practical application. The old theory limited the subject matter of mental discipline to a few studies; paramount among these was the classics. The new theory because of its

ideal of specific discipline, insists on training in a wide variety of subject matter.

It is significant that in each specification, Locke stood on the ground now occupied by the modern theory of educational values through specific disciplines. His theory of specific, concrete experiences as the source of all our ideas, was the real renaissance of educational theory and methods. If Locke's insistence on the study of mathematics is sufficient to classify him with the advocates of formal discipline, where would the following passage place Herbart?

"As to the middle portion of education, everything might be repeated that has ever been said concerning the usefulness of mathematics for the cultivation of the mind. Being a gymnastics of the thinking powers, needful, even in the earlier years of childhood, shall we be able to dispense with it later on? The mind as well as the body must from time to time return to its gymnasium in order to test its muscles and to renew their perfect elasticity."¹

In the light of what has already been said, the following quotation from the "Conduct", sometimes pointed out as exemplifying the disciplinary idea, may be interpreted more in accord with Locke's philosophy as a whole.

"The business of education, as I have already observed, is not, as I think, to make them perfect in any one of the sciences, but so to open and dispose their minds as may best make them capable of any when they shall apply themselves to it. If men are for a long time

1. Herbart's "A.B.C. of Sense Perception" Tr. by Wm. J. Eckoff, p 150

accustomed only to one sort or method of thoughts, their minds grow stiff in it, and do not readily turn to another. It is therefore to give them this freedom, that I think they should be made to look into all sorts of knowledge, and exercise their understandings in so wide a variety and stock of knowledge. But I do not propose it as a variety and stock of knowledge, but a variety and freedom of thinking, as an increase of the powers and activity of the mind, not as an enlargement of its possessions."

This is entirely in harmony with the dynamic view of the mind we have already attributed to Locke, and it also agrees with the idea set forth, concerning a variety of specific experiences as a foundation for knowledge.

~~Locke~~ We have said nothing about the disciplining of the memory. So far as we have been able to note, those who look upon Locke as an advocate of formal discipline make no change of it as concerns this particular faculty. Yet the Humanists looked upon the training of the memory as one of the principal disciplines. Upon this subject, however, Locke has so clearly expressed himself as to leave no shadow of doubt concerning his view of it. He says;² "But the learning Pages of Latin by Heart, no more fits the memory for Retention of any thing else, than the graving of one Sentence in Lead makes it the more capable of retaining firmly any other characters. If such a sort of Exercise of the Memory were able to give it Strength, and improve our Parts, Players

1. Fowler's, "Locke's Conduct of the Understanding" p.44.

2. "Thoughts" § 176.

of all other People must needs have the best Memories and be the best Company."

In these last two quotations, one from the "Conduct", the other from "Thoughts", there is a common underlying thought. That ~~to~~ to increase the possessions of the mind without increasing its ability to react on the data it receives, would be of no value. He rightly urges that mental ability is to be tested by the power of the mind to grasp new situations. But here is where his method of attaining this power is seen to differ most radically from the older conception of discipline. The older view said, increase your powers by a few chosen studies, or by certain memory exercises, and depend upon their general disciplinary powers to enable you to grasp new situations of any kind whatsoever. Locke says; Increase your powers by a 'variety and freedom of thinking'. This can be attained best, not by endeavoring to attain perfection in one of the sciences, but by the exercise of the mind in a large variety of subject matter, so that no matter what new experience comes knocking at the door there will be in the mind already somewhat to which it can be related.

The object with which we started on this investigation- the interpretation of Locke's attitude towards the dogma of formal discipline has been consummated. The evidence tends to show: First, that his philosophy and psychology furnish no basis for this dogma: Second, that he sought to set aside the limited curriculum based upon the disciplinary conception of his time, and substitute for it a broader curriculum. Third, that he urged the abolition of abstract rules and generalizations

in favor of concrete, specific experiences: Fourth, that Locke's various references to education as a discipline may best be interpreted in the light of specific discipline and concepts of method, and such interpretation is harmonious with his philosophy.

From all these conclusions it appears to us that we are indebted to Locke for the grounds upon which the refutation of this dogma has been prosecuted. And we are furthermore, convinced that his writings contain the fundamentals of the best reform movements in education, while his philosophy is set forth in the plain clear language of sound common sense which none can fail to appreciate.

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