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THE INQUIRING MIND

KNOWLEDGE is not a series of propositions to be absorbed, but a series of problems to be solved. Or rather I should say, to be partly solved, for all the answers are incomplete and tentative. This view of life is in no way original, but it is frequently ignored. From the fact that reading, writing, and arithmetic are the bases of education and were long the only education for most persons, we have unfortunately been led to regard them as typical of *all* education. We feel that knowledge is something which has been settled by others and given us to learn, just as we learned the multiplication table.

Nevertheless, outside the field of such established facts as the three R's there lies a much vaster area, and with it citizens must acquaint themselves if democratic government is to manage our modern industrial civilization successfully. Knowledge of this vaster area cannot be obtained merely from what others tell us; it must come from what we find out ourselves by asking and answering questions. Therefore, the true type of education is not the certainty of the multiplication table, but the incomplete approximation of the square root of two, or better yet, the undiscoverable ratio between the circumference and the diameter of a circle. (How strange that such a common fact should be so complex!) Indeed, we may eventually come to take as our typical fact the square root of minus one, which, although we call it an imaginary quantity, forms a necessary element of many of the electrical calculations that make possible the ordinary operations of our daily lives. In school geometries the propositions are printed in large type and the originals are tucked away in the back in small print. Some day we shall realize that the propositions are far less important than the originals.

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II

The fruitfulness of this method of constant inquiry is demonstrated by the experience of Darwin. His voyage around the world brought him into contact with many interesting facts which he recorded faithfully but he was not content to rest with the acquisition of facts. He began to ask himself a question that he could not answer. Soon after his return to England he opened his notebook on the Origin of Species, in which he preserved all the information he could find for the sake of answering that one question. His method of using books he learned from Buckle, who used to jot down on the fly-leaf of every book he read references to passages in it which he thought might prove serviceable to him. "How do you know," Darwin asked, "which passages to select?" Buckle replied that he did not know, that a sort of instinct guided him. When the thinker has formulated his problem, the facts he meets are bound to shape themselves with regard to it, just as a magnet throws all the iron filings brought near it into one pattern.

Darwin asked himself one question, and spent the rest of his life answering it. Pasteur propounded a succession of riddles, and his earlier problems offered little prospect that their solution would aid mankind. What relation to human happiness was in his first riddle, the difference in the deflection of light through the crystals formed by tartaric and paratartaric acids, a difference which apparently concerns nobody? From this he passed to the even more useless problem of the possibility of spontaneous generation. Yet this led to the question of fermentation, and from the diseases of beverages he turned to explain those of animals and men. The possession of theoretical knowledge, indeed, seems almost sure to create opportunities for its practical use.

This progress from the theoretical to the practical was reversed in the riddles that beset Kepler, the forerunner of Newton. Find-

ing himself financially prosperous, he decided to place some well-filled casks in his cellar. They must be made of wood, and wood was expensive. Hence a problem, quite independent of the pleasures of theory, but all-important to the economical head of a household; how to get the greatest cubical content of wine into the minimum amount of wood. Should the cask be apple-shaped, pear-shaped or lemon-shaped? We can imagine him out in his orchard laying boards in various positions on temporary frames and then generalizing his results in mathematical formulae. They developed into his book on the measurement of casks, and became the foundation of infinitesimal calculus, the basis of all our pure and applied science today.

Einstein at five years old was, as he lay in his cot, given a compass by his father. The remembrance of the swinging needle remained with him, suggesting invisible forces, which later he was to explore in electromagnetic waves and gravitation. At twenty-two, struggling with poverty as a private tutor, a friend obtained for him a position as examiner of patents in the Swiss Patent Office. Instead of repining at this job as five years enslavement, he made his experience in varied fields of invention interlock so widely with the solution of theoretical problems that before he left he published in quick succession the first series of his dissertations on the theory of relativity. To the inquiring mind, all experience is gathered into the solution of overmastering problems.

Nor need my illustrations be limited to the non-human sciences. Frederick William Maitland, the English legal historian, became interested in a German treatise on the political theories of the Middle Ages. What could be more alien to the Twentieth Century than medieval doctrines of the relation between the empire, the church, and the guilds? Yet Maitland's attitude was, "Today we study the day before yesterday, in order that yesterday may not paralyze today, and today may not paralyze tomorrow." He began to inquire into the nature of groups of human beings, incorporated and unincorporated. Is such a group merely an aggregation of human beings, or is it in itself a person? Facts accumulated in his mind, he cross-examined documents like a string of hostile witnesses, he talked about his problem, wrote for information to America, to men he had never seen for data about our corporations. And somehow the problem of the Middle Ages became the problem of the great unincorporated groups of today; the Roman Catholic Church; the trade unions—Chief Justice Taft's decision in the Coronado case on the possibility of suing the United Mine Workers of America is just this question; the New Jersey corporation doing business in States where it owes none of its legal existence to the local legislature—; the nature of that most powerful of all groups, the state itself. Is it only a sort of glorified public service company, as Maitland's followers would have it, that sells police protection and schooling to its citizens as a trolley company sells rides? Or is it, as the other side contends, a sort of ethical culture society to lead us onward and upward toward the light? Whichever of these two views we take of the state, whether it is an organization for specific business services to the community or an inspirer of souls, why does it haggle over the settlement of its contracts, impose double taxation, deny all responsibility when its mail-trucks run over us, refuse to be sued in its own courts, and in general fall far below the standards of fair dealing which it imposes upon every taxicab driver or keeper of a restaurant.

The old system of water-tight compartments into which knowledge was supposed to be divided, and each of which had to be entered separately, is breaking down. The late Jacques Loeb, whose vital personality was hard to explain by his own mechanistic doctrines, once remarked: "People ask me, 'Why are you studying mathematics? Why are you learning physics? Aren't you a physiologist?' And I say; 'I don't know.' Then, "Aren't you a chemist' or 'Aren't you a biologist?' I don't understand these questions. I am pre occupied with problems." Problems—the material for solving them must be drawn from every available source! No place, then, for jealousy between workers in sharply demarcated fields. As H. G. Wells says in "Joai and Peter," "All good work is one."

III

It will probably be objected that all this is very well for the leaders of thought, but that few of us can hope to be ranked among

them. What are the inquiries of the rest of us worth? On the contrary, I insist that this way of looking at life as a series of questions and answers is not for originators and specialists alone, but for every man and woman whose vision is not confined to the acquisition of a bare subsistence. Beyond the facts that immediately affect us are the problems of the world in which we find ourselves with no choice of our own, the solutions of which are bound to mould us in the end, however remote such problems seem. It has become a commonplace to remark, and yet it cannot be said too often or it will be forgotten, that a shot in Bosinia brought over a hundred thousand homes in this country into mourning. Financial disorganization in Central Europe means foreclosed mortgages in the Dakotas. The time has long since passed when Dr. Johnson could say that he would not give half a guinea to live under one form of government rather than another, because it was of no moment to the happiness of the individual. The government of these days can decide what we shall thing or what we shall drink, allow sugar to go up and the dollar to go down, tax us out of the income we meant to devote to travel or the education of our children, force our boys—by imperceptible extensions of the present training-camps—to spend one or two of the best years of their lives in barracks learning the art of killing, then send them out to be shot by some nation we happen to dislike at the moment, and afterwards dictate school-books to demonstrate how profitably they died.

Most of us are too busy contending with the effects of these obscure forces to probe long into their causes, but the undergraduates in our colleges have abundant leisure for acquiring an understanding of the obstacles to progress, and if they acquire it, may do much to remove those obstacles in after-life. Instead, they allow the leisure available for such inquiries to be filched from them by those who want them to use it up in the drudgery of managerships and committee meetings—just the sort of tasks on which they will have to spend all their lives after they leave the campus.

Why is it that the average undergraduate allows himself to be lured into thus anticipating the gradgrind monotony of his middle life and away from the pursuit of ideas, for which he now has opportunities that will never return In large measure because such college activities seem a part of real life, while the reading and thinking that he asked to do appear unrelated to his own experience and expectations. Once this supposed want of relationship is shown to be a falsity, once the solution of a given problem is proved to be as intimate an influence upon his life as the choice of a room-mate, will not the natural human thirst for ideas assert itself? Learning, therefore, must be related to individual experience, but that experience may reach b-yond the maintenance of bodily existence to the enjoyment of distant landscapes, of children at play, music, the converse of friends, the mind voyaging through strange seas of thought alone.

IV

A few illustrations will make clearer what I mean by the relationship between theory and our own experience, and the way in which the investigation of a problem draws in facts from several departments of knowledge.

The front page of every daily newspaper was occupied recently by the senatorial committees investigating the oil scandal and the Department of Justice. It is the fashion in many quarters to regard such investigations as annoying interruptions to legislation—an attitude somewhat inconsistent with the usual sigh of relief when Congress adjourns without inflicting any more legislation upon us. But this attitude of hostility toward the committees was vigorously combatted by an editorial in a newspaper that can hardly be called radical—the Boston *Transcript*. It insisted that the investigative function of a legislature is just as important as its lawmaking function. College undergraduates might well turn from their study of political science as an abstraction, and ascertain the limits of this investigative function. On what occasions did the English Parliament call Cabinet ministers to account. Is the punishment of impeachment a satisfactory remedy for official misconduct? What was the process in Parliament by which the removal of an official by impeachment became obsolete as too cumbersome, and was succeeded by the custom that he should resign on receiving a vote of want of confidence? What would happen to an English Minister if he did not resign? Did the vote of the Senate

calling for Denby's resigation mark the beginning of a similar process in this country? Is the separation of the executive from the legislature an essential incident of democracy, as Mr. Coolidge told the Filipinos?

If so, why is it that England and France are not democracies? Under Washington and under Taft, proposals were nearly adopted for Cabinet officials to appear on the floor of Congress and answer questions. Should this be done? Would it be superior to investigating them long after they have acted? Does the great increase of Federal powers in the last few years necessitate the creation of more definite channels through which the representatives of the people may get at the conduct of officials who have acquired so much control over our daily lives? In such inquiries, history and political science would interlock.

Another interesting group of problems arises from the decision of our government not to recognize the government of Russia, which, in turn, has refused to recognize us until we clean house. Adopted, as our decision has been, by a distinguished Secretary of State, the udergraduate must unquestiongly assume it to be based upon a valid reason. But let him inquire what that valid reason is. One day it is stated that the Russian Government is so weak that it is about to fall. A few days later, the same person or newspaper worries for fear that it is so strong that any day the red flag may be seen fluttering over the White House. Either of these reasons may be sound, or neither, but not both. Then the inquirer might consider other reasons. The Bolshevik atrocities would open the way to an historical consideration of the recognition of the French Republic by Washington's Cabinet during the Reign of Terror. Then the undergraduate could turn to the general question of the effect of moral ideas upon recognition. He could recall our relations with a massacring Czar; he could ask whether our attitude toward the Huerta administration in Mexico marked a departure from our previous policy, and whether that departure was proper. The suggested reason for non-recognition, that the Soviets have sent money into this country to overthrow our government, would lead to an inquiry into the amount of American loans to Admiral Kolchak. The repudiation of debts would furnish an economic topic, involving a study of the repudiation of State debts in this country, and of the difference between debts that are recognized but not paid and those that are neither recognized nor paid. Thus, in time, after surveying political science, international law, economics, and history, our inquirer wil doubtless find the valid reason that makes it impossible for us to follow the English course, so heartily endorsed by such conservative newspapers as the London *Spectator*.

An inquirer interested in economics will find plenty of material at hand in the income tax. Loud complaints have been made that most of this tax has been paid by the citizens of a few States,—New York, Pennsylvania and Massachusetts—whose representation in Congress is small compared with that of the citizens of States wherein little or no income taxes are paid. The basis of this resentment is plain. Taxes ought not to be imposed by those who do not pay them, and it is natural to assume that the man who gets the tax bill and sends in his check to the collector is the man who pays the tax. But now we find that the persons who are loudest in making this complaint have been the most eager advocates of the Mellon plan for the reduction of high surtaxes, on the ground that the man who gets the bill for the surtax does not really pay it at all, but collects it from his poor customers. In advocating its abolition, he is consequently acting for their advantage and from entirely disinterested motives!

Now, this may be true; if so, let the investigating undergraduate prove it. He could show, for instance, how, when the author of a very successful $2 novel, such as "Main Street," was obliged to pay a big surtax, he shifted it to the reading public by increasing the price of his novel, and selling it for more than another $2 novel that had fallen still born from the press. Or he might find even more telling examples for Mr. Mellon's argument. But how can it be that the 50% surtax is not paid by the man who pays it, when the total income taxes levied in New York, Pennsylvania and Massachusetts are paid *entirely* by citizens of those three States? If the poor pay the surtax, why don't they pay *all* income taxes, and why do not the customtomers in the West and South, who buy from

those three States, pay a very large share of the taxes imposed there? Either theory may be right, or neither. But not both. An inquiry will show which is. A widely diffused knowledge of the principles of that very difficult subject, the shifting and incidence of taxation, would make it possible for the American people to criticize Mr. Mellon's next proposal with much greater discrimination.

I should like to go on with other problems: In history, whether the American Revolution was really, as some recent writers intimate, a combination of debtors and smugglers against the prosperous and law-abiding, and if so, how the participation of Franklin and Washington is to be explained; in literature, how much misfortune is necessary to stimulate an author to create without going so far as to kill him off; in classical studies, how far the conditions which brought about the flowering of Athenian culture are attainable in a modern factory city? But I hope that enough has been said to indicate the fruitfulness of the method of the inquiring mind.

V

Nor are such problems as these for undergraduates alone. The inquiring mind is not to be thrown aside with cap and gown, rolled up in a diploma with a ribbon of the appropriate color around it. Oxford was once said to be a place of such great learning because so much was brought there and so little taken away. The value of a man's education cannot be determined until we see what he is reading ten years after he has been graduated. Dallas Lore Sharp has said that the student passing through college is like the wind blowing through the orchard; it carries away some of the fragrance and none of the fruit. Unless the college man has enrolled in a fifty-year course, in a continuing education his four-year course has failed of its purpose. And if my view of the nature of education be sound, this means that he must continue to preoccupy himself all his life with problems.

There is, indeed, no reason for limiting such investigations to college graduates. A very large amount of reading is now carried on by other persons, especially in public libraries, as will appear from a visit to one of their reading-rooms any Sunday afternoon. Desultory reading is a desirable recreation and even when carried to excess is probably harmless, but so is solitaire. Much of the time now spent on books leaves no trace in the reader's mind because it is directed to no continuous purpose. This energy and love of books could be profitably canalized into the pursuit of the solution of problems related to the life of our own time. Consider the value of such an inquiring attitude to the citizen! By continually asking and answering questions, he may gradually approach the qualities of that great teacher of whom it was said, "I sometimes think that the one and only prejudice he had was a prejudice against his own results." He will come to appreciate, too, the wisdom of DeTocqueville: "I am tempted to believe that what we call necessary institutions are often no more than institutions to which we have grown accustomed, and that in matters of social constitution the field of possibilities is much more extensive than men living in their various societies are ready to imagine." Whether this citizen call himself conservative or radical, he will certanly not be ranked among those conservatives who, if they had been present on the first day of creation, would have exclaimed "Let us conserve Chaos!" nor yet among those radicals who account it so much a virtue to be ahead of the procession that they sometimes find that the line of march has been deflected into a side-street behind them, and that they are left stranded.

Only if there be an abundance of inquiring minds among the people can the leaders who are striving to answer the riddles of the time meet a sympathetic response from the masses whose support is essential to their success. The high-power broadcasting station would be futile if it were not for the low-power receiving sets, and they must be tuned to it. Elaborate schemes such as Walter Lippmann's for developing public opinion through experts will be useless if the public refuse to ask questions about the material which the experts and leaders supply. The want of such responsive inquiring minds has caused some of our most conspicuous national failures of recent years. We have insisted on propositions, and refused to consider problems. Before the war we accepted freedom of thought as a venerable tradition, and neglected to exert ourselves to define its scope. Freedom came to mean in practice the liberty

to do what everybody else did, but not to do anything different. We would not allow a man to be prevented from wearing his straw hat in July, but we saw no reason why he should be free from molestation if he wore it on a hot day in October. A conception of freedom which had been given no genuine content through general thinking quickly vanished with the advent of war, when free inquiry was most needed. We lapped up propositions like the War to End War, and an Association of Nations without caring to ask what they meant, and we shrank from unpalatable problems like the Secret Treaties in the same spirit that a man avoids going to the dentist's for fear that a bad cavity may be discovered. Consequently, when we had obtained the victory, we did not know what to do with it, and we patched up a separate peace which made no provision to secure any of the things for which we had so eagerly fought. The present administration swept triumphantly into office with another set of propositions which have recently acquired an unexpected significance—Government by the Best Minds, and More Business in Government. If we neglect to exert ourselves to define by arduous inquiry what we really want and expect to get, we can, at least, be sure of getting something that we do not want at all.

To men of inquiring mind a main concern is the universities, for they are the principal centres of systematic investigation among us. The government of a university by its graduates has been accepted for many years as an indubitable good. Yet Graham Wallas, in "Our Social Heritage," says of alumni control in England and America: "That expedient was devised from the mass meetings of resident teachers in the medieval universities, and has, I believe, now ceased to have any but bad effects. The alumnus, as such, has neither the knowledge and interest of the teacher, nor the knowledge and interest of a well chosen representative of any community at all." Thus alumni control is still a problem for us to consider, though it is to be hoped that our eventual answer will be favorable to it. Certainly it is significant that the two most striking efforts of our time to transform colleges into real institutions of learning, Woodrow Wilson's at Princeton and Alexander Meiklejohn's at Amherst, both failed, and, despite the presence in each case of other factors, failed mainly because a large body of alumni did not want that kind of college. In the Harvard Law School the reform of Langdell, which revolutionized legal education, alienated permanently many influential graduates and could never have succeeded had not President Eliot supported the dean against both faculty and alumni.

VI

Not the least of the values of the preservation of the inquiring mind by the alumnus is that it renders him sympathetic to theoretical research with no visible practical value, to free investigation by the faculty and students of his university, and to experimentation in its administration. If, on the other hand, he has allowed his idealism to be worn away by the preoccupations of daily life, he is likely to adopt toward the aspirations of thoughtful and eager undergraduates the attitude described by Romain Rolland:

> In the hostility, sullen or ridiculing, displayed by most persons towards the dreams of the young, there enters in large measure the bitter thought that they themselves were thus once upon a time, that they too had these ambitions and did not realize them. All those who have denied their souls, all those who have had in them the possibility of achievement and have not brought it to pass, accepting instead the safety of an easy and honorable life, think: "Since I have not been able to do what I dreamed of doing, why should they do it, these boys? I do not want them to do it." How many Hedda Gablers among mankind! What a sullen struggle to annihilate new and free forces! What studiousness to kill them by silence, by irony, by the wearing down of daily life, by discouragement—and by some perfidious seduction, just at the right moment!

And so curious fears spring up among graduates that the students are learning higher ideals than are practicable in the rough and tumble of actual existence. A powerful group of Harvard alumni in New York City objected to the work of Professor Davison in training the Glee Club to sing songs of the first rank because its members would thus acquire a taste for a type of music which they would not find after graduation!

As one leaves youth behind, the problem of growing old well acquires unexpected importance. There is less to look forward to and more to lose by changes. For many of us, our college stands out as one of the

few spots of idealism in our lives, and we resent the slightest possibility of alteration there lest that, too, be lost to us. Such a motive may account for the almost savage intensity with which alumni have at times opposed novel tendencies in teaching. There is much uneasiness abroad among them today over radical teachers. I believe that this springs largely from the view which I opposed at the opening of this article, that the multiplication table is the type of knowledge, and that a teacher is assumed to hand out chunks of doctrine to his students which they accept unquestioningly. Elderly gentlemen easily exaggerate the immaturity of the undergraduate. A few months ago, President Cutten of Colgate stated in an address that one had to "talk to the little ones in words of one syllable." An effective statement of this multiplication table view may be quoted from President Elliott, president of railroads, not of a university:

> In giving young people their physical nourishment we do not spread before them every kind of food and say, "Eat what you like whether it agrees with you or not." We know that the physical machine can absorb only a certain amount and that all else is waste and trash, with the result that bodies are poisoned and weakened. In giving them mental nourishment, why lay before young and impressionable men and women un-American doctrines and ideas that take mental time and energy from the study and consideration of the great fundamental and eternal truths, and fill the mind with unprofitable mental trash?......After they get into the real world it takes them considerable time to become convinced that certain laws controlling social and material affairs are as unchangeable as the law of gravitation, and some never learn it.

Without pausing to ask what these unchangeable laws are, or to recall that even the law of gravitation is not so firmly settled as it used to be, I protest that this food analogy misses the duty of a teacher, and of every man of inquiring mind, who inevitably (whether paid to do so or not) feels it one of his highest tasks to stimulate the same sort of mind in those younger than himself, whether his students, his children or his friends. It is the business of such a man, not to hand out rigid bodies of doctrine, whether Socialism, Home Market Club protectionism or anything else, but to train those to whom he speaks to think for themselves. He is not the gentleman behind the quick-lunch counter that Mr. Elliott's criticism suggests. He is more like the leader of a group of miners going into partially opened country. He has been there before; he knows more than they do about the technique of exploration and detecting the metal they seek, but he cannot give them definite directions which will enable them to go to this or that spot and strike it rich. He can only tell them what he knows of the lay of the land and the proper methods of search leaving it to them to explore and map out for themselves regions which he has never visited or rivers whose course he has erroneously conceived.

ZECHARIAH CHAFFE, JR.

ADVERTISING

ADVERTISING, like the telephone, the automobile and the popular magazine, is distinctly an American institution. This does not mean that it is not used abroad, but simply that in the United States it is employed more extensively, to exploit goods and services of a higher character, and that the technique, which refers to art work, copy writing and mechanical development, is here most advanced.

In England and the European countries, a large part of the advertising is devoted to the promotion of commodities of questionable value, notably patent medicines, while the better class of manufacturers and merchants feel that it is not a strictly high grade selling method. Altho this prejudice against advertising is gradually being overcome, and more and more firms are yearly entering the ranks of advertisers, the business abroad may still be regarded as in its infancy.

An American business man relates the following story which well illustrates the English attitude towards advertising. While traveling on one of the railroads leading to London, he noticed at frequent intervals, posts bearing the letters "L. W." Their significance was quite a puzzle to him, and a number of people whom he questioned were unable to enlighten him. Finally, however, he was told the explanation. One of the clothing stores in London, after long deliberation, decided to take a fling at advertising—an altogether new venture for their house. They debated at some length what form their advertising should take, and at last decided to