

THE NEW CULTURE

THE NEW CULTURE

An Organic Philosophy
of Education

by

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a JOHN DAY book

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To the Memory of my Aunt

MABLE FRANCES WARNER

*In visits to whose classroom as a
child I learned to reverence
teaching.*

O that a seeing architect might design
In a new form
New schools for all the teachers in the dark,
White temple homes
For teachers teaching by candle-light in catacombs,
New temples of education!
So delicate, so subtle, so beautiful the purposes
Of their sweet halls, dedicated to the flowering of humanity,
to the sweet flowering of the earth,
That they would rise like love-flowers, free and fragrant,
Like the spreading blossoms of the many-petalled lotus and
the rose,
Exhaling the creative fragrance of their bloom!

Architects! Teachers! Pupils!
Awake from your sleeping! Look at the landscape!
See with your eyes what you do, where you go, what forms
and what beings you walk among!
O sleeping people of the world! Awake and think!

FLOYD MCKNIGHT in *Buildings*.

FOREWORD

AN EDITORIAL in a recent copy of the Paris edition of the *New York Herald Tribune* bore the significant title, "The Unity of Knowledge." It was a reflection of a conference of some of the world's distinguished scholars at Harvard University out of which came a realization of the fact that such a conference should become an annual event. "Though the arts and sciences are many," said the editorial, "knowledge itself is one."

This book is devoted to an allied theme. It sets forth the unified and living nature of all things, and makes suitable applications in the realm of education. Thinking of this nature has been neglected and misunderstood in the years during which public education has risen in modern nations. The result has often been the loss of the deeper and more significant meanings in education, and the multiplication of the less important and more superficial matters in our schools.

To many to whom I am indebted in my thinking, acknowledgment has been made in the appropriate place. I am particularly grateful to Mr. Richard J. Walsh, President of the John Day Company, for constructive criticism of the manuscript, and also to my wife for the drawings and cover design.

A. GORDON MELVIN

Kandy, Ceylon, 1936

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CHAPTER I

THE OPPORTUNITY OF TODAY

MODERN MEN are wearied by the tireless and tiresome cry of "social unrest." Sickness in the land is not a normal way of life. Things have not always been so. The times have not always been out of joint. Whenever in the past men have thoroughly determined to master their world they have controlled and stabilized it. The Greeks in the Age of Pericles reached such an acme. It was as if the forces of the world were in leash. Human persons rising above the concrete problems of that material world wrested a pattern out of chaos. The times bred men, and men in turn recreated the times. With the subsequent decay of men the times, too, fell into decay. As human beings lost their dominance they were swept from their pedestal. The thirteenth century once more gave men their mastery. An equilibrium was struck. Men rode the world. Until again, as in the days of Greece, the times fell a prey to their own weakness. The nineteenth century witnessed yet another access of living. Rationalism emerged triumphant and Longfellow inscribed his *Excelsior* to an excelling world. But today that world lies shattered at our feet and we are faced with the stark necessity of breeding a race of men. Unless we make men we must perish.

It is thus essential that we take the firmest hold upon the problem of the rise of man. Has each upward surge of history deposited mankind back in the trough of the wave? Or has it deposited him higher on the shore? Upon our answer to this question depends much of our subsequent action. Have the gains of the ages been structural to man or structural to the environment? Here is a vast argument to which we might marshal volumes of written and torrents of spoken words. In its discussion almost every field of learning from literature

to biology might be invoked. For the present a simple basic estimate must indicate the attitude taken here to this problem. It is assumed that since man has never succeeded in permanently maintaining his dominance over the environment, it is the environment which changes, not the man. There is an even quality to the heroisms and failures of man that runs through all recorded history. Men differ from individual to individual, not from period to period. Individual man must conquer himself and so dominate the changing environment.

It is in the changing environment of the race that we discover both the challenge and the opportunity of education. For even though mankind may not have succeeded in passing on to posterity an improved stock of men, the race has, nevertheless, succeeded in passing down an improved environment. Each following age has won something for the race. We have yet to assimilate the gains of Eastern civilizations which are still alive. The art, philosophy and literature of India and China are as yet unavailable and little known in the West. Rather do our cultural roots sink down into Greek, Persian, Babylonian and Semitic soil. The Pyramids stand as a colossal monument to what has been lost. What remained was enough to fertilize that flowering of Greek life which produced the sculpture of Praxiteles, the architecture of the Parthenon, and the scholarship of Plato and Aristotle which have become the basis of Western culture. Yet so great a civilization as that of the Greeks could fail. The failure of Greece was ethical. With no sanction sufficiently vital to support any moral code the Greeks lived unto themselves and so lived out their ultimate ruin. Such a moral sanction was provided for the West by the Semitic writings of the Old and New Testaments. It was the mighty working of this sanction which laid the moral foundations of Western civilization so deep that human character soared by its power to new heights. The

magnificent scholarship of the Middle Ages was the emergence of a great life among the people. Great scholars were those—Alcuin, Abelard, Albertus Magnus. It was the success of faith. But with it came the suppression of reason. For this failure of the Middle Ages the modern world has paid full compensation. The rise of rationalism made the nineteenth century through which England and the European cultures rose to dangerous powers. Dangerous largely because they have permitted the degeneration of rationalism into materialism. In its denial of faith the modern world has forecast its own destruction unless—unless, indeed, we pause and deliberately learn from the past those lessons it clamors to tell.

From these great failures and these great victories we have gained a double heritage. We have learned from the Greeks the perils of ethical inaction. From the Middle Ages that unhealthy internal decay comes with spiritual inaction. From the nineteenth century that rational inaction breeds a withering pride of race and culture—"Let him that thinketh he standeth take heed lest he fall." We have been shown by a fruitful past that life must not be partial. It must be the fullest life of all our being. To be dead in one aspect of life is to perish in all.

It is through our records that we triumph. Among primitive tribes life evaporates as it is lived. The improvements men make in their world die with them. Modern men have the conserved experience of thousands of years to live by. By a system of continuing records and traditional works the race has handed down this new environment to succeeding men. The world about is a mobile crystallization from the past. We, modern men are no better than our forebears, but they have given us a better world to live in if we can make of men's inherent being the powers to swing it into use. For tragically enough we may refuse our heritage. There is no guarantee that men will accept today any more than they

have accepted yesterday. But this is not enough for a world so dynamic as ours. We have the same weaknesses as earlier men, the same strengths. We live man by man. As each man lives so the world is built. It is the job of education to make men who will stand high on the shoulders of the past.

Our improved environment is worthy of an inventory. The chain of early progress is too long and too infinitely slow to refer to in detail. The man who invented the wheel was no shaggy malformed "primitive" as the textbooks and the museums would have us believe. Surely we may imagine him as a being much like ourselves. The gifts of language come to us not from the inarticulate howlings of apes, as careless scholarship would maintain, but in the brilliant thinking of many men who bridged the gap from sound to character, from character to phonetic writing.

When the Greeks came on the scene they had already inherited the tools of learning. Thus they could pass on to later centuries a form of philosophy and a classification of knowledge from which succeeding learning has been spun out in long lines and college courses. Yet they were without the orderliness of Roman law and Roman government, without even the Roman alphabet. Roman numerals held men back. The progress of arithmetic had to wait for Arabic numerals and the twelfth century. Thus were born engineering and map making. Voyageurs discovered the outlying continents and presented the story to children on a sheet of paper. Engineers built bridges and skyscrapers, automobiles and airplanes until men soared still higher than in the dreams of Icarus. It is these machines we face today. Energy and still more energy is unloosed upon us. Machines and machines and machines. Work done, they say, physical labor ended, and plenty in the land. These gifts we have been handed by preceding men.

Yet our inventory is not complete. There are certain ways

of life which mankind has hitherto refused to follow. In theory they are always with us, actually they are unrealized. Up to the present men have steadfastly refused to live as one interdependent group. They have built nations, and one nation has been against another nation. Consequently they have rejected peace. War has been definitely and deliberately chosen as a means of settling human affairs. These affairs have been difficult to settle because of men's refusal to set up a planned and controlled social order. All these things men have accepted in theory but not in action. These gains are still before the race. The new environment built by the men of the centuries is forcing such action upon us. The time is inevitably coming when mankind will realize it. The millennium is already in the making.

CHAPTER II

THE CHALLENGE OF A NEW WORLD

EDUCATIONAL PHILOSOPHY has too often stood alone and ungrounded. This is a major error. It must send back roots to a more general philosophy. It must know and master life itself. Only then can it be genuine and real. Who is there that does not know how to live his own life and is yet fit to teach children? Who is there that does not know the world and would yet lead young people into that world? Who is there that does not know men in many walks of life and in many lands who would yet guide youth that they may become men? Before one can hold any ordered outlook upon education, he must have some larger view of the whole, of which it is a part. This larger view may be partial. It may be confused. Or it may be deeply settled and fully ordered. In such a case the philosophy of education built upon it will be sounder and more useful. For even our philosophy of education is set within walls. It receives its life from our own larger life. Just as hydrogen, water and ice cannot exist alone but depend for their chemical and physical nature upon the state of affairs in which they exist, so one's philosophy of education depends for its form upon the system in which it is set. It is thus a first and major problem for the thinker in education to discover the ground upon which he stands.

His second major problem is to make over philosophy of education in terms of the changing outlook of his time. Too often he has forgotten the first problem and tried to solve the second. This is to be dull indeed. For the second is but an aspect of the first. Yet even if the first problem were solved the second would remain. To Pestalozzi education was grounded in love, love in the traditional sense of his own race and his own culture. But even if all men could agree on so

sound a way, yet to live up to it would be one thing for Pestalozzi, another thing to the teacher of today. It would call for different understandings, different methods, different plans. Each generation must have its new philosophers of education, no matter how good the old. There must be those who rethink life's deepest thoughts in terms of a changing world, a new social order.

Never has it been more necessary to rethink education in terms of a specific time than it is today. Never has the context in which we live, the environment to which our whole existence is relative, changed so rapidly as it is changing today. Never since the beginning of Western civilization have such lesions taken place in the inner structure of the social heritage. Never have the age-long compromises of Western history become so thin. How shall these dwell as companions under the same roof? War and peace? Nationalism and internationalism? Democracy and exploitation of our fellow men? Love and hate? The clash of ideals has never before been so clearly seen by common men. Under this strain society is cracking. Old ways are being rapidly shed. A new culture is being born.

THE NEW CULTURE

If we are to witness the rise of a New Culture there must be deep searching. There must be a jettisoning of much that is causing us to flounder. There must be a salvaging of all that is true. In times like these false prophets flourish. Panaceas multiply in the land. Every rostrum has its simple solution for our problem, its short cut to living happily ever after. This reformer would dicker with the coinage, that one would drink us through beer to prosperity. College professors would provide us with a political solution in magazine article or pamphlet. Demagogues would spend us into safety or bribe us into assent. Salvation is offered us through endless political

or social isms. All such trifling is like locking the windows and leaving all the doors open. Isolated reforms are almost valueless. What is needed is all-round understanding and adaptation. We need no less than *fundamental philosophical reconstruction*. Deep and serious thinking has never failed to fertilize society in the past. Today it is only by such basic change of thought that the New Culture will emerge, rightly grounded in the old world, built in terms of the new.

OUR PHILOSOPHICAL HERITAGE

Men of our generation have been doubly unfortunate in their philosophical heritage. In the first place, we have been largely trained in a heritage of Greek cultural elements which have served the purposes of men for two thousand years. In the new and complex world we have entered, many of these Greek elements are faulty tools for the purposes of our changing culture. The use of these elements by men for millenniums has caused them to outlive themselves, to become outmoded. The problems which they were made to solve have been largely solved. Their mission has been fulfilled. We have lived through a period in which the older elements have outlived their usefulness, but the newer ones have not clearly emerged. The shifting of values which has occurred in the absence of cultural elements to control them has thrust confusion upon us.

This confusion has been heightened by the feeble philosophies which have dominated the last forty years. Cynics have flourished in high places and have taught the younger generations the valuelessness of value. Mockers have held us in Shavian laughter, until we could not reverence anything anywhere. The colleges have been full of a new spawn of sophists. These teachers have taught for money whatever was salable. The few that have taught under the compulsion of truth have been outnumbered by those who have urged

the opportunistic formulas of success. The world has been full of debunkers who have broken down but have not built up. We have been inflicted with demagogues who have traded in their social trusts and have "counted our life a pastime, and our time here a market for gain." Captains of exploitation have arisen who have used their wealth, not for the social good, but to purchase vast systems for the enslaving of men. An ill-grounded and inadequate philosophy has furnished an apology for things as they are.

GREEK HERITAGE WAS STATIC

The Greek outlook on life was a triumph for its time. The Greeks lived in a discrete world, a world which was neither known nor understood. The distinctions between nature and man, individual and group, knowledge and opinion were all clearly current with the Greeks. Aristotle employed a veritable army of men who scoured the known world for data which they submitted to him. The Greeks were at the beginning of things in Western culture, for our culture has continuity from then to now. Their problems were those of world survey and classification. They had to place ideas and things in classes and categories, so that they might deal with an ordered world. Their philosophy was designed for that purpose. For every philosophy is a volitional design brought into being by human beings to fulfill their purposes with themselves and their environment. Sensing relationships is the basis of design, and design is the basis of artistic living. Thus the Greeks sought for themselves a design for living and found it in a static philosophy of collecting and classifying. With this philosophy or design went a mode of thought and a type of logic which was adequate for the Greeks but which no longer meets our needs in a new world with its new designs. For the task which the Greeks did must be done all over again today. We must re-survey

the world and reorganize all knowledge if we are to make our environment man's domain.

Static philosophy no longer meets the needs of the present day yet it has served generations of men since the days of the Greeks. Through the Middle Ages it guided the endless works of the school men. Their problems, like those of the Greeks, were those of identification, organization and classification. Thinkers of the modern period used it with equal success and through it science was able to carry on its discoveries and furnish its interpretations. The biological world was explored and catalogued, the Newtonian laws stabilized physics. The chemical elements were marked off from one another and atomically listed. So through the process of the centuries classification reached its ends. The world lay before us on a table, philosophy was ordered and science was in full display. Apparently learning had reached its summit and scholarship was complete. All was set before us as so much fare to be stored and devoured. Thus the centuries were crowned with the smug philosophies and formulas of the self-satisfied nineties.

But now things began to happen. The world so neatly catalogued and set forth in permanent designs began to turn and shift. Classifications began to melt before our eyes and crystallized systems began to dissolve. Animals and plants began to fade into one another in disturbing fashion, species began to run into species, and genus into genus. The very Newtonian laws of gravitation began to lose their integrity. Chemistry was no longer its clear-cut self. Atoms began to disappear into atoms and to break into ions. Thus margins so neatly established began to fade, and the centuries and centuries of classification and cataloguing were threatened. The earth was in flux. The canonical authorities of philosophy and science were dissolved. The world was in the inconvenient state of having to be built anew.

In its dealings with the world human personality makes use of two reciprocal processes. Men approach life seeking design in the environment. The designs which they discover and those which they create form a continued flux in which is the ever-changing pattern of men's purposes and ends. Thus with the foundations of their age-long designs crumbling in every direction men are forced today to discard the static ways which no longer serve and construct a dynamic mode of life which will account for, explain and serve the new and old alike.

For in this new world the designs which we encounter have been endowed with a new life. Our inherited concept of a cube, for instance, is that of an inert object resting still upon the table. It is absolute, calculable, determined, permanent, quiet. The new physics has taught us that it is very different from this static conception. Says Lloyd Morgan,¹ "The cube is not only an orderly set of purely geometric relations of purely spatial terms; it is an orderly cluster of events which go together within the boundaries of this figure." From now on we must reckon with a dramatic world, and devise new ways to enable us to deal with it.

¹ C. Lloyd Morgan, *Emergent Evolution*, Henry Holt & Co., New York, 1931, p. 244.

CHAPTER III

DYNAMIC THINKING

THE NATURE OF DYNAMIC THOUGHT

IT HAS become popular to approach the problems of philosophy without preferences. Such indifference is disarming. It paralyzes constructive thinking. It assumes that all modes of thought and their resulting actions are monotonously unimportant. It pretends that one way of thinking and behaving is as good as another. That it has not mattered to men or their fellows in the past how they have lived out their lives. That history has been accidental drifting. Not that men have made themselves and their own times.

Such an effete liberalism is not for today. Today we must know that there are ways of thinking which build up, and there are ways of thinking which break down. That it matters much and most of all how men act. That we can deliberately make our history, that we can deliberately choose our philosophy. There is philosophy which is good for today. In philosophy as in life there is that which is good and constructive, and that which is bad and destructive. Here as elsewhere human history and human experience can be our guide.

If we are to build a new culture there must be a new thinking, a dynamic thinking. Such dynamic thinking has been gradually replacing the static thinking which has dominated Western culture through the Ancient and Modern periods of history. As we enter a new social and historical era, it is dynamic thinking which must build the post-Modern or Future period of history. It is that task to which current thinking must be consciously and deliberately directed. For this is the truest form of social planning. Isolated examples of the process of social planning are evident among the

modern nations with their five-year plans and reconstruction programs. But such superficial planning is not enough. We must establish our philosophy on a truer basis than ever before. Only thus will society progress rather than regress. Only thus will the expanding spiral of history swing in wider circles. Let us hold a convention of philosophers of the past and the present and rise to new philosophical heights.

THE LAWS OF DYNAMIC THOUGHT

Dynamic thinking proceeds in accordance with laws which are partially different from those which governed the static thinking in which recent times have been schooled. It is for this reason that the science of logic has been for some time under a cloud. It is the function of logic to bring thinking under control, to facilitate and guide the work of the thinker in the marshalling of his ayes and noes. It should be the tools of the trade for the engineer of thought. It should provide him with a *modus operandi* for dealing with his concepts, and should help him in the avoidance of errors, and in the detection of those deviations in the thought pattern of others which he calls their errors. These functions our Aristotelian logic is no longer able to fulfill for thinkers in our current world. It was fit for the use of medieval school men, whose world problems were not one whit less important and pressing to them than ours are to us. But today a textbook of logic is but a cold meal for a hungry man. It describes the way people have thought, but not the way they do think. It has become an abstruse and antiquarian subject, a luxurious, intellectual excursion for him who would study intellectual antiques, a sort of mental chess game with syllogisms for counters. No teacher of classical logic claims today that his subject will give to his students any practical skill in the handling of ideas or in governing the process of

his thinking. For the day of classical logic is over, and we seek new ways of ordering our experience.

The greatest contribution to logic in modern times, of which I am at all aware, is the work of Boris Bogoslovsky.¹ Dr. Bogoslovsky has thrown into a minor position the processes of classical or static logic and allows it only as a particular case of the extended systems of dynamic logic.

The constructions of dynamic logic, which is the instrument suitable to carry on dynamic thinking, are based upon the simple process of challenging axioms. This procedure has been most successful in recent years in uncovering certain ancient incrustations of error which have come down to us through the centuries. The process is a simple one. It is reminiscent of Rousseau's clever maxim so workable in times of social change: "Do the opposite of what is being done, and you will be right." It consists in changing some statement which is regarded as axiomatic and expressing it in the form of some opposite. Since a statement is an act of will, the new statement must be volitionally true. The success of the procedure depends upon the fact that practically all formulations contain some margin of error. In the words of Lossky:² "Every great discovery, however brilliant it may be, contains besides truth a certain amount of falsity, which condemns it to be one-sided and partial." Thus by the challenging of axioms Lobachevsky found Euclidean geometry insufficient. By passing from the Euclidean continuum to a non-Euclidean, four-dimensional, space-time continuum, he was able to construct his non-Euclidean geometry. Similarly, new challenging of Newtonian physics made possible the construction of the physics of Einstein. As a counterpart to these movements

¹ Boris B. Bogoslovsky, *The Technique of Controversy*, Harcourt Brace & Co., New York, 1928.

² N. O. Lossky, *The World as an Organic Whole*, Oxford University Press, London, 1928, Introduction, p. v.

in cultural reconstruction, Bogoslovsky has challenged the logic of Aristotle. The result has been the laying bare of a new structure for the furthering of dynamic thinking.

DYNAMIC LOGIC

Dynamic logic is based upon the denial of the Aristotelian axiom, the law of excluded middle. In its classical form this is stated thus: *A is either B or not B*. With this mode of reasoning even textbooks on classical logic express a certain amount of dissatisfaction. They point out that the law is fully functional only when the *A* and the *B* are real contradictories, and that there is no logical law by means of which things may be divided into two contradictory or exclusive groups or classes. The statement *A is either B or non-B* is what the man in the street would call common sense. A tomato is either a vegetable or a fruit. It cannot be both a vegetable and a fruit. Such a judgment, which regards vegetable and fruit as contradictories, is an example of static thinking. According to dynamic logic however *A* is both *B* and *non-B*. A tomato is both a vegetable and a fruit. This, too, corresponds to our experience if we look at it in a certain way. If a tomato is served with steak, onions and potatoes it fulfills the rôle of a vegetable. If it be eaten raw for breakfast as a substitute for the morning grapefruit, it is to all intents and purposes a fruit. Our tomato is therefore not regarded as sitting on one end of a line thus established in permanent rest in terms of definition and class:

Tomato	
Vegetable	Fruit

but rather as sliding back and forth on a line taking its position now here, now there, in terms of its function in human life. Now here—

Tomato

Vegetable Fruit
Now there—

Tomato

Vegetable Fruit

This form of reasoning is particularly needed when wholes are not regarded as fixed, absolute, eternal and unchanging, but rather as somewhat indefinite, temporary and changing. This is well illustrated by the old puzzle of the beard. How many hairs are required to make a beard? Beginning at one extreme the interlocutor asks the victim if in his opinion a chin of five hundred hairs is sufficiently hirsute to be called a beard. Receiving the answer "yes" he jumps to the other extreme and inquires if two hairs make a beard. Receiving the answer "no" he jumps back and forth lowering the number of hairs on one extreme and increasing it on the other. If the persecuted individual who is answering sticks to his guns and insists that a beard is a beard and just that, he will soon be reduced to the ridiculous situation of claiming that 249 hairs make no beard, while 250 hairs do. It is only when he realizes that an assemblage of anywhere from about a hundred hairs to three hundred hairs may under various circumstances be both a beard and not a beard that he is relieved from embarrassment due to his loyalty to static logic. Thus most illogically is settled the status of the goatee!

We must not allow the levity of our examples to blind us to the deep logical significance of the concept of continuums. If *A* is both *B* and *non-B*, then in any particular instance of *A* it may fall anywhere along the line *B* and *non-B* thus—

A

B *non-B*

or

A
B *non-B*

From *B* to *non-B* is a continuum. For that matter, so is *A* itself, although the diagram does not indicate it. Thus in comparing our admiration for Aristotle with our admiration for Bogoslovsky, we do not compare two contradictories which are mutually exclusive. Rather do we compare two continuums, Admiration-for-*A* and Admiration-for-*B*. We are thus able to admire both with equanimity and with logical conscience at rest.

LAWS OF DYNAMIC LOGIC

The derived laws of dynamic logic are not only different in fact, but different in nature, from those of the classical variety. They are stated in terms of poles and continuums. A line such as the following diagram is a continuum:

B *non-B*

In such a case the poles of the continuum are *B* and *non-B*. Any position along the line *B* to *non-B* is a position within the continuum.

PRINCIPLE OF POLARITY

“Every unit of thought in rigorous and efficient thinking must always have its definite and explicitly expressed opposite. An *A* must never be used separately from its *non-A*.”

Consequently, when we are dealing with a concept, in order to indicate the sense in which it is being used in any specific discussion, it is necessary to state what is regarded, for purposes of the discussion, as its opposite or contradictory. A complex concept, such as that of *education* may have many opposites. The *B* may have many *non-B*'s. The opposites

of *education* may be many things, such as *no education*, *memorizing*, *experience*, *book learning*, and so on.

Education	No education
Education	Memorizing
Education	Experience
Education	Book learning

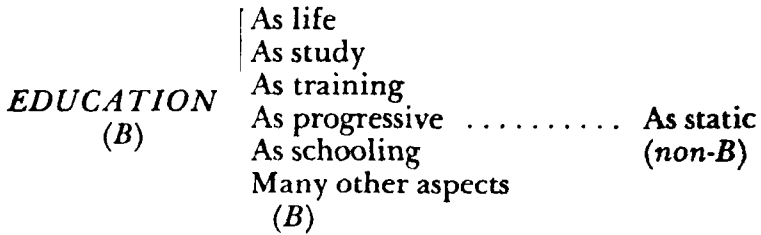
In order to carry on constructive thinking it is necessary to indicate which of these opposites is, for the purposes of the discussion, regarded as polar to the other. Failure to do this is a fallacy in dynamic logic. It results in no meaning. If we talk by the hour about *education* without indicating some concept of reference other than *education*, neither meaning nor value results. The principle of polarity thus deals with the subject of thought or discussion. The subject must be a continuum with clearly delineated poles.

THE PRINCIPLE OF PARTIAL FUNCTIONING OF CONCEPTS

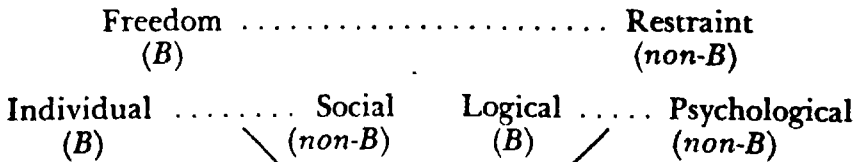
"A complex concept in actual reasoning at a given moment never functions as a whole, but only in a certain aspect. Which aspect is put into operation is determined by a pair of opposing concepts. (1) In cases where a concept functions as a component of the previous experience, it is one pole of the pair. (2) In cases where a concept functions as a present experience, both poles of the pair are extraneous to it. In efficient thinking these pairs must be explicitly expressed."

This principle deals with two modes of thinking. (1) The first is that in which the thinker is very familiar with the concept with which he is dealing, say for instance, *Education*, but wishes to improve his notion by further thinking. Such would be the mode of thought used by a sophisticated professor of education thinking over the most recent book by a famous colleague. (2) The second is that in which the

thinker is a novice in the field concerned, as for instance, an undergraduate taking his first course in Education. In either case, as thinking goes on, the full complex concept of *Education* does not function as a whole. (1) In the first case the thinking of the college professor of education may be diagrammed thus



Reasoning here is deductive, it develops out of a concept of Education into a clearer concept of Education. The complex concept of *education* is composed of many sub-concepts such as, *education as life*, *education as study*, *education as progressive*, *education as schooling*, and *education as many other things*. During thinking the total concept of *education* does not function at one time, but the partial concept *Education as progressive* functions as one of the poles, while the other pole is its opposite *education-as-static (non-B)*. (2) The thinking of the novice, on the other hand, may be diagrammed thus:



EDUCATION

Reasoning here is inductive since it develops out of experience, and the examination of cases, into a clearer concept

of education. A series of continuums is examined, for example, Freedom (*B*) and Restraint (*non-B*), Individual (*B*) and Social (*non-B*), Logical (*B*), and Psychological (*non-B*). In each of these three cases the poles are extraneous to, that is to say, outside of the concept Education, which is the subject of thinking. Each continuum is thus built into the concept of education which is thus gradually constructed of dynamic elements. In either mode, (1) or (2), efficient thinking demands the clear setting forth of both poles.

THE PRINCIPLE OF CONTINUITY

"The essence of dynamic reasoning is the establishment of continuity between two opposite poles of a unit of thought which tends to terminate in a realization of their qualitative identity. Efficient thinking must start with an assumption of continuity in potentiality, and work for its actual realization."

Consequently, a thinker who is investigating the relationships of two opposites such as interest and effort should make the theoretical assumption ¹ that they are the same, that each is but a special case of the other, that the two are melted and molded into one continuum thus:

Interest		Effort
(<i>B</i>)		(<i>non-B</i>)

or thus:

Interest		Effort
.....		

interest being but a special case of effort, and effort a special case of interest. Efficient thinking aims to synthesize the two concepts, interest and effort. This may be done by indicating that in a given act, such as writing a play, interest and effort are both high when the activity of the author is full and free.

¹ In actuality both are present but melt into one continuum. Identity is not so much between poles of a concept as between different actual samples of it in a specific case.

THE PRINCIPLE OF QUANTITATIVE INDICES

"No statement has any definite meaning without a certain quantitative index. In efficient reasoning, the quantitative value of any unit of thought must be explicitly indicated, preferably in terms of objective continuous scales between the two poles of the opposites."

This form of thought is useful in making applications to any specific case. In describing the handwriting of a child, for instance, it is clear that this handwriting is both good and bad. The continuum involved is

Good handwriting	Bad handwriting
(<i>B</i>)	(<i>non-B</i>)

B, in this case good handwriting, is the best handwriting of any writer, while *non-B* is that atrocious and illegible worst performance. The child thinks his handwriting is *good*. The teacher thinks it is *bad*. His mother thinks it is *fairly good for a child of his age*, while his father thinks it is *so bad that it is illegible*. Obviously all are right. But their statements are useless to one another or to any impartial fifth person. In order to make the statement or judgment useful to all concerned, these general and subjective statements must be replaced by a more objective and quantitative one. A quantitative value of the unit of thought must be indicated. This may be done by saying that the child's score on the Standard Handwriting Scale is ten, which is standard for his grade in school. This placing of the handwriting by means of a quantitative index solves the practical issues for all concerned and makes agreement of statement between them possible, so that they may unite and say that the child's handwriting is as good and bad as it is satisfactory for him. It is obvious that the fallacy of neglecting this quantitative placement of a unit

of thought results in confusion on the part of the individuals concerned, which prevents the proper issue of conduct for each of them.

THE HOMOGENEITY OF DYNAMIC LOGIC WITHIN ITS OWN STRUCTURE

We must not commit the major fallacy of constructing dynamic logic and then attempting to apprehend it in terms of the partial pattern of classical logic. Any design must be internally consistent. It must possess integrity of inner relationships. In this case it is obvious that dynamic logic must be only relatively relativistic. It must be interpreted in terms of the statement that dynamic logic and classical logic are not only different from one another, but are also one and the same thing. Thus

Classic Logic	Dynamic Logic
(<i>B</i>)	(<i>non-B</i>)

It is obvious that Classical Logic and Dynamic Logic are both the same and different from one another. We are reminded of the Golden Mean of both Aristotle and Confucius. Classical logic is just a polar extreme of dynamic logic. It is simply one case within the continuum. To fail to recognize this cyclical or spiral nature of discourse is the typical fallacy of those who use dynamic logic. Just as it is fallacious in classical logic to say that *A* is both *B* and *non-B*, so in dynamic logic is it fallacious to say that *A* is either *B* or *non-B*, with complete exclusion of the other alternative. The fallacy of classical logic fails to fully recognize the overlapping of concepts, while the fallacious use of dynamic logic establishes false identities and fails to recognize polarities.¹

¹ In my opinion Dewey falls into this error of embracing dynamic logic and then treating his subject as if it were governed according to the laws of classical logic. One example of this is to be observed in his discussion of theories of knowl-

The suitability of Dynamic Logic for the uses of our present time should now be evident. Living at the beginnings of our culture and faced with an unclassified and unorganized world, the Greeks developed a logic which would assist them with their problems. Those were the problems of separation, classification and organization. Statics were necessary. It was necessary to get knowledge organized in a system which was sufficiently static to hold it still while the rest of the world was examined and classified. Thus systems crystallized out, and they were sufficiently true to make them workable. The crystallizations of truth were specific cases of high approximation to truth. Using these systems of building blocks, Western civilization reared a rigid, absolutistic and authoritarian system. Its fallacies were those characteristic of rule, creed, dogma, statics and authority.

The new logic must beware of the opposite fallacies of destroying in the world all traces of the solid, the stable, the real, the authoritarian and the absolute. This revised logic is suited to the needs of today in a world which has been analyzed to death—a world which has been atomized, systematized and classified to pieces. Today we need to put

edge in which he is expounding the untenability of dualisms and the value of the idea of continuity. He says: "For the philosophic significance of the doctrine of evolution lies precisely in its emphasis upon continuity of simpler and more complex organic forms until we reach man." [John Dewey, *Democracy and Education*, The Macmillan Co., New York, 1921, p. 392] This is the paralysis of organization and classification. Such reasoning fails to recognize the relativity of continuity. It fails to recognize that dualisms are but a special case of continuity. To quote Bogoslovsky:

"It is worthwhile to notice that the Dynamic Logic of Included Middle is not a flat repudiation of the Static Logic of Excluded Middle, nor a substitution for it of something entirely incompatible with it. In fact, Dynamic Logic is only a more inclusive system which contains Static Logic as a part of itself, since the cases where A is 99.9999 . . . per cent B and 0.0000 . . . 1 per cent non-B closely correspond to Static Logic. In other words, Dynamic Logic is not absolutely relativistic, but relatively relativistic, and therefore highly consistent and comprehensive." [*Ibid.*, p. 18.]

things together and realize in each an organic nucleus and a fundamental life. For our purposes Dynamic Logic is at hand. The problems of the future are the problems of relationships, not the problems of inert entities, but of continuums. Classical Logic was the logic of analysis. Dynamic Logic is the logic of synthesis and the logic of today.

DYNAMIC PHILOSOPHY

Dynamic logic meets the needs of dynamic philosophy. It is important to realize that there is a dynamic and there is also a static philosophy of life. Wheeler has pointed out very clearly that history reveals the way in which men have in succeeding social periods embraced one and then another of these attitudes toward life.¹ In one period the dynamic pattern has held sway, only to be followed by a period in which the static pattern is dominant. This in turn is succeeded by a return to the dynamic pattern. That the dynamic one is the one on which men must rely in periods of rapid social change is obvious from the study of its results in historical development. Static philosophy, on the other hand, rises in a society which is living on the fruits of its previous gains. When mankind becomes lazy and consequently rests upon its oars, the static outlook on life comes as a rationalization to salve the conscience. Each reversion to the dynamic pattern should carry civilization further on its way by an increasing realization of meaning and value. It is the very fact that we are today moving from a static into a dynamic period which makes the present discussion pertinent to our current problems.

The following list of characteristics of both dynamic and static philosophy is based on Professor Wheeler's analyses:

¹ Raymond Holder Wheeler, "A Set of Postulates for Educational Theory," *Journal of Educational Research*, January, 1935.

ATTITUDES OF
DYNAMIC THOUGHT

ATTITUDES OF
STATIC THOUGHT

Nature is ordered.

Nature is haphazard.

Wholes are primary to the parts of which they are composed.

Either there are no wholes, or wholes are produced out of parts. The atom is primary.

Nature is purposeful and teleological.

Nature is purposeless and not teleological.

The whole controls the parts.

Each part must look out for itself.

The properties of parts are derived from their position in the whole.

Properties of parts are innate, not derived.

Individual freedom is found through the whole.

Freedom of the individual is an illusion.

The individual fulfills himself through his own part in the plan of the whole.

Man's destiny is unrelated. He stands alone.

Nature's law is co-operation.

Nature's law is conflict.

In learning, the whole comes first, then the parts.

In learning, the parts come first, and contribute to the whole.

Spirit is primary to matter.

All is substance, matter.

Dynamic thought would maintain that the attitudes in the left-hand column above are relatively true. The value of the analysis lies in the assistance it gives in our control over the present environment, our modern society. An examination of history will reveal that in periods in which such views of life have dominated social progress has been relatively high. The application of this criterion will help to make clear the earlier statement of this book that the cultural heritage of this generation has been unfortunate.

In the first place what has come to us from the Greeks has been due to historical accidents reduced to static form.

Although Greek philosophy under Heraclitus started off on the right foot with a fluid and relativistic view of life, Parmenides elaborated the static view. The static view was definitely endorsed by Aristotle, and in virtue of his authority was so highly regarded during the Middle Ages that it remained in vogue through the succeeding centuries down to the present. In spite of this fact succeeding historical periods from that time on have been relatively dynamic and others relatively static. The time is still before us, however, in which philosophy and society will be deliberately and purposefully dynamic.

Certain individuals throughout history have also had superior understanding of dynamic thought. Among them may be mentioned Socrates, Plato, Aristotle, Thomas Aquinas, Galileo, Newton, Lamarck, Goethe, Kant, Hegel and many others.

Certain periods stand out as those which have inspired human beings to great actions. Notable are those which fall around the years B.C. 300, 1250, 1650 and 1820 A.D. Each of these periods being dynamic in the nature of its whole-to-part philosophy was followed by a cultural renaissance which, with the succession of less active modes of thinking, fell into decline. The cultural efflorescence which made Greek life remarkable (B.C. 300) is too well known to require emphasis. The finest of medieval scholarship (1250 A.D.) again followed the earlier organic pattern with a consequent fertilization of culture which made the Middle Ages a great era in history. Relative peace and stability again prevailed after the collapse of the Church Empire in the mid-seventeenth century (1650), in the time of the comparatively whole philosophies of such workers as Galileo, Bacon, Spinoza and Leibnitz. These being followed by materialistic and atomistic philosophies for a time were in their turn succeeded by a return to the successful pattern in

the early nineteenth century (1820). These were the days of Kant, Herbart and Goethe, who used the term "Gestalt" to describe the form of living organisms. As before we find that the political unrest had quieted down and the world was a comparatively satisfactory place to live in. Unfortunately this pattern did not prevail. The world entered into a period of part-to-whole theories, and scientific atomism which ushered in those civil and international wars which have tortured recent civilization. It is only recently that we have been returning to the beginnings of organic thinking in the work of such men as James and Dewey. This is fortunate indeed, for Wheeler has pointed out after an intensive analysis of thousands of books and manuscripts that "The great advances of scientific *thought* have come almost exclusively under the guidance of pattern one."¹

A review of the history of Western thinking is necessary to develop this theme completely. Such a colossal task cannot be undertaken here. A fuller account is given elsewhere² for the benefit of those who wish to pursue the study further.

THE NATURE OF DYNAMIC THOUGHT

In carrying out the deliberate purpose of dynamic living we may be much advanced by a thorough understanding of the nature of organic thought. It is obvious from the historic account just given that at different periods in the past dynamic thought has operated in part. It has had, however, but a faint realization of its own nature. It carried on almost intuitively, unconscious of its own techniques, the techniques being implicit in the type of thought itself. In actual fact it was hampered by the forms of static thinking which were everywhere current as the dominant thought techniques

¹ Raymond Holder Wheeler, *op. cit.*, p. 9.

² See Appendix I for a more extensive analysis of the periods surrounding the years B.C. 300, 700, 1250, 1400, 1650, 1770, 1820, 1860 and 1936 A.D.

of Western civilization from the Greeks to the present. This dominance of a technique of thought, antagonistic in nature to organic thinking itself, furthered static thinking, gave it the upper hand throughout the centuries, and handicapped the development of relational thinking. The time has only now come when dynamic content and dynamic method may go hand in hand mutually reinforcing one another and so rising to new triumphs and accomplishment. With a technique which is overtly dynamic and a mode of thought which is correspondingly organic, the instruments of the new culture are at hand.

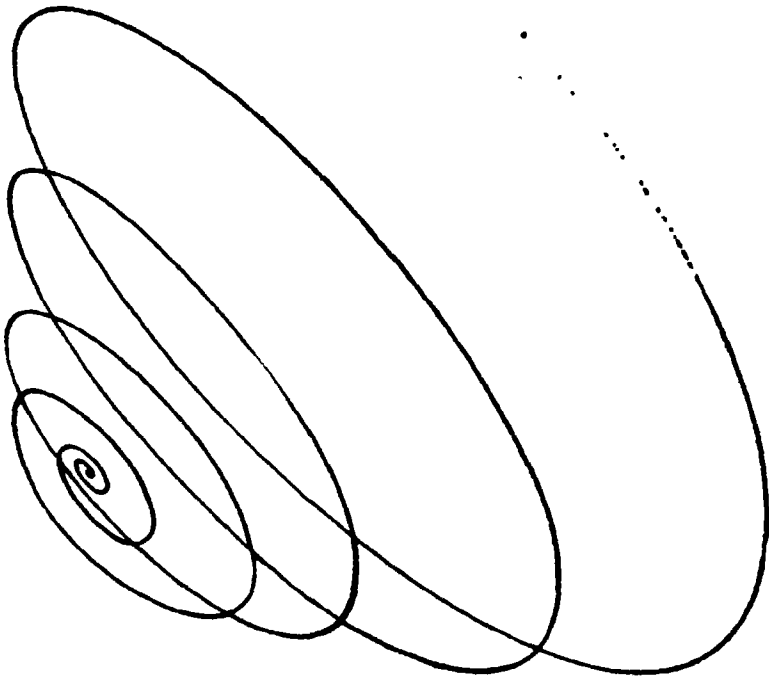
The nature of dynamic thought is demonstrated by the contrasts and oppositions indicated by the following list. Relatively interpreted, it will be of great assistance in determining the nature of units of thought.

NATURE OF DYNAMIC THINKING	NATURE OF STATIC THINKING
Places emphasis upon continuity.	Places emphasis upon position.
Relativistic.	Absolute.
Emphasizes interrelation.	Emphasizes independence.
Regards entities as changing.	Regards entities as unchanging.
Recognizes spiral development.	Considers entities at rest.
Recognizes pluralism of possibilities.	Dogmatically asserts only one possibility.
Dislikes definition.	Demands definition.
Is characterized by overlapping classifications, categories not entirely exclusive.	Abhors overlapping categories and posits separate classes, logical compartments.

Considers function in terms of the time-space continuum.	Disregards time-space relationships.
Has tendency to sweeping statements. Uses general terms in widest sense possible.	Makes close, protected, narrow statements. Makes limited abstract generalization.
Prefers truth to logical accuracy.	Prefers logical accuracy to truth.
Desires through thinking to clear the path to action.	Desires through thinking to obtain proof.
Regards logical proof as unattainable.	Regards proof as the <i>sum-mum bonum</i> .
Aims at control of environment.	Aims at organization of thought and the objective world.
Subject to its typical fallacy of relativism. Fails to recognize polar conditions. Rejects the relatively absolute.	Subject to its typical fallacy of absolutism and authoritarianism. Fails to recognize medial cases. Disregards the relative.

Such a mode of thought is well symbolized by the spiral. Beginning at its polar extremity, at a point endowed with energy, the point passing through space and time is always in relative motion. At every point its motion changes through growth both in every conceivable relationship through space and through every conceivable relationship through time. Thus time and space, energy, origin and goal are thrown into changing relationships. Such is the movement through which a shell passes to its maturity demonstrating its spiral in its outward appearance. Such is the development of a seed through time and space into a flower-

ing plant, of a person from embryo to death, of a people through history. From the beginnings the race moves forward in ever-widening swirls from purpose to relative maturity.



"Symbolism is fundamental to the true concept."
Commentaries on *The Book of Changes*.

DYNAMIC PRAGMATISM

Dynamic thinking has now been described in terms of its content, its logic, its technique and its nature. It has been unified briefly in terms of its internal relative nature. Thinking of this organic type may well be called dynamic pragmatism. It differs from the simple pragmatism of the gross American life of the preceding period (1860-1935) which has evaluated everything on the basis of its practical nature, its workability. It was expounded by Pierce and James and recently by Dewey, although Dewey may be regarded as transitional to the more active interpretation. Bogoslovsky, due to the propulsion of his own dynamic thinking, has unwittingly in the name of pragmatism indicated the nature of dynamic pragmatism when he said that the essence of pragmatism "may be stated as an evaluation of everything on the basis of its controlling active power." Gross or early pragmatism was seriously limited by its static nature. This resulted in an overemphasis upon object and matter, and a comparative neglect of motive, purpose and their relationship to end. It neglected both origins and the relationships between motive and act. It was materialistic, behavioristic, atomistic. But it was practical and in a crude culture both welcome and helpful. It promoted activity without troubling conscience. It said, "We don't know where we're going but we're on our way."

Dynamic pragmatism should preserve the same quality of freeing action but yet within the limits imposed by sound motive and ethical outcome. Static philosophies permit their own theory of reality to interpose itself between the actor and object. Dynamic thinking does not allow its own epistemology to stand between personality and environment. Exalting personality, it leads to what is sometimes lamely called personal-

ism. It recognizes personality as primary, environment as secondary and interaction between them as inevitable. It aims to promote this interaction for the benefit of the actor-personality. Thus it makes action primary to epistemology. Personality dominates metaphysics.

The newer pragmatism recognizes time, space, object, personality as subjective and primary, the source and purpose of thinking, ideas, ideals, philosophy, logic, metaphysics. It never allows thinking to become enamored of itself and paralyze action. It never fails to accept "facts" as contradicting logic. Such was the folly of those early philosophers who, confronted with the logical enigma of Zeno's arrow, which could never be in any place because always moving to another, could not face their dilemma. In their faithfulness to static logic they were led to deny the possibility of motion. Dynamic pragmatism will not allow the denial of reality in a real world with the aplomb of many loose interpreters of Plato. Neither would it fall into the typical error of gross pragmatism, overlooking or denying motive or freedom of choice, thus making metaphysics primary to personality.

Dynamic pragmatism clears the decks for action. It rejects incompatible dualisms, such as mind and body, as having their origin in epistemological or metaphysical error. By a sort of intellectual metallurgy it amalgamates polar concepts. It harmonizes contradictories which paralyze action. By placing complex concepts quantitatively on a continuum between the poles of two contradictories it indicates the point on the continuum from which action may emerge in the specific case concerned. The success of this action will be in accordance with the correct location in each specific case of the point of action on the continuum. Correctness will depend upon the correctness of the location of the continuum between motive and result, and upon many other realities.

The work of Dewey¹ represents a stage on the continuum between gross pragmatism and dynamic pragmatism. In his *Democracy and Education*, Dewey is concerned with the teaching of the complex concept of education to the novice or beginner. His procedure is inductively to build up the complex concept of education by the harmonization of a series of polar pairs (see p. 18 where Bogoslovsky's principle 2 is explained). In Dewey's book he deals with a series of simple contradictions and attempts to resolve them. Typical among these opposites are *School—Life, Child—Adult, Living alone—Living together, Active—Passive, Conformity—Uniformity, Subject matter—Activities, Process—Product, Interest—Discipline, Play—Work, Vocational—Liberal*. It cannot be too clearly realized that here Dewey is dealing, not with fundamentals of educational philosophy, but with the merest elementary problems. His contribution is not in the solution of these problems which he offers, for his underlying philosophy is, in my opinion, largely, perhaps fundamentally, static. His contribution is in the method which he uses in dealing with them, the dynamic harmonization of opposites. His solutions are often partial. They clear the line for action and experiment, but it is too often the experimentalism of gross pragmatism unguided by deep, sound, underlying principles, and an organic philosophy of life. He slips by easy stages into a frequent static pragmatism which has marred his work and caused devastating results in schools and for teachers who have tried to follow his guidance without a fundamental philosophy by means of which to interpret it. A great deal of Dewey's vagueness and abstruseness seems to be due to the obscurity of his fundamental premises. It is in an odd confirmation of this lack of clarity that Horne has pub-

¹ Valuable criticism of Dewey, which lays bare his materialistic alliances that seem anomalous to many, can be found in *An Introduction to Education*, by Michael Demiashkevitch, The American Book Co., New York, 1935.

lished for his students a commentary¹ in which, section by section, *Democracy and Education* is presented, with exposition and interpretation which the average individual will find more readable and more understandable than the original of Dewey. The most dynamic thinkers on education of which Western civilization has record are Comenius, Pestalozzi, Froebel, and in America, Francis W. Parker. If the work of Dewey, with his attempts to resolve his series of elementary problems, be approached in terms of the Comenius-to-Parker spiral, the most organic and living parts of Dewey will function. A school guided by such a philosophy will be progressive indeed. If on the other hand the student or teacher approaches Dewey, blind to fundamental values, unorientated to life, history and philosophy, he will suffer from what may be the blind leading of the blind. His school may become the bedlam of despair.

With an imminent return to organic thinking, fortunately history's spiral is, in these days, ready to take a wider swing than ever before. We are gradually recovering from the inertia which has been the canker of the schools of our day. The drab lectures of the universities, the listlessness of tired teachers of our social heritage, the blighting pessimism which youth has suffered at the hands of its teachers must be thrown off by youth itself. Already the beginnings of the New Culture are with us, and are ready for a full development to fertilize the ways of men.

Today we hear of the new physics, the new chemistry, the new biology, the new genetics, the new logic and the new education. All these being in essence one way of life must be the basis of the New Culture. But it is not for us to struggle on in doubt of our own premises. Our progress should be a sophisticated march to new territory, a deliberate claiming

¹ Herman Harrell Horne, *The Democratic Philosophy of Education*, The Macmillan Company, New York, 1932.

of the land for an overt and selected philosophy. Let us no longer be the fortunate or unfortunate philosophers of chance, let us not be caught in the trough or on the crest of an accidental wave. Let us remake our oceans and rebuild our worlds in the constructive gains of a thousand generations of experiment. Let us be deliberately and willfully dynamic.

CHAPTER IV

THE ABSOLUTE

NEAR THE British Museum in London is an art store in which is to be found a finer collection of oriental paintings than may be found in any other museum. The proprietor is an art lover who has surrounded himself with the best that can be obtained from all parts of the world. As he revealed to me one after another of his priceless possessions I marveled at their utter beauty, exceeding, it seemed, the beauty of the West. Insects which seemed alive, and more than alive, because of their very exquisiteness—flowers and birds, men and the ways of men—scene after scene of superb color and surpassing delicacy. Alarmed to see such wonders stored so carelessly in the upper floors of a wooden building I asked concerning their safety. Might they not be stolen? Might not a fire quickly destroy them all? Earnestly the old gentleman, who lived in the building with his precious collections, replied: "I would never let them go. If fire should come I would never leave my treasures. They are all that I have. All that I live for."

Here in this place of old age and esoteric beauty is a man clinging to his absolute. Inadequate and perishable as it is, so that in a few short years at best he must leave it behind him, yet to him it is the deepest thing in life. Magnificent as art is for the enrichment of life, yet it is not enough. So men cling to something outside themselves as a point of reference, as an absolute.

One of the very fundamental problems of practical philosophy is the problem of the absolute. Is there in this universe or out of it an entity, an essence, a reality, a being, a conception which is completely, fully and "one hundred per cent" the opposite of the relative—an Eternal, Immovable, Unchanging? The search of humanity and the search of each

individual for such an anchor in a time of storm has been incessant and unailing. This simple problem appears among mankind in many forms. It spurred Plato onward in his search for the *real*, and has divided philosophers down to the very present into two camps. On the one side are the Realists to whom our common, everyday notion of any real object is but a part truth, today's approximation to the abstract essence of that object which is the true *real*. On the other side are the Nominalists who have been content with our everyday conception of the *real*,—men from Missouri, who call a spade a spade. The search of all is the same, the search for a good, reliable absolute. Blown sometimes this way, sometimes that by the winds of Realism and Nominalism, the school men of the Middle Ages pursued the search. In that famous old woodcut of the textbooks we behold Peter the Lombard sitting triumphantly on the top of the Temple of Wisdom, the guardian and exponent of theology. Thus theology held the highest secret of the *real* and sought to attain to the *sum-mum bonum*—the absolute of Scholasticism. But even while theology held full sway illicit traders were at the doors. The Alchemists, pseudoscientists in a world in which science was taboo, sought in mundane ways the philosopher's stone. For their philosophy, intuitive or reasoned, taught them that through the unity of the absolute all substance was ultimately one. In one form or another, the world took up their search. Says Boodin¹: "From Thales down, men have tried to simplify our world by reducing it to some *Urstoff*, some simple entity or entities in terms of which the motley variety of our world might be expressed and understood. It might be water, it might be fire, it might be material atoms, it might be mind, it might be electricity, it might be some combination of elements. In any case, the human mind has felt more at ease in

¹ From *A Realistic Universe*, by John Elof Boodin. By permission of The Macmillan Company, New York, 1931, p. 15.

the world when it has thus simplified it." Now in these days when this search seems ended, men are beginning to realize that the search of "science" has not been more successful than the search of "theology." The absolute has refused to be trapped in men's finite cages. As they go in at the window the absolute flies out at the door. Gradually the world was reduced to chemical elements and set in periodic tables; hydrogen, oxygen and carbon, each ticketed and placed urbanely by its numerical atomic weight. Elements were divided into molecules, molecules were split into atoms, atoms were made into ions, and ions into neutrons and electrons, at last all basically one. Hydrogens turning to oxygens and leads to gold. Alchemy realized. The world back once more to the flux of Heraclitus.

Still the search is on. The search of the individual for security. Unable to reach the urbanity of the lilies of the field which toil not neither do they spin, men look for some material stability in a material world. Social security is the cry of the day. Banks which do not fail, old age pensions which glory in their strength, an international bank where moth doth not corrupt nor thieves break through and steal. Thus does the race seek security in a man-made world. Still other men too prosperous to suffer the uncertainties of privation suffer the uncertainties of luxury. Untroubled by material search, they seek psychological stability. Psychiatry, that Rock of Ages in our current welter, is there to cling to. Be good and you will be happy is its not too original injunction. And yet psychiatry flourishes because men's need for steadiness is so great. So the tired soul seeks for rest. If it be not found in this life, may not even death be better? Many renounce life for the hope of the absolute in death. Many living, unshaken by these common ills yet crave emotional reference. There must be the security of love. The doubtful soul longs for proof and the troubled one for peace. All these are but

aspects of the search for the absolute, common to all men of every time.

So does the human being seek to hitch himself to a post in the back yard. We cannot too clearly realize that the absolute of the philosophical searchers of the ages is the absolute of static logic, an absolute that never was on land or sea. This absolute is static, inconceivable, except in terms of classical logic, and impossible of location or identification by philosophers or scientists. Such an absolute has no actual existence, no real counterpart. It is afloat in the conceptual world, in isolation from the world we live in. It has logical but not practical existence. It is a figment of philosophy, a chimera of epistemology.

Yet such an absolute has been woven into the warp and woof of Western thinking and Western culture from its beginnings. It was invented by the Greeks or possibly derived by them from Egyptian or Babylonian sources. It was imposed upon Western civilization for a neat millennium (300-1300 A.D.) by the Grecizers and Romanizers of post-Christian thinking. Creeds were crystallized and became instead of practical guides to the zealous, touchstones of orthodoxy. The Gnostic contempt for the world became as reprehensible as the Pelagian too sanguine view of the goodness of man. Augustine, for example, promoted the trend of authority and Thomas Aquinas perfected it. As time went on, gradually dogmatism became characteristic of "scientists" whose last word proved through advertisements a signal boon to manufacturers of lotions and toothpastes. Scientific authoritarianism became no less blatant an enemy of heresy than medieval theology. Faith in a credal evolution became an issue. Men attempted to legislate evolution in or out of existence. Its proponents and antagonists thus exposed themselves to equal ridicule in defense of their absolutes.

Thus established in Western thinking absolutism built

itself into Western institutions. Legality fixed this and that here and there to suit itself. An automobilist who passes a red light snapped on when his car is but a faint fraction of an inch short of the line is legally guilty. The court protects itself by its own absolute, "contempt of court," even in the most contemptible courts. To know or not to know? In our schools some students have failed to pass with sixty-nine per cent and thus have passed on through sixty per cent to glorious, commendable careers. In the moral world a thief is a thief though he be starving, halt and blind. A Jean Valjean is ruined by a Javert. Boy murderers are held guilty before the courts of a society which has trained them to murder. Business is primary, success is mandatory and "prosperity" the greatest absolute of all.

But in our world of today even our post in the back yard is changing. It may be useful to tie up a dog, but it would never do as a hitching post for a philosophy of life. It was once a tree, it is now decaying, it will go some day into solution in the general flux and appear again in unpredictable forms some other day. Its stability is transitory and temporary. Even our post in the back yard is but a relative absolute.

It is thus with all our values. A 99.9 per cent absolute must be good enough for the practical affairs of men. What we seek is to find our active way through this world of relative absolutes and through it by mounting inductions to reach a Relatively Absolute. Fortunately for us, the world of Western Culture which lives on for us as the gift of many million lives is not for modern sophisticates a total loss. In the words of Reichenbach:¹ "The world of previous experience is not regarded as completely false, but only approximately valid; in that way it is not only possible to hold fast to

¹ Hans Reichenbach, *Atom and Cosmos*, George Allen and Unwin, Ltd., London, 1932.

the old ideas in the domain of daily experience, but to use more general concepts for the world of science." Yet let us beware, even in the domain of daily experience, of too much stubbornness about our self-made absolutes.

Thus we do return safe and sound from our plunge into the void. The Absolute remains, but a more vital, living, and dynamic Absolute. It is impossible to conceive of the relative without the absolute. If there be no absolute, there can be no relative. The concepts are mutually dependent upon one another. But we must still beware of simple philosophical conceptions of the absolute, of primitive animisms and anthropomorphisms. We must not paralyze thought and action by commonplace affirmations or denials. An absolute of any importance must be absolute relatively to ourselves. Just as the small child finds strength in the mother, so must we find an absolute stabler than ourselves. An absolute worthy of the name must be outside our time, space, matter, system, and independent of its internal relationships. It must be in terms of this system of life into which we are interlocked supra-natural. Natural enough, perhaps, in larger realms and wider systems, but for us above our system and so miraculous. Such an absolute may be to our time-space crystallization the energizer, controller, system-organizer, system-destroyer, source, governor of cause-and-effect relationships within our finite system. In terms of quality, dynamically, transcendently creating—relatively changing and infinitely eternal—an Absolute who illogically enough tempers justice with mercy.

CHAPTER V

RELATIVITY

THE MOST freeing philosophical conception of recent years has been that of relativity. It has been instrumental in changing the static concepts of the Victorian era so drastically that the whole field of modern thought is being radically remade. It is at work in the realm of physics, chemistry, biology, mathematics and logic, and is so effectual that through it philosophy is placed directly on the path of organic conceptions.

Contrary to the general opinion, it is neither a new concept nor a difficult one. Its newness is one of emphasis. Its seeming difficulty is the result of the spectacular mathematical abstruseness of its widely popularized exponent, Professor Einstein. Nor is its mathematical form its fundamental one. Fundamentally it is a change in the times. The pendulum having swung in one direction, the direction of security of concepts, now swings in the other, the direction of shifting values and uncertain certainties. The notion of relativity cuts way down below the specific impetus which it receives from its mathematical, physical, chemical and biological manifestations to a more fundamental thing, a change in epistemology which is an outcome of the times.

The theory of relativity arose as a natural necessity. It was a mode of thought required to make intellectually and logically tolerable to the human mind two contradictory experiments, both of which were regarded as sound. The two clashing experiments were those of Fizeau and Michelson, both on the velocity of light.¹ Does the velocity of light add itself to

¹ For further information on these experiments, consult Ernst Cassirer, *Substance and Function*, and Einstein's *Theory of Relativity*, The Open Court Pub-

a moving body through which it passes so that the final velocity of the light rays concerned is greater than before its entry into the moving body? Or does the velocity of light entering a moving body remain the same during its passage through the moving body? The experiments of Fizeau said "yes" to the first question. The experiments of Michelson contradicted it by saying "yes" to the second question. Fizeau's experiment was with light passing through flowing water. It showed that the velocity of light in flowing water was greater than in water at rest, but not on the simple additive principle, Final Velocity = Velocity of Light + Velocity of Flowing Water. The total was less than this, indicating the drag of a motionless ether. Michelson attempted to discover the consequences of the movement of the earth with reference to this motionless ether. He was unable to do so. Thinkers were thus faced with the fact of a motionless ether, and the contradictory fact of no motionless ether. The modern device of challenging axioms came to the rescue. Goethe once wrote that the greatest art in theoretical and practical life "consists in changing a problem into a postulate." This Einstein proceeded to do in his "*Zur Elektrodynamik bewegter Systeme*" published in 1905. With such a philosophical outlook one might regard two contradictory facts with intellectual equanimity. The principle of relativity was saviour of the day. It was, however, not physics which changed, nor mathematics. The fundamental change was epistemological. It was a change in philosophy, a change in men's way of looking at things.

Since the matter is fundamentally a philosophical rather than a mathematical one, how has it come about that relativity in the eyes of the layman is inextricably associated with the notion of a highly abstruse mathematics beyond the grasp

of the ordinary man? It results from the fact that the new theory had to be made practical through mathematics so that it might be used in mathematico-physical experiment. Measurements made in one "system" of values are not absolute and are dependent upon the state of motion of the system. The purely mathematical problem arises in discovering the laws of permutation by which the space-time values of an event are changed in going from one reference body to another, one which is in uniform translatory motion with regard to the other. This problem is solved by the famous fundamental equations of the "Lorentz transformation." The equation expresses the law of transformation of one into the other.

$$\begin{aligned}
 x^1 &= \frac{x - vt}{\sqrt{1 - \frac{v^2}{c^2}}} & z^1 &= z \\
 y^1 &= y \\
 t^1 &= \frac{t - \frac{v}{c^2}x}{\sqrt{1 - \frac{v^2}{c^2}}}
 \end{aligned}$$

Extensive mathematical and physical implications are involved but they should be regarded as related to the philosophy of relativity and partly derived from it, but not necessary to its understanding.¹ Such a deep change in current theory of knowledge, however, is bound to implicate every realm of learning. For each department of thinking is but a branch of thought, related to every other branch through the trunk of the tree. It is impossible for any realm of learning to stand alone. Electrodynamics implicates mathematics, and mathematics implicates physics. Physics is particularly affected in its concept of *time* and *space*. *Time* is to the ordinary child

¹ For more technical discussion see Appendix II.

no puzzle. *Time* is to him as extensible and almost as definite as a stick. It is as objective as the day and night, the sun and moon. It is a clearly perceived continuity capable of measurement in terms of past, present and future. The reason for this apparent state of affairs is that this concept of time is imbedded in the context of our everyday acts and conversations. The child is trained to it. He is never tempted to question it. He is taught to regard it as relative to himself. To the modern physicist, however, the matter appears differently. Before Einstein, however, no scientist considered the problem critically. The scientist assumed what the child assumes, that there is a single time system for the whole physical order. His concept was the concept of local time. It was measured by the periodic motion of some such mechanism as a clock. True that in everyday purposes this is satisfactory. In fact, even in the theory of relativity the theory of *local* time is the same as that which is current with us in our everyday affairs.

Such a limited view of time, however, overlooks the fact that time as we know it is but an attribute of the system in which we are embedded. It is true within our pattern or system, but has no necessary validity in areas wider than our system. It is therefore inadequate for an extended or complete theory of physics. In physics it is obviously necessary in measuring the velocity of a body to measure the time at which it leaves a certain point and the time at which it arrives at some other point. The classical physicist measured this with his own watch. In doing so he assumed that the movement of the hands of the watch along space is a method of extending time throughout space. Or he assumed that the difference in the time required for the light from his watch and the light from the clock on the wall to reach him is negligible. He was thus not exact. For a precise concept it is necessary to be more explicit. Thus arises the problem of how time may be defined for the whole of space. It raises the problem dealt with in the

special theory of relativity—the extension of a time system throughout space.

Just as the equations of the Lorentz transformation reveal that time is relative to a system of reference so also do they reveal that space is relative to a system of reference. Just as the average individual measures time by the use of the clock hands moving through space, so may he measure space by the use of a metal rod of standard length. This is because we are embedded in this space system just as we are in the time system. It is in fact a space-time system, or space-time continuum. For practical purposes the average man regards the length of a stationary and a moving rod to be the same. So did the classical physicist since classical physics may be regarded as a first approximation to relativistic physics. If we wish to regard the rod more universally with respect to all systems including our own, the transformation equations of the theory of relativity show us that the length of a moving rod in the system at rest is less than the rest length in the moving system. The relativity of space and time results from the harmonization of the finite velocity of light and the principle of relativity.

The space of Euclid is the familiar space of our school geometries. It may be diagrammed in our mind by a lattice of rods made into cubical frames built in the three dimensions, breadth, length and height. This type of diagram indicates what is called Euclidean space. In 1816 a Russian mathematician, Lobachevsky, challenged the theory that through any point only one line could be drawn parallel to a given line. By considering the possibility that through any point two lines could be drawn parallel to a given line, he constructed a whole new system of geometry. Later on a German, Riemann, challenging the whole Euclidean system, constructed a new concept of space by extending the ordinarily recognized three dimensions of space to an infinite number, to n dimen-

sions. Thus was developed a third geometry, in addition to the earlier systems of Euclid and Lobachevsky. In all these newer developments the principle of relativity is in operation.

The repercussions of relativistic thinking in the other branches of learning are not so direct. They are, nevertheless, actual. In chemistry there has come an increasing tendency to realize chemical phenomena as the properties of systems, to reduce all matter of whatever form to energy systems. Thus, in terms of energy, chemistry is interlocked with physics. Psychological theories of the Gestalt type with their characteristic unity have introduced this concept of fundamental wholeness into psychology. I have myself in another volume ¹ developed the concept of relational activity of the personality in the theory of complex interrelationships and in the recognition of the life force within the personality. Psychology is here related to the Vitalism of biology, differing from it, however, in that it has no essential affiliation with teleology. Biology has been deeply affected both in the growing modification of the theory of evolution and in the concept of biological systems.

The deep trend of relativistic thinking toward unity within the field of knowledge is one of its most significant characteristics. If it be not possible to fulfill the hope of bringing all changes under mathematical law so that the whole field of reality, organic and psychic, may be expressed in fundamental mathematical formulas, yet the philosophical concept of unity in energy remains. It supplies us with the simple concept which emphasizes the true meaning of the word universe, a oneness which may find expression through every form of reality.

Thus do we return to the Pansophic dream of Comenius and Francis Bacon. For Pansophism, but poorly understood

¹ *Building Personality*, The John Day Co., New York, 1935.

in recent years, much discounted and ridiculed, is not so much the hope that all knowledge can be encompassed and mastered, as it is the intuition that all that is is derived from some single source, that it is part of one design, obedient to one law. We may well go back to the Pansophic ideas of earlier thinkers. Not to master or accept them as they stand. Rather to realize that wholeness of apprehension precedes specific experiment and detailed knowledge. Through the unity of his grasp of the whole of creation, Comenius, who in terms of the details of modern scholarship was but an ignorant man, was yet able to construct in his *Magna Didactica* a curriculum which has basic validity today. Whereas the complexity and infinite detail of our modern curricula, conceived not out of one deep-lying philosophy, but built by a thousand half-educated doctors of philosophy in many scattered "curriculum bureaus," leaves the deep things of life untouched, and supplies for children a scattered experience which often disintegrates rather than unifies personality. We have much to hope if relativity can lead us to a more enlightened Pansophism.

Fortunately, the casual reader may dismiss without too serious consideration the technical knowledge of relativity as it affects the specialized fields of learning. He will lose nothing of considerable practical value for the ordinary affairs of life by considering the notion of relativity freed from the technical embroidery of mathematics and physics. The fundamental principle of relativity may be mastered from much simpler and everyday examples.

It is difficult for us to look at our own lives and our own times as if we were outside it all, stationed at some point exterior to the universe. We may be assisted in so doing by regarding some smaller system which is practically external to ourselves. Let us consider the waters of the Hudson River as representative of some such comparatively closed system.

For a fish swimming in this river, the river might be regarded as the universe. It is within the space of the river's waters. Space is water. The water flows down to the sea as time flows onward. The flow of the river is time. Its past flows onward irretrievably to the ocean and carries its events with it. Its future is in waters yet to come bringing with them new happenings and new hazards. Thus the medium of water is both time and space, a closed system to the dweller within, a time-space continuum from which no fish may free itself, since it is only in this medium that such a being can exist. So it appears to us human lords of the horizon who regard the watery world from our point of vantage outside its system, its time-space continuity. We humans may regard with similar equipoise and superiority the Mississippi River or the Yangtze Kiang, far away worlds of which the fish in his closed system has no hearsay.

Suppose, for the purposes of our illustration, that the fish be endowed with the powers of observation and measurement. Space would be that entity, the river, and time the passing of its flow. Space must be measured in terms of that time, and time in terms of that space. All is thus relative to the rate of flow of this river which, let us say, with gross literary inaccuracy, is fifteen miles an hour. Such must be the point of view of this fish whose habitat is the Hudson River.

But let us now consider the weighty affair from the point of view of another fish in such another river as the Mississippi. Suppose that in this separate universe, this other system or time-space continuum, the river's rate of flow is ten miles an hour. Now all the time and space observations are relative to this flow of this other river, a very different state of affairs indeed.

We may now suppose that by another miracle the fish of the Hudson should at last guess that there may be other rivers in the outer universe, and, like our ambitious physicists of

this planet, realize that all its measures of space and time are but relative to its river system. That in order to measure its time and its space in terms which are more than local, which have general universality, it must consider relationships between its time-space system and the time-space systems of other rivers in a wider universe—then indeed would the fish have become an Einstein among fish, a giant of relativistic thinking. Then might we look for a veritable spawn of piscatorial Riemanns, Lobachevskys and Bogoslovskys.

We may presume that we ourselves, locked tightly in the closed environment of this our material world, are in a predicament similar to that of our fish in the Hudson. We may imagine some being without our time and space regarding us as we regard the fish in the river. We are imprisoned in a system outside of which we must inevitably die. We fit this environment and this environment fits us.¹ It is our time-space continuum. Jehovah said to Moses asking His name, "Say I AM hath sent me." To Jehovah our time-space continuum is but an eternal present. There is no past, there is no future. Just a system, like the flowing river, and in that system human beings live, move and have their being.

But unlike fish, human beings have imagination. Striving for a greater freedom in the universe they have at last realized its relational aspects. If they cannot stand without this time-space-energy system in reality they may yet do so in imagination. Who knows but that some day they may be able to explore this outer realm and move back and forth in time and stand without space? Up to the present, however, the outside-of-here is an uncharted realm. All that the scientists can do is to build imaginary and abstract systems, to dream of other mediums. If one, why not many? Why not an

¹ L. J. Henderson, *Fitness of the Environment*, The Macmillan Company, New York, 1913.

n , an infinite number of time-space-energy continuums? And if so, how extremely relativistic it all is!

But our relativities are not all of the remote character of things beyond stellar space. We live in a world of systems within systems. To realize this we have only to consider ourselves in the simple act of taking a streetcar down Broadway. As I sit looking at the floor I am at rest in relation to the car itself. Similarly a policeman in a passing radio car is at rest with reference to his automobile. A friend standing on a street corner is at rest relative to the sidewalk. But suddenly he catches a glimpse of me approaching in the streetcar. To him I appear as moving rapidly toward him, he starts to run across an intersection toward the streetcar, the automobile bears down on him and at this point he must be left to his possible fate, while the reader considers that each of us is now in motion relative to the sidewalk, as well as relatively to one another. Yet through it all, I judge myself at rest because I am seated. To do so is to live statically. If I now dash from my seat in my anxiety to save my friend, I have now realized the relativities involved and have related myself to the world of things and men. Thus to be static is to be quiescent, to be relativistic is to be active in a changing world. Rest and motion are entirely relative to the system of reference, streetcar, automobile, sidewalk or the universe at large.

THE SIGNIFICANCE OF RELATIVITY

It would be wasteful to consider so abstract a matter at such length without pausing to note its significance in the other affairs of life. For the practical value of the theory of relativity lies not in its ideal constructions, but in the principle itself and its applications. In the first place, it should help us to realize how subjective our world really is. We have learned to accept such things as clocks and foot rules as the last word in objectivity. We are reminded by the theory of

relativity that these measuring rods are subjectively determined, and have nothing to commend them above certain others except their universal use. In the end the Imperial standard yard, defined by the Weights and Measures Act of 1878 as the distance, at 62.00° F., between two fine lines engraved on gold studs sunk in a bronze bar, is but an ideal conception. In the last analysis we measure with our own thoughts, we create a system and then project it upon the world around us. We are far too prone to regard reality as something determined and unchanging. We forget that we live in a man-made world. Lotka points out ¹ that the words plant and animal correspond to no clearly defined limits within the living world. That calling *Volvox* a plant or an animal is merely a matter of definition. Moving on, he comes to the conclusion that the various organisms which make up the earth's living population, together with their environment, constitute a single system which receives its daily supply of energy from the sun. We are thus reminded that to look at the world in a new way is to discover the world anew.

Another service which relativity does for our thinking is to warn us against immediate immersion in brief absolutes. The average man dwells in immediate objects rather than in their relationships with the world around him. Thus to put on a tire is a job in itself. It is not thought of in its relationship to a possible blowout with injury to the passengers in the car. The business man may think of how much money he makes, not of what he does to human beings in the making of it. The schoolteacher thinks of how much arithmetic the boy learns, not of what it does to the boy who learns it.

Relativity is death to static concepts. The scholar who writes a definitive volume will be laughed at tomorrow. The individual who lives by the eternal verities of science will find

¹ Alfred J. Lotka, *Elements of Physical Biology*, Williams & Wilkins, Baltimore, 1925, p. 4.

his props fall from under him in a few years. The student of education who rests his soul upon rather than poising his intellect about evolution or behaviorism finds himself in middle life with an onus of loyalty about his neck. The teacher who begs her pupil to write legibly fails to consider the typewriter he intends to use. The school man who insists that the pupils in his system must learn just this or that is standing on dangerous ground in days when knowledge is in a flux. In every walk of life we must be moving on.

Relativity always emphasizes growth. The artist discovers the law of dynamic symmetry as the principle which makes beauty seem alive. The biologist discovers phylotaxy, a mathematical law of expanding growth. The scientist in every branch of life discovers an organic universe. The educator emphasizes learning as growth. The philosopher discovers the fundamental pattern of all that is in time or space, in history or in the lives of men. All is relativity, therefore, all is growth.

It may be that the pendulum will swing too far in the direction of relativity. Men may become so relative that they will set their boats adrift rather than moor them safely at what might seem to be a static buoy. However that may be, relativity is eminently a philosophy for today. In a world which is chasing its own heels in an attempt to keep up with its changes, in which many old ways no longer meet our needs and have to be discarded, in which old definitions have to be willed away and new ones manufactured overnight, relativity is the order of the day. With a sort of Bishop Blougram apology we may say it serves, therefore let us have faith in it. Let it be our theory for today. It will shake us out of our smugness.

APPLICATIONS TO EDUCATION

Educational corollaries of the theory of relativity are too numerous to mention. Some few are, however, worthy of

brief mention at this point. It is obvious that the very stuff of knowledge is itself changing. What we knew before, what served yesterday, is gone today. The old chemistry, the old physics, the old biology, the old isolation and independence are things of the past. Textbooks have to be discarded and new ones rewritten, perhaps with a new reapportioning which may not merely relate these fields, but run them together and let what will emerge. The sacredness of subject matter which dominated the schools of the past is no longer with us today. With such changes come a new emphasis on the importance of independent research. Time was when the student came to be told, and to learn what he was given. Acceptance and mastery without question and sometimes without understanding were stressed. Now questioning is encouraged. Independence of action in any sensible direction must be approved. Earlier attention to training children to find out for themselves and to conceive of the world around them in their own way is increasingly important so that it may lead on to original ways of investigation and early and much research. Thus we must not be afraid of youthful ways and encourage rather than condemn precocity, as long as it is accompanied by good manners. In history we must begin from the present and emphasize the immediate past. If students are to deal with current problems they must know their origin. Their origin is more in the immediate past than in the remote past. Unfortunately the history which is least taught to the young is that of the years just previous to their birth. A clear cut is thus left in the continuity of problems which is a most difficult gap to bridge. The immediate past is the historical blind spot of both schools and pupils. Youth should be quickly oriented and admitted to a significant part in the actual affairs of life. The recent tendency to delay that entry has been carried to an extreme. The high schools and colleges have been used as shunting grounds to shift youth out

of the way. Child Labor laws have become schemes which have removed the last vestige of a significant participation beyond the grasp of youth. The streets are filled with youths, big and strong in body, who must wreak their strength on what falls to hand, even at the expense of a helpless community. It is, therefore, the educator's task to see that schools and colleges become not mere arenas in which youth may mark time and sublimate its energies in the over-promoted sports so common everywhere. Places of learning should become places of real social significance. From this base, if from no other, the talents and powers of youth should make social alliances, and move out toward participation and contribution in the life of the community.

Finally relativity dictates the cyclical principle of knowledge. Comenius knew this principle long ago, and through the use of it was enabled to construct a curriculum which has been the core from which all curricula from that day to this have grown and developed. It is not necessary for us to use this principle as he did, although there is considerable validity in such procedure. Beginning with young children, he planned that they should be taught the beginnings of everything, and at each succeeding period of life this knowledge was to be supplemented and expanded into a fuller knowledge of the whole. Rather should we today be sure that the knowledge in the background of the learner's life should be rounded, related and oriented, an organic whole rather than a higglety-pigglety jumble of facts, attitudes and skills served up in atomistic array. There must be a unity behind the learning experience. Furthermore, that unity should reach its highest realization in the unified approach of the individual learner whose own learning experience should be a distinctly personal and cyclical approach to fuller realization of his own living. His own experience must be relative to himself and his whole world.

CHAPTER VI

ENERGY

VASTNESS OF energy is about us on every hand. The ages have enabled men to devise a thousand techniques to harness power. Yet that power is infinitesimal in comparison with that which binds the atoms in their places and swings the universes in their courses. In the natural world each course of energy is ordered, each atom in its place, each circuit constant. The planets venture forth and back again as if regulated by some celestial timepiece. "Day unto day uttereth speech, and night unto night showeth knowledge." The years produce their ceaseless array of every flower and fruit in its season. The driving power of the universe propels colossal systems yet nothing is out of kilter, none is in chaos. It is only when men try to govern the energy they free that forces run awry and hurtle their guardians even to death.

The world today is a world of energy run wild. It is men's great challenge to master it. We are forced by the very nature of our surroundings to know the origins, the meaning and the manner of energy. It is no wonder that thinkers are pondering this problem anew, and building a realm of thought in terms of fundamental energy. Energy has in a sense become basic. We view it in new ways, and it appears clothed in strange garments. The calculations of Einstein would lead us to believe that radiant energy must have inertia and weight. Energy must be like matter. Energy is in fact, they say, actually matter. We marvel at so simple a formula for the universe. A million little worlds in one great world, cosmos within cosmos, the driving force partaking of the very nature of the thing that is driven! The simplest particle of matter an energy system. The universe itself one vast energy system. Air, water, plants, animals, human beings

—all like machines propelled by solar energy. The sun, itself energy, energy-driven, builds the ions and atoms into compounds, the air we breathe, the water we drink, the salt which seasons our food. It builds these compounds into systems, plants, and animals and men. And each of these passes through its own cycle of life, and returns its energy again in newly appearing forms into the general flux.

Within the great system energized by the sun, we may descry four interlocking systems or cycles which perform the drama of life in this material universe, power-driven through time and space. These are the systems of the natural environment, the system of the plants, the system of the animals and the system of human beings. These four sets of energy transformers form the great cycle of energy-driven matter. The first three culminate in man together with whom they form one grand cycle.

THE FUNDAMENTAL NATURE OF MATTER

The notion of some single substance or building stone from which all matter is made is a very ancient one. Thales of Mileteus thought that it must be water. Modern scientific theory finds it to be hydrogen, the chief component of water. But more basically still we are told that hydrogen is itself energy. The smallest particle of hydrogen, say the physicists, is actually an electrical charge. Electricity is the fundamental substance of matter! Positive electricity is the nucleus of the hydrogen atom. Rutherford's theory, which fits the facts so well that it is regarded as virtually a truth, holds that each atom of any element is a little cosmos within itself, a complex microscopic universe with its own central sun and revolving planets. The "planets" which swing about the nucleus are negative charges, electrons.

Prout's hypothesis, that the hydrogen atom is the fundamental building stone of matter, is supported by the fact that

the hydrogen atom is the simplest of the atoms, being composed of but a nucleus and one electron. It is the lightest of the atoms in weight. Furthermore, the weights of all other atoms of other elements are approximately whole numbers when expressed in terms of the hydrogen atom.

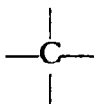
If these hypotheses are true, then every atom of every one of the elements is built up of these basic atoms of hydrogen. Next in atomic weight to the hydrogen atom, with its single unit charge, is helium. Its nucleus has two units of charge. Lithium has three units of charge and three electrons. Each unit of charge is like a leash which swings one electron in its planetary course about the nucleus. So it continues throughout the periodic table of all the elements, each atom being a system with a fixed number of units of charge. The higher atoms have many units, lead, for example, having 82 units of charge in its nucleus, while 82 planets or electrons swing in their orbits about its nucleus. Uranium, with its 92 electrons, is the heaviest atom known. Thus is explained the mathematical orderliness of the periodic table of elements.

THE NATURAL ENVIRONMENT

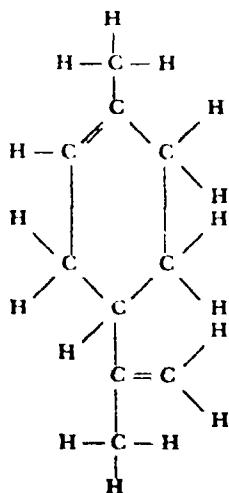
Men, animals and plants live in the natural environment. This is the world about us, the air, the land, the rocks and hills, lakes and oceans. In this natural environment the numerous elements of the periodic table are found not only free, but in endless combinations or compounds. Quiescent as the world about us may appear, it is, nevertheless, not so, but is continually enacting the drama of life. These chemical compounds compose vast systems which pass through their cycles of energy manifestation.

Compounds are themselves energy-driven systems. This is well illustrated in the case of a unique set of compounds known as the carbohydrates, all of which are compounds com-

posed of the very prominent elements carbon, hydrogen and oxygen. These elements afford the greatest number of components for the construction of systems. Of all the chemical elements, carbon, hydrogen and oxygen have the greatest number of compounds and enter into the largest variety of reactions. The known compounds of carbon, which frequently contain all of these three elements, number into the tens of thousands. The element carbon has one important characteristic. This is its ability to combine with four other atoms, thus:



Consequently, in combination, it is capable of forming, in the molecule of compounds, rings, chains and forked chains of atoms. Furthermore, these rings and chains have an unusual ability to hold together, especially when hydrogen is the principal element in the molecule concerned. This state of affairs is unique, and accounts for the unique suitability of carbon for the formation of stable compounds. The following diagram illustrates the types of combinations into which



carbon and hydrogen may enter in forming the great profusion of hydrocarbons.¹

One hydrocarbon is said to possess a straight chain of sixty carbon atoms. Such chains of atoms have the power of branching or forking at any point. Again these atoms may form rings as well as chains or any combination of both, and because of the double valence of the carbon atom may be

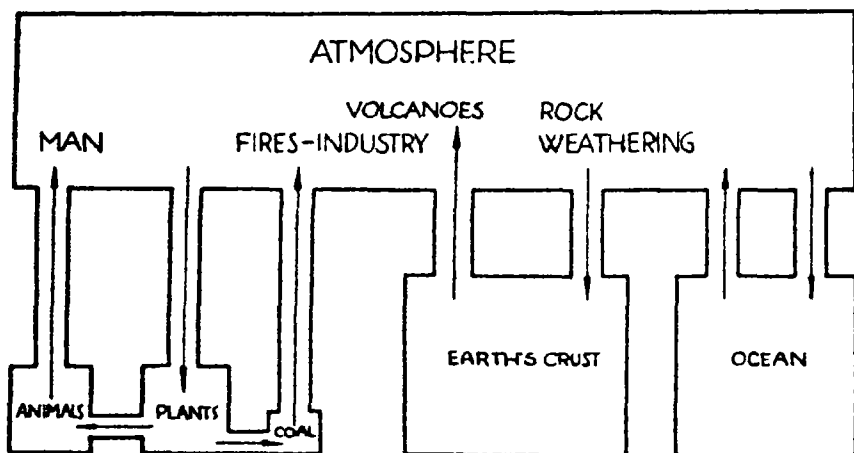


DIAGRAM OF THE CARBON DIOXIDE CYCLE

joined in a union with two other atoms. When oxygen is joined with carbon and hydrogen, the number and variety of combinations is still further enhanced. It includes the alcohols, aldehydes, ketones, acids, ethers, esters and many other groups. When these elements enter into combination with others, especially nitrogen, the number of combinations becomes almost endless. Such is the variety of systems within the range of organic chemistry. Its systems upon systems are practically endless, each depending for its stability upon the environmental conditions which surround it. Each in its very integrity a manifestation of energy.

¹ This example and many of the data referred to here are taken from Lawrence J. Henderson, *The Order of Nature*, Harvard University Press, Cambridge, 1917.

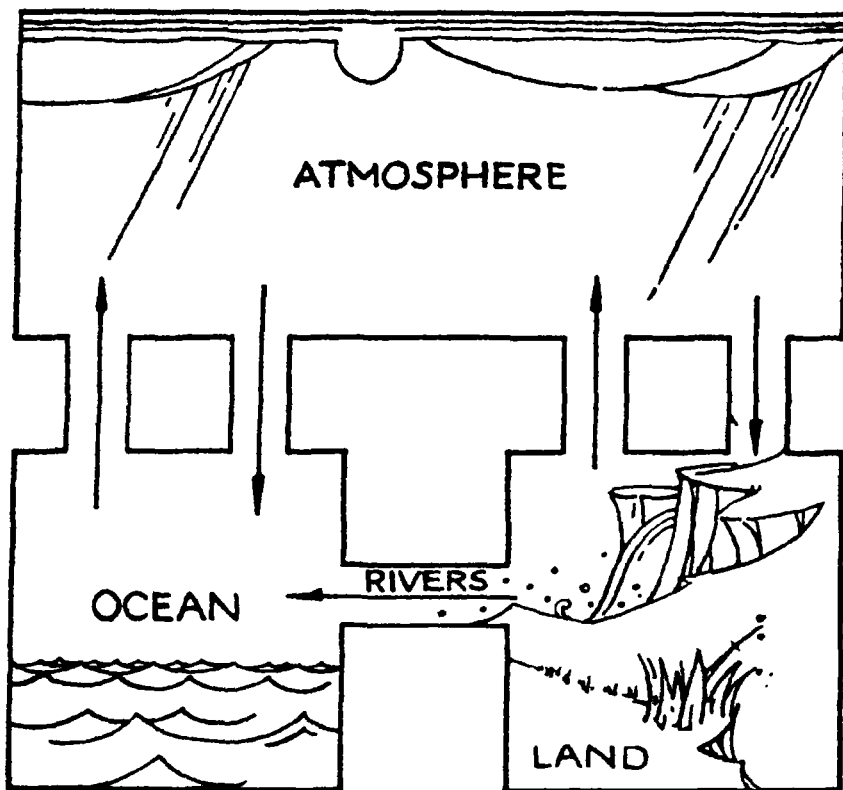
Not only do the atoms and elements with their internal universes seem as though they were alive, but certain natural compounds are in a continual flow which has the quality of living. Carbon dioxide, water, oxygen, nitrogen and other substances flow about the face of this globe in vast streams and rivers, the currents of which are not beheld by men. Among the most striking of these planetary streams are the gaseous wanderings of carbon dioxide, and the liquid adventures of oceans of water.

Unobserved by human beings there is a continual and universal flow of carbon dioxide from atmosphere to earth and earth to atmosphere. Constant exchange takes place between the air around us and all solid things, plants and animals, the waters of the ocean and the solid crust of the land. This flow may be pictured by a diagram.¹

The air surrounding our planet holds huge quantities of carbon dioxide—two and one-half million tons of it. Even more than this, twenty to twenty-five times this quantity, is held in solution in oceans, lakes and rivers. The interchange among earth, air and water takes place in many ways. In the first place, green plants are ever active in promoting the exchange. Driven by sunlight they take in carbon dioxide from the air and build it into their plant structures. The plants are in turn eaten by animals which breathe back carbon dioxide into the air again. Fossil plants which stored up sunlight in some early eon, when burned to warm the dwellings of men or to turn the million wheels of industry, belch back their carbon dioxide bound up so many years ago. So also do certain volcanoes. Cotopaxi alone is said to discharge two million tons a year. The weathering of rocks, which we see going on about us in buildings and cliffs, uses up carbon dioxide to replace silicates by carbonates. Yet in spite of the varying

¹ Adapted, along with other data and diagrams in this section, from Alfred J. Lotka, *op. cit.*

rates of this colossal drift and interdrift the process is never upset, it never gets out of order, the balance is never disturbed. This is due to the fact that the ocean, which the aver-



THE WATER CYCLE

age man finds so useless a part of the earth's globe, fulfills an essential part in the world's daily drama by acting as a monstrous stabilizer.

For every ton of carbon dioxide set free by fires or volcanoes, only 100 pounds remains in the atmosphere and 1000 pounds ultimately flows into the ocean. Thus does carbon

dioxide rove endlessly about through the natural environment in a continuous and age-long cycle.

The swirling of the water cycle is equally interesting. It is illustrated in the diagram on page 62.

How picturesque is this sweep of the rains and rivers through the whole of our earth and sky. The dampness of the air tells the story of 3000 cubic miles of moisture hanging in the lower six miles of the air wrapped about this globe. The rain and snow pour out upon the ground 86,100 cubic miles of water every year. All this must be returned again into the skies. Here the sun is at work again. The ocean reservoir, 302 million cubic miles of water, fed by river drainage from the land, has an enormous evaporating surface of 144 million square miles. Each year, heated by the sun, this returns to the heavens again 63,300 cubic miles of water. Land evaporation is 22,800 cubic miles a year. So the moisture is returned whence it came and the water cycle is complete.

Even more remarkable, to him who would regard natural events as wonders of the world, is the astonishing way in which the action and interaction of carbon dioxide and water form the unique character of natural waters. Upon this unique character depends the very existence of life upon our earth. Pursuing each its own path about this globe both carbon dioxide and water seem to form an alliance in the cause of living things, and to co-operate in a way which is essential to plants, animals and men. This utter fitness, this interlocking of the ways of planetary streams and the needs of living creatures, is pictured in its magnificent detail by the chemist Henderson.¹

Both water and carbon dioxide have special qualities and characteristics which are possessed by no other compounds. Furthermore the qualities of one substance enhance those of

¹ Lawrence J. Henderson, *The Order of Nature*, Harvard University Press, Cambridge, 1917.

the other in remarkable fashion. Water is the best of all solvents. But its very superiority is improved by carbon dioxide which is always present in solution in natural waters. In solution in water it forms the mild carbonic acid. This is ideal for the promotion of those processes of slow solution which water carries on as it trickles through the earth and the crevices of the rocks.

To the unique solvent quality of water is linked a unique characteristic of carbon dioxide. It cannot be completely locked up in chemical combination. Consequently, as the earthy and rocky substances are gradually dissolved away they cannot completely remove the carbon dioxide from solution. They neutralize the acid but can combine with only a portion of it. One further distinctive quality adds to the perfection of simple natural water for the task it has to perform. The surface tension of water is greater than that of any other common liquid. Thus water is held poised for a comparatively long time in the pores and interstices of the earth, thus prolonging its solvent action upon the earth's crust.

Swept here and there on the face of the globe, the substances of the earth's surface are kept in constant flow by the movements of the water cycle. The 10,000,000,000,000,000-000 tons of water on the surface of the earth is in continual movement. The yearly drainage of the rivers of the world, about 6,500 cubic miles, dissolves, apart from sediment, nearly 5 billion tons. The Gulf Stream in the Straits of Yucatan alone, traveling with a mean velocity of 80 miles a day, is said to carry 200 million tons of water per second. But water has one further marked characteristic in which it is unsurpassed by other liquids. Not only does it dissolve large quantities but also wide varieties of substances. Almost half the elements are found in solution in natural waters, making up a total mass of 500,000,000,000,000,000 tons. Thus the elements carbon, hydrogen and oxygen, in the form of nat-

ural water, possess those unique characteristics which favor the present life on the earth. The natural waters themselves constitute an internally co-ordinated system. Driven in one vast flow over the surface of the earth by the movements of the water cycle, the natural waters themselves compose an energy-driven system which redistributes the earth's crust and thus keeps the surface of the earth a fitting place to dwell in.

PLANT SYSTEMS

The energy which keeps the crust of the globe in flow does not do so in vain. As flour is ground for the baker so the rocks and hills are ground into a fitting earth for plants to grow in. The life process so well begun is ready for a higher cycle. System supports system in widening circles. The air, the rainfall, the eroded materials of the earth's crust, themselves organized into systems, by the aid of sunlight on the green leaf, are grown into plant systems. The process which converts dust into leaf is called "photosynthesis."¹ The process is an intricate one, which is none too well understood.

The leaf is the "factory" in which are prepared the various carbohydrates, components of carbon, hydrogen and oxygen. Plants' leaves are composed of several layers of cells. The surfaces of the leaf, usually on the under side, have openings or *stomata* through which exchange of gases takes place. Here and there in the surface cells of the leaf are the *chloroplasts*, minute green particles which contain the characteristic coloring matter of the green plant, *chlorophyll*. Chlorophyll has been identified as the active agent which, in the presence

¹ The author is indebted in this section to Frances Mason, *The Great Design*, The Macmillan Co., New York, 1934. Lotka, discussing photosynthesis, refers to E. C. Baly, "Photosynthesis," *Nature*, March 16, 1932, p. 344; Baudisch, "On the Formation of Organic Compounds from Inorganic by the Influence of Light," *Science*, April 20, 1923, p. 451. For other references see Lotka, *op. cit.*, p. 221, footnote.

of sunlight, promotes the assimilation of carbon by the plant. Carbon dioxide entering the plant leaf via the stomata dissolved in water becomes carbonic acid in the plant. Due to the little-understood effects of chlorophyll, it becomes sensitive to light, particularly to the red rays of light. Light thus seems to act as an energizer somewhat like an electric current. A process resembling electrolysis now takes place in the weak acid solution of carbon dioxide in water. H_2O is oxidized and H_2O_2 , hydrogen peroxide, is produced. The leaf cell contains a but poorly-understood agent which converts this hydrogen peroxide into water and oxygen. The hydrogen atoms thus set free, instead of passing off in gaseous form, combine with the molecules of carbonic acid in such a way that the carbonic acid is deprived of half its oxygen for which hydrogen is substituted. Thus is formed the important carbohydrate, formaldehyde, CH_2O . Here the action of light seems to come to an end. Formaldehyde in solution in water forms $\text{H}_2\text{C}(\text{OH})_2$ or formaldehydrol. Thus has the sun animated the dust of the earth. With the production of formaldehydrol the basic materials of the natural environment have passed into plant form. Just as in the case of other natural phenomena, plants are complex energy systems in operation.

Formaldehydrol, the unit builder of plants, is an exceedingly sensitive and active compound. Its own molecules interacting among themselves form a mixture of products. Glucose, for instance, the simplest of the sugars $\text{C}_6\text{H}_{12}\text{O}_6$ is formed by the interaction of six molecules of formaldehydrol. The linking of a large number of glucose units in a chain forms starch. With the aid of the sun "formaldehyde bricks" are built into the plant in the form of a cement or walling of starch. This is insoluble, so that it remains where it is set, producing the peculiar form of the special plant concerned, be it the oak or the rose. Under the influence of an enzyme the starch is converted into sugar. This passes into

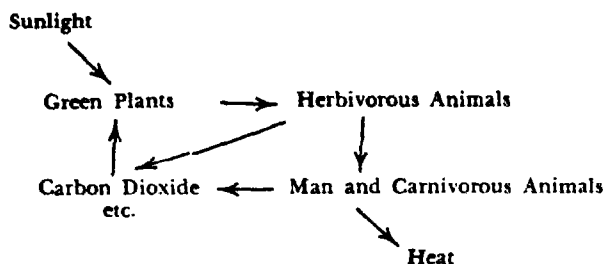
the circulatory system of the plant to be used as building material in the growth of tissue. So plants grow.

ANIMAL AND HUMAN SYSTEMS

Just as plants are built from the earth so animals and human beings are nourished by plants. Once more the lower systems support the higher ones. For animals and humans may also be thought of as energy-driven systems. They cannot themselves build up food from the basic materials of the natural environment. They must depend upon plants to do it for them. Vegetables and meat become food through the service of the hydrocarbon making plant systems. Human beings burn or oxidize the hydrocarbons which they eat by means of the oxygen taken into the lungs in breathing. As food is digested and oxygenized it is broken down. Carbon dioxide is breathed into the air. Energy is made available to the body. So in this physical counterpart of living is the driving force provided for acting and doing. This energy is made available not merely for the physical processes such as walking or playing ball. It serves the higher functions also, the so-called psychological processes, remembering, thinking and purposing, which make human beings unique. For the human being is a system which like other systems is driven by energy immanent in itself. This energy binds all the processes of the being into harmony and co-ordination with themselves, and supports such acts as jumping a hurdle or writing a novel, each of which is an action of the whole man.

THE ENERGY CYCLE

Intermingling with and propelling all these systems, the water system, the plant system, the human system, is the greatest system of them all, the energy cycle. The various systems and cycles which have been described, and a myriad others, constitute a hypercycle of solar energy.



THE ENERGY CYCLE

The sun seems to squander energy with reckless indifference upon the universe. Sweeping outward chiefly to unknown destinations in space the sun's energy pours forth five hundred thousand million million million (500,000,000,000,000,000,000,000) horsepower a year. Only a tiny fraction of this, $\frac{1}{2,200,000,000}$, reaches the earth's surface.

Modern theories of radiation hold that this light reaches us in a bombardment of photons,¹ minute particles with mass, momentum and energy. It has been said that when we pay our electric light bill we are buying photons. If we pay twelve

¹ Crowther writes on photons as follows:

"For the present we must be content to regard these fundamental realities of the universe, photon, electron and proton, as abstractions, something beyond our power of direct conception. But it is not beyond our power of logic, and in particular of that particular kind of logic known as mathematics, to deal with abstractions, and some progress has been made in this direction. The broad similarity in behaviour of protons, electrons, and photons leads us to suppose that in spite of obvious difference there must be a fundamental similarity between them. The fact that electrons and protons are charged, the former negatively, the latter positively, while the photon carries no charge, is in itself sufficient to account for the difference which we observe. The electrical charge which these particles have to drag about with them makes them slower in their movements, and at the same time more massive than the photon, which is pure energy. As far as we can tell that is the sole difference between them. If we could rob an electron, or a proton, of its electricity it should automatically become a photon. These material particles would thus dissolve into pure radiation. The veil which science used to draw so firmly between matter and energy is wearing very thin." (From an article by J. A. Crowther on Radiation in Frances Mason, *The Great Design*, by permission of The Macmillan Company, New York, 1934, pp. 56-57.)

cents a unit, we are paying for photons at the rate of \$85,000,000 an ounce. Compton has been able to show that a photon may collide with an object as small as an electron. When this happens the two particles bounce from one another elastically like billiard balls.

Of the energy which reaches the earth 35 per cent is reflected and 65 per cent absorbed. Of this, about 12 per cent is used by green vegetation which is the gateway through which all the energy used in the life cycle must pass. Only 24 per cent of this falls to plants cultivated for human use. The total amount of energy thus coursing through the whole system in a year is 22 times the world's annual production of coal.

This picture of cycles and systems with their own internal integrity motivated by solar energy is one vast picture of unity and design. Behind it all is postulated the sun as a source of physical energy. But this sun-absolute must now be interpreted relatively. We have been regarding it from within this time-space-energy system. How might it appear from outside this system in which we are ourselves imbedded? The material of the sun itself is dissolving at the rate of 4,000,000 tons a second. In those myriad distant suns we know as stars similar conflagrations flare at furious speed. Scientists do not pause to explain or account for the source of all this energy. Urbanely, and somewhat foolishly, they pursue the results of they know not what. But the thinker, the common man, must find an answer. In the light of modern knowledge and research it is easy to understand the wholeness of Comenius who knew nothing of these new details. It is easy to understand Froebel's much misunderstood doctrine of Unity in the Universe. Unless we catch a glimpse of man's infinite resources we can never realize the child's amazing possibilities.

ENERGY AS A UNIFYING CONCEPT

Thinkers are beginning to discover the notion of energy as a powerfully unifying concept of life in the universe.¹ Dialectic and logic are deficient instruments of life. They lack any driving power. In their very nature, unless vitalized by some life dynamic, they cannot lead to any common denominator of thought. We must look to reality for truth. We must consider energy and how to receive, direct and use it.

Energy thinking is spreading into every significant branch of learning. It is running through modern physics, modern chemistry, biology, psychology and in almost every direction. It is not surprising, therefore, to find it affecting economics, sociology and education. Students of these branches have had much to say in recent years of "the power age," "the age of machines," and "the era of technology."

There has been much recent stress on the fact that an abundance of material goods can now be brought into existence for use by humanity, whereas in all previous history scarcity prevailed. Man has at last reached the stage where such brute toil as that which rowed the galleys or built the Pyramids is no longer needed. It can be eliminated by the work of machines. Machines have increased the age-long feeble energy output of one-tenth of a horsepower per eight-hour day per single man by 9,000,000 times. A farmer can do in one hour what would have taken 3,000 hours in 1840. A Roman miller could grind out a barrel of flour a day, a modern flour mill can produce 30,000 barrels a day per man.

¹ This notion of energy as a basic reality receives a certain amount of support from the theories of conservation of energy and conservation of mass. In a given material system, according to the law of conservation of energy, when energy disappears in one way it reappears in another. If it disappears as heat it may reappear as motion, or as electricity or as chemical or decomposition. There is a certain amount of vagueness about this law, but so far as it goes it lends weight to the point of view here presented.

On every side we hear such phrases as the "economy of abundance," the "plan of plenty" and "production for use."

The recent enormous flare of publicity which followed the public announcement of so-called "technocracy" was evidence of the very social change that it expounded. Following the publication of the articles of Wayne W. Parrish¹ in the *New Outlook* in 1933 this point of view had a month's vogue in America unequalled by that of any abstract idea in recent, probably in all, history.

The ideas set forth in the name of technocracy came illustrated by many picturesque statements. Its stories of endless power, unused and misused, were pointed by interesting claims. It told of a factory for rayon yarn in New Jersey which was being built to eliminate human labor. It was to be entirely mechanical and capable of full-time operation directed by a single man. Photoelectric cells were to make it possible for an official in a New York office to change dyes in the New Jersey vats without leaving his desk. It was claimed that a technologist can produce a razor blade that would need no replacement; that a new fibrous nettle plant, ramie, can be made into an amazing fabric possessing practically all desirable characteristics for such a commodity. It would wear several hundred times better than cotton, several times as well as wool. It would be stronger wet than dry. It would have a beautiful silken lustre and could be manufactured with a minimum of operators. Shoes could be produced, it was said,

¹ The articles by Wayne W. Parrish which precipitated the discussion appeared in *The New Outlook* as follows. "What is Technocracy?" November, 1932; "Technocracy's Question," December, 1932; "Technocracy's Challenge," January, 1933. Many of the data used in this section come from these articles. The subject is more technically set forth in publications of the Continental Committee on Technocracy, New York, notably in their *The Economic Significance of Technological Progress*. The story of the split which came in the technocratic ranks after the publication of the articles in *The New Outlook*, and the withdrawal of the "technocrats" from quarters which they had been permitted to use in Columbia University, is worthy of study and publication as an interesting commentary on our times.

of waterproof leather to wear for two and a half years. Designs were ready for an automobile both rustless and frictionless to run some 350,000 miles without general overhauling. A machine had been developed to be operated by two men which in twenty-four hours can tear up an old street, lay foundations and put down eight miles of pavement a day. Such improvements were withheld, it was claimed, because of the devastation they would work with the sales of established owners.

Such ideas as these appearing under the name of Technocracy were circulated over America in an avalanche of articles, books, pamphlets, magazine and newspaper articles and lectures. They were discussed in the classrooms of the elementary school, high school and college, in clubs and business circles, among laborers, mechanics and intellectuals. Probably no subject in history has ever been discussed by any people so widely in so short a time as that branded in its beginnings as "Technocracy." In two short weeks the ideas set forth under this label interwove and interpermeated American society with such thoroughness that no form of suppression could set back the hands of the social and economic clock to the place which they held before this outburst of theories. The arguments of technocracy were, in brief, that modern machines made physical labor almost unnecessary, that production of power was today practically limitless. That such machine power applied to production of such comfortable materials as homes, food and clothing, as well as of luxuries, could provide the people with all their wants. That poverty could be wiped out and a higher standard of living allotted to all citizens. It was pointed out that there was everything to get and nothing to give, in which understressing of the essential importance of social return from the individual lies its great weakness and danger. There are men of power in the world today who would impose the

slavery of obedience to their power in exchange for the fraction of plenty they will allot. Thus bribery may bring men in subjection to a new Caesar.

It is significant that in its earlier publicized forms technocracy was more than a theory of economics. It was a plan of social government. It prophesied the collapse of the current system of social and economic life, and outlined a plan for its replacement by a form of government known as Technocracy. In its prophecies, however, it reckoned without the educational effect of its own propaganda. This propaganda has operated to put the drastic remedies it suggested into action in partial form in present-day life. Thus was delayed its prophesied crisis. We have seen movements toward the socialization of production, the taxation of wealth and the distribution of goods to the underprivileged in the form of money or work relief. These efforts have been characterized throughout by the original understress of social return from the individual so that the newly provided social privileges tend to operate not as a buttress to the social structure but as bribery for the support of demagogues, whose names need not be mentioned here since they are so frequently seen in the press and heard on the radio.

It is significant that the earlier publicized plans for a new economic basis in society were stated in terms of energy. It was suggested that the basis of exchange be no longer gold, but energy. That we have not a gold standard but an energy standard. That the amount of energy produced in the country be determined by survey and allotted to the citizens in proportions determined somewhat vaguely. The actual allotment to the individual was to be so much energy, expressed in a coinage to be called *ergs*, that is to say, energy units. These units of energy were to have but transitory value and were to be used or spent within a certain time to insure the consumption of production and thus balance the cycle. Thus

was revealed the fact that the concept of physical energy, which dominates physics, chemistry, biology, science and metaphysics today had become the basis of new economic and social thinking. The dominating theme of energy is with us in every department of life.

THE INFLUENCE OF ENERGY CONCEPTS UPON EDUCATIONAL THINKING

In the presence of such a determined trend of energetic thinking and living education must also become energetic. The dangers to human life and to historical race values precipitated by energy-thinking are appalling. They may be avoided only by a mode of human life not equally but superiorly dynamic. Unless human values higher than those which have existed before actually come into operation, the human race is headed for subjection, slavery and decay. It is the work of education to set free those human forces. The discovery of values and methods to develop higher and fuller human powers is the most pressing current task of education.

What are the sources of human energy? Certainly one source is rigorous thinking. Probably the greatest squandering of human resources is the neglect and waste of our human crowning ability to think. If we use our machines with a 10 per cent loss of efficiency, we use our ability to think with a 98 per cent loss. The brain is certainly our least developed and most atrophied organ. Education must address itself to what might be called in terms of the old psychology brain culture or mind culture. Another treasure which must be developed is the individual ability to do. Do this, that or the other thing, do anything in preference to doing nothing. In a certain sense this is the same problem as the previous one, since thinking and acting go hand in hand. But traditional education has separated the two. We must learn to reunite them in the education of young and old. Society's

greatest potential resource is the willingness and power of youth to *do*, a resource which it has never utilized. One of society's greatest sources of power is freedom of thought and action. All forms of suppression which are more than guidance defeat their own purpose. In the presence of rising tides of suppression exerted by self-protecting wealth, privileged classes, insurrectionary mobs and power-motivated dictators, freedom must be accorded to all constructive thought and action. But in order to balance freedom restraint and discipline, in terms of individual self-control, are necessary. Moral living, held somewhat in derision by those who take little social responsibility, is the best social economy. Education must secure action that is moral action. There must be a recrudescence of moral living which will prevent human exploitation. These sources of power, as well as every source of spiritual power, must be fostered by all our institutions, no matter how radically they must be changed. We have a general population which has been taught certain simple and valuable elements of human behavior. Through the school the populace has been taught to be reasonably clean and sanitary, and men have learned this lesson. They have been taught to make change, to read, to be patriotic. But today our schools and our social institutions must do more than this. They must reach the higher values of good living in practice, good living for individual and social power. To control all the energies of our gargantuan machines, education must release the energies of human hosts.

CHAPTER VII

SPIRIT AND MATTER

EVEN THOUGH we find in energy a unifying concept of natural life we must still face deep and important problems. Just as ancient philosophers sought for unity, so they pursued the concept of difference. What is that deep dividing line which forms life's most fundamental cleavage? What basic qualities distinguish the good from the bad?

Chinese philosophy has stated the problem in what is possibly its clearest form. Difference to them is symbolized by two basic abstractions, the *Yin* and the *Yang*.¹ In the absence of resolute and clear difference, by means of which to distinguish the good from the bad, abstractions have come to the rescue. Fundamental difference is expressed by the use of these terms, the *Yin* and the *Yang*. Although in themselves these terms cannot express the nature of good and bad, yet they have absorbed meaning through the years as they have been used by the Chinese to classify experiences. For whatever men have thought comparatively good has come under the sway of *Yang*, while that found to be less good has fallen to the realm of *Yin*. Thus Chinese culture has pointed the differences between many things encountered continuously. Distinction has been made between the active principle (*Yang*) and the passive principle (*Yin*), the white and the black, the good and the bad, the positive and the negative. The *Yang* classifies light, heat, the sun, the heavens, the masculine. *Yin* classifies their opposites: darkness, the moon, cold, the earth, feminine, weak. Thus these two words have served philosophers as classifiers with which to interpret manifold experience. The very abundance and variety of

¹ These terms, *Yin* and *Yang*, may be described as fundamental abstractions of general partitiveness.

cases so classified is a testimony to the bewilderment of the human race in its attempts to make fundamental qualitative judgments to establish clear bases of qualitative distinction. That philosophers were compelled thus to resort to abstractions to establish their differences is equally significant. Western philosophy has not been so insistent in the setting up of fundamental opposites. We have not been, however, without numerous statements of isolated opposites by means of which philosophers have hoped to classify experience, such as naturalism and realism, idealism and materialism.

Many of these ill-established opposites have served as indifferent classifiers of experience. Most of them have proved comparatively inadequate. There have been unconscious gropings for the most fundamental distinction of human thought and experience, the distinction between spirit and matter. This is the great divide of philosophy, which sheds its consequences toward one basic philosophy or another. This is the battleground of conflicting experience, this is the most fundamental distinction of both philosophy and life. The eternal Yin and Yang of life in this world are materialism and its contrast in the spiritual view of life. Here is philosophy's most hotly contested battleground, here is the source of all our deepest axioms.

MATERIALISM

Materialistic thinking has retarded the development of civilization in the most barren periods of history. It has, for the most part, dominated scientific thinking from about 1850 to 1900. Few of those who unthinkingly embrace it carefully consider its wide implications.¹ Materialism recognizes nothing beyond matter. The rocks, the hills, the dust, the elements, these are the be-all and end-all. All else

¹ For a lengthier description of materialism by Hans Driesch, see Appendix III.

that is exists because it is in the nature of these, because it is but a more complicated form of the same thing, matter. Systems, the universe, the plant, the animal, the man are causeless. They just happen. The laws which govern them are simply inherent characteristics of matter. The world, and all that is therein, is an accident, developing accidentally into a series of accidents. The origin of life is due to the proximity of particles. Somewhere in the remote past some tiny elements of this dust happened to fall into a pattern. It is the nature of such a pattern to become alive. Where there is pattern it is the nature of things that there should be life. Chance places particles in a certain juxtaposition which produces structure. Structure took up its bed and walked. Structure and function occurred accidentally together. Function is a phenomenon of structure. Given the amoeba or the man, it is the nature of matter, when it happens to be so organized, to be as the amoeba or the man. So by a series of persistent accidents all that is came to be. Beyond the material there is nothing. All there ever has been is material, all there is or ever will be is material, of the earth earthy. Whatever might be identified as spirit is but a by-product of matter which, passing away, all passes with it.

THE SPIRITUAL VIEW OF LIFE

In contradiction to the material view of life is the spiritual view. Pushed to the wall in so-called intellectual and scientific circles, it has in recent years found inadequate expression in respectable circles. As a result it has been placed into the questionable hands of quacks so that the very term spiritualism, or spiritism, has the odor of charlatanism, and cannot safely be used as the antithesis of materialism. Just as, according to materialism, spirit is a by-product of matter, so according to the spiritual view matter is a by-product of spirit. Spirit dominates, it makes alive, it is the source, the

cause, the reality behind matter. The dust of this world is organized by the spirit into systems through which spirit may function, but as long as it is enclosed in this material system, the spirit must abide by material laws. What there is of spirit in man belongs to another system. The spiritual system without, beyond and primary to the matter through which it is expressed. In this time-space-energy system spirit is, as it were, strained through matter, it is subject to the laws of matter, it operates in accordance with matter, it is limited by matter, it is involved in a material system from which it cannot free itself by its own efforts. We are bound in this matter-spirit envelope. The material system, so far from being all of reality, is only the reality of the system. There is no less of matter and its laws than falls to the cognizance of the materialist. There is all of this and more, for there is all of the spirit system without time, space or matter. Just as a plant uses the material of the soil to manifest itself and to become a plant, so the spirit uses the accidents of matter to manifest its life and to grow or become a human being. Matter is in the service of spirit and therein finds its only *raison d'être*, its only significance.

Here then is the fundamental which divides all men, the sheep from the goats, the Yin from the Yang. Finding their way through the devious paths of experience, consciously or unconsciously, men make this distinction the touchstone of their "truth." Here lie the hidden premises of this philosophy or that, they are either material or spiritual. Here is the fundamental dividing principle in human thought and action.

There are not merely two ways of thinking, or two ways of acting, however; there are two kinds of men, material men and spirit men. Each receives his life in different ways. One is by his own choice nourished by material force alone, the other by nonmaterial. It is this fundamental fact, not

argument, or logic, or study, or education, but actuality of state which determines men's lives. Between these types of men there is little exchange of values. Discussion alone will not win them over from one side of the line to the other any more than it will persuade a barrel to roll from one back yard into the next. It is not a question of intellectual values, of ideas or ideals, of character or opinion, it is a matter of being matter-men or spirit-men. This distinction explains all of an individual's thought and action. What people say is a rationalization of what they do; what they live is a dramatization of what they are.

We cannot be too clear upon the fundamental nature of this distinction. It can be vehemently denied. It can even be vigorously criticized. Critics may use scorn and ridicule and abuse to refute it, but by so doing they reveal not so much their logical rectitude, as their fundamental attitude. For the very recognition of the fundamental character of this distinction is part of the make-up of the spiritual man. The materialist will automatically be offended by this distinction, to which in the very nature of the case he is blind. If his eyes should be opened to this distinction, he would already be, intellectually at least, in the beginning of a spiritual state. To realize that the most fundamental distinction of life is between the material and the spiritual is, in a certain intellectual sense, the beginning of wisdom.

THE ABSENCE OF INTELLECTUAL PROOF

The intellectualizers of history have trained us who have inherited Western culture to look for proofs. In the very nature of human thinking, intellectual proof of spiritual reality cannot be given. We who are the inheritors of Western culture are much in need of this warning. We are the prey of the overintellectualization of culture. The sculptor, Brancusi, in a modernistic figure, has depicted Socrates with

a head which is nearly all its own massive dome. Thus did he aim to teach by a symbol the overintellectualization of our culture. The philosophies of the Greeks were philosophies of thinking rather than of doing. We think rather than live our philosophies. The endless dialectic of the Middle Ages was a continual intellectualization of religion. It pretended to offer proof in argument, but the very nature of its axioms precluded the possibility of any proof. Once an axiom was accepted without proof, the victim of the argument was compelled to agree to any logical point of view. He had only his own gullibility for his "proof." In the very nature of the case, proof was impossible.

TWO ROADS TO PROOF WHICH HAVE NO END

The pursuit of logical proof is very much like the old piratical practice of walking the plank. If you proceed far enough you are precipitated into unfathomable depths. Human thinking has pursued two paths toward truth, neither of which can ever arrive at its goal. They involve the two most fundamental distinctions which have ever torn philosophy, that of Aristotle, later called Nominalism, and that of Plato, later called Realism. The philosophy of every proof seeker from that day to this has involved a generous mixture of one or the other of these two most distinctive brands of philosophy.

In spite of their familiarity a few words will be given to remind the reader of these two philosophical points of view in a form which will make clear the analysis of the subject.

The Platonic search for Reality was highly metaphysical. It did not find the real about us in the ordinary sense of the word. A real object, such as an automobile, was not a real automobile. It was an accidental automobile, a specimen approximation to the fundamental type automobile, which exists in the abstract ~~not in the concrete~~. The real auto-

mobile is the abstract or fundamental essence of automobiles, automobileness. Since Reality exists not in the object actually found in material existence in the environment, but in the idea or essence common to all objective specimens, to be lost in study of the environment, in the studies of science, is not the road to truth. The road to truth is through philosophy, through contemplation, through removal from the world, through quiescent and trained meditation. Such a life of quiet thought would, through mounting mastery of reality, bring one into closer touch through a sixth sense, a non-materials sense, with the fundamental essence. This was the goal of philosophy and of life. Truth was a revelation, an intuition, an inspiration given to the triumphant philosopher who reached the fullest contact with the highest essence, the True Reality.

The Aristotelian search for truth was much more like that which pervades our science-stricken world today. Reality was reality. An automobile was an automobile. Reality was to be discovered around us in the objects of our environment. All that was necessary was to look about us, explore the world of the common, everyday six senses. What the senses reveal is reality. The scholar's static task is to observe, classify and catalogue the objects of the material world. The reward of the triumphant philosopher was to be sure about things, to believe what he sees and to require objective proof.

The centuries since the Greeks have not sufficed to bring an end to the controversies between the proponents of these two views, arguments have been worn thin with use, and the world has been deluged with words—of making many books there is no end. In the very nature of the case the proof so ardently longed for is not available. Millenniums of scholarship have not been successful in tracing it to its lair. That faulty instrument of the intellectualizer is like a broken net which will not hold its catch. Logic cannot enmesh truth.

It is above logic, without dialectic, beyond proof. What happens when an irresistible force meets an immovable body, how shall we square the circle, how may we write the philosophical formula for truth? The answer is precluded by the form of the question.

Each of these two paths of truth is a dead end, although upon each of them much is to be learned by the way. Both the Aristotelian and the Platonic approaches to truth are valid and helpful to a certain extent, but each is subject to its own peculiar internally stated limitations. Platonic realism has the virtue of being relativistic rather than static. A chair is different from whatever point of view you regard it. Things must be viewed in systems, in relationships rather than out of them. Furthermore, it recognizes, if not in method, at least in theory, the intuitive path to truth. The flash of genius, the clever theory, the brilliant guess, the inspired notion, the revealed truth. It sets both scientist and philosopher on the search for verification which each pursues in his own peculiar way.

But this path to truth has its own characteristic blockings. While meditation, contemplation or inspiration may reveal the deepest and most fundamental truths to men, yet it leaves them without the power to check or verify these fundamental truths. Its mode of truth is not fundamentally subject to test. The characteristic of intuitive truth is that it cannot be fundamentally tested. Furthermore, the information which it provides is abstract, and generalized rather than concrete and particularized. This is a most embarrassing form of truth. The mathematician in his formula retains all the special cases and is able to deduce each one from his formula. Not so with the philosopher. His generalities are formed directly by intuition, not from inductive inspection of general cases. He is thus frequently unable to identify or produce the particular instance on demand. He possesses truth at the expense of

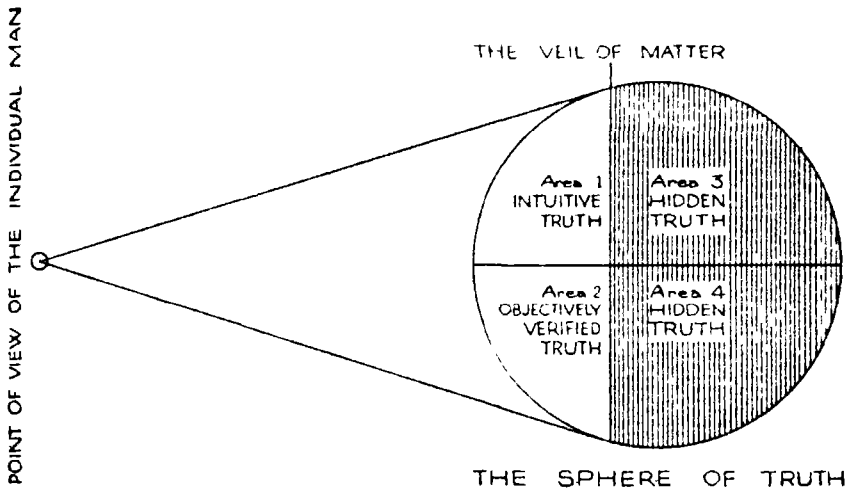
practicality and specific definiteness. He specializes in what is essentially so rather than in what is practically workable. He explores Area 1, the area of general or abstract truth.

The Aristotelian tends to be cocksure. He knows what he is talking about, but he does not talk about anything of importance. At least not in the fundamental sense. In his search for truth he hardly pauses to think what he is looking for (fundamental truth, fundamental unity) but he is off about the face of the globe looking for one thing or another. He pursues the knowledge of the huge by his telescopes, of the tiny by his microscopes. He searches the heights of the stratosphere and the depths of the ocean. He is here, there and everywhere, collecting, classifying, identifying, preserving, stating. He was until recently most sure of what he had. Today what he seizes changes while he grasps it. His space squirms itself into time, and his protons twist themselves into electrons under his very gaze. Valuable is the truth which he garners. After a century of its intensive search, we emerge with electric toasters, automobiles, submarines, airplanes. All very practical and workable, but how good? How much nearer to Truth? Convenient and luxurious, but to what end? We have learned to master the elements of the environment to which we have attended. But those which we have neglected have become even vaguer than before.

Why all this luxury? What has it done to better mankind? What is its revelation of fundamental truth? The answer is—Very little. For the characteristic limitation of this type of search is that it apprehends bit by bit. It knows a corner of the world as long as that corner remains stationary in its system. But it does not know wholes or fundamentals. It is forced to learn a part at a time, but the parts do not add up to form the whole. All the intricate knowledge of all the biologists in the world will not add up to make a man. It is helpless in the presence of deep, important or fundamental

realities. Its field is the temporarily actual, the picayune but practical. It explores Area 2, the area of particular or accidental truth.

It is important to realize that just as neither the Aristotelian nor the Platonic path to truth ever actually arrives, neither can any combination of the two. This is due to a situation which may be clarified by the accompanying diagram. Area 1, the area of abstract fundamental truth cannot,



in the nature of the case, check or correspond in full with Area 2, the area of particular or accidental truth. Since the fundamentally real cannot be reduced to the particular case, and the particular case is only temporary and cannot be raised to the degree of fundamental truth, the truth of Area 1 must necessarily, in logical terms, disagree in part with Area 2. This is due to the nature of life, the deficiencies of logic. This possesses the eternal dilemma of dialectic, the eternal dilemma of the intellectual. It leaves us in a world without intellectual proof. For the intellect is but the part of life, and the whole of life cannot be enclosed in any of its parts.

Thus we find ourselves possessed by intellectual processes

alone, of but part of truth. In fact, in every sense we live before a veil. The veil of matter is a particularization of truth, not its full realization. The truth which we behold in one direction is not the truth which we behold in another. What we hold as truth is relative truth, truth within the system which we are beholding. What truth is outside our system is absolute relative to our system, what truth is within our system is relative to that without. We must value truth, we must search for its phases as revealed through science, we must pursue its depths as by inspiration or intuition we peer beyond the veil. We must check and hold one against the other, and the area of correspondence is our reward. We must not, however, be alarmed when the checking is not complete. For in the nature of the case, it never can be. We must realize that both scientific and philosophical truth are but relative, and in the case of each specific action we must find through our whole being the line of action somewhere between the two. Through the unity of our whole being may we live out what truth we have.

Thus we come to a realization of the fact that proof or knowledge is not the result of logic old or new. Logic and dialectic help us to order and use experience. They do not provide proof. Knowledge is the result not of separate intellectualizing or emotionalizing or imagining. Knowledge is the result of total apprehension, of full experiencing.

But full experiencing is a difficult and unusual attainment. Everyone is subject to the discount of his experience in the family in which he has been brought up, in the community and time in which he lives, in the schools in which he has been taught. Each individual is subject to blind spots in his experience. He has been sedulously trained not to see, not to apprehend certain areas of experience. It is literally true that each individual, some individuals more than others, are dead to certain areas of their own experience; they do

not note them, they do not realize them, they have made themselves incapable of apprehending them. They have eyes that see not and ears that hear not. It should be the triumph of education to make the whole apprehension of whole truth its major general goal. Learning is not arguing but being. Living is realizing completely and acting wholly.

THE SPIRITUAL FOUNDATION OF EDUCATION

Tangled as it has been, and lost in its own purposes, Western civilization has been, and feebly is, a spiritual civilization. It has been developed in accordance with the fundamental belief that spirit is primary, spirit is fundamental, spirit clothes itself with and animates matter, an outside and spiritual system projects and realizes itself through matter as its temporary mode of expression. This fundamental of Western civilization has been under the shadow of the materialism of the late nineteenth century. It is now emerging with fuller clarity toward its final race to test its validity. We cannot too clearly realize that other civilizations are forming about us which are nonspiritual in their fundamental premises. They are diametrically opposed to a civilization founded on the spiritual and are frank and premeditated in the building of a civilization based on materialism and its applications to life. In these two crystallizations which are forming about us in the world today, two mutually intolerable modes of life are rising in surging tides. The material man cannot live in the spiritual civilization, nor can the spiritual man live in the material civilization. Each squeezes and pinches the maladjusted individual and deals with him in its own characteristic way. For these distinctions are not accidental, but fundamental. The world is building not toward one international whole, but to two semi-international halves. The world is hastening to the old Chinese battle of the Yin and the Yang, the final struggle toward a unified

world. In that battle the part which will be played by the Western world is the traditional part, the part not of today, but of its ages; the spiritual pattern still dominates the Western world and will continue to dominate it. No matter where we stand as individuals, we will be much aided in our thinking and in our analyses of the events which are upon us in the light of this Grand Division.

The educational way of America is the way of Comenius, of Pestalozzi, of Herbart, of Froebel and of Francis W. Parker. But this way has been interrupted for a matter of fifty years or so by the inundation of our schools and colleges with the materialisms which have been fashionable and current. The philosophy of John Dewey has dominated American thinking. Much as it has resembled that of the Western tradition, it has been clear only to those who have used it as a superstructure to be raised on the fundamentals of the spiritually grounded teachers of the past. Many thousands have failed so to understand it. Since these spiritual foundations, if they are even admitted, have not been clearly stated by Dewey, many who have been without them have struggled on in bewilderment. The results have been all too clear in the schools of the West. Education has lacked fundamentals. It has been a series of additive experiences. It has produced millions of disorganized personalities. It has failed to unify children's experiences in the terms of clear and basic fundamentals. It has produced a race of the psychologically unstable. The educated have crowded the prisons, and the insane asylums have been increasingly filled with broken human lives. Evidences of disintegration are clear in every branch of society, nowhere more obviously than in religious denominationalism where it should least be expected. There is no wholeness anywhere. There is no determined fundamental. It must be clearly remembered that greater unity and power may be built up in a society the foundations of which

are deliberately and ruthlessly unified in conscious materialism, than in one which stands on shifting sands. Scattered and vague spirituality is weaker than unified materialism. It is inevitable that Western civilization respond, if it be through mere social tropism, by developing its spiritual foundations. That it do so consciously and deliberately and purposefully would make for integrated lives, wholeness and newness of life.

The school of America must realize with a new definiteness that it is dealing with spiritual beings. Unless we recover this ancient basis of education we cannot truly understand the educational corollaries to which we have submitted ourselves. American schools have constructed a new and vast practice in their efforts to realize the ideals of Pestalozzi, Froebel and Parker. Inductively, they are feeling backward through the ramifications of this new system to its foundations. Inevitably, they lead not to materialism, but to the spiritual realization of the individual. The origins of freedom, of the individual, of individual initiative, of a society, not of privately owned political slaves, but of free citizens, of the realities of individual life, of the fullest realization of the individual and his unselfish devotion to the social whole. These things are spiritual in their foundation, they are not to be derived from a material foundation. When the scales fall from our eyes, we shall behold American education as fundamentally a spiritual process.

CHAPTER VIII

THE MEANING OF ORGANIC

AMID THE luxuriant trees and lawns of Kew Gardens in England stands a tall pagoda. Mounting into the sky it perfects an otherwise perfect beauty. Surely of all things built by man the pagoda most harmonizes with nature. For it contains a secret beauty of its own. Each part is designed in orderly relationship with the whole. It reveals an orderly organic growth which it shares with all living things, the graceful movements of swans in their quiet pools, the tropical grandeur of great trees, the moving clouds in the heavens. When man co-operates with nature, bringing his own life under the same law, he lives best and most fully. Such behavior is organic. The man and the universe, the individual and society become one living organism.

Such unified effort can build a new culture. The organic concept, for so long hidden to men, so that it could operate but spasmodically, is coming into recent, more frequent use. It is gradually spreading as a term which makes clear the unity of all phenomena. The notion of "organism," for long but narrowly applied, has been much widened. It has been extended, to what was once called the "inorganic" world, by Whitehead (1925) and Lloyd Morgan (1927). It is used in philosophy by Lossky (1928), in biology by Bertalanffy and Woodger (1933), in psychology by Wheeler (1932), and thus by invading every branch of modern thought is tending to restore the unity of scholarship which has been lost to modern times. Its increasing use is a signal that the world about us is alive again. For a generation or more the intellectual world has been partly blind to living notions. Touched as Dewey's thinking has been by the beginnings of the organic, he was able to apprehend and to some extent

apply the teachings of Froebel. Others less awakened found Froebel's doctrine of "Unity" a deep mystery. Witness the English educator Quick,¹ who says, "Before one can accept a teaching one must at least understand it, and this preliminary is not always possible when we would learn from Froebel. At times he goes entirely out of sight, and whether the words we hear are the expression of deep truth or have absolutely no meaning at all, I, for my part, am at times totally unable to determine." Today no such paralysis need hinder us from understanding the organic approach. After all it is but the philosophic counterpart of that natural flair for teaching which has always marked the true teacher. Today both science and philosophy proclaim the living nature of all things. In such a fortunate era we should struggle to recover our wholeness.

Consequently no branch of learning, literature, physics, music should exist alone, in unrelated form. No institution, the church, the government, the school can stand in isolation, apart from the other institutions of society. No man can stand alone from his fellows, nor can mankind stand forth in isolation from a fundamental unity. That which is organic has a source and origin in something more fundamental than itself. It partakes of fundamental unity as the branches partake of the trunk. To be alive is to be organic.

FUNDAMENTAL WHOLENESS

The organic point of view stresses wholeness. The idea that the whole comes before the parts which come out of it is set up in opposition to the atomistic or additive notion. This latter maintains that the universe exists in parts or atoms which when added or combined form wholes; that parts can compose themselves into wholes. This has been the prevail-

¹ R. H. Quick, *Essays of Educational Reformers*, D. Appleton & Co., New York, 1929. P. 397.

ing philosophy of mechanistic science since 1850. It has squeezed to the wall, by means of a sort of intellectual tyranny prevailing in our universities, the more vital notions now asserting themselves, top-heavy with their own evidence.¹

Driesch, in his sensational experiments with the sea urchin, has provided startling evidence of the fundamental wholeness of living things. He has shown experimentally that the energy which forms an individual being acts in a whole-making way. Using an egg which would, under natural conditions, develop into a single sea urchin, Driesch separated its four cleavage cells by dissection. From each of the separated cells one complete sea urchin developed. Thus was it shown that not only in the egg, but in each cell of the egg was the potential of the whole! Carrying the study further the experimenter waited until a single egg had developed into its eight-cell stage. He then separated the eight cells and rearranged them in incorrect positions, thus, as it were, tangling up the organism. Now it must be clear that if, as mechanistic theories claim, function is a phenomenon of structure, a disordered monstrosity must result from such meddling. On the contrary, however, from the deranged cells a normal larva developed. Many variations of this experiment were carried on by Driesch and others always with a similar result. Waiting still longer, until a single egg has developed into the stage in which it had a thousand cells, Driesch cut away various chunks, as it were. For instance, from the thousand cells he cut away perhaps 23 cells. From another thousand-cell development he cut away perhaps 78 or 504. The remaining living thing gave, not a mutilated creature, in which certain vital organs were missing, but always a complete normal larva somewhat smaller than usual size. But more than this, eggs were not only separated but

¹ A classical presentation of the wholeness of philosophy is given by Schiller in an appendix.

combined. Two eggs which would normally produce two individuals were by a microscopic operation combined into one. One sea urchin resulted. Nor have sea urchins been the only objects of such experiments. These investigations have been repeated with the eggs of fishes, newts, medusae, insects and other types, always with the same kind of result. Thus organic life is demonstrated to be more vital, living or persistent than any machine. No machine could, from a single cogwheel or part, produce a whole machine. A living creature, an organic-energy carrier, may carry in a single specialized cell the potential whole. Thus energy working through wholeness produces its internally related parts. This is the organic process.

CHARACTERISTICS OF ORGANIC BEING

1. *To be Organic is to be Dynamic.*

It is impossible to think of the truly living being without realizing its dynamic origin in terms of fundamental force. To cut away the supporting notion of force causes the world to clatter about our ears in inert confusion. This is the death of scholarship, a death too often with us. Whatever lives organically comes from an animated whole. This whole is shown in many ways. It is present in ideas of origin, source, energy, egg, embryo, germ, seed, stem and in many like conceptions. It pushes out the idea of accident, or pure chance association of parts as the source of living beings. Thus all organic thinking and acting must be related to some stem or source to validate its nature, just as the discussions of this book are related to fundamental energy with reference to its deeper source.

Organic beings, which include all natural phenomena, together with man, are energy-driven systems, driven by one fundamental energy. It is even claimed by some that there is no reason why the term matter should appear anywhere

in the scientific attempt to describe the world. Matter has been called a metaphysical fiction to provide forces with a vehicle. Human beings may be regarded as life-bearing energy systems, and so may all other living beings and their environment. Henderson in his book *Fitness of the Environment* has shown that there is the closest relationship between individuals and their environment so that a fit organism lives in a fit environment. Thus we are warned against making too sharp a division even between man and the world in which he dwells. In a certain sense the individual is continuous with his environment. A human being is an energy system constantly receiving energy from and transmitting it to other systems. Thus man and his environment are not mutually exclusive systems. There is a sense in which the two merge into one another. Consequently, Lotka has said that the life contest "is primarily a competition for available energy."

2. *Growth, Order and Design.*

It follows that organic systems are characterized by the phenomenon called growth. In fact, it might be considered by some a sufficient description of the organic to describe it as the growing. In some form or another the concept of growth has been emphasized by all the great educational philosophers since Comenius. It is an obvious corollary of the Comenian and Rousselian doctrines of "according to nature." In fact, a study of natural growth is always helpful in understanding education. Much of the deep understanding of Comenius was the result of the series of educational analogies with nature outlined in his *Great Didactic*. Just as Comenius freshened the whole field of educational thinking by applying an organic concept to education in terms of the best knowledge of his time, so today we who are living in a wider segment of the time spiral may benefit as much

if not more from such consideration. The speciousness of the Comenian applications of natural analogies to education was due to the fundamental unity of all organic phenomena; a similar study of natural growth and educational development in terms of growth should be as fertilizing to modern education as the process was in the time of Comenius.

Starting in whole or unified fashion from its stem, growth is regular, systematic and ordered. In the words of Julian Huxley: "The existence of growth-centers and growth-gradients is an empirical fact." The study of the growth of fiddler crabs, the antlers of deer, cranium length and face length in the baboon and so on, revealed orderly growth ratios through the whole organisms. Orderly growth of the parts was also revealed. Even during growth involving differential rate changes of different parts of the organism, orderly and rhythmic development takes place. Thus while an organism like the crab may appear to grow evenly larger in general, in fact the growth is much more intricately organized. Change in form is produced by different growth rates. If the rate of growth proceeded throughout the organism at an even rate, no changes of form would take place. As a matter of fact, form changes do take place and yet the differential growth rates between the various changing parts are preserved in orderly rhythms. When any specific part of an organism such as the claw of the fiddler crab begins to increase in size relatively to the rest of the claw, growth proceeds from a certain point within the claw at which growth is the most rapid. From this point the farther away the point in the special growth area of the claw, the less the rate of growth which diminishes according to an orderly growth gradient.¹ This is expressed by the author as follows:

In the male of *Uca Pugnax*, a fiddler crab, "The most

¹ Julian Huxley, *Problems of Relative Growth*, The Dial Press, New York, 1932, p. 80.

obvious alteration is a relative increase of size of the whole chela. However, when the weights of different chela-regions were accurately determined, it was found that there existed within the limb what we may call a growth-gradient, the distal region (chela-propus) having the highest relative growth rate, the central region (carpus) the next highest, and the basal region, nearest the breaking joint, (merus part of ischium) the lowest, although its relative growth rate was still above that of the body."

The high point of a growth gradient is obviously a *growth center*. Here we encounter once more the unfolding of the unity, the total organism growing from its center or nucleus, and each differentiated part developing from its center or nucleus, the two nuclei being related, the whole or center governing the parts. Such is the orderly and systematic nature of growth.

Two types of growth may be distinguished from one another. One is the growth of a snowball, as it rolls on the damp snow. This may be called false growth, just as learning fact by accretion may be called false education. True growth educationally or in the natural world proceeds by nourishment. Organisms constructed of protoplasm can nourish themselves. This type of growth is true growth, the growth of nature.

Huxley distinguishes in the organic world two types of growth, both of which he brings under the same law, additive and multiplicative growth. Additive growth is exemplified in various shells, such as those of molluscs, brachiopods or foraminifera. Such growth proceeds according to an additive or "simple-interest process." The new growing material is simply added coming under the general growing or expanding principles of the organism, remaining where it is set in the sea shell, and not in its turn producing new growth. Multiplicative growth, however, goes on according to a "com-

pound-interest principle." Such is the growth of the horns of antelopes, sheep, oxen, rhinoceroses and the teeth of vertebrates. As each new growth appears it is itself alive and goes on producing new growth. To the outward eye the appearances of these two phenomena seem different. The underlying growth mechanisms, however, are related so that growth studies have indicated that both proceed according to the same fundamental fact of growth gradients.

3. *Passage Through Time.*

In the simpler additive process the nature of growth is revealed as the passage of energy through time, a fourth dimension. It is only by the slow passage of the hours that seed unfolds into the glories of the lily or the chrysanthemum. Organisms have been called energy-bearing four-dimensional continuums. Once more is recalled the spiral form as a basic philosophical diagram. For the spiral grows only as it passes through time. Every event, even if that event be an organism in the act of living, and even though it is statically described in the three dimensions, possesses a fourth dimension, due to its passage through time. No event, even a three-dimensional one, is identified geographically without the presence of the time element. White gives an instance: "For example: if we wish to see John Smith and know where he lives we can locate his house with mathematical accuracy by the use of the three co-ordinates of space of Euclidean geometry. If he lives on the northeast corner of Fifth Avenue and 56th Street in New York City, his house could be located geometrically by drawing a line on the east side of Fifth Avenue running north and south and another, at right angles, on the north side of 56th Street. The point of intersection would be John Smith's house. Now if he lives on the third floor, a perpendicular erected at the point of intersection and stopping at the third floor would locate the place *where* John Smith

lived. But if we want to see him we will have to go there *when* he is there." Growth may be conceived of as energy moving through space and time. A seed passing through space and time unfolds itself into the intricacies of plant, leaf and flower. So with a human being; so with an act of learning which has its own significant place in space and time.

4. *The Organic is Rhythmic.*

Rhythm is a constant characteristic of organic forms. It is illustrated in the sea shell, the growing plant, the poetic verse, the vital picture, the musical symphony. It is to be seen in Hogarth's line, in the patterns of dynamic symmetry, in the give and take of musical beat, in the alternations of the *Yin* and the *Yang*, in the negative and positive, the plus and the minus which must always add up to *one*. Rhythm is the whole into the parts, the developing, growing movement of organic development. It may be defined as dynamic movement of reciprocal balance among the component parts of a pattern.

The growth of living things shows in a remarkable way the evidence of order and design so definite that it can be described in terms of number.¹ A special series of numbers is known to be related to the orderly distribution of leaves in plants. This series is: 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144.

¹ Jay Hambidge, *The Elements of Dynamic Symmetry*, Brentano's, Inc., New York, 1926.

A. H. Church, *On the Relation of Phyllotaxis to Mechanical Law*, Williams & Norgate, 1902.

Theodore Andrea Cook, *Spirals in Nature and Art*, John Murray, London, 1903.

Curves of Life, Constable & Co., London, 1914. An unusual and important work unfortunately out of print.

D'Arcy W. Thompson, *On Growth and Form*, Cambridge University Press, England, 1917. An important standard work.

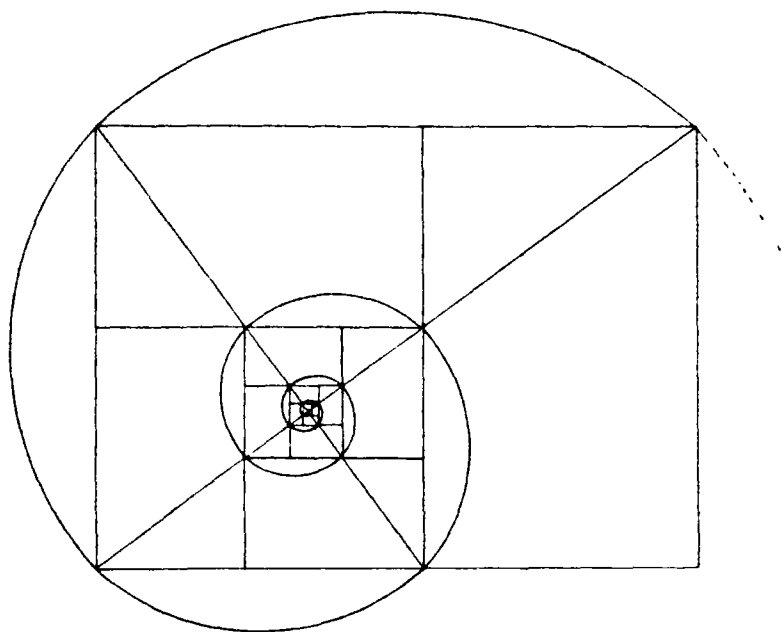
H. Moseley, "On the Geometrical Forms of Turbinated and Discoid Shell," *Philosophical Transactions*, Royal Society (London), Vol. 128, 1838, pp. 351-70.

I. Mears, and L. E. Mears, *Creative Energy*, a study of the Chinese "Book of Changes," John Murray, London, 1931.

Claude Bragdon, *The Frozen Fountain*, Alfred A. Knopf, New York, 1932.

etc. Each term is made up of the sum of the preceding two terms.

Church used the common sunflower head as a simple example of this orderly, rhythmic growth. The seeds arranged in the head of the flower give the appearance of a whorl, a series of intersecting curves identical with those of the pine cone.



It has been frequently pointed out that such arrangements in nature have their basis in the so-called logarithmic spiral. Such a spiral may be easily constructed by the use of a rectangle. In the rectangle a diagonal may be drawn, and then a line from one corner cutting this diagonal at right angles, and extending to the far side of the rectangle. If a smaller rectangle is now cut off from the large one where this line touches the far side of the large rectangle the process may be repeated indefinitely as indicated in the diagram given.

The rectangular spiral so formed is the basis of a curve which goes on forever. This is the logarithmic spiral. It is at the basis of the living, the beautiful, the rhythmic. It is the mathematical symbol of the organic.

5. Form and Function Correspond.

Another characteristic of organic systems is that in them form and function correspond. One of the primary causes of disease in society and in the individual is due to the persistence of traditional or outworn forms subsequent to their function. When society or the individual thus remains static malaise occurs. There is no growth. Such a persistence of outworn forms in society causes serious social dislocation. If the institutions of society persist in a mode which is no longer functional social troubles result. Thus the persistence of geographical borders, when there is no difference in the functioning life of the peoples so separated, is dangerous. So also is the freezing of the forms of state or church or school a sickness in society. When human individuals persist in the continuance of ways of thought which are no longer valid they are warped thereby. Delusional experience follows with consequent dissociation of the personality.

In all organic life forms with functions are transitory, the bud gives place to the leaf, the leaf to the flower, the flower to the fruit and the summer florescence to winter quiescence. If the bud attempted to persist into the time of the flower or the fruit into the winter cold, growth could be arrested and the plant destroyed. Thus in order to grow the human race must be continually discovering new forms to fulfill new functions. Realities are to a large extent what we make them; since the environment is continuous, reality exists for us in terms of definition, and definition is made according to function. For example, frozen drops of water are the "word" snow to the poet, white spots on a paper to the artist, a storm to

the average man, bits of falling whiteness to the ordinary observer, crystalline forms to the watching scientist, and so on. The form is determined by the function, and the category or class comes into existence to fulfill a special local purpose. When form and function are separated we have the *formal* rather than the *organic* state of affairs. Continuing static forms are false, and they persist in order to maintain some existing structure. Nationalism today is maintained in order to preserve the values of those to whom it is valuable. Certain forms of religious life persist when they no longer function for the humans using them. The result of the maintenance of such forms is injurious to the structure which maintains them. Thus nationalism in excess of function causes failure of loyalty and lack of patriotism, outmoded religious forms receive a mechanical but not a vital religious following.

When a new function arises a new arrangement of the world around may be made to fit it. True classifications are those which correspond to relationships in the real world. But our classes are valid only when there is a correspondence between our modes of apprehending experience and the reality we apprehend. Realities are the classifications in which we have agreed to regard the world. We must continually make new arrangements of the environment in functional form. New forms are a matter of definition, but they are valid only when functional. Thus academic forms which overload the scholarship of the scholarly are those which exist by arbitrary definition with no function other than the fabricating tendencies of their authors. When we call a horse a pig and a pig a cow, they actually become so. But since in such a form they are confusing, and meet no useful purpose, such a mode of naming is useless because it performs no valuable function. Thus the non-growing individual or society is weakened by distorted or partly deranged forms, which in-

jure the health of the whole. To be organic is to reject old forms which are nonfunctional, to maintain functional forms, and to discover new functions and new forms to fit them. So are many sicknesses of men and society curable.

EDUCATIONAL COROLLARIES OF ORGANIC LIFE

The organic development of human beings is in one way different from that of other systems. Most plants grow in size like a tree, continuously as long as they live. The later growth may be relatively slower in some cases, but it continues through the life of the plant. It is so with many animals. Man, however, reaches the limits of physical growth at about the age of twenty years and continues at about the same physical size through life. For the energy system which carries human life has psychic, as well as physical, processes. In the human being learning, which is begun at birth, continues through life. Learning is the subjective counterpart of all human experience. It is the continuing organic growth of the individual.

When Marietta Johnson called her epochal school at Fairhope, Alabama, "The Organic School" it was a bright day for education. The organic nature of learning when recognized is of fundamental value in the understanding of education. Such a concept lays great emphasis on the wholeness of the individual learner. So significant is this wholeness that a succeeding chapter is devoted to the discussion of the single unity of personality. In true learning the individual passes from his individual wholeness through a learning experience which supplements and fulfills that wholeness. Thus true learning must receive its significance from the learner's own true participation in it. Again the experience into which the learner proceeds, the world around him into which he learns himself, must also be organically whole, a growing, changing substance through which he learns. An example of organic

learning contrasted with the failure of inorganic attempts at learning may make these statements clear. The older methods of teaching languages have proved very ineffective because of their inorganic approach. In the first place, the languages Latin, Greek, French or Spanish, were required subjects, to be learned not because of any organic need of the learner, but because of some blanket prescriptions of subjects required for college entrance. The approach to the languages was atomistic, the parts to the whole. Vocabularies were learned, declensions, rules and the whole put together in sentences prescribed by the textbook which no intelligent communicator would be likely to use. It was by such methods that I myself studied for years without learning Latin and Greek. In the Peking Language school in which I actually learned to speak Chinese the organic approach was used. I wanted to learn Chinese because I was to use it as the vehicle of communication in teaching. Thus did I as the learner make an organic approach to my task. The teaching materials of the language school were organized not like the atomistic and mechanical array of grammatical textbooks. Rather were they arranged in a spiral of experience, and we were all taught to talk and converse in narrow circles from the beginning, so that in a week we could hire our own rickshaws and meet simple life situations which occurred around us. Within a week of the beginning of lessons I bought a male canary from the smiling vendor by the simple expedient of telling him I wanted a man not a woman! Here the environment was arranged in organic wholes with experimental counterparts.

My earlier study of music was similarly marred by mechanical teaching. As was the custom of the day, the various scales were taught separately one by one, in succeeding months as if each scale were a separate nuisance to be mastered. Not only were no relationships between them indi-

cated, but they had no apparent significance for the art of "playing pieces" which was the only goal held up and exalted. All music was the reproducing of the patterns of others. Today the good music teacher allows the child to build into musical experience in terms of his own composition. The scales are all taught at once, and mastered with ease as one unified and interrelated mode of expression. Instead of learning each scale separately in succession, the learner rises spirally into the circle of the various musical keys with such ease that they present no problem of importance. All is unity and interrelatedness, so that recently I heard a fourteen-year-old musician casually remark to his teacher—"I composed a piece this week that I think you'll like. You like changes of key. This one changes its key with every bar." He then played a very engaging composition which had grown out of his own experience. Such is the ease of learning when organic learning and organic teaching meet one another.

Just as growth is orderly and systematic, so should learning be ordered and systematic. Not only should the learner proceed to his task of learning with a consciously ordered plan, which he carries through to conclusion, but the materials of learning themselves should be arranged in accordance with an internal orderliness. The expanding experience of the learner should correspond to an expanding organization of that which he learns. Thus the student who has discovered fossils wishes to learn about them. The pupil desires to have the everyday phenomena of his experience explained and interpreted. As to the arrangement of the materials of learning in organic fashion little progress has been made in this direction in so disintegrated a world as the one in which we live. In fact, there has been no attempt at the organic arrangements of the materials of learning since the pansophism of Comenius enabled him to build what is probably

the most unified curriculum that has ever been built.¹ Men must struggle today for an orderly knowledge of the world in order to provide an orderly experience for learning children.

Organic learning must be conceived of in terms of energy release. Children are energy-driven learners. It is essential for the health of the learner that the energy find an adequate outlet. If it be dammed up it surges within and ill health besets the learning process. Consequently, the teacher must be ever conscious of the form in which energy is being offered by the child to the learning process. This child wants to learn to swim, and that child wants to make airplane models. That one is consumed with the desire to examine aquarium life under the microscope, while another wants to build an electric derrick. It is by the fulfillment of these energetic movements that the health of the personality is maintained and true organic learning goes on. Procedures which suppress or dam up the flowing energy of the learners are not merely false but injurious.

But it is in their failure to obtain group energy release that our schools have most seriously blundered. Little has ever been really done in the attempt to harmonize and weld group energies into whirlwind learning experiences. Since the ideal has been lacking the techniques have never been developed. Society is sufficiently afraid of the individual energies of individual youths. It is still more alarmed at the joint energies of youth co-ordinated in the march of truth. There is a vast dynamic in the freeing of the energies of groups of the young.

All learning should be organic. To supplement it teaching should be organic, curriculum should be organic, method, should be organic. Learning should be the living of a living

¹ For exposition of this theme of Organic Curriculum Construction see Appendix IV.

organism in patterns which are rhythmically ordered and beautiful. We see the beginnings of such learning in the individual approaches which characterize much recent school work. It is at work in the developing experiences provided by the activity program in the elementary school. It must spread up through the life of high school and college until the school and community provide an integrated experience and produce integrated personalities.

CHAPTER IX

PERSONALITY

I HAVE found deep meaning in knowing diverse peoples of the world and mingling with them in their own countries. It is not difficult for the traveler in Europe and the Far East to observe great differences in the pervading atmosphere of the countries he visits. In some there is a tightness, a tenseness, almost amounting to fear. The happiest countries are those in which great freedom is given to human beings in those realms of private behavior which are their own concern. In such countries there are a host of customs pertaining to the simple matters of eating and drinking, dressing and traveling, personal opinion and privacy of life which being reflected in the larger and deeper things make for wholeness and health. Among such fortunate peoples the rich flowering of human personality finds its fullest expression. To exalt human personality is to exalt all values.

To help us in understanding education we must find a unity which draws together those meanings which we find throughout the total environment into an acting whole. This fullness of meaning is discovered in human personality. In all times and countries where organic thinking operates to mold the culture the supremacy of personality comes to the fore. In materialistic cultures machine concepts dominate to the enslavement of men.

In education we deal primarily with people, and it is fitting that the concept of personality should reduce all values to itself. Thus the notion of personality is a bridge between the concepts which have been developed in the earlier part of this book, which deal with the world as a whole, to the latter chapters which deal primarily with education. Personality be-

comes the organic stem which relates the larger unity of life to the smaller one of educational philosophy.

To the thinker steeped in the mechanistic and atomistic philosophy of the halls of the learned, the concept of personality is not simple. He is appalled by it. It is to him a confusion. Having no unifying notion of personality he asks for a definition. He is lost when one is not forthcoming. When he is told to look about him and see the persons around him, he cannot deal with the situation. He knows neither himself nor his fellow beings as wholes. He regards them as a summation of parts and is so lost in the complexities he discovers that he can emerge with no simple notion of a human being. Personality is the unified and distinctive nature which we possess in virtue of being a person. It is the noumenal form of the individual being. The human person possesses human personality. Other persons possess their own typical forms of personality. The nature of personality is not defined by philosophy but by the reality of the person himself, in the hierarchy of beings each person defines his own nature in terms of his own reality. It is only when we abandon the apathy of the academies and wander abroad among men, that the fresh winds of heaven stir us to a vibrant knowledge of humanity. Individual and environment are but two aspects of being in dynamic relationship, between which there is a constant interplay of forces. In terms of relativity the human person is to be conceived of not as he is at the moment, but as he originally was through his whole being into what he will become. He has both past and future being to which his present life is relative. In terms of the absolute the individual finds his bearings. He is not eternally buried or lost in the maze of this material system. Without and beyond are other systems and forces with which he must establish fundamental relations, for the personality is a spiritual material integration, a spirit manifesting itself through matter. The whole

being of the individual is growing, from origin to partially predetermined and partially self-determined future. In his organic growth he is energy-driven through matter, time and space, so that the human person has been called in a summative fashion "a complex four-dimensional manifold of energy manifestations." To be such and to be a man is to be a person. Guye ¹ has isolated what to him (though not necessarily to all) are basic or fundamental concepts. These he identifies as number, space, time, matter, life and thought. On the basis of these fundamental concepts he has attempted to classify the sciences in a fashion of which, even though the classification may be questioned, the method is superb and valuable. His process is simply illustrated by the following table in which the various sciences are arranged in order according to their partaking of the categories of number, space, time, matter, life and thought.

	Number	Space	Time	Matter	Life	Thought
Arithmetic	x					
Geometry	x	x				
Kinematics	x	x	x			
Mechanics	x	x	x	x		
Physics						
Chemistry						
Astronomy						
Biology	x	x	x	x	x	
Psychology	x	x	x	x	x	x

The significance of this scheme lies in the fact that it reveals the inevitable tendency of organic thinking to exalt personality. The divisions of arithmetic, geometry, kinematics, mechanics, physics, chemistry, astronomy, biology are

¹ Ch. Eng. Guye: *Physico-Chemical Evolution*. Quoted by White, *ibid.*, p. 20.

mechanistic, atomistic, and static in their nature—they are placed up against the organic concepts of number, space, time, matter, life and thought for redivision and reapportionment and interrelation. The result is that they are all subsumed under the heading of psychology for which we might write in the substitute term—the study of the realm of personality. In the modern sense psychology is the study not of the mind, of the psyche, of the abstract, of the soul, of the spirit. Psychology is the study of personality. Thus in organic thinking does psychology emerge as the queen of the sciences, while personality emerges as the king of the real world.

Thus is personality the supreme and unifying force of all being. The world of the natural environment, plants and animals finds its fulfillment in the human being, the human being finds his fulfillment in becoming a spirit and taking his place in a higher system of higher personalities beyond the material. It is not necessary to imagine an anthropomorphic god making mud pies to interpret the phrase "God made man in his own image." The image in which man is made is the image of the spirit which clothes itself with a material agent to facilitate its own growth in a material environment. To assist such growth is the function of education, until the spirit discards the material agent and passes into the future.

FOR EDUCATION THE AREA OF PERSONALITY IS SUPREME

The aristocratic theory of life which was laid down for Western culture by Aristotle has served long and well to establish hierarchical ideas and bring them to the support of the notion of the supremacy of personality. The teaching of Genesis that man is lord of creation confirmed the idea of human supremacy in creation for Western civilization. With the passing of the influence of Genesis from the moribund thinking of the universities and the appearance of aristo-

cratic modes of society the status of man in the universe has not been so clearly understood or realized.

For human beings, who are necessarily the nucleus of their own system, the very nature of the case demands the postulate of human supremacy in the natural environment. To the materialist, however, all notions of superiority are anathema. If matter is all, then all is matter, equally to be valued or held in contempt. A rock, a plant, an animal, a child, a man, all are but instruments to an end. The demagogue uses them like chessmen on a board to secure his purposes because as a power-loving phenomenon of material structure he intends to function at the expense of other material phenomena. This materialistic mode of government is to be observed at work in the world today. A true concept of the dignity of man destroys the exploitation of one individual by another in virtue of the inviolability of the supreme values resident in man. The human being is the highest peak of the energy cycle. The sun nourishes the earth, the earth the plants, the plants by metabolistic construction prepare the food to nourish man, while man alone of all these beings nourishes a spirit, clothed in energy or matter. All exists for spirit. Having used its matter, all is returned to the system again, while the spirit for which it has existed passes on to another system.

The relationship between spirit and matter is one of the insoluble puzzles of philosophy. There seems to be no epistemological pathway from matter to spirit. Yet personality is such a fact, a phenomenon which is just such a bridge. The impossibility of this bridge is indicated in all those dilemmas in which attempts are made to merge finite into the infinite or vice versa. To divide a line until it reaches indivisibility, to add points without dimension into a line. In the face of attempts to merge the finite and the infinite logical failure results. The personality, however, is just such an actual bridge

between spirit and matter. No matter whether we can understand it or not, the fact remains. We must not neglect it because we cannot explain it.

It is in an ostrichlike attempt to avoid this inexplicable area of the relationship between spirit and matter that the materialistic scientist scorns the mystical. I have seen college professors turn away with loathing when faced with any trend of thought which would lead to what they call the mystical. Yet mystery is again a necessity. It is a characteristic of our present position in nature. The mysterious is merely the unexplained. No true scientist could draw back from the area of the unexplained. He should be the first to embrace it for he must inevitably encounter it. We must learn to distrust our sophists and our cynics who would pretend to knowledge where they should profess ignorance.

The prominence of man in the natural world is further revealed by his power of mastering both time and space. Reichenbach has said: "For, even though men have been called beings in space and time, it is only our body, a space-time structure, which has a share in space, while the course of our spirit flows in the temporal order alone, without being embedded in spatial extension." So we may roam about into past or future and control time to our own ends. The rapid moving-picture camera, for instance, becomes an instrument for the control of time. By taking pictures at a more than normally rapid rate, and then running them at a slower rate the process of time may be slowed down. By taking, as is frequently done, a horse race at a normal rate, then showing the moving pictures at a more rapid one, the time process may be speeded up. But it is only by man, called by Korzybski the "time-binder," that time can be controlled and made to serve certain ends. He holds wider sway than any other material being in this material world. To him a person is a natural aristocrat.

PERSONALITY NOT A MECHANISM

In a power age we are tempted to a mechanist view of man. Such a view is not only current among thinkers, especially those devoted to special areas of thought, but also among the common populace. A machine like a locomotive or an electric iron is fundamentally an energy transformer. It is a structure so organized that if energy is poured in at one end, in the form of the heat of burning coal or of electricity, that energy minus a certain loss which has to be paid as a tribute to nature as a whole, appears in a more convenient and usable form. Consequently, thinkers have been tempted to discover a human analogy. Is not the human being, not to mention plants and animals, simply an energy transformer in the sun cycle? For is he not fed with energy, and is not his sorry life a set of vagrant energy transformations less useful than a machine, because directed to no clear purpose? Does he not rust out and die, and being dead is no more. while his sons take up the futile tale? Let his transitory glory be that while he lives he is god of the machine—a pitiful god indeed to his slave the automobile, and an equally pitiless god to the human machines whom he governs and uses as the inert instruments of his own power.

Let us not be caught in this miserable analogy. Unlike the machine, man is an independent being, so independent that he can cut off the energy source of his own being. Once being formed, he does not lie a dead mass of material in some garage of life until his master supplies his organic, galvanic will. He is self-motivating. He can take up his bed and walk. Furthermore, he waits not for tons or quarts of nourishment to be furnished by another. He forages for his own food and nourishes himself. Again he can bring into the world others of his kind, he can reproduce himself, while the machine is not even sufficient unto its own life. A recent writer, in his

eagerness to defend the machine, has gone to the ludicrous extreme of stating that although no machine has yet been made which can reproduce its kind, such a thing is not inconceivable. Imagine an infinite spawn of machines breeding to no purpose whatever. A vast mechanical much ado about nothing. For a machine can be but a machine, and that machine the mechanical extension of the human end organs, a tool which mediates between man and his environment, a means to an end, whether that end be the building of a Dnieperstroy, or a Boulder Dam.

Machines are and must always be devoid of psychic action. To be otherwise would be to be no machine. In that remarkable play of Karel Capek¹ "R.U.R." (Rossum's Universal Robots), which placed the word *robot* firmly in the English language, the story is told of man's ingenuity in creating in workshop and laboratory a race of living mechanical men. Each member of this race developed a will of its own. Turning upon its makers, this race destroyed them and their civilization, for their being was without generosity or love to its creator. So ruinous is the materialistic concept of man as a machine. Through it men may build their Babels, but they may never reach the sky.

Under the aegis of the machine philosophy there has risen in the land an outburst of ideas which are in one form or another variants of Technocracy. Technocracy considers society as one vast machine, a huge energy transformer. The energy which it produces may be distributed among the populace and so provide them with plenty. It seems scarcely likely that any new society which rises in the near future will be without some element of the picture which is presented by the technocratic analysis of plenty for all. In spite of this fact, however, the philosophy associated with such machine and energy theories is fraught with the most potent danger to

¹ Karel Capek, *R.U.R.*, Doubleday, Page & Co., New York, 1923.

human freedom unless it be dominated by human rather than mechanical values. There is a persistent tendency to evaluate all in terms of foot-pounds. When the energy theorists are presented with human values, they either retire from the field in silence, or give a halting word of encouragement to those concerned. What is the price in foot-pounds of a poem, a picture or a book! How many kilowatt-hours are equivalent to a theory of philosophy! How shall we value the death of Father Damien for the lepers, or the life of the teacher for her children! Machine theories of value annihilate the higher human values, and unless men stand master of the machine, only war and ruin can result.

The figures quoted by dispensers of energy theories of society are stupendous. The man of the centuries they tell us was a feeble fellow, a personal engine of a mere tenth of a horsepower. By leashing the forces of the universe he has become in this century over 8,000,000 times as dynamic as he was before. Such are the figures of our energy calculators, and they are sufficiently striking. But let us calculate in a different fashion. Human culture is not the culture of a machine. As long as we preserve our records and hand down our functional traditions, our tested heritage, we do not stand alone on our own efforts. We may ever build on the accomplishments of the past. Korzybski has estimated that a man today, in terms of real human values, is not a mere eight million horsepower in energy, but that his life is greater than the lives of 1,160,000,000 men. So vast is the heritage we bear. We should examine our thoughts a billion times in the light of our inheritance from the human Titans of the past.

The miserable doctrines of some of our energy philosophers are telling us that human work is over. Machines are our slaves, and with them we build with equal ease the molehill and the mountain. Men sit and watch while skyscrapers are lifted for them to the skies. Thus is the moral culture

prepared for human decay. If the curse of physical slavery is removed, and life is no longer by the sweat of our brow, then we may begin to live indeed. And we may be free to work. Work is needed now as never before. If we are to maintain our mastery over the machine, we must live on new levels and build by new visions. As a race we are not living on a human level. Here is the new opportunity of education, to raise human life to the level of aristocrats. Let the king's sons be princes indeed. In the past it has been sufficient for education to prepare men for the simple responses of a laboring life. To care for their health, and to deal with recalcitrant realities of a physical nature. Now that men are free from material labor they are ready for something higher. Never in history has a race of men lived on a really human level. When we live by the labor of our hands we live on the level of the material. It is for us to rise to higher levels: to live as human beings in a human world; to work as never before for the building of a new civilization in which mankind can find a new fulfillment. We must live above machines, we must live above animals, we must live as men in a new cycle of history.

CURRENT DANGERS TO HUMAN PERSONALITY

Education can only go on, human values can flourish only in a state of freedom. Unless freedom is maintained human values decline. Consequently, the educator, the teacher, the human being must ever be alert to defend what millions of lives have been sacrificed to secure, human freedom. Incidental to the changes which are taking place so rapidly about us as the older age passes to the new are many which threaten this fundamental of freedom. In order that the task of education may be the more fruitful in this cause, it is desirable to point out what are the most serious threats to human freedom in our current world.

The present state of society lays it open in a peculiar way

to the exploitation of the people by demagogues. The people in general have been made aware as never before of current weakness and faults in the social structure. On the whole they are without deep fundamental values with which to interpret the life about them, and are subject to current unrest. In such times of stress the vivid appeals of some picturesque character, who in virtue of a good delivery, a popular pose, but most of all, a specious premise of a social millennium is able to flatter the masses into ignorant allegiance. The avenues of propaganda are wide open today as never before. The radio, the press, an international web of organization can be used as never before. Among a people who, unlike the people of a hundred years ago, have no deep convictions, the process of interpenetration of ideas may be carried on by the debasement of education to propaganda. Ideas are planted where they will reap fruit due to the human passions which they touch. The indigent are told that they are enslaved by the current system, that a new one will give them something for nothing. The industrious are promised work under better conditions, the clergy are told that their gospel is on the side of the oppressed, the teachers are interested at the point where their philosophy is most altruistic. Interpenetration and interpermeation of ideas may be subtly used to create an ideology favorable to the individual and the groups seeking power. The power-seeking nature is characteristic of certain human beings. Such men are ready to use other human beings to enhance that power, and the road to doing so is by purchasing free men's freedom by barter, by offering them whatever they desire in exchange for freedom. We are in a place today where we must think without cheering and flag-waving, but soberly of Patrick Henry's dictum, "Give me liberty or give me death." Human beings will do well to exchange nothing for freedom.

The democratic state itself has its own inherent dangers

to freedom. Democracy breeds contentment and a fulfillment of men's most pressing desires. But it breeds neglect and indifference to public affairs. Citizens who hold the appearance of power in the vote, are apt to neglect that power and undervalue it because it is as common as bread and water. Its uniqueness in the course of history is forgotten. It is an attained goal, unappreciated because attained. But freedom, although it is free as sunshine to those who have it, does not rise each morning with the faithfulness of the sun. It must be sedulously preserved. In the large democracy, men of power may so suborn voters by one technique or another that in the name of freedom whole areas may be divested of part of their freedom while the exploiters within a democracy enjoy the spoils. It is the duty of education to build among men a righteous indignation at those who misuse public office, or suborn the vote. This social indignation, so rare today, must be recovered via the agencies of education.

The dangers of large-scale bribery are more imminent than ever before. Bribery which in simple and small communities could be carried on by the use of minor patronage and actual money may be carried on today in wholesale fashion. Relief money, and even work relief, may be so used as to bind the human protégés who receive it in a protective allegiance. Bribery today must be recognized in many unsuspected forms. The mark of bribery is the offer of something without the requirement of any social return. Those who give freely and ask no labor or responsibility in the way of moral or social return are pernicious. Every action has its equal and opposite reaction—we must suspect the man who does not emphasize social responsibility in terms of social advantage. To understress social responsibility is in itself a sort of moral bribery. The honest man wants nothing for nothing. The dishonest one will find that he pays for his goods if not in labor, assumed responsibility or social return, then in sur-

rendered freedom. Education must teach the nature and function of bribery and its positive opposite, social responsibility.

One of the most prized possessions, so general among us that we forget it is not natural, is freedom of speech. There is no complete freedom of speech and probably never can be. It is relative freedom of speech which must be prized. We must proceed on the principle of the more the better. That suppressionary tendencies are at work in current society no one would deny. Men occasionally lose positions because they have been more outspoken than the authorities controlling them would allow. The press favors interests and publishes the sanctioned story of the "handouts." But there are societies in the world today where not only is this so, but in addition there is suppression ten times more violent and a thousand times more frequent. Individuals are subject to constant spying from their neighbors and those who seem to be their friends. They may be arrested at the word of one in authority and condemned without trial, even to death. Human beings may be used like pawns, and disposed of as men might dispose of lumber or stones. Fear rules in human hearts. Men may not write letters which contain the truth, they may not criticize the powers that be by word of mouth. There is no privacy among one's friends. What one says at his breakfast table may be the means of his own destruction. What is said in the inner chamber may be published from the housetops. Freedom of speech is not merely suppressed, it is extinct. It is against such a tragic demise that education should set itself with new determination. Education must be the guardian, not of truth alone, but also of freedom. No matter what specious promises are set before us, no matter what heaven on earth is dangled before our eyes, we must not sell our birthright for a mess of pottage.

Economic dangers are ever with us in the form of na-

tional control of wealth. When wealth is concentrated in the control of a central authority it is more mobile and so may be used more freely to relieve distress where it is needed. It is fraught with many possibilities for trouble. Time was when men received a certain real value in return for their labor. The value was inherent in the gold which they received. Credit depended on individual possession and could not pass from individual possession. One might store one's wealth in a sock, and if the winds descended and the floods came, still one might keep one's principal at the loss of one's interest. Today interest is available, but in a sense no man may own his principal. With the removal of gold from circulation the individual is left with credit only. If that credit be withdrawn the individual is ruined. We trust, because of precedent, that it will not be withdrawn, but the fact remains that under certain circumstances it can be. It is illegal to own gold but it is not wrong in any other sense. This world as it is today is extremely dangerous.

The chains of human slavery may well be beaten out from the world which now surrounds us. Education should make all men aware of the techniques which can be used by their fellow men to bind them. The enemies of human freedom are the enemies of free speech. One of the first requirements of demagogic control is censorship, suppression of truth, withholding of facts, control of the press. Those who must be protected from criticism by their fellow men are often those who deserve it. Control of the currency is the next weapon to be used against the public. If the wealth of the nation is controlled by those in power, then those who apply for a share of it must be fingerprinted, ticketed, and catalogued. They are thus placed under observation and subservience may become the price of wealth. Only those who have the official mark of recognition need be paid. Others may be kept, as is done in some countries today, in concentra-

tion camps. For the next element of control is hunger. Those whose active allegiance cannot be bought can be controlled through hunger. If they refuse active political support in return for bribery, they may be forced to hard labor in camp centers where food is contingent upon manual labor. Drastic as these schemes may appear to those in countries where they are not used, nevertheless, they are actually dangers to be contemplated, for they are already in actual use. By such means innocent men may be made slaves in a slavery like that of the criminals of the galleys.

Education must accept the task of freeing men from the shadow of slavery. If freedom is less than we might desire today, we must not turn to the first savior whose propaganda flatters every man into believing that he is a king. Freedom is more kingly than possessions. Let us court freedom; where there is little let us have more. But freedom is not a gift. It is an earned commodity. Education must so organize itself that freedom is the result of fulfilled social responsibility. Let us advocate and secure freedom and responsibility together.

The values in the word love are much obscured by the confused usage of the word in the English language. From the point of view of education it must be examined soberly, for its significance is great. It was the great word of Pestalozzi and through it he fulfilled his destiny as the greatest of all educators. The uniqueness of human personality finds its fulfillment through and in love. In a certain sense education is love. For in love personality finds its highest expression.

CHAPTER X

THE COMMUNITY

IF THE modern world is to be better than the ancient one, communities must be made, not allowed to drift into being. Actually a community as mere community has no function. The aimless wanderers in Times Square are a community in the sense that there are many individuals present. It is only when they come to watch the old year out and the new one in that they become a functional community. Communities may be accidents, they may be purposeless and useless. It is when human beings take their own community in hand that they can use it to their own ends. The community must be made valuable. It must be engineered into being. It must be sedulously constructed and made into functional forms, it must be deliberately used as a benefit to the individuals composing it. Community may be used as a fortunate matrix in which the full development of each individual may be realized, or it may be used for the private ends of a few and the exploitation of the many. It may even be used as an agency of mass destruction in which the improper management of society is visited upon the heads of those who have contributed in part, or not at all, to its mismanagement. Personality should take an active, not a fatalistic attitude toward community life. For individual and society are in a certain sense one and the same. Community is the plural form of personality.

THE FORMATION OF GROUPS

To call society an organism is to use a false analogy. In the sense in which personality is an organism society is not. One cannot imagine the cells or members of the body each going its separate way at will. Society does not of itself have

the single unity which is necessary in an organism. It is frequently haphazard and full of contrary functioning in its numerous unrelated parts. The organic analogy may be used, however, in the making or controlling of society, at least in part. The concept of unity in society may be held up as an ideal, and the proper establishment of its functional parts to act in harmony may become the goal of effort. Society is not naturally organic, but it may become so under the influence of an organic philosophy.

The crudest form of society is an accretion. The original inhabitants of Pitcairn Island were an example of such a society. Brought together on one ship with no community intention, they were wrecked and cast ashore. From the accidents of a common fortune they were compelled to live together. The story of their compulsory association is a romance in itself. Soon the accidental group was welded into a purposeful one with the common aim of survival in an unfavorable situation.

A society or community may be formed by selection. Such selection may be either functional or formal. The grouping of a number of children in a class because they are the same age is formal; the grouping of a half a dozen of them who want to make a moving picture is functional. Selection may also be by examination, as when students of highest high school average are admitted to college. It may also be by common interests, as in a case where a group of artists and scholars interested in the common basis of the arts met once a week throughout a season to talk it over.

Accretionary societies are those in which members interested in some such common cause as progressive education or political reform add their names to the list, but make no contribution to the progress of the work involved. Groups may thus grow on the simple-interest plan. The group increases in size but not in function.

Academic or formal groups are those which are formed by mechanical classification. When students are apportioned to a series of teachers of the same subject by a classifying office in sections, the teacher of which is unknown to the students, mechanical or formal groups result.

Truly organic societies are those in which individuals are associated due to some strong common bond, such as interest in temperance reform. Each new member is enlisted because of his personal interest in the cause. As he joins the society he becomes himself an active member of the group, a new cell in the growing organism who adds to the strength of the organization by active contribution to the attainment of its objects. Strong societies are usually those which begin small and grow slowly taking in only converts to the cause, who are firm additions to the structure of the group. Accretionary members are of little use and should be animated into active participation or dropped.

Societies seldom grow. They are grown by individuals who become the makers of groups. Communities are naturally unformed, a mere collection of persons. Their formation is usually due to some common interest, or task. In the case of the Pilgrims who came to America, it was the desire for freedom of worship and freedom from oppression. In the case of an athletic society, it is the common interest. In societies like that of the Pilgrims, when a geographical location is chosen, it in turn affects the community, so that the geography of the locality favoring hunting, fishing, lumbering and so on gives another bond of common interest. Groups so formed are grown together by being given some "consciousness of kind." Such consciousness does not always just happen. It may be developed and fostered. Thus when a community is to be made organic, one of the earliest steps is to make the individuals concerned conscious of their common tasks, interests, privileges, duties and, in fact, of all that they share

in common. One of the earliest tasks of him who would build organic groups is that of education in the common needs and purposes of the group concerned. It is a common fault of dictators to strive for group consciousness by using force as a substitute for education.

In groups which are not made organic parasitism occurs. The human parasite is one who exploits the group, securing his own personal satisfactions at the cost of the community. In the average community today parasitism is more frequent than it is recognized. It is not only large owners of wealth who exploit the system, but individuals in all walks of life, each group justifying itself on the basis of the other's deprecations. The common mottoes, "Every man for himself and the devil take the hindmost," "A man must look out for himself," "If I don't, somebody else will," indicate the almost universal spread of parasitism. The individual must be taught to recognize in his own conduct social parasitism, not merely to oppose it in others. A small shop owner was recently asked: "Why do you vote for such a man, whom you know by your own experience to be thoroughly corrupt?" The answer was: "I might as well; somebody will do the grafting—I'd do it myself if I had a chance. Wouldn't you?" Education should make unsocial conduct a basis for community ostracism.

Such ideas have a direct bearing on both school and community life. An understanding of the community and the group is not desirable for teachers only. It should be a part of the understanding of every citizen. Such social literacy is even more important today than the more common literacies of reading, writing and arithmetic. An understanding of the functioning relationships of the individual and the community should be built into the personality of every child and adult. And this not only by word of mouth, by discussion and precept. School life should itself be community life and

integrated with larger community life in such a way that all its relationships are realized in actuality. Learners should analyze the community life which they themselves experience and participate in. Its structure should be laid bare. The individual's relation to it in a thousand ways should be by direct experience. It should be overtly mastered by participation, analysis and discussion. Children should not be catapulted into society at the end of school, possessed of a few ideas, knowledges and skills, but untaught concerning the realities of community life. But they should be schooled to an understanding not merely of personal but of community being.

THE ECONOMIC ASPECT OF COMMUNITY LIFE

The economic aspects of social change should receive the most careful attention. Under the influence of materialistic philosophy, however, there has sprung up in recent decades the fallacious notion that social life is in the most fundamental sense economic. That the economic aspect of social life is its most essential aspect. That if all goes well economically, all will go well physically and spiritually and in every sense. This point of view has been much enhanced by the urgent economic dilemmas which have faced all nations. As long as the average individual had an economic surplus, could buy more than his basic needs, he was comparatively blind to social difficulty. As each man felt the pinch in his own purse he became a social reformer. It has proved almost literally true in the lean years that no man has shown great social concern until his special profession and his personal economic income felt the squeeze of money shortage. Feeling the pinch at that point, the individual jumps to the conclusion that money is the center around which social being revolves. If there is plenty of money, all is well in society; if money is scarce, reform is needed. What reform could be more obvious than monetary or economic reform? Since the cause lies here, so

must the remedy. Thus has the pernicious notion gone abroad that society can be reconstructed by the brief and comparatively simple process of economic reform.

Such thinking has brought a bevy of reformers, each with his pet path to the millennium through some scheme of economic reconstruction, inflation or deflation, debasing the currency, return to the gold standard, relief money for all, international war to raise prices, Technocracy, taxation of wealth, and redistribution of private property. Scheme after scheme has poured from the fertile brains of remedy makers. Most hotly contested of all has been capitalism as a mode of economic life. There are those who would replace it with a communistic economics, those who would change it to state socialism, to fascism, to this, that or the other thing. All these rosy reformers, or nearly all, seem to believe that if the economic structure of society were but set right there would be a heaven on earth. Thus there were many who looked with eager hopes to the benefits which were to be obtained by the devaluation of the dollar, but the devaluation of the dollar did not bring "prosperity." Much was expected of price fixing, and the formation of codes for the governing of business. This vision also faded. For so it must ever be whenever economic dickering is the sole basis of reform. We might change from capitalism tomorrow to other economic schemes, but unless the change were more than economic it would be as futile as all other modes of social reform by economic short cuts.

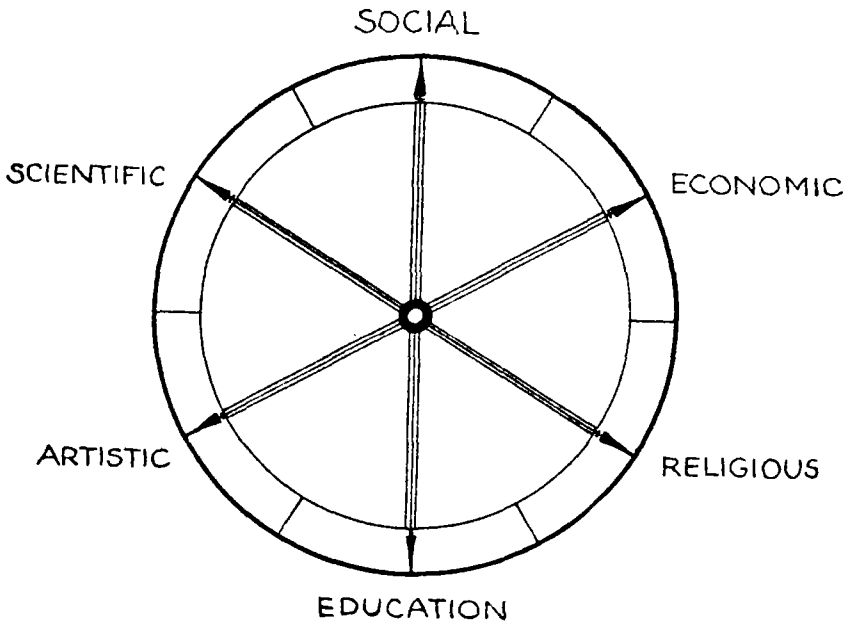
The economic aspect of social life is only one of its aspects, not even a fundamental aspect. For the economic aspect is to society what a man's pocketbook is to his personality. It is but a minor adjunct of his whole being, not even a part of his organic unity. It is an appendage, a wherewithal, an exterior means to an end. Money in society is what it is to the individual, only a medium of exchange which may be used

to facilitate the realization of its fundamental values, and its real life.

The real community is the persons composing it. If there is something rotten in the state of Denmark, there is something wrong with the people of Denmark. It is utterly impossible to get below this fundamental fact that when there is something wrong with a country, there is something wrong with the people of that country. It would be much more fitting for them to repent in sackcloth and ashes than to attempt to patch up a rotten dwelling with pasteboard economic reform. What is needed when things are awry is all-around fundamental, philosophical reconstruction, and basic reform in our ways of life. There is little value in a pious economic reform made in the hope that none of our private ways may be thereby destroyed. We want basic and essential reform. Reform in every direction, reform which is everywhere in harmony with itself.

As history moves on through the centuries it brings great changes in the lives of men. These changes are not isolated changes which are made in one corner and left to themselves. They affect every aspect of daily life. For example, the advent of the automobile did not affect transportation alone. It affected the economic system of the country, and whole communities of workers grew, like Detroit, around the automobile industry; it affected the home for it made farm life more tolerable; it made whole communities more mobile; it affected education, for children may ride to central schools from far-off towns in the school bus; it affected church attendance by bringing people from afar, but also by placing men's affections on the things of this earth. So ramifying has it been in its effect that hardly any aspect of social life remains untouched by the changes brought by the automobile. This illustrates the fundamental proposition that what changes one aspect of society changes another. Consequently, changes

need not be made merely in one social institution, but as large changes occur in one direction they must occur in others. A diagram will illustrate this argument. Let us suppose that the major aspects of community life are social, economic, religious, educational, artistic and scientific. These may be indicated on a clock face, with a hand pointing to each thus:



Time on this clock is not recorded by the change of one hand alone. The social hand does not move forward ten minutes while the other hands stay still. If so the clock would break. If society moves onward without strain or stress all the hands would revolve together. As social life changes, so also will economic, religious, educational, artistic and scientific. The change is not caused by one hand which revolves too fast. It is caused by the fundamental energy behind the clock. It is the *zeitgeist* which pushes forward each of the hands in

harmonious and equal change. When one aspect of society changes, others must change with it. Reform in one direction must be accompanied by harmonious reform in all other directions. Reform must not be by a local patching of one spot in the pattern, but all-around social reconstruction which effects every part of life. If this fails trouble results. The industrial revolution brought changes to the lives of men which left them stranded. It took not only economic reform, but religious and educational reform as well, to make any impression on the desperate situation. When change does not come fast enough in different parts of the world, when one part of the world changes and the other lags behind, poverty, revolution, war and social catastrophe result. It is the part of education to so facilitate the change in every direction that violent lesions shall not occur, that transitions shall be made rapidly in every direction for the preservation of the social whole (the realization of its fundamental values and its real life).

The speciousness of all arguments for the fundamental nature of economics in history, in human conduct, and in community life is due to a peculiar characteristic of economic systems. They are the bookkeeping of mankind. Here in the ledgers and bank accounts of the world are worked out the figures which stand for the values men have exchanged. Each time an object or an idea is bought and sold a value is placed upon it. Money, the medium of exchange, the material of barter, passes from one hand to another. Whatever value men place upon their sandals or their souls is recorded by the exchange of money which takes place in the transaction. Thus the record of society is kept. The monetary system is the great recording angel of society. Carefully, as each daily transaction of millions of souls takes place, the record is written in the money system. Where value has been found by the human race there is money, where they have found no value

there is no money. What we value we pay for, whether it be murder, beautiful gardens or hospitals. What society values is worked out inevitably by the intricate arithmetical process of the economic system. When society functions well, values are flowing well, and society flourishes. When society spends its money for that which is not bread, all is a tangle. When people are right economics is right, but when economics goes wrong people must change. To better economics, we must better human personality and human society.

HOMOGENEITY AND DIVISION WITHIN THE COMMUNITY

The truly organic community is homogeneous. Thus the establishment of homogeneity within a group is a major problem of him who would make communities or reform them. The earliest homogeneity within a group which draws its members together is some common interest. This must be the starting point in unifying a group. This earlier unity must be strengthened by gradually revealing to each member the deepest form of unity which they hold in common. The highest form of homogeneity within a community is spiritual unity. If the members of a community, like that of the Pilgrims in Massachusetts, feel themselves bound together in spiritual oneness a deep unifying force grips the community and holds it together as nothing else will. Western culture finds such an approach to unity in its historic religious tradition which may yet again become a unifying force in the Western world. Charles Beard has written that the next great war will be a war between Christianity and Paganism. In such a case there will be a vast trial ground between a spiritually homogeneous society and a materialistically homogeneous one. For cultures may be knit together in material as well as spiritual unity. Nationalism or nationalistic internationalism may be such a unifying motive. Since the national whole is a formal one based on geographical

boundaries it may be made the rallying ground for community propaganda. Palestine forms such a rallying ground for scattered Jewish life today. Such propaganda-made unity is dangerous because it tends to exalt the group above the individual personality, and make the personality the slave of the group. Thus nationalism and nationalistic internationalism breed war, war which can never be avoided as long as highly organized nationalistic groups exist with fundamentally different social axioms.

The community which is most thoroughly homogeneous should not be one in which all individuals are forced to agree with one another. Such agreement is humanly impossible. Homogeneity in fundamentals does not necessarily mean homogeneity in every respect. Homogeneity in community life is not uniformity. Thus for any government to force upon its subjects one point of view, one individual leader, one cause to be supported on pain of punishment or death is tyranny. The homogeneity which results is not true homogeneity. Underneath are the oppositions of dissent. Each tyrannical action has its equal and opposite reaction so that in the end the tyrant falls—but that fall may be delayed until the whole community has been hurtled into national catastrophe. True and healthy homogeneity is secured by the provision for change and interchange within the total community, for the action and interaction of differing groups. Thus neither school administrator nor governmental official, need fear the existence of minority groups. Minority groups which are given freedom of peaceful operation may be safely tolerated in an honest community. Society is not like a biological organism in which each part remains content in the performance of its function, the fingers to grasp and the ears to hear. The members or parts of society are in a constant state of interchange and interflow. Those who belong to one political group interpenetrate religious, educational and cul-

tural groups. Persons pass from group to group as their ideas and interests change. Community life is one vast flow of individuals in human rivers from group to group.

The plotting of such patterns of human thought, such bands and currents of human flow is a dream for the sociologist. He who understands these movements of people will understand the pattern of his community. The construction of a sociological chart which shows the current of human opinion is no more impossible than the charting of the meteorological flow of winds and temperature. Just as the weather is prophesied by the weather bureau so human conduct can be prophesied by a bureau of human affairs. But better still, while we can only meet the weather by planning for it, we may meet the ebb and flow of human life by directing it through education into more and more constructive channels. Furthermore, it is the duty of the universities and colleges to be the first to plot these curves of human relationships. Unless this knowledge becomes the daily possession of every citizen who cares for it, it will become the private possession of demagogues who will use it for their own interests. It is, therefore, the primary task of education to win the race with demagogues in the pictorial analysis of social currents.

THE COMMUNITY AS MAKER OF MEN

As a partial result of the way in which history has been taught from cause to effect, from beginning to end, it is commonly assumed that men are the makers of a period. Caesar made Rome. Luther made the Reformation. Lenin made the U. S. S. R. For history has been taught longitudinally rather than latitudinally. It has been taught as a sequence of events rather than an evolution of human experience. The succession of events in a period has been emphasized with local cause and effect, rather than the fundamental driving principle and the current pattern of the times. We have thus

failed to grasp with thoroughness the wholeness of any social period. We have failed to realize that society in any given period is a vast interlocking series of events and states which shoots forth human growths, which exudes individuals to lead it, which pushes men upon the pedestal of prominence as leaders whom the times have made unto themselves. The leaders in their turn impress themselves upon the communities which choose them and propagate their reforms in terms of the society they lead. Individuals are, to a large extent, the products of the social milieu.

Society can be as blind to truth as it can be cognizant of it. Throughout the Middle Ages, for example, truth was that which was established by the authority of Aristotle or by ecclesiastical authority. Checking and experimenting were regarded as unnecessary and, therefore, taboo, a sign of lack of faith in authority. Thus society developed a vast blindness to the world of natural phenomena which held the times in their own unchanging pattern. So also in China did an established pattern of looking backwards hold Chinese society in its bondage of recapitulation. The ancestors became the determiners of culture, and to live over again the lives of others became the goal of changeless China. In such stable periods the reformer is destroyed. Progress to the top is secured through conformity. Promotion is the result of obedience to authority, and every speck of originality is smothered in the interest of the *status quo*. Such societies become stagnant. They suffer from social diseases which are analogous to the mental illnesses of individual persons. They need a purging by some community psychiatrist. They are communities with delusional psychological ailments. Their own blindness has caused community introversion.

The healthiest times are those which allot to individuals that freedom which makes a man. The release of social energy is the road to health in societies as in individuals. The

freedom of society to make men—who in turn will make and remake society—is the best means of social progress. The conservation, not the suppression of dynamic individuals, is the road to social greatness. Thus the wise community will give the freest charter to its educational institutions. In certain countries today men are not free to teach that which they believe is truth. University teachers are not subject to the mere disfavor of authorities and to occasional dismissals. They are completely subordinated and suppressed. They are permitted to teach only the favored brand of truth, its official interpretation. No opposite views may even be discussed. The teachers themselves are not free to expound their personal views. They are compelled to accept official beliefs and propagandize for their acceptance. Such an educational program is socially unwise. It secures a temporary solidarity, but in the end educational freedom of the fullest kind makes for the best welfare of the community. When the times and the schools give men freedom, men will better the times.

THE COMMUNITY AS AN EDUCATOR OF INDIVIDUALS

We have passed into times when the general community is a far more potent force in the education of individuals than any single social institution of society, such as the home, the church or the school. Through recorded history, the most potent educational instrument has, until recently, been the home. It was here that character was formed and here that individual attitudes were made. The advent of Christianity did much to strengthen the home, and to make it the symbol of the good life. Modern influences have operated against the unity of the home. Increased mobility in transportation, and national rather than local organization, have operated to scatter individuals so that the patriarchal cell, with its aggregation of families, is almost a curiosity of the past. Theories of state ownership of the individual have in some cases almost

destroyed the family. Reverting to the state socialistic educational theories of the Spartans, certain modern states have tended to segregate children in groups in order to remove them from the individualistic philosophies associated with family life and affections, and to impress upon them the state theory of life. These and other forces tend to operate by a weakening of the educational effect of the family so that it does not function as it did as a maker of human personality.

In the social organization of earlier American life the church played an important part. Educational influences of a religious and moral nature were impressed upon practically the total population through the various types of church gatherings. In some communities social life itself revolved around the church. The influences of cosmopolitanism and of materialistic philosophies operating in every direction under the sponsorship of the universities have not only turned the university support away from religion but have deflected social life from any church nucleus. The percentage of children receiving religious education in the United States today has notably declined. Church educational institutions have to a very large extent broadened their programs from religious to social ones with a tendency toward the duplication of secular efforts and the abandonment of religious education. Entertainment programs have been furnished to an over-entertained generation in the hope that the waning influence of the church concerned could be bettered by the honeyed attraction of secular entertainment. For the most part, young people have failed to be enticed into any closer relationship with the entertaining body, and thus the educational influence of many churches has become secular rather than religious and dominated by the prevailing community modes.

The school in earlier American life was synonymous with

education. To go to school was to be educated. The school was the special institution devoted by society to that specific task. Education was the private possession of the schooled. The school was the educational agency of society. It is this concept of the school which remained with us from its traditional origin. On the whole, America still regards the school as its most potent educational influence. This is far from so. The school has been steadily fighting a losing battle in the task of educating the populace, until the educational influence of schooling has become almost negligible in the main issues of life. The subject matter areas which it pursues, instead of being the major lessons by which learners should learn to conquer the world, are merely the insignificances of a traditional culture. The school has already lost the race with the general community in the education of young and old.

Today the community itself has become the overwhelmingly powerful agency of education which we see at work on every hand. It penetrates the family in the morning newspaper and the advertisements therein, in magazine literature, in the conversation reflected from the day's work. It places the teachings of the church under searching scrutiny, and pigeonholes them whenever convenient. It works its way into the very warp and woof of the school until the school is leavened by the prevailing social modes. Unable to compete with outside forces, in its few brief hours of school life a day—it succumbs to the prevailing attitudes, and tends to flow along in the current in comfortable nonresistance. For the community today makes the family, the church and the school—it is not made by them.

To be more specific, just what are the aspects of community life which have made it the great educator of adults and children? Most violent and influential are the moving or

talking pictures. According to the studies of the Payne Fund ¹ attendance in motion pictures in 1930 was estimated to be 77,000,000. Of the individuals concerned 28,000,000 were under twenty-one years of age, 11,000,000 under fourteen. The capitalization of the motion picture industry for the same year was said to be something more than \$2,000,000,000 while the cost of education in the public school systems of the country was slightly less than that same amount, \$2,000,000,000. Dale's study of 1,500 pictures indicated that 75 per cent of them dealt with erotic love, unwholesome sex situations or serious crimes. Of 71 deaths by violence occurring in 54 pictures, 21 per cent go to the heroes, 40 per cent to the villains. It has been found that the very youngest children carry away 52 per cent of what their parents would get from the same pictures, with an average retention for all children of 70 per cent. Serious effects have been found upon the sleep, heart action and nervous systems of children after attendance at moving pictures. Investigators have found, by means of a psychogalvanometer, that with ordinary danger pictures the intensity of emotional reaction of adolescents is twice as great as that of adults, while that of children 6 to 11 is three times as great. Attendance of children at moving pictures during their earliest or best sleeping time sometimes caused total loss of rest, and effects were discovered persisting after a week. Heartbeats of boys and girls 16 to 18 ran from 72 to 194 per minute and effects lasted as long as three days.

The effect of moving pictures on the play life of children is well established. After attending a mystery play one boy of ten wrote:

"What I played after I came home from the movies is one play *Dracula*. I pretended I was a vampire. I played especially

¹ H. J. Forman, *Our Movie-Made Children*, The Macmillan Company, New York, 1933.

good when I had to suck the blood out of the warden's daughter. The maniac who could change himself into a bug and crawl out of the prison bars called me his master. I also played well the part where I use my power but fail to suck the doctor's blood. I loved to play the part where I disappear. I didn't like to have a big nail driven into my heart and make me lifeless, but it had to be done. I am still alive—thanks to God.”¹

Attitudes are definitely influenced by moving pictures. Prejudice against the Chinese has been a common attitude among American school children. Of 182 children from an Illinois high school who were tested for attitudes most were found to be definitely anti-Chinese. After seeing a showing of *Son of the Gods*, which portrays the Chinese in an admirable and friendly fashion, the attitude of the children changed for the better, a change which was found to persist after five and again after nineteen months.

A young lady, a college junior, describing her earlier life as affected by the moving pictures wrote:

“I think it was during early adolescence that the movies had its greatest effect on me. I spent the time just before I slipped off to sleep in planning and dreaming about the pictures I should play in, my clothes, my admirers and suitors, my cars, my jewels and even the home I should have, which was to be the most magnificent structure in all Beverly Hills. I had a name picked for this house and for myself—very ornate, fanciful and ridiculous names which I thought quite beautiful and lovely. I was a bit hazy as to how I should accomplish all this, and just when I was to start for Hollywood. I felt quite comfortable about it all coming true, however, and put off my departure somewhere in the future, but I felt quite superior, all to myself, over other girls who were

¹ From *Movies and Conduct*, by Herbert Blumer, by permission of The Macmillan Company, New York, 1933, p. 23.

not to have such a glorious career as I was to have. Then one day I confided in my best friend and was distinctly surprised to hear that her future was to parallel mine, and that she too was going to be a star of the first magnitude.”¹

One further biographical sketch selected, like the others quoted, from so much similar material that it may be regarded as representative of many similar cases, follows.

“I saw another picture at H— and S— Street, in which I got an idea how to rob a store. The title of the picture was——. I cannot recollect the name of the leading character. It was a picture about some thugs robbing a bank. They tried to get in the door but it was adequately locked. They tried the back but it was the same as the front door. Then they tried the roof but it was well barred with iron bars and screens. Then one of the thugs suggested that they break the lock on the iron door that runs around the outside, then paste some fly-paper on the window; about ten pieces was what they put on the window. Then they took a hammer and hit around the edge of the fly-paper until the window was broken. When they took the paper down the pieces of glass came with the paper and did not make any noise. Then they went in the bank and looted it and got away safely without anyone seeing them or hearing them. About a week after I saw the show, a couple of boys and myself tried the trick and it came out successfully. We went out to F— Street and P— Avenue. We went up on the roof of a store and pasted paper all over the skylight. Then we hit around the top of the paper lightly. When we took the paper off some of the glass came off with it. Then we took our hands and took the rest out with care. The owner of the store had burglar alarm wires all across the inside of the skylight. We touched one of them and the alarm started to ring. We ran down the alley and about two or three minutes later the

¹ *Ibid.*, p. 62.

alarm stopped ringing. We went back and squeezed the smallest boy that was with us between the wires. After he got in he knocked a hole in the side wooden door and we went in. If we had opened the door the burglar alarm would have rung. We looted the store and got away safely. I have tried that trick on quite a few stores and it has come out successfully each time. I have never been caught in the act of robbing a place. I have been locked up a number of times. I was always put in jail when someone would tell on me or the police would pick me up on suspicion. I have gone to the Boys' School for little things such as being bad in school, riding in stolen auto, etc." ¹

Surely from such data ² the startling influence of the moving pictures must be clear. This most potent educational force in America commands the minds and morals of individuals more than either home or church or school. The moving pictures are the makers of American *mores*. The moving pictures so widen the experience of children beyond that of their local and natural environment that they soon develop a sophistication which they have not the inner controls to master. In the days prior to this educational influence children's experiences were comparatively simple. The home, the neighborhood, the school, their awareness of human conduct was limited to their own experiences of individuals. Today they are faced with environments, situations and screen personalities whose ways and morals they imbibe in quiescent receptivity. It is not the racketeer who wins, or the scoundrel who thrives, that parents need fear the most, in their pictures. Nor is it the horrors which revolt them by their stark reality. It is the gradual daily and weekly exhibi-

¹ From *Movies, Delinquency and Crime*, by Herbert Blumer and Philip Hauser, by permission of The Macmillan Company, New York, 1933, p. 20.

² The writer readily acknowledges recent improvements in the moving-picture situation. His purpose here is not to condemn moving pictures but to exalt them as an educational force. The better they become, the better it is for the social whole.

tion of the *mores* of the screen, which imperceptibly build standards of conduct and attitudes toward life which are no more real and true than the vaporings of a diseased mind. One of the most obvious realms in which moving pictures influence the conduct of the young is in their attitudes toward sex life. From the beginning of time individuals and communities have found it wise to exercise sex restraints in order to aid the bitternesses which follow in the wake of freedom. The intimate customs of the moving picture portrayal of life are not merely stimulating but they are standard setting. Children who are not carefully protected from taking the obvious interpretations of screen life soon begin to make the screen embrace the typical model which they regard as the idealized custom for romance. Romance has developed a community pattern in the mode of the blond and oily heroes of the screen. It is needless to continue making applications which are so obvious. The screen *mores* ramify in a thousand ways into the life of the community. Individuals picture themselves as screen heroes and life as they see it in the living shadows which flit before them. All unconsciously perhaps, but none the less surely, the moving pictures are raising and training a generation which is ignorant of life in the real world. So much more are they schooled in the shadow life of the moving-picture house that they lose their grip on the actual world about them, and live in a dream. There is a stark severity about the cause-and-effect patterns of human life which men must realize to their sorrow. In the smaller community the drama of life was clear to all around. The proud family with its erring offspring told its own story. The fruits of conduct were overt in the tales of men whose lives became an open book in the small community. Children learned to know life from reality. The happy ending was not forthcoming upon call, and life left a taste both bitter and sweet. In the uncontrolled sway

of moving-picture education, it is almost impossible for the other institutions of society to build among all men a wholesome knowledge of actual human life. The time must come when moving pictures are as carefully graded and adapted to the age of children as the schools.

Propaganda by moving pictures and radio is another potent educational force to reckon with. At its best the radio is generally a fairly innocuous waste of time. But both propaganda film and radio addresses have a widely educative effect, not in the general sense of education for the general good, but for the good of those who sponsor the programs. Via the radio the public is particularly susceptible to use by "interests" business and political.

The press is an enormously powerful influence in education which the community gives to all. Via its pictures, articles and advertisements, it subjects the public to a veritable bombardment of ideas and attitudes couched in terms of what society devours and is eager to receive. The nature of the tabloid newspapers is too notorious to need discussion. Material which panders to lust and low motives is assembled in company with what the powers who control the press want them to have. Thus the community educates in its own *mores*, ideas and weaknesses. The child is helpless in the endless volume of comic cartoons which, innocent as they may be, are yet an allure which diverts him into quiescent habits of mental inertia. The advertisements hammer forth an incessant propaganda for the interest of those who control them. The whole ethics of advertising has been seriously under fire as a texture of lies by suggestion. At its best it is raucous and essentially fatiguing. The consumer is almost helpless in this vast sea of educational material which tells him to buy what men want to sell. The onslaught of advertising has produced that widely growing association of buyers known as Consumers Research of Washington, New Jersey, an organ-

ization which purports to give impartial analyses of an almost complete range of products with recommendations as to quality and price value. Many householders are learning to become independent of advertisements which they distrust and to depend on confidential reports to consumers for their guidance in buying what is healthy and within the price they wish to pay. If education for community welfare were carried on at the cost and with the persistence of certain campaigns for tooth paste and tobacco, the fundamentals of community living would be much securer than they are.

But the most intimate and directly supervisory educational force to which individuals are subjected is the familiar group of their personal acquaintances—the community, of which each individual is the personal nucleus. Bearing in on each person is the influence of his society, his political club, his friends, his associates, his gang. No matter how antisocial or undesirable this group background of the individual may be, it marks him as a community-made being with an indelible and ineradicable stamp. The individual in a protected environment has little realization of the texture of the social situation of underprivileged areas with which he is unfamiliar. Consequently, the following quotations are given to provide a concrete instance of societal training as it provides a background for individuals: ¹

Sometimes a principal has a breathing space. Mary-from-the-eighth-grade came into the office a few days ago during one of these rare times and the principal helped her complete her errand and then unwittingly began the conversation which follows. His comments and questions will be left out as they can easily be imagined from Mary's talk.

"Sure, I'm a good girl this year. My ma's awful strict now.

¹ William Meikle, "A Chat With Mary-From-the-Eighth-Grade," *The Journal of the National Education Association*, November, 1932, p. 252.

She says four or five dates a week is enough for me." The principal did not deny this. Twelve-year-old Mary went on, "One thing I wish, tho—those cops should mind their own business. We're getting tired of them coming to the house every night." . . .

"Sure, they've come every night for a month." . . . "Oh, I guess they're looking for some of the boys that hang around us girls. They think they're so smart. Every time they see us on the street, they drive the squad car up to the curb and say things to us. Cops ain't got no right to bother us. We mind our own business."

. . . "Oh, I guess the boys come around to see us. They're scared of my Dad, tho. He'd fix them." . . . "Oh, Ma and Dad ain't home so much and Alice and me get sick of those guys around." . . . "Slicker and Charlie and Stealer and Joe and Lick and Murphy. They live around 22nd Street. Murphy is the leader. He carries a gun, too. I saw it. That ain't his name, tho, I think. I heard some guys call him Kopec once." . . . "The cops are scared of him. He's eighteen years old. They kicked him out of high school. I guess none of them guys go to school. They bother us—only Lick don't. I wish Lick would come alone but those guys push the door in or crawl in a window. My little sister Rosie always lets them in 'cause they give her candy and stuff. And Stealer's always taking stuff." . . . "He took my Ma's pin and a medal and a knife and lots of stuff. My Ma's going to make him give it back." . . . "Oh, he's about eleven. He thinks he's tough. He takes bikes and money or anything." . . . "Yeh, well, I guess he don't go to school. He ain't scared of cops. He says they can't catch him. If they do, his Ma will get him out of it. I'm going to keep the watch he gave me until he gives us back our stuff. He said it was his but one of the boys told me he got it in a store down in

Cicero and some rings and other stuff, too." . . . "He's proud. He calls himself the 'Stealer.' "

All this while the principal had put in friendly questions often enough to show a flattering interest. But back in his mind was a riot of thoughts. What an alien world was revealed by this casual chatter of pretty, slightly dirty Mary, who so demurely sat thru the routine of an eighth-grade school day—thru reading and spelling and history and civics! Her philosophy of life and love is formed and perfected.

"I think it's all right to have a good time with the boys. I know how to take care of myself. My Ma says have a good time but don't never bring shame on us." . . . "I don't do nothing wrong—just have a good time." . . . "I don't like those kid games. We don't play with no girls, hardly. Only last week I was at my girl friend's at Cicero. And Murphy ain't got no right to do such things." . . . "Well, Lick was in the house and Murphy's gang come and they were going to get him and he run out of the back way and they caught him, and my girl friend's Ma run out and yelled at them and we carried Lick up and put a bandage on him where he was bleeding. Murphy ain't got no right to beat up Lick only Murphy thought Lick was with his girl." . . . "Murphy's gang beats up lot of guys."

Mary's mother comes to school several times a year. Her six children are her pride and she stands by them through all difficulties. She is friendly and jolly. Mary's father is a salesman with somewhat dubious connections. He tells of his boyhood in New York City where his father was "a big Tammany man."

In school Mary is an average student. Her childish face looks up at her teachers, who carefully sift all materials presented so that her young innocence will not be shocked. There are thousands of girls like Mary in the schools of our cities, although she is outstanding in her frank talkativeness.

What have our traditional courses of study to offer them? What shall we do with Mary? She is well fed, clothed and housed by doting parents who offer little criticism of her conduct.

Perhaps nothing can be done for Mary, but is not such a glimpse of the real activities and ideas of a twelve-year-old child enough to set us all thinking?

The following list of traits,¹ by no means complete, may serve as a guide to those who cast their lot with the "bad boy." No one "bad boy" possesses all of these qualities, but they are, in varying degrees, part of every "bad boy" personality. The "good boy," too, it may be noted, partakes of some of these characteristics, but to a lesser extent.

"Bad boys" have these traits in common:

- (1) They worship physical strength.
- (2) They want material success, above all. This is natural since most of them have been surrounded by squalor and poverty.
- (3) They worship power. The man who does, regardless of how he does it, is their idol.
- (4) They have a contempt for law and order because they see its futility. The era of the racketeer has contributed very largely to this.
- (5) They feed on the tabloids, the sexy movie, the burlesque show.
- (6) They gamble, annoy policemen, and frequent billiard rooms.
- (7) A large percentage smoke and some drink.
- (8) They are unlettered as distinguished from illiterate, although illiteracy is not unknown among them.
- (9) They hate effeminacy.

¹ From A. H. Lass, "The 'Bad Boy' and His Teacher," *The Journal of the National Education Association*, Vol. XXIII, No. 7, November, 1934, p. 195. Manual Training High School, Brooklyn, N. Y.

(10) They are victims of inferiority complexes. Constant nagging at home and contemptuous indifference in school make them sullen and resentful.

(11) They have keen perceptions and size up the teacher quickly and accurately. They sometimes test him by being deliberately nasty to see if he can take it.

(12) They appreciate sincerity, good sportsmanship, the square-shooter, the teacher who gives them a break.

(13) They have immense, almost blind loyalty to anyone who has won their affections.

(14) They are hard to interest. They are restive because school does not satisfy their stronger desires. A teacher must be resourceful if he would hold their attention. This does not mean that the class must degenerate into a three-ring circus. But the teacher who is something of a showman and can present the subject dramatically and humorously need not fear that their attention will wander.

(15) They like stories of adventure and daring. They also like to listen to stories well told.

(16) They enjoy socialized recitations, which give them a feeling of power.

(17) They like self-government. They have not had much of it because they have been considered unfit. They respond rapidly and favorably to any opportunity to run things for themselves. It gives them the feeling of personal and social responsibility which they want to develop.

(18) They cannot be approached on too lofty and ethical a plane. Much that they react to must be translated into terms of good sportsmanship and consideration for others. They are left cold by anything abstract or too theoretical. They like to discuss ethical problems touching their own lives very intimately.

(19) They are excessively endowed with animal spirits.

Very little of it is sublimated in concentrated study. Hence, occasional outbursts must not be too severely punished. They need not be ignored. But they must be seen in proper perspective not as the expression of viciousness but merely the result of a pent-up, healthy animalism.

(20) They do not like to be snooped at or watched too meticulously. The closer the teacher approximates the policeman, the more they are driven to find means of outwitting him. The best possible procedure is to make it impossible or inadvisable for them to cheat or bluff. The course can be so organized that a premium is put upon daily application of effort. The end can be made unattainable without this rigorous application. To cheat is to unfit one's self for the test. This they must learn through the daily recitation, not through precept. They learn quickly when it is to their interest.

There is considerable reason to believe that in communities as they are today the general community training of the individual undermines personality and character earlier and at a more rapid rate than the constructive agencies can build it up. The total result is therefore a *negating* of the work of the constructive institutions devoted to educational work. Society gives with its right hand and takes away still more with its left. Vice and corruption are taught on the street corner with more efficiency than they are counteracted in church, school and home. The total result in the community is a net loss of personal values. It is this which is at the bottom of social regression, and it is this failure of the community to keep the level of life higher than the median possibility which makes for social degradation and economic collapse.

Children are not natural murderers. A community which can train children to murder by the age of twelve has much

to answer for. A community which can produce youthful criminality at the rate at which it is being produced today must hold itself responsible by law. It is customary to convict youthful criminals in our courts and to sentence them to reform schools and to prisons. This is to make the individual person bear the whole guilt of his crime before the age of discretion is on him, and the pound of flesh is exacted by a hypocritical community which washes its hands of his unrighteousness. There is great need for the establishment of a Community Court in which the community itself may be placed on trial in each case of serious delinquency of a minor below eighteen. Concurrently with the trial of the individual the community in which he lives should be tried and fined in every case in which a normal background has not been provided for the normal development of the youth concerned. The community convicted should be fined by the Community Court a very large sum, from one thousand to one hundred thousand dollars in each case, and the fines devoted toward the improvement of youth in the fined community. It is a poor sort of community which trains youthful criminals and then makes them pay the price of its own corruption and vice.

No longer must the school be regarded as society's agency of education. The community itself must be the agency of education. The profession of education must become the servant of community betterment, and the professor of education must be concerned with education in its fullest community aspects. The classroom teacher may proceed on her own course, teaching her child in her own excellent school community, and relating that community in active ways to the larger community in which the school is placed. But the teacher of education must no longer be the proponent of the school alone. He must lead in the task of establishing and building a community which is wholesomely educative in every direction. It is to this end that the times have called

him forth. In earlier communities the teachers themselves were sufficient to the educational ends of their time. Today a new profession has arisen, the profession of the educator. It remains for him to justify his calling and to campaign incessantly for a sound community education for every child in the land. The educator, backed by the struggling teacher, must assert himself against the overwhelming community which undoes the work of the school faster than the school can do it. Education must mobilize the forces and the institutions of the total community and urge them to one vast co-operative effort in the education of the young and old.

RECONSTRUCTING COMMUNITY EDUCATION

If the community is to be made over into a constructive rather than a destructive educational force many new educational institutions must be built, many old ones including the school must be changed, and the whole made over into a series of interlocking and intersupporting agencies. In the first place, schools must come forth from their retirement as separated places set aside for learning. They must realize that they are but a part of the community experience of learners, and that it is their responsibility to train them from childhood to adulthood into an understanding of and participation in the social life which surrounds them. The position of the school as a total agency of education and its position as a mere adjunct to the total educational program are very different ones. Integration with society must replace separation, and co-operation must replace isolation. The concept of the school as a place for subject-matter mastery, memorization, or mere attainment of knowledge is too narrow. A wider and deeper acquaintance with life and society as it is must become part of the educational experience of every school boy.

The various agencies for supplementary development of

youth such as the Boy Scouts movement, the Y. M. C. A., and the various social settlements should be brought together and integrally related to the life of the school. Boy Scout troops and groups of Girl Guides should be associated with every school, not as haphazard evening extras, but as part of the legitimate day problem of the school. In intimate relationship with the school program such organizations could do far more for the welfare of youth than they are able to do at present.

The rejuvenation and expansion of the work of the social settlement is urgently necessary. Springing up in underprivileged neighborhoods under charity support the settlement house has made its way as a much needed agency of education. Its value and success have produced the strange anomaly by which children of the poor are in settlement neighborhoods more fortunate in certain aspects of education than the children of the average home. In such localities children are fortunate enough to secure at rates within their grasp special swimming and gymnasium facilities, health treatment, opportunities for dramatic expression, and special classes in art and music. In the case of the average child in the large city, however, these amenities are missing, so that many talented children of comfortable homes are unable to secure the musical or artistic training which they need. Such a state of affairs calls for the widespread development of the settlement house as an essential part of every neighborhood. Settlements should be supported from public rather than private funds, and their facilities provided, not for a few, but for all, in a program which is co-ordinated with that of school, church, and home for the advancement of a fundamentally spiritual culture.

It is time for the churches to substitute for the pusillanimous measures which they now support for the education of the young a real program of religious education.

Time was when the church was unwilling that those educated in its religious teachings should be without the advantages of education in every branch of learning. The advent of secular education removed from various congregations the problem of educating their young. With the relinquishment of the secular aspects of education religious education was, for the most part, left to the haphazard work of occasional Sunday schools, and the volunteer efforts of a host of untrained teachers. But a careful evaluation of secular education is sufficient to indicate the failure of secular education to cope with moral and social problems without the aid of religious agencies. In moral questions secular education has proved a debacle. This fact is easily verified by the state of child criminality and general social delinquency. The moral breakdown of society has been as obvious, if not more so, as its economic breakdown, and the two are intimately related. We can witness around us every day a rising tide of violence. Each neighborhood is the victim of assaults, frequently bloody, and burglaries, housebreaking, bag snatching and petty robbery. Such conditions have crept on us so gradually that they are accepted as natural and individuals will even contend that they are unavoidable, instead of struggling to avoid them.

In the experience of the last twenty years it has been amply demonstrated that secular education alone is not capable of producing an orderly population of youth and adults. Great has been its progress in the field in which it is capable of operating in the development of literacy, in the furthering of national consciousness, in the securing of minimum business efficiency, in calculating and writing. It has not succeeded in building character. Even moral training has failed as it must always fail when only a secular sanction is provided. The churches should fully co-operate with the schools and the rest of the community in the provision of

religious sanctions for moral behavior. Such a reform in the churches would involve the expenditure of vast sums of money and the development of extensive systems of religious education. But the choice remains with the churches. It is educate the young or sink into an invited desuetude. Religious education must establish for the individual that harmony with the universe that secular schools can never secure.

The development of more and more widespread agencies for adult education is increasingly necessary. Reform which is to be accomplished by the elementary school is too late. Society moves too quickly today to provide children with any lasting education. Adults too must be cognizant of social change and be made continually aware of that which goes on around them. Neither the urge to learn nor the ability to learn things disappears with age. There are literally millions of our adult population who are eager to pursue some form of learning, whether it be social, technical, artistic, musical or merely domestic. In every community should appear people's colleges in which all who apply may be directed to the form of learning which they need. Carried on in co-operation with other schools and educational agencies in one vast co-ordinated program, cultural or technological retraining should be made available to the total population. The recent movements which have developed in the field of adult education are but a small beginning. Every program of adult education which has yet been made available is too small. We must gradually accustom ourselves to more stupendous and sweeping developments in adult education if a new civilization is to appear couched in terms of current needs and possibilities.

In each community there should be a vast central bureau of educational and social co-ordination. Such a bureau should be without authority lest it become the prey of political

minorities. It should be not a supervisory but a service bureau. In certain large cities today the various social agencies have a central co-ordinating bureau in which case histories are kept so that a settlement giving aid to one family may find out what is being done by other agencies for the same household. Such an agency on a much wider scale should be developed and supported by public funds. Its purpose should be to act as a clearinghouse for educational and social work. In this central office should be a case card for every individual in any form of social or educational institution so that his whole social educational history from the point of view of the community might be easily traced and made available. In such a fashion all the educational agencies of the community could share in what knowledge was available in the educational and social development of each individual. Co-ordinately the service of this bureau should be made available to citizens on application. It should serve as an information bureau to which individuals might appeal in inquiring where they might find the educational social advantages they desire. Applications for such help, however, would not be handled by the bureau but should be made by the individuals concerned to the appropriate institution.

The existence of such a co-ordinating bureau would make it possible to work for the improvement of home and family conditions. If the case of each family were available in the central office complaints concerning specific families or individuals might be followed up with the aid of the bureau by any agency of social justice. In a large city in Europe there has been established a clinic to which children may appeal directly if they are in trouble. Such an agency for the reception of the appeals of both children and adults would enormously aid the relief of the educationally destitute. Children might thus be removed from unwholesome environments by

legal action. It should be an offense punishable by law to bring up a child in immoral or debasing surroundings. The heads of such families should be subject to criminal prosecution on adequate charges. Society should be shot through with the ideology of the wholesome community.

There is an urgent need for the establishment of centers of artistic and technical education free to the public, both child and adult. It is almost impossible for the schools to cope with the special technical and artistic needs of unusual children. Provision should be made for them by their special application to technical or artistic bureaus located at convenient centers. Thus the child whose motor will not run may consult some older boy and receive his aid. In the art and musical centers those who require the special aid of the more mature might receive the help they need. Adults, too, are urgently in need of creative opportunity. In special centers for arts and crafts they might profitably find a haven in which to work. Possibly it might be in sculpture, possibly in printing, or presumably in woodcraft. Whatever the drive, in such educational centers it could find profitable fulfillment. A learning population with adequate leisure needs self-made rather than purchased amusement.

As the educational functions of the community overlap and the whole of society becomes conscious of its educational responsibility many reciprocal changes of function must occur. It is not possible to outline each of these but the mention of one or two of them will serve as an illustration. Just as medicine has tended to move from the curative to the preventive stage, so must we move in all society. The original function of the police was to pursue and capture, or at least to strike such fear into the hearts of men that they would behave. Today we are much more in the fear of the racketeer than of the policeman. For in the organized community the function of the police should be not merely

apprehending and holding, but educating. There is a sense in which the police officer is today a teacher. There should be in every school, if not a policeman, at least a course of lessons conducted by the police. Thus should the single function of the old-fashioned policeman be supplemented by the function of the teacher and his training and his concept of his work should change in corresponding fashion.

The typical function of the business man devoted to the profit mania is in serious need of alteration. The concept of the employer as owner of the individual employed must pass away. The notion of the business man in business to make money and for nothing else must also pass. We must not allow the business world to undo in two months what the school has spent years to build. We must rid ourselves of the notion that an unsocial action is to be pardoned if it is in the cause of business or of making money. We must learn to expect whatever business a young man enters to train him in business honesty and integrity rather than in the opposite. A mother recently said to her son who was employed in a large business organization, "Son, how could you make such a deal? You knew that it was dishonest." The answer was, "Mother, when I joined the firm I sold my soul to the X Oil Company. After that, anything is easy." Business organizations must accept their full share in the educational development of the human persons who enter business. It is not in the abstract that honesty is learned but in the concrete. In the wholesome community no agency of community life can be free from its educational responsibility. Even business must educate for community welfare. They who spend their lives in education have a right to expect and to demand it.

So gigantic a program of community education and social reform of existing institutions may seem appalling and highly visionary. But nothing short of it will meet the dilemmas of

reality. A good society is a society of learners. Consequently, no matter what it costs, the community must become one vast school.

A NEW CULTURE

America today needs a new culture which frees the individual and the community. One of the finest poets I have ever known has had his poetry refused by publisher after publisher who acknowledged its merits, because it would not sell. The finest teacher of music I have ever known has never yet received an opportunity to make her methods clear to the world. One of the most remarkable pieces of research into the biological effects of light which has ever been made has never become the general property of men because of human prejudice. For long we have been living in the cultural patterns of the past. We have had in a new country an old culture. In this new country we should develop a new culture which is indigenous to the land and the times in which we live. In a society in which the dominating motive is monetary profit many things are submerged. Inventions, instead of being pooled for the general good, are used only by those companies who are willing to pay the royalties. Art flourishes only to the extent to which it ornaments the portals of the rich and serves their profit or their vanity. It is time to shake off such partial notions of existence. America is well established in material wealth, and technologically more advanced than any other nation. Thus should America produce, with her signal advantages, the most advanced culture the world has known. Let us build a new and an organic culture.

CHAPTER XI

MAN AND THE UNIVERSE

IN THE Scotch game of curling, in which granite curling stones are slid forward on the ice by the players, a player moves rapidly before the path of his stone, sweeping each impeding particle from its course with a broom. Such should be the work of the teacher—to prepare a world in which no small impediment shall remain to hold back the course of the dynamic learner. The school is a device provided by the community to remove the obstacles to learning. Each child will learn without school or without teacher. A child is an automatic learner. He learns by himself without aid. What the schools can do is to facilitate that learning, and remove all obstacles in the learner's path of *energy release* toward desirable goals.

Teachers may perform such a task for their pupils in two ways. One is by opening up the way for the development of acts, or activities, or doing. This is the goal of method and of practice. The second is by inducting their pupils into an organized universe. Each child is an explorer with a new and unique world to explore. A unified and organized universe should be the background of the curriculum and should become its organizing plan. Thus by uniting an organizing learner with an organizing universe, unity of being between the man and the world may be attained. The learning being should merge himself with the general being and together with all else move forward with the universe through time and space.

Our cultural heritage, the knowledge, attitudes and skills which have been the bases of our constructed curriculums, has not been a satisfactory background for the organization of curriculum or the freeing of learning. On the

contrary; it has been just the kind of background which is most unsuited to the purpose of curriculum construction. In the first place it has been abstract. It has not presented the objective universe as it is but an abstract and subjective universe constructed by the schools into an esoteric mode of learning. The divisions of learning, such as chemistry, mathematics and French, are not divisions of learning unless they are made so by the schools. The school subjects are not modes of life but the partitioned areas of the schools, provided to facilitate the mastery of the school concept. They are artificially created in abstract forms into which the learner must learn himself, rather than find his way through his own experience. The organization of learning is typical of the times in which the public school itself was organized from 1850 onward. It is partitive, separating, lacking in unity, haphazard in organization and atomistic in form. The appalling array of school subjects with their plenitude of definitions has loaded learning with the useless necessity of surveying the borders of each class of knowledge for fear that any two of them might overlap. Subject matter borders are as artificial as national ones, and much more dangerous. Just as men have imposed arbitrary borders on the unified geography of the earth's surface, so men have mapped off learning into areas that will not "stay put." The course of study has its endless subjects, and school programs have the dust and smoke of definitions. Each subject has its bits and details until the curriculum resembles not a universe in patterned order and rhythmic beauty, but a blast of Peking dust from the Gobi Desert.

Furthermore, the knowledge behind the curriculum has been static in its form and spirit. With no common animating basis and no divisions but the abstract ones of the schools, the whole has been presented to learners as an incoherent mass. How desiccating has been such a procedure is exem-

plified over and again by college students who are stumped at the concept of order in the universe. "Where is it?" has been the yearly cry in my own classes. "What do you mean?—show us even a single example."

The supreme challenge of our modern environment lies in its dynamic complexity. One of the finest gains of Greek civilization was the power of concept juggling, Aristotle and his paid myrmidons ran about the world cataloguing and pigeonholing. When they were done the human race settled down to a long history of false finalities. These finalities were composed of a set of concepts which multiplied beyond count through the centuries. The concepts themselves were built on a theory of objective reality. They produced two kinds of truth, each of which was but part truth, the truth of objective reality and the truth of projected reality.

Truth of objective reality is characterized by a direct relation of equality between a concept and an objective reality. The concept "hammer" is regarded as equal to the object "hammer." The facility of thought which is gained by this logical convention is astonishing. It endowed the thinking race with a lordly freedom, a freedom, however, which was false to truth and objective reality. It neglects the distinction which exists in the objective environment between a steel hammer and an iron hammer, a difference structural to the object. It also neglects the distinction which exists between your hammer yesterday and that hammer which you have given me today, a difference related to the hammer's motion through time. Yet this very deviation from the true concept has provided mankind with a practical and convenient theory for dealing with reality. The simple process of calling an object by a name, and identifying that name with a subjective concept which the thinker can use as a substitute for the object, has given man vast power over historic and current environments. It has enabled men to

manipulate concepts instead of objects, first by simple mental processes, such as imagining what a house might be like if built of logs, then by more complex and recently developed methods such as the drawing of plans and diagrams, which facilitate the movement of concepts, the writing of receipts and the use of mathematics to calculate stress and strains in the plans of a bridge. Thus by the device of matching objects with concepts the face of the earth has been made over.

Truth of projected reality has been of equal help in manipulating environment. It consists of a body of artificially created concepts welded into a semblance of knowledge. It is manufactured by a subjective process of concept construction. It is maintained that ether exists and ether thereby comes into what seems to be objective existence. The personality is divided into body and mind and it is assumed that those concepts are matched in objective reality, which they are not. Knowledge is classified into fields such as physics, astronomy, ethics, economics or politics, and then is supposed to lie in fields delineated by those terms. The correspondence of the concepts with reality is neglected. Thus just any concept becomes a reality; for a concept, imaginative, unreal, false or true becomes to the thinking person a reality as soon as it is named. Thus has descended upon the human race a deluge of false naming, false classifying, false cataloguing. It has produced avalanches of false knowledge, false systems of knowledge, false reasoning. It has distorted language and malformed human thinking, until today we dwell in a world which does not exist. Worse still, we match this half-knowledge against the eternal time-continuing verities. We are satisfied with a knowledge which has breadth but not length nor height.

This inheritance of distorted knowledge built of simplified and therefore false premises has become infinitely com-

plex and consequently highly delusional. Errors of the type described seem of comparatively small significance in the individual case. Thus we acknowledge little difference between this brick or that, my automobile today and my automobile yesterday. We say the difference is not great. The one approximates the other so closely that it makes very little difference. The error is negligible. We are virtually, if not exactly, right; we are right enough for all practical purposes. This is specious. Our theory of knowledge seems adequate for the occasion and we reason ourselves into accepting what we have been habituated to believe. Our environment today is stated in these terms and to rebel against them is hard because they are built into our outer and inner world. Yet it is in centuries and millenniums of approximation that the margin of error increases. There is a chasm which yawns between ape and man, yet we have tricked ourselves into bridging this chasm by false identification. Such monstrous errors we commit after centuries of practice. There is a vast difference between Roman razors or mirrors and the ones we use today. There is a wider difference between Greek and modern politics. Stretch terms as we will, it is absurd to attempt to identify classical Roman and current religion. The categories are at opposite poles and almost mutually exclusive. These are but examples of the ineffaceable confusion of knowledge which we hold today after centuries of seemingly insignificant deviation, age-long dissection and analysis, persistent abrasion of concepts. Today the complexity has produced a thought envelope which is stifling to true thinking. We struggle with names which cover excluded categories, and categories which bridge eternal abysses. The thought life of today is a texture of inherited contradictions.

In the midst of these existing contradictions, however, is the triumph of that theory of knowledge which has pro-

duced it. The result is an environment which is to an unprecedented degree dynamic. The losses of truth from which we suffer today are unobserved in the concrete splendor of triumphant machines. The very falsehood of the theory of knowledge on which the race has for millenniums proceeded has secured for man a vast freedom of thought and action which has enabled him to master many of the concrete objective elements of environment. Thus he has built skyscrapers, airplanes and electric eyes. He has outstepped his physical organism in terms of energy. He sees where he likes, hears what he likes, goes where he likes within the concrete limits of the physical universe. This energy he has mistaken for power, and this triumph for truth. His fundamental fallacy has become his metaphysical defeat. He has been caught in a cyclone of energy which human personality cannot control. He has sacrificed human to material dynamic.

To win back for man the truth and recreate a vast new human dynamic, education should dedicate itself. Such a process of building personality demands that man be regarded in the specific instance, not in the generalized abstract. We may not soundly think of the abstract child or the abstract man, but only of the specific child or man. Such a procedure is necessary if we are to avoid involvement with concepts of the type already criticized. A true concept, to be a valid means of mastery of the environment, must be based on true identity of the concept and the part of the environment to which it refers. Thus a true name must represent a true concept and a true concept must be an organic multi-dimensional continuum. For example, when one mentions a maple tree the reference should be to a specific, particular maple tree regarded not as a momentary or temporary phenomenon but as a continuum from its origin behind the seed to its fulfillment in a new generation of the maple-tree

class. The concept is organic because it regards the tree from its source as a caused phenomenon; it is multidimensional because it regards the tree in a unified past-present-future fashion; it is dynamic because it regards the tree as a phenomenon in a process of motion forward; it is a continuum because of its nature in all these respects. Thus to correctly regard a human personality one must regard such a person not as a temporary or momentary or physical manifestation. A man is to be thought of as a personality of established source, continuing development, and future fulfillment. The true concept of a man or a child must be specific, organic and dynamic. True education which aims at the making and remaking of personality can be based only on such a true concept of man.

Throughout education as throughout life we must aim to maintain the organic and dynamic nature of all true concepts. This is necessary if a basis of true representation of objects by concepts is to be secured. For in all manifestations life is dramatic. Yet we have been inured to concepts which are inert, and we tend habitually to recognize phenomena as passive. Thus to the ordinary mortal, the plain man as he would call himself, a knife is a knife and a gun a gun. Our verb "is" has been called the "is" of identity. But there is no identity unless it be the identity of the true concept with its true object. The specific knife is both more and less than our concept of it. Our concept even after sight of the knife may underestimate its weight or overestimate its sharpness. Furthermore, as it rests it is in process of slow decay and is not now what it was a moment ago. Our knife is at any moment undergoing a process, performing, as it were, an act. It is not a passive but an active knife. Not a quiescent but a performing knife. In its existence from start to finish it is a drama in itself. Regarding it through time from its concep-

tion in the mind of the cutler to its ultimate loss of form and substance it is an organic and a dynamic knife. As it lies on the table it is an event, as it lives from its start to its finish it is a performance. Thus every true concept, whether it be of knife, gun, cloud, bird or person must be specific and alive.

Furthermore, the process of building personality demands that man be given pre-eminence in the created universe. It is only by such a true concept that pre-eminent man may be dynamically balanced with his environment in a series of true relationships. Such a mode of thought is in revolt against the view which fades out and washes out the demarcation between objective realities. Such an obliteration of extrinsic pattern has been the logical result of the simple unidimensional concept-object hypothesis. The imposition of a false classification upon current realities forces the thinker to thrust his thinking into the mode of current realities. Both objects and concepts are without the quality of growth or movement. Thus the apple is not a real apple but the apple of the concept and the apple of the moment. And the dog of the classifiers is some inert creature that never dwelt on land or sea. The writing in books and records of such inert data and categories has made man deal with unrealities. The classes and species and orders which he has recognized are not true classes, species and orders. Their elements are neither organic nor dynamic ones. Consequently, arranged in order of accidental resemblance they appear to be realities in terms of proximity. The proximity is man-made, however. Thus the relationship is man-made and nonexistent in reality. A true scientific approach to reality invalidates inadequate classifications and avoids the fallacy of regarding classifications as continuums. To avoid such untruth we must establish classes and categories on the basis of pre-eminent

man, and identify subsidiary processes which correspond to a dramatic reality.

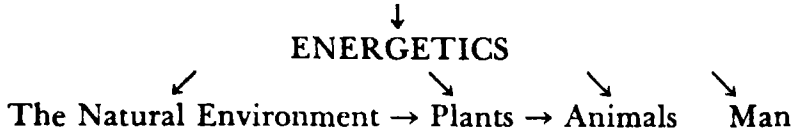
THE REORGANIZATION OF KNOWLEDGE

The schools cannot struggle on in the task of making modern and dynamic men without a fundamentally organized world in the background of the school. The complete reorganization of knowledge is necessary as a basis of curriculum making from kindergarten to university and beyond. We want to salvage and secure every bit of functional knowledge, and we wish in our libraries every record even of man-made and abstract categories. But we must, if the schools are to present organic learnings, discard, not organization, but the abstract atomistic and static organization which has existed. We must discard the organization which has cast our world since Aristotle into such various logical or static forms as astronomy, mathematics, history, geography, arithmetic, language, grammar, logic, metaphysics, psychology, art, music and so on in endless array. This type of organization is outmoded, it should become for the purposes of the school entirely extinct. The educational luncheon must be served in a new set of courses with food adequate for all.

A PROPOSED BASIS OF REORGANIZATION

Any structural organization of knowledge must be organic instead of static or formal. Thus it must begin with our dynamic universe, the whole, of which we ourselves and all things are but part-processes. From this whole it must proceed to those parts which are functionally valuable. Such fundamental aspects are Energetics, the Natural Environment, Plants, Animals and Man. In terms of these realities the whole world may be satisfactorily and flexibly constructed by each learning individual. Such an organizing plan may be sketched as follows:

THE DYNAMIC UNIVERSE



THE DYNAMIC UNIVERSE

In the very beginning of his education the child should be given the feeling that the whole of his school experience will be a unifying one. That in the process of learning he will explore, disentangle, and come into a better and ordered understanding of the world around him which will be whole, wholesome and satisfying. He should thus from the very beginning learn that his own world, the world in which he lives, is a widening world which opens forth to the remotenesses in time and space of a unity of which he is the apprehending center. Throughout his whole school experience and throughout life the universe should become a more and more open book, a more and more suitable medium for the life he has to live.

The wholeness of the universe is concerned with much that is scattered here and there throughout the various conventional forms of thought and learning. The simple questions of the child, Where did I come from? Who made the world? are the childish form of serious philosophical and metaphysical questions of adult philosophers. As we proceed through school and life, we give but more and more complex answers to these questions. The answers are qualitatively the same but in their wider implications more satisfying and more related to other aspects of life.

Under the study of the universe, marshalled and rearranged, is much that was associated with the various branches of learning; theories and accounts of its origin, as given in old manuscripts, sacred literature, scientific formu-

lation, geological speculation. The geological, chemical and physical structure of the world, geography, mineralogy, astronomy and literature all contribute to the whole picture of the universe. A curriculum written through from youth to age would develop a cyclical and ever-widening knowledge of the unified structure of the universe. Such a piece of curriculum construction is found in the book *The World as an Organic Whole*,¹ for here the various writers have expressed a universal unity by modern scientific treatises on various aspects of the universal being. Such a marshalling of all the materials of the various abstract forms of learning around a determined concreteness would form excellent background for learning.

ENERGETICS

Another area of experience, which is in a special sense important, is the area of energetics. We need constantly to be reminded in all our thoughts and learning of the active quality of the universe. What is the source, the origin, the beginning? What keeps things moving and acting? Such questions must be answered not merely in the gross and mechanical sense of what makes the steam engine go but in the deepest and most fundamental sense, Whence is life? What animates the physical aspects of the personality, the mental, the spiritual? In the answering of these questions and in the preservation of the dynamic background of all knowledge every academic field of knowledge pays a tribute. Each science and branch of learning must be reapportioned in due part for the answering of these important questions. Into such an expanding notion of reality enters not merely physics and chemistry, but also psychology, religion, metaphysics and almost every branch of thought as it is organized today. As learning is apportioned today the concept of energetics is

¹ See bibliography.

embedded in all the branches of thought, or lost sight of altogether. It must be brought back into an overt and dynamic part in all our fundamental thinking.

CLASSIFICATION OF LIVING PHENOMENA

The energy-driven universe may be conveniently classified into four modes of activity which are universal and simple and easily observed phenomena for all humans, child or adult, in all places and in all times. Such modes are the world of the natural environment, plants, animals and man.

Such a classification of wider realities may occur by the isolation of separate process groups. Thus various acting realities may be distinguished on the basis of the realms in which they act and which they consequently control. All matter as we know it is organized. The concept of primitive unorganized matter existing a long, long time ago is utterly unbelievable. All that we know of the construction of matter goes against any such inert beginnings or continuings. In the simplest form in which we know it, matter is always organic and active, like the knife previously referred to, in performance. Thus the use of the term inorganic to describe such phenomena as metals and rocks is improper. We must find some other term to describe that class of phenomena commonly called inorganic. We may call them lower phenomena or Class 1 phenomena.

CLASS I—*Phenomena, Lower Beings.*

Class I phenomena are composed of those material manifestations which are commonly called inorganic, or nonliving, such as various earths, rocks and chemical compounds. They may be called lower beings because of the very limited processes which they control. They are beings in the most restricted sense. They live in the narrowest sphere of created

things. Their organic life consists of origin, for they were formed, and process, for they continue to exist in active atomic and protonic form. They manifest two forms of life. First, they have an inner forming power which causes them to exist in many aspects as various chemical compounds which occur in various mixtures in the rocks and hills. While their being is limited to inner control and never passes beyond their own boundaries, yet this power of inner control is still organic and dynamic. It is powerful, reliable and difficult to resist. The immense dynamic of water, for instance, as it passes into blocks of ice may rend vast cliffs asunder. The violence of powder exploding into gas is limitless. The explosion of a ship full of TNT in Halifax, Nova Scotia, during the Great War razed whole sections of the city and threw the human hive into death chaos. The rocks about us lie in an inevitable crystalline form, and the snowflakes, of which no two are alike, are diverse reminders of this inner power of pattern forming. In the second place they proceed into chemical combination. They unite and part. The explosion of TNT referred to was produced only when the temperature of the compound was raised due to collision of one ship with another. The raising of temperature causes the materials involved to proceed into new relationships with one another. Ordinary rust is a simple example of the decay of iron itself through a process of chemical interaction. Thus in its changes from one state to another, from solid to liquid and from liquid to gas, in its assumption of crystalline forms, and in its entrance into chemical combination, the material in Class or Stage I exhibits its organic character. Its status is determined by the control it exerts in the universe, which is that of an inner forming power.

The proper understanding and control of Class I phenomena of the natural environment involve much that is

now known as chemistry, physics, geology, crystallography, geography and endless knowledge imbedded in the various branches of learning. To understand the way in which such phenomena come into being, act and pass away is in itself an intricately related organic study.

CLASS II—*Plants, Secondary Beings.*

That class of phenomena commonly described as plants controls a much wider area of life. Composed of the primary or lower phenomena and finding its origin through them, plants possess newer and more expanded powers. To them they add the power of persistence and variation. The power of persistence plants possess, in virtue of their ability to reproduce themselves via the process of seeding and germination. The inner forming power is not subject to the almost accidental happening of proximity, temperature and so on. It is related to the rhythm of the years and seasons. Given a specific soil and a favorable location, it blossoms into this zinnia or fructifies annually as this plum tree. Passing on through the time stream it enters into seasonal rhythmic relationships with it, seeding, germinating and reproducing; seeding, germinating and reproducing down through the years. It is true that creatures of Class I exist and persist in the sense of remaining. Plants do more than this, they actively persist through their powers of reproduction. Their power of variation is much wider than in the case of Class I. Crystalline forms, for instance, are uniform and standard, except in terms of mechanical interference. The clover leaf varies in one generation from three-leaf to five-leaf form. From generation to generation, the flowers appear in differing shades and colorings. Plants cross-pollinate and mutate in the widest fashion, producing within their own plant class many unfoldments and varieties. Thus by an access of inner forming

power and by the processes of reproduction and variation plants exert a wider control than organisms of Class I.

Plants have certain less defined characteristics which are nevertheless worthy of notice. In their life history they are more ordered than primary beings. The processes through which they pass are more complex and the forms and patterns they exhibit in stem, leaf, flower and fruit are infinitely more varied and entrancing. Their progress through life phases is more intricate and less saltatory. They pass not through a short series of violent and sudden changes such as liquids pass through in becoming gaseous or solid. Rather is their life history the tale of an orderly gradual and rhythmic series of changes less dependent upon accidental conditions and more closely integrated with the orderly processes of the organized universe. Thus in many ways plants exhibit more intricate and wider powers over the environment than do lower phenomena.

To the understanding of plants must be brought the fullest current knowledge of what pass as biology, genetics, chemistry and geology of soils, of inorganic chemistry, climate, weather conditions and a thousand other aspects of learning. To understand the process of plants as they pass through generation after generation, each with its life cycle, has possibilities which ramify through most of the major established branches of thought and knowledge.

CLASS III—*Animals, Tertiary Beings.*

Proceeding higher in the scale, the animals possess not merely the powers of the two lower orders but powers much greater. They have the ability to control or subject space. While the two lower orders must function in space allotted to them, animals may move hither and thither as they choose. It is in this very power of movement that they find the rise of psychological characteristics which enter the scheme of

things via the power of choice. Phenomena of Classes I and II do not exert a control which demands the powers of choice. Animals, on the other hand, do. They take an active attitude toward their environment and are able to control it to their ends via a series of instinctive reactions. The beaver builds the hut, the bees their hive by a series of uniform actions corresponding to a given environment. Their power of choice is thus limited both by the environment and by their own instinctive equipment. But in virtue of their independent existence, their severance from the living universe, their complete entity as an animate unit, the power of choice must function. It functions at every turn, at every forked path, at every object which is chosen from the environment. Thus while the beaver may issue his choices via his instinctive drives, the objects toward which those drives issue are in a measure self-determined. At any given moment even the amoeba is a doer and a chooser.

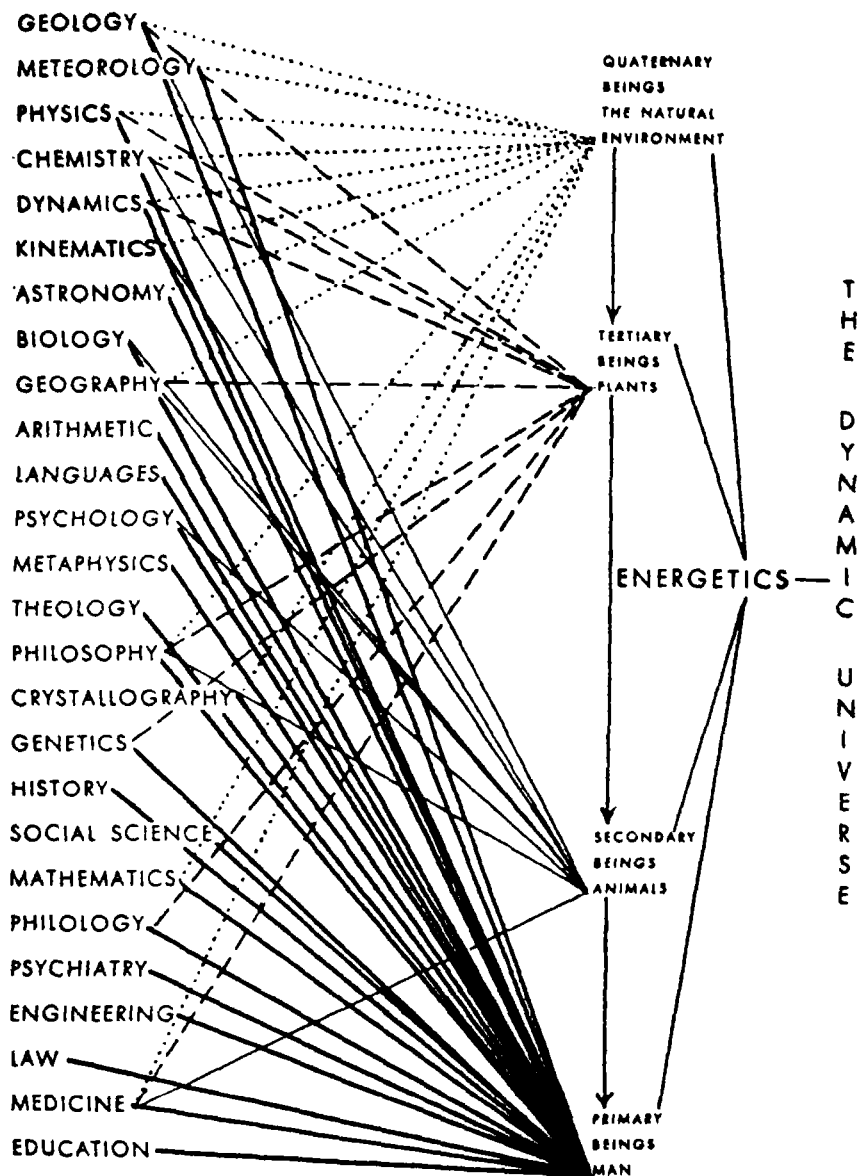
Animal biology, the life habits and psychological characteristics of animal psychology all lend a helping hand to him who would know the animals' ways of acting and behaving. Much that is knowledge of the ways of crystals and the ways of plants is knowledge of the ways of animals. Thus many things may be learned in different settings and extended in their relationships to other realities. Thus learning becomes not a venture set against itself, engaged in preserving its own artificial boundaries, but an interco-operating series of learnings which naturally link the knowledge of one event with the knowledge of others.¹ The overlapping of classes and categories presents an easy mode of inter- and cross-reference so that one may find easy passage between one area of knowledge and another. Thus integration and interrelation of knowledge are accomplished almost automatically in the course of learning.

¹ This subject is closely related to transfer of training and formal discipline.

CLASS IV—*Men, Higher Beings, Quaternary Beings.*

The distinguishing characteristic of men is their power of four-dimensional choice. This power is the result of that higher ability which enables men to control not merely space but time. Men only of all created phenomena have the ability to make time subservient to their ends. Thus they are able to manipulate their environment in the most diverse fashion. The fruits of the centuries do not pass away but are preserved in monuments and records. The future is not necessarily adventitious, it is determined and arranged by appointment beforehand in many respects. The double ability of controlling spatial and temporal movement is the basis from which human, as contrasted with animal, psychology arises. It marks men off as unique phenomena which sum up and supersede all other phenomena of the material universe. In human beings instincts are to a large extent very limited, for they would hamper and injure free choice. They are superseded by habits which through learning perform a function similar to that performed by instinct for animals. Instincts are inflexible in their operation. Habits are like instinct, systematized patterns of behavior, but they are not inflexible but may be modified or even reversed by the individual. Thus man with his wide powers of choice is both master of the universe and the summit of it.

Education is charged with the task of enabling man to realize to the fullest the regnant powers which he should exert in the world of material. It should be concerned with the presence within the individual of an abundance of life, of the freeing via the individual personality of the fullest resident powers of which his personality is capable, with the use of those powers to relate him to others and to the material environment in a manner most satisfactory to all concerned. It should make him master of himself, and, via his superior powers, of his environment, of men and things.



THE OLD STATIC KNOWLEDGE FEEDS
 THE NEW HUMANIZED KNOWLEDGE

To the knowledge of man, to the mastery of himself and his relations with other men all branches of knowledge must contribute. All that is known of other beings points to man, all that man knows of them he may use in mastering himself and the whole world. Thus through the activities of man all knowledge becomes his province. It is the problem of education to enable him to learn them, not in mechanical or artificial fashion, but as they relate themselves to his acting and living.

Man, Acting and Living.

After establishing the relationships between men and the other phenomena of the universe, it is sound to proceed to a discussion of human action. Governing and controlling his own acts, man enters into relationship with his environment, which is everything outside himself. Acting is an individual's mode of becoming functional. What is dead does not act. What is alive always acts. By action, whether it be eating, singing, dreaming or building, a human being expresses his being. By action men enter into relationship with their environment and mold it. Making personality in terms of patterns in the environment and remaking the environment in terms of patterns within one's own personality is the process of life. Men remake the environment in order to make and remake themselves. Human personality is the most fundamental phenomenon of the material universe and action is its fundamental characteristic. Acting is living, and living is acting.

Modes of Action.

By the observation of patterns of human behavior it is possible to distinguish various modes of action. Such a classification of modes of action may become the basis for the analysis of total experience and provide fundamental cate-

gories of a philosophy of both life and education. For if learning and living are regarded as coincidental, then general philosophy and educational philosophy become identical.

MODES OF ACTING

- Mode 1. Supporting one's self.
- Mode 2. Eating, sleeping, growing and playing.
- Mode 3. Homemaking.
- Mode 4. Communicating.
- Mode 5. Relating himself to group living.
- Mode 6. Making tools and machines.
- Mode 7. Studying, meditating and carrying on research.
- Mode 8. Teaching.
- Mode 9. Relating himself to the time spiral.

It is characteristic of the current state of living that these fundamental processes have no single-word names. This means that the concepts themselves have not been recognized as sufficiently basic to receive names. Only two of them, teaching and communicating, can be regarded as being satisfactorily named. Of these two only teaching is regarded as one of the most significant of human activities. In the sections which follow a single word name will be suggested which is intended to be the equivalent of the mode under discussion. The unfortunate distortion of the language is due to the importance of maintaining terminology which is in the active mood. For these words the writer apologizes.¹ They are suggested as a spur to the discovery of better ones.

It is not possible in such a treatise as the present to consider the various modes of action of other beings than man. Each should receive separate consideration. It is possible that each should be studied in and by itself. The following chart

¹ Poor terminology does much to impede our thinking. Many old terms need to be dropped, many new to be coined. In order to avoid the bizarre the writer is for the present remaining within customary terminology for the most part. As modern thought changes new terms should be etymologically developed.

concerns itself only with the extent to which the human modes of action are shared by other beings.

	Beings of Natural Environment		
	Plants	Animals	Man
Mode 1. Supporting one's self	x	x	x
Mode 2. Eating, sleeping, growing and playing		x	x
Mode 3. Homemaking		x	x
Mode 4. Communicating			x
Mode 5. Relating himself to group living			x
Mode 6. Making tools and machines			x
Mode 7. Studying, meditating and carrying on re- search			x
Mode 8. Teaching			x
Mode 9. Relating himself to the time spiral			x

Acting and Learning.

Before proceeding with a discussion of each of these modes it is important to indicate the relationship which exists between acting and learning. This is fundamental to any valuable understanding of both life and education. Acting and learning proceed simultaneously. It is at least approximately sound to say that learning proceeds out of acting, or that action results in learning. Thus when an individual raises a crop of potatoes he learns much in doing so, when he falls in love he learns a lot more.

It is further significant that thinking proceeds out of acting. It is always as an accompaniment of some form of action that thinking occurs. It is in the course of such activities as proposing, planning and taking a trip to Europe, for instance, that thinking concerning these matters arises and takes its course.

It is also worthy of observation that the materials of learning, such as content or subject matter, are functional to acting. It is in the course of such enterprises as building an air liner that mathematics finds its functional fulfillment. It is in roaming the globe that geography becomes significant. In fact, it may not be going too far to say that subject matter aside from implications of activity is not worth learning. Acting, learning and thinking, proceeding together, subsume subject matter to their ends in the fulfillment of personality.

MODE 1. Supporting One's Self—Earning.

This process might be rather called producing. Every individual should make his contribution to the total welfare. This contribution may be made in the form of a mural, a manufactured product such as an electric toaster, or by street cleaning or singing. These activities are reciprocal to the individual and society. While the individual's motive may be that of earning for self-support, the contribution he makes is valuable to society. When society returns the value received in some such form as money, the individual produces, earns and so is able to support himself and his dependents.

The matter of self-support is tied up with what is called vocational education. Vocational education is of two kinds. That which is received via the processes of liberal education, such as ability to read and add, and that which is received in special training for a specific job, such as that of plumber or doctor. The subject matter involved in such activities may, therefore, be drawn from the common branches of knowledge and also from the specific activities of any of the vocations.

MODE 2. Eating, Sleeping, Growing, Playing—Metabolizing.

The problems of eating and sleeping are eternally with us, and much light has been thrown on them by recent research.

Learners have today gotten so far from the sources of production on the local farms, or the faraway orchards, that they must learn much about natural products that those of simple communities pick up in the course of daily experience. Again technological development has so influenced the methods of caring for and preparing fruits and vegetables for the market that the public needs a vast knowledge of devitalized and developed products and of the various forms of processing used in the course of production. The artificial ripening of tomatoes and oranges, the spraying of fruit with arsenical sprays, the devitalizing of sugars and flours, and a thousand other things related to human diet are of essential importance to everyone.

The effect of sleep, the normal conditions of healthy growth, a wide knowledge of bodily functioning, the care of the health, as well as consciousness of the meaning and function of play are important for all. Education should not merely produce such wholesome habits, but build them into the habit structure of learners.

MODE 3. *Homemaking—Reproducing.*

One of the universal arts of everyday life is the making of a home. Comparatively little of our educational program is devoted to this aspect of being. Wrapped as it has been in foolish romance, it has been protected in its sentimental dress from the sanities of other forms of conduct. In China marriages are arranged as if they were serious business. In the Western world they just happen, chiefly through proximity.

The conditions of good home life, the privileges and duties of family life, the problems of companionship with the opposite sex, a sound rather than a sentimental attitude toward marriage, simple knowledge of reproduction, and its part in human life—all such have a part in the life experience of every individual.

MODE 4. Communicating.

The process of interhuman communicating introduces such vast and complex areas of interest that it is difficult to mention them. It concerns communicating by the use of transportation, and thus introduces roads, railroads, ships and a thousand other modes of transportation, with all that is transported by means of them. It involves technological talking by radio, telegraph and telephone, and by such alone introduces complicated and extensive studies. It involves talking in conversation and from the platform, with the various kinds of discourse. It is concerned with writing of every sort, letters, newspaper articles, magazine articles, books and endless forms of written work. It involves the vast field of art and music. Languages are the mediums of communication and in their study alone there is a vast area which men may explore as they wish. In fact, so great is the mass of learning which men must master in order to communicate successfully and well that this field alone might occupy men's time for years.

MODE 5. Relating One's Self to Group Living—Socializing.

Human beings have much to learn in relating themselves to those around them. It is well for each individual to know the nature of groups, to study with special care the structure of the groups to which he belongs, the nation, the home, the community, the society of his friends, also the structure and organization of his own and other communities in terms of groups. He should know and master the techniques of group movement and direction, the means by which groups are organized, held together, propagandized and exploited. He should study his own responsibilities to each group to which he belongs, and chart his own group geography. He should become group conscious and community supporting.

MODE 6. *Making Tools and Machines—Technifying.*

In the matter of making tools and machines the individual may run the gamut from making his own simple play apparatus, his toy sword and his kite to the study of the manufacture of automobiles and electric refrigerators. The whole field for technology requires vast understanding, in relation to itself and its effect on the affairs of men. The mastery of machines, their recency, the problems, such as the traffic problems, which they have precipitated and their solution, all are fields which demand close attention. Men must understand machines if they are to master them successfully.

MODE 7. *Studying, Carrying on Research—Meditating.*

The habit of independent and persistent personal research into the surroundings of life should be ingrained in every individual. Men should be trained not to accept the world as they find it. They should know that they do not have to accept it as they find it, that it is their privilege to change it. Techniques of study, individual study, original organization of ideas should be early promoted and made habitual. It is the duty of each individual not merely to learn but to make knowledge as a return for what he has received. Thus continual sensitivity to the need of research, the areas in which it can be carried on, the opportunities for it, and the necessity for it should be incessantly produced. A deep understanding of the function and the importance of meditation should be fostered. Each person should come not merely to realize the value of meditation and the various forms it may take and the purposes which it serves, but to practice meditation as a healing and art, and as a creative process.

MODE 8. *Teaching.*

One of the most magnificent and universal arts of life is the art of teaching. It makes man the crowning height of crea-

tion. It makes human life possible. In a very actual sense each individual must and should be a teacher of others. He cannot avoid it. For teaching is not the art of a separated class of professionals, but a function of all men. Thus some notion of the importance, the function and the method of teaching should be taught to every individual. He should, to some extent, have practice in the teaching of individuals or groups. One very able teacher will never accept a pupil who has not himself a pupil under him. While such a rule may not always be practical an approximation to it will aid in a material sense the development of any learner. The importance of teaching and of education in the community should be adequately taught to every citizen, young and old. No class of human beings has its own destiny in its hands as have the teachers. It is their rightful privilege to so train the young that the dignity and importance of teaching should be made amply clear to all. Teachers may train the rising community to new levels of educational support and realization.

MODE 9. *Relating One's Self to the Universe—Religionizing.*

Religion is too often regarded as a thing, an appendage, a way of thinking—not as an act. Religion is a mode of acting by means of which the individual allies himself with the fundamental Being of the universe. The fact that secular schools cannot teach religion may be used as a condemnation of secular schools. Or it may be used as a justification of religious schools. Certainly the secular school should so organize its work that it should support the religious training of the community rather than undermine it. The meaning of religious freedom should be taught in secular schools, its value, its importance, the evils of religious persecution and intolerance, the meaning of superstition, the evils of priest craft, and exploitation by religious impostors. At the same time it

should point to the individual his opportunity of finding fundamental religious orientation and satisfaction, and make him realize that until he has solved this problem he must maintain the attitude of search. Moral training and sympathetic support may be expected of the secular school—religious education is the province of the Church and is the Church's responsibility.

Such an extensive reorganization of knowledge casts the whole of learning in the active and dynamic mood. Curriculums and schools so organizing the approach to learning will provide curricula which integrate themselves with the natural mode of learning, the acting of the learner himself. Organic organization of knowledge and culture should form the basis of healthy experience and integrated personality.

CHAPTER XII

THE ELEMENTARY SCHOOL

IN CREATING a vision of organically growing experience of the learner from his first beginnings in school life, on through secondary school and college into the community, the points of view set forth in this book are very influential. It is assumed that the nursery school and the kindergarten are institutions which partake half of the nature of home, and half of the nature of the school. Consequently, the analysis of school life presented here will begin with the elementary school. In the sections which follow no specific plan of school life will be offered. Rather a determining and governing philosophy will be set forth which may form a basis for the organizing and reorganizing of school life.

The advent of modern school methods is radically and rapidly changing the elementary school into an organic institution more and more related to the modes of current social life. Reform which began under Froebel in the kindergarten is gradually spreading up through the elementary school until today new overt and concrete practice is identifiable for the elementary school.

That this new practice is well oriented to the changing times is evident on brief reflection. The modern elementary school has the following marked characteristics which indicate its relationship to the times.

It Utilizes the Dynamic Life of the Learner.

Faced with a world situation which demands as never before the release of human force to control the machine, it is most appropriate that we should conserve and capitalize on individual dynamic. The best elementary schools attempt to enlist every tendency of the learner in behalf of his own learn-

ing. They seize on the child's tendency to build, and allow him to build houses in school. They make use of his interest in current events in introducing him to historical materials. They allow his interest in handling objects to grow into counting. In every way the good school attempts to make deliberate and continual use of the child's own dynamic contribution to school life.

It Aims to Organize Experience Organically.

When the material of the curriculum is organized mechanically, in the interest of the principle of difficulty, or the principle of logical sequence, or the principle of concentration of value, much friction is encountered in the process of the child's learning. Learning, which is the organic outgrowth of the child's own experience, is more valid and valuable. The summer experiences of children may lead them to a study of farm life, of water power, or of bridge building. Individuals who have collected butterflies may classify them and learn their life relationships with other species. To arrange the learning process so that the child moves by easy stages from where he is to where he is not is organic. To arrange school backgrounds in such a way that they carry children through normal paths of expanding growth is a corresponding resource to be used by the teacher when it is helpful.

It is Relativistic and Flexible.

The tendency to lay out the educational fare in a compulsory sequence is passing. The notion that just certain ideas and skills should be mastered in a certain order by every individual is disappearing. Such a regime is intended to breed unquestioning obedience to self-constituted authority. Such absolutistic teaching is not suitable for the world today. It is like teaching a dog a set of tricks, which he is unable to vary.

In the world in which we move today one must know not just certain responses such as those connected with bread making, or horseshoeing. One must be quick to learn and to adjust, to fit one's self to one community and one kind of work, then to another and another kind of work. The flux of the environment is such that the individual must become automatically adjusted but self-adjusting. Consequently, personal resourcefulness must be developed. One must learn that what is suitable in one situation is only relatively suitable in another. Knowledge is taught as relatively true, and the success of a child's invention, or composition is judged in terms of its functional value in a concrete situation, rather than in terms of an extrinsic standard of value which is the property of the teacher alone.

It is Not Exclusively Intellectualizing.

The school today does not attempt to "train the mind" alone. It realizes that the all-aroundness of the personality must be developed. Emotional as well as intellectual poise is required in the dramatization of a set from a story. Great personal poise and integration are required of a child who skillfully leads a discussion on the use of snowballs in the playground. Children are not in school to read books, listen to lectures, take dictation and recite their lessons—not these things alone. In addition they take part in every form of activity, the making of boats, the singing of songs, the playing of games, the cooking of lunch. In these and a thousand other activities they find an all-round fulfillment of being and an inner integration which is more than intellectual. Thus are personalities built which may cope with the ever-changing aspects of a quickly changing world.

It Provides for the Consideration of Current Problems.

Schools weighted with tradition to the exclusion of all else are suitable to a society which is set in its ways, and needs

no change. But in a world which is rapidly moving and continually changing in complex ways current problems must be understood and faced. The discussion of current arctic exploration, some foreign dictator's most recent exploits, seasonal effects upon the crops of the nation—such things give children not merely a current consciousness of the reality of life about them, but form a connecting point with the social dilemmas and accomplishment of other times and lands. They begin to glimpse the fact that the men of history were not shadows but beings like themselves, and every whit as alive.

It Develops the Personality of Individuals.

Rugged individualism and social co-operation should go hand in hand. Unless supreme individuals are produced supreme societies never can be. The stress of the modern school upon personal values and the making of men is once more in response to the need of the times. In the good school the teacher does not think primarily of what quantity of composition or spelling is covered or produced. Rather does the teacher consider what this experience does to the learning personality. A good unit of learning makes the learner a better person, and better persons are the crying need of the day.

It Socializes the Individual.

It is only in groups that we learn to help and use groups. Co-operation is not learned by the dinning voice of the teacher who preaches co-operation to save the school from trouble and himself from inconvenience. It is learned by actual co-operation with the group in the presenting of a pageant or the understanding of a history lesson. The highest form of group life is to be found in the modern school. Here children see what it means to benefit the group and be benefited by it.

It Provides Training for Leisure as Well as for Work.

Training for and in work is essential and assumed in any school worth the name. But the times in which we live are thrusting increasing hours of leisure upon the general populace. The reduction of hours of work due to machine labor and to unemployment places in men's hands more free time than the total populace has ever enjoyed before. To bring up a generation of loafers and amusement seekers, is to squander the values of human life. The use of the outdoors, of constructive reading, writing and artistic and musical participation is part of the work of the good school today. It trains children to the constructive use of free time.

It Provides and Develops Artistic Experience.

As society moves from gross material values to idealistic and subjective ones the place of art in the community increases. We are passing through just such a metamorphosis. When personal, financial success and money making was the single goal of the young, society became a competitive race for supremacy. This internecine existence is coming into growing disrepute. There are increasing numbers of the younger generation who are seeking subjective values, and the things that come through art, literature, music, sculpture and the crafts. These things find a larger place in the life of the modern school. Not only is craft work intrinsically interesting to all children, but it serves the double purpose of providing concrete materials for the development of thinking, and at the same time enabling the individual to coordinate his physical and mental being in a single worthwhile task. In addition, it provides the proper participation in art values which leads on to a fuller life in other terms than material success and money value.

It Provides Elementary Technical Knowledge and Skill.

Many a child of thirty years ago could speak and read and write, but could not saw a board straight, nor fix a puncture in his own bicycle. The provision of adequate opportunity for boys and girls to participate in woodwork and shopwork is removing their technical illiteracy. In a day in which machines abound on every hand—the toaster, the vacuum cleaner, the washing machine, the automobile,—simple technical knowledge and skill are necessary not merely for the mastery of the machine concept, but of the machine itself. Men must know machines in order to rise above them and keep them in their place.

It Develops Inner Controls.

In our society we are increasingly dependent upon the manners of men about us. We cannot look for any omnipresent police force to keep men in order. The social organization in the small community long ago was influential in keeping men within the bounds of common decent behavior. Today life is so mobile that the worst of manners prevail, and petty as well as major crime is incessant. Men are not known by their fellow men. They cannot be recognized in city crowds. They may even commit depredations in open daylight without being observed by the men around them. Society can not hope to control individuals by the application of outer force. The elements of direct control are not even sufficient to develop a code of good manners in the driving of automobiles. The only hope for orderly behavior is the development of inner control. Pupils must learn to behave themselves in school and in the community when they are young, and must be trained by the community to continue in such control when they become adults. In the modern school the pupil is trained to obey not merely the rod of authority

but the still small voice, the inner urge to behave. He is taught to control himself, by himself.

In these numerous ways the modern elementary school is reconstructing its inner being. In all the modern nations where oppression is not rampant the development of the individual is become increasingly important as the goal of public elementary school life. The modern elementary school is rapidly bursting through the damming opposition which has held it back for years, and is finding firm foothold in most of our communities. Even where a full progressive program is not in use the school systems have been shot through and interpenetrated with modern methods. The problem today is not to secure allegiance to the newer methods, but to secure any minimum understanding of them on the part of those who assay to follow them. For the progressive school has been called into being by the times, to meet our pressing need for the making of men.

THE DISCOVERY OF THE CHILD

One of the most important functions of the elementary school is the discovery of the individual child, and in this work the school of tomorrow must make much new progress. For all our new methods and all our modern programs we have not thoroughly grasped the uniqueness of the individual child, nor developed adequate techniques to discover that uniqueness. True enough, we have already moved far away from a program of regimentation. Time was when it was regarded as desirable to have every child learn the same thing, and to have every child behave in much the same way. We have now reached the stage in which we are reconciled to the fact that individual differences are a necessary evil. They must be met by individual techniques and flexible procedures. This child may make a kite while that one makes a candlestick. This boy may specialize in the Reformation, and

that boy may prefer the Roman Period. This class may make a study of medieval homes, and that one may make stained glass windows. Such latitude we allow and even encourage.

This flexibility and differentiation is all to the good, but we must in the future go still farther. If we prize personality and hope to develop the best that is in the individual we must not give grudging place to individual differences. We must eagerly pursue and rejoice in the uniqueness of the individual. We must think of it not as a phenomenon to be dealt with but as an asset to be prized. We must diligently seek to discover the distinction that crowns the being of every child.

Such an analysis does not indicate that every child is a genius, far from it. Genius is just one kind of individuality. We have perhaps prized it too much. We have been inclined to believe that genius is to be coddled and treasured, while the average child is to be merely suffered to live. The dull child we have been tempted to regard as an unavoidable evil.

"There was a time when all the body's members
Rebell'd against the belly—"

The belly's answer:

" 'True is it, my incorporate friends,' quoth he,
'That I receive the general food at first,
Which you do live upon; and fit it is,
Because I am the store-house and the shop
Of the whole body: but, if you do remember,
I send it through the rivers of your blood,
Even to the court, the heart, to the seat o' the brain;
And, through the cranks and offices of man,
The strongest nerves and small inferior veins
From me receive that natural competency
Whereby they live'."

It is a serious error to neglect the contribution which is made to the general good by the average and the slow. It has ever been the dream of society since the time of Plato's Republic to sort out society into classes or layers, and put each man in his place. That dream so poetically conceived should never be fulfilled. It is not for men to place others in pens and delimit their usefulness. That dream of Plato's of a superbly organized society in which each man does his part is to be secured not directly by legal supervision or dictatorial classification of individuals. It is to be attained through a much more liberal and less definite procedure, that of treasuring the individual in every walk of life, through the discovery and development of every personality to find its highest fulfillment in terms of its own individual being. Such a culture of individuals will salvage all society's resources and make them available in the place where they are needed. We do not collect our food in classes, carrots for the brain, and steak for the muscles. All is allowed to contribute of its own mature and natural qualities. Digestion prepares it for its peculiar services to the body. So education should digest individuals for society, by discovering the particular qualities and values of each individual. Once more, the making of men is the making of society.

Let us then discover the basic individuality of every child while he is still in the elementary school. We must discover it to develop it. We must develop it to capitalize upon it. We must make each individual's deepest being tell for himself and for society.

Children very early begin to show their own peculiar and individual traits, which mark them off from other children. It may be but an expression of countenance, the meaning of which we are unable to interpret. It may be but some simple sleep ritual through which the infant passes before he is willing to sleep. From the first our tendency is usually to stamp

out the variation if possible, although those of better training and judgment do not do so. As early as the kindergarten years unusual tendencies appear. One child, for instance, in the free painting of the kindergarten used a peculiar type of perspective all her own. She drew things as if they radiated from a central nucleus. The dog walking on the sidewalk she portrayed head downward, or what we would call upside down. The train on the tracks above the dog stood up as we would draw it. To the kindergarten teacher this was a source of worry. She wished to persuade the child to draw everything according to our conventions. It would have been harmless enough to have allowed the child to continue until some more adult experiences allowed her to choose to modify her method if she would. There is much to be said, even in a positive sense, for a nuclear perspective, similar to the views we receive from airplane photographs. Even a relativistic conception of perspective is something to think about. A child of nine, whose artistic talent was unusual, drew with deliberate intent certain partial pictures on visiting cards, his only available medium. He drew a foot in action without a body and a football hero's body without any head on it—something for even an adult to think about. For everything he did no matter how unusual this child had a reason. To ask the reason, rather than to condemn the procedure, would be to learn to know this unusual child.

At the age of ten children are usually sufficiently individualized to reveal marked personality leanings. It is of comparatively little importance to determine the causes of these variations whether they come from home or school, from "inheritance" or its corresponding figment "environment." What is essential is the discovery by the teacher of this constructive leaning. If the child is given sufficient freedom to act he will reveal it. For example, a child walking with an adult down Broadway will, if given sufficient freedom, reveal

his interests even in the simple progress of an ordinary walk. It is impossible to pause and to dash here and there with the child in his incessantly changing interests. But while the adult walks on, a simple "you go look at it, and catch up to me" will reveal the child's special interests. Some children show an inveterate interest in things. They want to observe and study everything in sight, to handle, hold and experiment with it. Such children learn through concrete reality and generally through manipulation of it. They will strongly lean to a life occupation which is partly manual. Others are concerned especially with people, while others are occupied with their own thoughts. Of course, in each individual these characteristics and many others are mixed yet these illustrations serve to indicate the way in which even a casual walk may reveal marked personal characteristics in a child. One child never failed to stop at a shop containing art materials. This drive toward art was incapable of suppression in this case in which both home and school operated in part to suppress it. In the end it became a master theme in the life of the young man. Another ten-year-old had a strange interest in jewelry stores. Investigation showed that the boy's interest was in jewels, which came out of a larger interest in crystals, rock formations and geology generally. Here was the basis from which the true geologist might have been developed. In this case neither school (a famous progressive school) nor home ever discovered this trait of the individual child, and it was soon lost in the school's pressure for the orthodox in a guise of freedom. These illustrations are typical of definite community loss which schools allow by their failure to discover individual children.

The time for the discovery of the individual child is during his elementary school life. Not only a walk on Broadway, but similarly every activity in which the child is permitted to participate, is a revealer of his name. On the child's personal

record card held by the teacher and passed on up with him through the school, his uniqueness should be carefully reported. One of the chief functions of the elementary school is to discover and conserve the child's distinctive personality, and to set him on the path of self-fulfillment that his own particular being reveals. Around this individual nucleus he should begin to organize a unique experience which will make him widely oriented to choose a field in the secondary school with intelligence and interest. He should be so discovered and self-discovered that to be without the further educational experience the school offers would be to him deep disappointment. His elementary school should awaken his being to crave the wider experience of the secondary school.

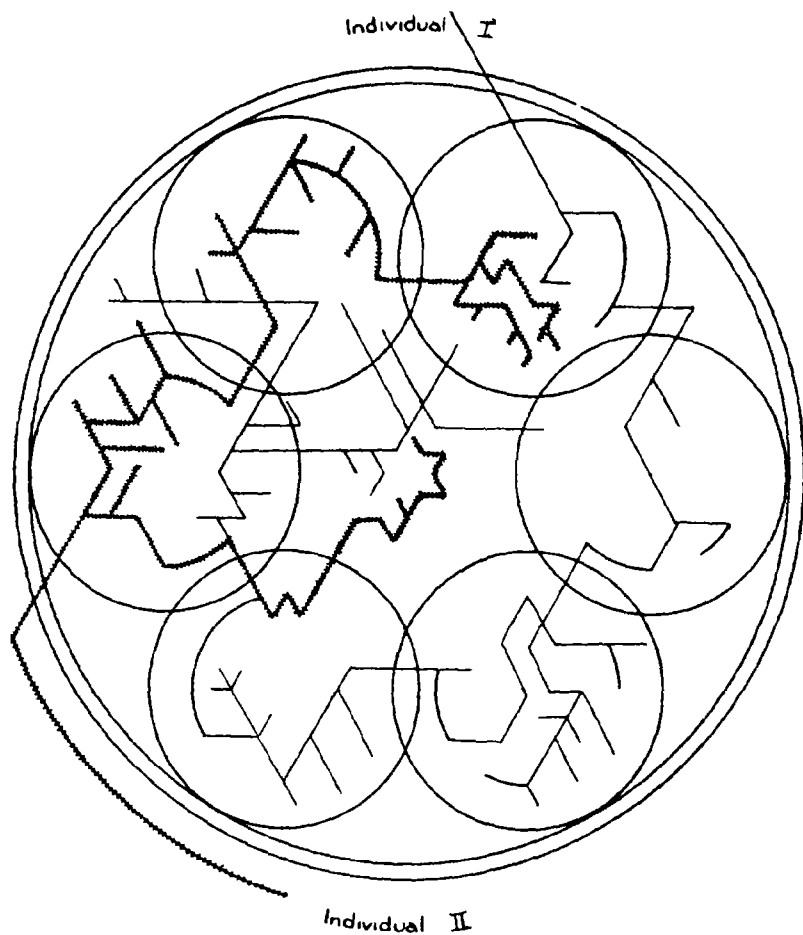
THE ARENA OF KNOWLEDGE

For the teacher to open certain specific doors to the inner arcana of a specific knowledge no longer meets the needs of pupils. The older concept regarded the school curriculum as a certain set of learnings to be mastered in a certain sequence by all; thus:

Reading
Writing
The Child—enters—Arithmetic
Geography
History

Through each he was piloted in a certain official order. There are schools in our metropolitan districts today where the principal at the month's end brings in his own tests in arithmetic and geography covering the work he has set out for teacher and class as their duty for the month. Such procedure is so utterly inconceivable in the good elementary school that it appears ludicrous.

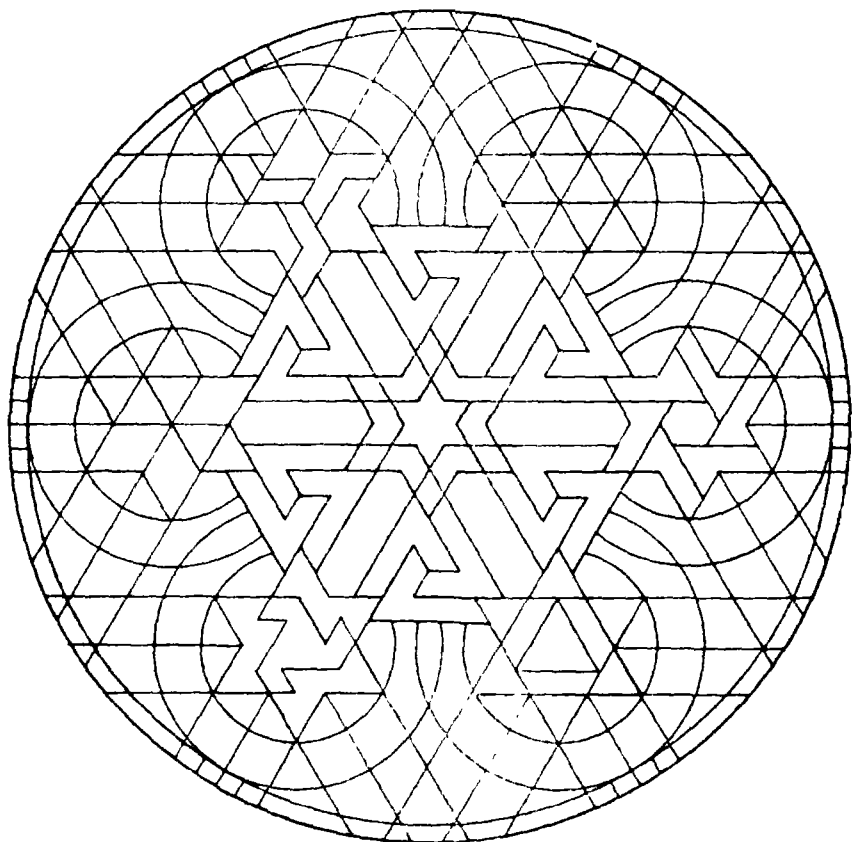
We must conceive of knowledge or experience as one



EACH INDIVIDUAL ENTERS THE ARENA OF EXPERIENCE AT A DIFFERENT POINT AND ORGANIZES HIS KNOWLEDGE IN TERMS OF HIS OWN PERSONALITY.

vast unified arena with as many doors as there are points in the circumference. Within, all is ordered perhaps, but ordered in such a way that one may grow into it in his own way, and pass from one part to the other in terms of his own growth, and his personal inner relatedness. This may be illustrated by a diagram.

It is only such organic entry into the arena of experience which is actual and valid learning. Other learning is formal and of little value to the individual unless he reasserts it by his own inner experience. Even with the best of scholars this reasserting or rearranging process is subject to a high percentage of waste. When the unique experience of the individual is discovered his unique path into the arena of experience is clearer. To arrange for the individual to make his basic experience the foundation of his subsequent major growth is the duty of the teacher and the school. I recall one high school boy who was taken as a pupil by one of the most famous progressive secondary schools in America. Due to a warped elementary and junior high school experience this boy was deficient in skill learnings, concentration in those areas and interest in them. He was, however, superior in family background, literary in a marked but unacademic way, possessed of immense knowledge of art and even of some knowledge of philosophy and psychology, and highly gifted in art. His dream was that the school would induct him through art into the other areas of experience. In a note written to the psychologist he so analyzed the needs of his own personality. Because of a prevailing concept that he must go to college, the boy was taken from his art work completely and required to concentrate on his deficiencies in French, algebra and history. In his inner life this boy experienced a revulsion which completely stultified him. Discovering this failure the school provided him with a special curriculum, a full-time art course with abandonment of the college theme, and began the expan-



THE CIRCLE OF EXPERIENCE SHOWS BEAUTY AND ORDER.

sion of the boy's work from the field of art into history and chemistry of pigments. The boy's attitude was revolutionized and he became a devoted student, tireless in his energy and in the pursuit of his own growth through learning.

This should be the basic procedure of the elementary school. The elementary school which so conducts children's individuality into the realm of knowledge and builds within them an organic combination of their own being with the material of learning, fulfills for them the function of the elementary school.

The way in which any common aspect of our environment implies a vast area of the remainder is indicated by the following quotation. Such a state of affairs indicates how the teacher may use one interest of the learner to implicate him in others.

"Take a high-grade shoe with a patent leather vamp and a dull leather top. The vamp is made of Russian horse-hide, tanned in this country with a bichromate of potash formerly obtained from Germany. The top, in all probability, is made from the skin of a goat raised in South America, tanned in Philadelphia with gambier brought from the East Indies. Wool oil from Michigan makes it soft and pliable. The brilliance of the patent leather is obtained by polishing it with a composition containing lampblack and turpentine from North Carolina, linseed oil from Ohio, dammar from New Zealand, conchone and asphalt from South America, wood naphtha from Michigan, benzine from Pennsylvania, amber from the Baltic sea, sandarac from Africa, mastic from the Island of Scio, Greece, flemi from Asia and Cuban lac.

"The lacing hooks and eyelets are made in Connecticut, the material in them consisting of alloys of zinc from the mines of Joplin, Mo., and copper from the Lake Superior district. Agatine, an ebonylike substance containing eight distinct ingredients gathered in Asia, South America and the

United States, is used to coat them. The Australian kangaroo furnishes the leather for the tongue, the lining of which is felt made in New York State from the wool of sheep grown in Ohio. This felt is glued to the back of the tongue with gum arabic from the Near East.

"The outer sole is obtained from the back of a Texas steer, tanned in Kentucky with bark from Tennessee, while the sole is made from the home-tanned hides of California cattle. The lifts of the heel are made from South American leather, and the dextrine which holds them together comes from Illinois cornfields. Before leaving South America the leather is partially preserved with chenang. The sole of heavy oak is stitched to a welt cut from Texas leather and made into welting in Pennsylvania. The welt is stitched to the insole and upper with linen thread made from flax grown in Belgium and spun in Scotland. This thread is lubricated and strengthened with wax made from resin and tar extracted from the pine trees of North and South Carolina. . . .

"Portugal supplies the cork filler which keeps the moisture out of the shoe, the cork being mixed with a solution of pitch and tar from the Carolinas. The base of the leather box toe is made from Texas hides, hardened by shellac which, in the crude state, comes from Siam. The counter originally comes from the Argentine. Over the box toe is a protector made of Georgia cotton and coated with a composition of Para rubber. The felt heel pads are produced from the same sources as the lining in the tongue. The twill used in lining the shoe is made from Texas cotton, woven in Massachusetts mills and stiffened in Philadelphia with a paste produced from Kansas wheat flour.

"Thread spun from Sea Island cotton supplies the top stitching, while the silk thread used in stitching comes from Japanese raw silk spun in Connecticut. The silk label also originates in Japan, but is woven in New Jersey. The shoe

lace is made of native cotton dyed with logwood from Yucatan or with aniline colors made in Germany and this country. The lining and upper of the shoe are pasted together with a cement made of Brazilian rubber composition. California produces the gold used for stamping the top facing, after it is beaten into thin sheets in New York State. The marking-machine ink is made from Indian cochineal and oils obtained from Oklahoma.

"The bright polish seen on the sole of a new shoe is due to a coat of bayberry tallow, which is produced from the fruit of the Indian bayberry tree mixed with native beeswax and turpentine. The tops are cleaned with gum tragacanth from Persia. Last, but not least, the nails used to fasten the heel and shoe together are made from Swedish iron ore, and a special steel manufactured in Pittsburgh holds the top layer to the heel." ¹

THE PRINCIPLES OF ORGANIZATION OF THE ELEMENTARY SCHOOL

The modern elementary school has not yet reached the stage of being clear on any fundamental principle for the structural organization of elementary school life. This principle should be that of organic unity. The organic experience of learning children is a matter of organic method, a subject which I have discussed at such length in other writings that it needs no repetition here. The organic organization of knowledge, which was discussed in Chapter XI should have a special application to the work of the elementary school. It is suggested that the organization of the curriculum be based upon the reorganization of knowledge there suggested. This does not mean, certainly, that any attempt should be made to organize any curriculum for systematic

¹ Quoted from White, "The Meaning of Disease," who quotes it from the *New York Times*, February 6, 1921, cited by W. N. Polakov: *Man and His Affairs*, Baltimore, The Williams & Wilkins Co., 1925.

and logical teaching from beginning to end. It is suggested, however, that the background organization of subject matter and experience as it is prepared for the elementary school should be dominated by the basic organization of experience into active categories, the universe, energetics, natural objects, plants, animals and men, that these modes of action and their sub-modes, rather than the old subject divisions, be used through the school, both in the organization of realms of learning, activities and curriculum. It is suggested that these realms of learning are valid because they correspond with modes of action. They thus are suitable for the development of an inner relationship and integration between learning, acting, being, doing and the experience and knowledge which becomes the medium of learning.

THE SOCIALIZING EXPERIENCES OF THE ELEMENTARY SCHOOL

The elementary school must in the most basic sense actually be a community. But that is not enough—it must explore and integrate itself with wider communities. For example, in the school itself there must be an extending consciousness of kind. This is not the old vanity of “school spirit” which meant the pretense that this particular school was better than the other, not on account of its accomplishments, but because it was a convention to keep up such a pretense. Such thinking encourages delusional experience and becomes the basis of mental tangles. The old school loyalty based on a sort of teacher- and pupil-made tyranny was a disgrace to any school. School community consciousness is based on the actual fact of a group of children living with a group of teachers in terms of ideal community relationships. The participation of each child in the care and thought of the teacher and the school officers, in the privileges of the school and in the specific companionship of every other child in the school is the true basis of elementary school community life. The

doing of individual with individual in common learning experiences, the exchange of ideas, the interpenetration of thoughts, all these things make for valid integration. The discussion of group work, and common effort, the concerted trips made jointly here and there, the school festivals requiring co-operation, all these and a thousand modes of intercommunity learning and expression should bind the children into a consciousness of membership in an organization of which they might well be proud. A school must be worth being proud of if children are to take pride in it.

By the time children have finished the elementary school they should have developed sufficient inner control to enable them to live as co-operating members in school. It should be the work of the high school to generalize this community experience. In the elementary school children find their first community life. They should then explore the nature of group life, and learn to manage and understand group affairs.

Children should early explore the nature of group government. They should have learned, by the end of the elementary school not merely to govern their personal affairs by inner controls, but to govern group affairs by general control. The nature of individual and group behavior should become an open book to children during their elementary school life. Such a realization is learning more important than that of the assumed knowledge and skill mastery of their ordinary school experience.

Furthermore, in the elementary school children should begin to use money, and to understand its nature and the problems which it precipitates in the lives of individuals and society. Under an older school regime money was kept out of the elementary school. The type of school management and government which was used in school made money an impossible problem. In the new school it is essential that the nature

of individual and group ownership of money and its social effects find at least the beginnings of understanding. In the elementary school we find the ideal community. There life proceeds at a high level of human interrelationship and trust which is not duplicated in the community. For there children have only their own judgment and their own code of honesty to obey. There is a premium on righteousness, on good behavior. To live well is to be the happier for it. In the community into which they enter this is not true. Bribery is rife, money steps in and in one guise or another places a premium on unethical behavior. The debasement of human life and every form of corruption is paid for with high prices. There is a premium on discovery and on unrighteousness. Children who are not trained to face these issues in the concrete while they are still in the guidance stage, are often lost when the full power of money with its possibilities of good and evil beats upon their motives. In order that the motivations and the operations of money in the life of individual and community may be known and understood, that children may learn what money can buy and what it cannot, what it should buy and what it should not, money must have an increasing part in the life of the school community from the beginning to the end of school life. Children should be allowed first to dramatize the use of money, as they grow older they should use it. In a Winnetka school the class organized a business in raising rabbits and organized a miniature joint stock company. The school shop and school fair introduce money into school life. There might even be a room with booths, a school market in which children rent their stalls at so many cents a day, where they may set up their business in the sale of art and marbles to their fellow pupils. In such setting both the pride and scorn of money values would develop under the school's very eyes. Children might learn the strength and the weakness of a material basis of exchange.

The socializing experience of the general learnings of the elementary school is of course assumed. What is written here is written not to destroy the school but to fulfill it. The full battery of socialized learning, competency of the first order in the simple skills of reading, writing, arithmetic is taken for granted. Once these were a school problem. Now the teaching of children of undisturbed experience in these simple skills is almost as simple as turning the crank of a food chopper. It is standardized and simply a matter of knowledge. We need not spend hours discussing the teaching of arithmetic. We need only take it for granted that teachers can be told how to teach arithmetic, as we would tell them how to make a boat. It is for experts to disagree on certain methods. For the average teacher it is simply a question of learning some systematic way of disposing of these matters. Once these so-called skill subjects filled the horizon of the school. To-day, although they occupy about half the time of the school, they hold the routine place of eating, drinking and sleeping in the whole life of man. They must be attended to gracefully and thoroughly, in order that there may be time for the great things of living and learning.

While the basic social mission of the elementary school is to be a community yet the beginnings of more than this must take place while children are still in the elementary school. In the lower grades of the school they must from the very beginning go out into the community and see what men are doing and learn of the life around them. As they pass into the middle grades they must begin to study the outside world and discuss its ways, continuing their trips occasionally to manufacturing centers and to public institutions. By the time they enter the upper grades they should begin to understand the way the wider community functions, while in the junior high school they should be familiar with every resource of the community how it is run, how it is supported

and what its service is in the healthy community. This should include not merely art institutes, schools and colleges and manufacturing plants, but hospitals, churches, social settlements, the police departments and in fact all the departments and public services of the community in which they belong. It is not yet time for them to participate to any large extent in adult community life. They should learn the significance and importance of these departments and public services, but also their own responsibility and privilege in supporting them by loyalty and integrity in their use.

THE ELEMENTARY SCHOOL

By the time the child has finished his elementary school career he should have developed all those functional knowledges, habits, attitudes and skills which schools of an earlier generation secured. But he should have gained much more. He should know himself. He should know with some certainty the community around him and its world relationships. He should know vastly more about the world of science and invention, of philosophy, psychology, of political government and economics than fell to the lot of the high school graduate of thirty years ago.

We must face today a consistent push of knowledge and experiences down into lower levels of the school. Just as the arithmetic for which a medieval student was sent from Europe to Italy to secure is now taught to infants, so today we must push new experiences down to the children's level. What is pioneering knowledge today is milk for babies in the next generation. The college curriculum of the Middle Ages, the seven liberal arts, is today taught in the elementary school. The college course of yesterday must now refertilize the life of elementary school and high school. In our elementary school we must have much of sociology, much of psychology, much even of common philosophy and much of

science. Time was when the elementary school teacher felt it her duty to protect the high school curriculum, and the high school teacher did not trespass on college levels, but watered down his subject and held back much that was vital. Today the elementary school must take all knowledge as its province and pursue the organic learning of individuals and groups of children where the distinctive personality of the learner leads them. The elementary school embraces first the child's world and through it all the world.

CHAPTER XIII

THE SECONDARY SCHOOL

THE WAY may be briefly cleared for a discussion of the reconstruction of the secondary school by the wholesale abandonment of certain areas which have been commonly occupied in secondary school practice. In the first place the notion should be completely forgotten that the high school is a preparation for college. The high school should declare its complete independence of college domination. It must find its basic orientation to the human material which comes to it, not to those who have left it. The most intimate relationships of the secondary school are with the elementary school which furnishes it with pupils. The preparation for college which is in addition to that of the organic development of the individual pupil may be left to the college itself. The scheme of college prescription of entrance requirements, which influenced the high school curriculum, belongs to a period that is passed. In the days when the secondary school was to a large extent a tryout for college the plan had some validity. Today when we are moving rapidly toward a total enrollment of all the adolescent population in high school, the complexion of high school life is completely changed. High schools have been like the elementary schools, schools for all the people, and the internal development of this new school must take its pattern from this universal character which is becoming a characteristic of the new high school.

A second mode of secondary school life which should be completely discarded is the organization of the school in terms of subjects, the old subjects of the academic classification. As I write there is being carried on within a mile of my typewriter a high school which has made no essential change

in its program for twenty-five years. When school opens in the morning the pupils have a brief routine assembly in an assembly hall, after which the bell rings and the classes proceed to the classrooms according to schedule, each class moving always together according to the same program from room to room, through the successive hours of the day. Each teacher has a subject and a schedule of classes. The pupils go to the subject teachers to study their subject, which is presented in logical sequence according to the dictates of the curriculum. The subjects are chiefly algebra, trigonometry, geometry, Latin, Greek, English, French, German, chemistry, physics. The method of teaching is chiefly lecture and recitation. It is just this traditional high school which must go. It is primarily a waste of time. Its functional value is not sufficient to justify the expenditure of public money in its support. It must be replaced by a new and more functional secondary school which is organized not on a subject-matter plan, but organically in terms of organic subject matter and organic pupil experience.

The third aspect of the traditional high school life which must pass away is the concept of the high school as a dispenser of knowledge to be mastered. The corollary of subject-matter organization is still all too prevalent. There is no knowledge in the world which is alone worth four years of a student's life to master in abstract form. The concept of learning as the mastery of subject matter must be replaced by the concept of the expanding experience of the learner. The reform which has passed up through the kindergarten and the elementary school must capture the secondary school and the college also. Programs of learning in the secondary school as elsewhere must be programs of action, must be couched in terms of functional activities in which the learner engages for their own sake.

THE FUNCTION OF THE SECONDARY SCHOOL

The basic work of the secondary school is to carry on the organic development of the individuals who come to it. The children who come to the secondary school should come with a full written report of their previous experience and accomplishment. During the elementary school life of the child his teachers should have discovered for him and revealed to him the peculiar nature of his own experience, his individuality, his distinctiveness. He should enter the high school which knows him for what he is and for what he knows himself to be. If the elementary school must discover the child, the secondary school must make him a man. As never before in educational history the secondary school program of the individual must be an individual program. No matter what havoc this makes with schedules, classes, subjects, administration, school organization, it is a necessary reform for the adaptation of the high school to the demands of the world we live in. The organization of the high school cannot longer exist for the convenience of its sponsors, it must exist for the learners who attend it, to further their ends and facilitate their experience.

MARKING TIME IN THE SECONDARY SCHOOL

There is a growing feeling among certain thinkers on education, which is supported by the stated experience of pupils themselves that to a very large extent the average high school student finds his high school a dead-end educational experience. It seems as though having exhausted the essence of everything in the elementary school, the student is being held back from learning until some hypothetical time when he may be permitted to learn again in college. The area of secondary school learning seems too often to be pumped dry of meaning by the elementary school on the one

hand and the college on the other. What is there to learn in secondary school which is not compassed by elementary school or college? Why all these hours chalked out for the student in English and French and mathematics? What does mathematics mean to a prospective longshoreman, and what does French signify to a girl who longs for a position in a ten-cent store? Sometimes it seems that the program of the high schools is devised to mop up the spare time of a huge unoccupied mass of human materials, to keep them under supervision, and sufficiently occupied to prevent the use of this time in mischief and idleness. The high school functions as society's great nursemaid for adults.

The secondary school is long overdue for a visitation of rigor. A harder core of real experience is desperately needed to vitalize the life of the secondary school. No longer made up of a population which expects to go on to college, the high school must face a thorough readaptation of the material of instruction to individual and community needs. Four years of a lifetime is a great human investment. Certainly a high school boy has a right to demand much from society for four years so donated to the good of all. Just as the elementary school needs enrichment from the work of high school and college, so the secondary school needs to be made weighty with the work of the colleges. We must not withhold one jot or tittle, but let the full avalanche of human experience descend upon the high school while there is yet an opportunity for it to reach the individual learner. But not in some arid storm of academic subject matter. Rather in a background of the most vital significance in universal and in human action.

The same form of organization of knowledge as that suggested for the elementary school (see Chapter XI), knowledge in terms of action, is valid; the same theory of learning, namely that of active participation in real affairs. But in

terms of organic experience there should be little left for students to learn in college in the way of essential subject matter after the completion of a good secondary school education. The softness that has pervaded the high school program should disappear. Life in the secondary school should be a deeply serious venture, one in which the deepest and most fundamental things in adolescent life are stirred to action, and in which the real and magnificent dynamic of the young adult should be harnessed to his work and the work of the world. There should be no time for the hilarity of useless amusement, or the dallying of sentimental idleness. Each youth should be endowed with a seriousness of purpose which he identifies for himself and an opportunity for labor which will absorb all his best energies. If the elementary school can but awaken the human child to his own distinction, the secondary school should permit him to cut his individual swathe both broad and far.

One of the most significant adventures in modern secondary school education of which I am aware is that carried on in the Eagle Rock High School in Los Angeles, California. It is significant because in this courageous school the real problems of secondary education have been faced in spite of the difficulties. The subject-matter organization of the high school has been discarded, a step that few schools anywhere have dared to take, and the school has been organized around four basic phases: 1, Fundamental Skills and Knowledges; 2, Physical Well-being; 3, Major Interests, and 4, General Interests. A more extended account of this work is quoted in Appendix V.

THE SECONDARY SCHOOL AS A CRUSADE OF YOUTH

The greatest youth organization in the world should be the secondary school. The fact that it is not so allows youth to be captured by the picturesque cause, the militaristic

youth movement, the campaigning demagogue. Worse still, in the absence of such causes it allows him to become a victim of his own manhood and sink into resignation with his unenlisted powers. The burning out of youth in a minor cause or the rusting out of youth in unwanted desuetude is vicious. It is for the secondary school to marshal this youthful dynamic, to provide experiences which make for manhood, and for actual participation in the affairs of men.

Unemployment, which is said to be a permanent characteristic of the modern society, has worked most serious havoc with the youth of the land. The middle-aged man has failed to make his mark, the younger man has substituted in some menial work, but youth has found itself entirely unwanted in an indifferent world. But what youth needs more than anything else is to be wanted—to be called into action for which he has endless energy and high aspirations. Society cannot afford to squander or neglect the idealism and the altruistic vigor of the young.

It is an almost universal error even of educational competency to fear rather than trust the young. In recent years the school has learned to trust the learning power and the behaving powers of children in the elementary school. The day has come to trust our youth. Whatever else the secondary school must do, it must surely and certainly provide high school students with opportunities for real participation in real things which count—not merely in the high school community but in the larger world of real men.

In the elementary school the socialization of the child should be accomplished in the school community. In the secondary school this socialization should continue. It should become more ramifying. The community life of the secondary school should become a thing to amaze men's minds, to be a shining light of efficient community reorganization, in which each needed reform and each wanted experience

should be made available, by the students themselves to themselves and to the community around. But more than this, the secondary school community should serve the city in which it is found. It should be a constant center of social service, a service rendered by the students to the surrounding community. We are unaccustomed to think in these terms. We ask—What is it that high school students can do for a community or a neighborhood? The answer is not ready at the tip of our tongue. But when the school is ready to serve the neighborhood will reveal its needs. In a Los Angeles high school the students earned enough money through their own efforts to pay for the magnificent organ which became a part of the school and the community. At Christmas the school became the center for the collection and distribution of food and clothing to the needy. A community survey conducted by the school and the teachers themselves would find many ways in which the services of the student could be rendered to the community.

If the economic system of the country is so maladjusted either permanently or temporarily an economic system within the school community might be established with signal benefit to all concerned. Economic wholeness is a part of social wholeness, and in the good high school all the sound financial aspects of a youth community might be safely entered upon. A school community, both solvent and independent, would be a mighty asset to the learning experience of the students and the service they render to the community.

The provision of jobs within the school itself would be the fortunate issue and the school would thus again serve the total community. For in the secondary school it is an essential part of the forming manhood of the youth that he be able to participate in the life of the community and to make a contribution to the growing world.

It is immensely important that we revive the old prac-

tice of apprenticeship—not apprenticeship in the medieval sense, but apprenticeship in a new and modern sense, apprenticeship from school to community. Reaching out into the business and the social life of the community, students should find an extension of their training by apprenticing their learning hours for part of the time to the task of serving the community and of receiving from the business concerned a nominal wage and a concrete training. Such an integration of community life, of the shop, and the school, the church and the school, for example, is of pressing importance if youth and men are to work together once more in our divided communities. In the days of simpler social organization the automatic assumption of manhood meant the automatic assumption of responsibility. In a fishing village which I have often visited, I have seen a lad of fourteen years become the rubber-booted fisherman, who sits on the docks with the elders after his work, from before dawn to midday, tending nets. Such lads are fortunate indeed even in their ignorance, for they find a fulfillment of being which is denied their raw-boned fellows of the city streets. Even the forbidding of child labor has caused an avalanche of idleness to descend upon those whose muscles are large and whose visions of life are larger. In our more complex society which has broken down the path from the play of youth to the work of manhood, the secondary school must beat once more a path for the youth which he may follow into the responsibilities and the opportunities of a man of the world.

THE ORGANIZATION OF THE HIGH SCHOOL

If the organic reorganization of knowledge in the terms set forth in this book, and the activity approach to learning are to be incorporated into the life of the high school, radical reorganization will be necessary. While it is not possible to disentangle all the numerous problems which will result from

such reorganization, a brief sketch of organizational structure will serve to illustrate the trend of thought here set forth in a more concrete form. I shall, therefore, set forth certain themes for action in the reorganized secondary school which will indicate certain aspects of organization which are in harmony with the philosophy set forth here.

THEMES FOR THE REDIRECTED SECONDARY SCHOOL

1. The serious classification of knowledge or experience.
2. Mastery of the functional areas of knowledge and skill.
3. Individual development.
4. Vocational discovery—with apprenticeship.
5. Social participation.

ANALYSIS OF ACTION IN THE REDIRECTED SECONDARY SCHOOL

It is suggested that the work of the secondary school be considered in terms of three modes of action—a program of fundamental action, vocational guidance activities and activities subsequent to vocational choice.

Program of Fundamental Action.

The fundamental activity program of the school may be in two parts. It may be composed of activities based on individual needs and those based on social needs. Activities based upon students' individual needs are of two kinds. First, there are those activities which involve the expressive aspects of experience, involving the material of literature, art and music, or of invention and discovery. Such a program would lead students into the various realms such as that of authorship. One student whom I know is engaged in the writing of a book on "Relativity in Art," which has been pushed out from his school experience for two successive years, so that he is unable to find adequate time to complete it. Such an opportunity should be allotted him in the good school.

Authorship should be followed by publication and sale in the school shops, while the printing, bookbinding and publishing might be carried on by other branches of the school community. The construction of buildings needed for special purposes would be a suitable occupation for secondary school pupils, especially for those interested in architecture and building. Schools situated in cities should find opportunity for the construction of camps and even summer homes or clubs in rural districts within reach of the city. One such dream of construction work done by high school pupils as part of their work in a residential school is stated as follows:

"In another way, this time in a very personal way, might the boys and girls enter into the adult world. This is by building their own homes or sleeping quarters. The school would provide the customary dormitories, but for those who wished and whose parents were willing, there would be a village close to the main school, landscaped and zoned by the school architect and his student committee. A boy or girl desiring to build his own home alone, or with one or two others sharing in the enterprise, would draw up a plan, submit it to the village building committee, and if all were well, proceed to erect the house under the guidance of an expert carpenter who would see to it that the work was done correctly. The project would be financed by a single individual or group of individuals who desired to live together. In the latter case, the structure would probably consist of two or three small bedrooms opening on to a living room. The students would use their own money or borrow their parents' money for these buildings. On leaving the school, the house would be put up for rent or for sale to other students and the owner might thereby be enabled to pay off his debt, if any, to his parents and if he were successful in finding a customer for his property. The new owners might have the same creative pleasure in the house as the original building by

making additions, fireplaces, porches, gardens, etc. It would be very educational if each house owner could pay for his own electric light and fuel, but, probably, not easy to work out in practice. The heating, in the early years of the village, would have to be done by fireplaces and drum stoves. At least each user could chop his own wood or help in doing so. Later, perhaps, a central heating unit could be built to feed the whole village, but this, though ideal, would cost too much for a new venture."¹

Another account of the way in which the experience of another high school pupil was made real by his school activities is indicated in the following:

"The first case came unsolicited from a parent. The boy had recently been transferred from a school system in another city where he had been compelled to learn his lessons in the most stereotyped manner. The parent had come to say that his boy was happy in his school and that his happiness seemed somewhat due to the fact that he had time to do some of the things he wanted to do. The parent's conversation follows: 'My lad is interested in mechanics. I believe he will some day become an inventor. He recently showed me a drawing of a machine which he thought might replace a machine now commonly used. He had borrowed all the physics books (the boy is in the seventh grade) he could get and had read diligently those sections pertaining to his machine and had searched the school library for all available material on the subject. Recently his class visited the General Electric plant where he was introduced to one of the engineers. The engineer kindly spent a considerable amount of time with my son, discussing this particular mechanical idea. My son came home and told me he would have to revise his scheme some-

¹ Quoted from mimeographed sheet on *A New Secondary School* sent me by Carmelita Hinton, Chestnut Street, Weston, Mass. Teacher in Shady Hill School, 1925-34.

what. Later he again visited the engineer for an hour. He spends his spare time working on ideas which he gets from his reading at school. He never had time to do these things before.' " ¹

A second part of the individual program is that concerned with mastery. Intensive programs constructed individually for each student should be woven about the special interest of the personality concerned. This study and other activities should involve the functional mastery of subject matter in suitable form. Each individual should be willing to devote himself unstintingly to studies and to research which have such an intimate bearing on his own personal development.

Such a plan of individual work involves the development of a new type of staff member, the personal curriculum advisor. Individual programs should be arranged in conference with this counselor whose expert advice and collaboration should open up the full sweep of possible development for the prospective learner.

Activities Based on Social Needs.

The activities of the individual which are based on social needs involve many and various modes of participation, some of which have been mentioned earlier in this section. The launching of various youth movements within the school, or of campaigns, clubs and societies which are needed, the participation in interschool and intercommunity conferences on whatever problems are before the youth of the time. Travel should be arranged when possible to other communities near or far by a travel bureau within the school. Trips by buses or by train should be arranged at special reduced student fares by special arrangement with the railroads. For even the

¹ Anonymous, "Making Interests Count in Junior High School Classrooms," *The Clearing House*, November, 1934, p. 183.

railroads should share with the rest of the whole community part of the responsibility for educating the young. Educational rolling stock, if owned by the public schools, might be carried free by railroad trains for certain established runs each year according to a prearranged schedule. Thus whole classes might spend a month in travel. A steamship owned by the city school system might be used as an educational base in which a month of school on board might be made incidental to international travel schedules.

Service work in churches or social settlements might be a further form of individual social participation. Public forums might be attended or held by the more interested pupils, while functional sports might be arranged. Thus the individual and social activities of the pupils would provide the main background of the world of the general high school.

Vocational Guidance Activities.

In addition to the regular work of the individual's program all pupils should participate in two forms of activity which are concerned with vocational guidance. The first part of this work should be an exploratory study of certain vocational occupations by trips out into the community. Students whose investigations lead them to believe that they might find a special interest in one or several occupations should spend a day or so in the community studying the vocations in which they are interested. Vocational choice may thus be facilitated. The vocational counselor in his work with individuals should aim to help the individual in vocational choice but should not make vocational decision for him. He should be assisted to make a choice by study and investigation, if he is ready for it, but choice should not be pushed upon him or made for him. A second part of this vocational preparatory investigation should take the form of deliberation with the counselor in groups or alone. Representatives of different

vocations in which the pupils are interested should be called in to give service to the community by talking with the group of problems in which they find a vital interest. Such procedures as the above involve the staffing of the school with a full complement of vocational counselors, psychologists and special guidance experts who can work out their function as it fits into the total program of the school.

Activities Subsequent to Vocational Choice.

The making of vocational choice is in a peculiar way functional to the learning experience of the student. Until vocational choice has been made, only general learning experiences can be enjoyed, which may or may not find vocational application in afterlife. Furthermore, it is not possible to state a time for vocational choice. It may be made by pupils in the elementary school, although when made at that level, except in the case of very marked talents or drives, it cannot be taken as a basis for shifting of educational procedures, as it is too liable to change.

Somewhere in the high school serious vocational choice may take place. It may, however, in certain cases be unavoidably delayed until after school life. But the vocational counselor in any school should assist the pupil as far as is possible in making a sound vocational choice, since the chief purpose of that choice is to enable the student to find a new motivation for further learning which will be to him truly functional. It serves the double purpose of solving an important problem and of providing new motivation for adult training. Students who have made vocational choice with any degree of certainty should be immediately transferred to a new curriculum. In consultation with the curriculum advisor the whole problem should be changed almost immediately so that the student's school experience may from that time be a combination of his general with his vocational development.

To the general program should be added a series of vocational experiences in which both school and community co-operate. Vocational training should thus be taken from the common secondary school basis, but provision should be made for morning or afternoon experiences in special technical high school or in apprenticeship work in the community so that a particular training should be received concurrently with the other educational needs which the individual's personality requires.

THEMES FOR ACTION IN REORGANIZED SECONDARY SCHOOLS

I. PROGRAM OF FUNDAMENTAL ACTION

This program would lead students into such acts as authorship, publication, camp development, building, mural decoration of homes and other interior decoration, public performances, dramatic and musical, etc.

INDIVIDUAL

1. Activities based on **STUDENT NEEDS**. These needs are of two kinds:
 - a. Expressive, involving materials of literature, art, music, with special emphasis on music.
 - b. Mastery. Intensive individual programs woven about individual personalities involving mastery of functional subject matter.

The administration involves a new type of staff expert, the personal curriculum advisory planner. Individual programs should be arranged in collaboration with this expert.

2. *Activities based on SOCIAL NEEDS.*

- a. Launching of and participating in youth movements. Interschool and community conferences,

a month of travel, social service on settlements and through welfare agencies, political forums and youth programs of all kinds, including functional sports.

II. VOCATIONAL GUIDANCE ACTIVITIES

1. Program of exploratory vocational studies in the community.
2. Vocational deliberations.
 - a. This involves the staffing of the school with a full complement of vocational counselors and psychologists.

III. ACTIVITIES SUBSEQUENT TO VOCATIONAL CHOICE

1. Students who have made vocational choice should receive instant transfer to a new curriculum to be worked out for them with the curriculum advisors. To the general program should be added a series of vocational experiences in which the home and the community co-operate.

THE STAFF

Several references have been made to the staff of the re-organized high school. The type of reorganization lays great stress on the function of the counselor as well as that of the teachers. This counseling function might be fulfilled by teachers who become counselors for part of the time and teachers for the remainder, according to the fluctuating plans of the school. There should be a flexibility about the teacher's function and work which was not present in the older subject-matter school where each person remained captivated by his *own subject*. But certain special counselors would also be needed as part of the teaching staff of the school. Curriculum

counselors would consult with incoming pupils, and with the aid of the whole staff build an individual program for each student based on his own personal uniqueness and distinction. Classes and programs would then be formed during a three-day organization period since the world of the school would have to be functionally organized after the construction of individual work programs, and before time allotments were apportioned to staff or pupils. Vocational counselors would have a much larger work in the school than hitherto. On the whole, instruction by the teachers would be supplemented by counseling, by seminar work, by intercommunity school and community arrangements, and in many ways that are new. It is, however, only in some unfamiliar way that both pupils and teachers may make a new secondary school activated by the dynamic of both, and aimed directly at the building of socially oriented individual personalities.

CHAPTER XIV

THE COLLEGE

THE COLLEGE is a place to receive and to make superior men. Unless it does this it is a redundant institution. Its most serious blight is an attempt, on the part of some colleges, to isolate and preserve a moneyed class, and by a polishing process to induct those who wish to make money into that class. The college which exists to support or develop class superiority is a blemish on a modern civilization. A frank discussion with the average group of college students will indicate that they hope, as a result of their college career, to be able to make more money than they would without it. Such thinking has permeated much of our educational background. The fallacious notion has prevailed that education was a means to making money. That its function was not to serve God but Mammon.

Supported by materialistic philosophies this perversion of the meaning of education has obtained wide currency with students and even subconsciously with high school teachers and college professors. The old theme of the Sophists is revived once more among us when college teachers become a hired class to teach the youth of the land "Success."

Those who wish material "Success," no matter at what price, should attend a college run by racketeers. Unscrupulous attitudes have no place in the college which is true to its cultural mission. The primary aim of the college student should be to become a man through association with men. It is manhood, not matter, which should become the goal of the college student and his college professor.

THE PLACE OF SUPERIOR MEN

Whatever else a college should be it should become the gathering place of superior men. Its faculty should be a nucleus of such men or it is no faculty worthy of youth. The influx of masses of students into our colleges in recent years has created an emergency in personnel. Colleges have had to be staffed by those who could be drafted by society to teach. In a culture which has placed money values higher than the things of the spirit many of the most capable men of the times have been diverted to the pursuit of money values and business superiority. Colleges have been compelled to take the best men they could get, and that best has often not been good enough. Too often the teachers of youth have been young men lost in the mazes of pessimism, the left-overs in the struggle for existence. College teaching has been a retreat from reality for those incapable of dealing with it. The result has been that the training of our best youth has been too often given over to those who are wise in their own conceits, but persons of peculiar incapacity to drive a dynamic universe.

This inbreeding of incompetency in our colleges should cease forever. The college should be the seat of the best of men, the most competent thinkers, the most confident livers, the most capable doers. Men who either have run or could run the affairs of the world. Fortunately we have not been without such or colleges would be dead indeed. In every college there has been a smattering of such capable ones, in the haven of whose training young men have been able to find themselves. It is a notable fact that in France the ranks of scholars have been the recruiting ground of public men and great statesmen. Poincaré, Clemenceau, for instance, were scholars of the first rank in the universities. In America we have had our Schurman and our Wilson. It is when such

men fill the chairs of our colleges and universities that youth can build in the direction of greater realities. The faculties of our colleges should be composed primarily of great personalities, those who are potentially great among the younger men, and those who have become great among the older, great as the constructive thinkers and builders of mankind among whom they live.

But the comparatively small nucleus of the faculty should be but a decoy for the attraction of the world's men of affairs, its best and most ethical citizenry. The great men of the community should make themselves available to the services of the colleges, not as penny-a-night lecturers, but as occasional companions of students in the intimacies of personal life. There should always be in the university or college some several men invited for their personal distinction to become the guests of youth for a week or an afternoon or an evening. They should have the freedom of the college, and find their places in classes, in seminars and at dinner, in the halls and on the campus of the university—great authors, poets, the makers of theories, the builders of tunnels, the explorers of the faraway places, the archeologists, the artists. They are needed in the homes of the professors and in the halls of youth. They should have built around them an atmosphere not of petty exploitation, not the desire of this lad to rush into the commercial centers of greatness, but a quiet and meditative atmosphere, a realization that the importance of life lies in subtle values and in dignity and benignancy.

So under the guidance of able men of the faculty and, when possible, of others from the community, students should pursue in philosophic and serious mood the opportunities denied to other men. For by the time college entrance is reached each student who has been well educated should have developed a personality so marked that nothing but a highly specialized approach to knowledge should be valuable.

Just as the approach to learning should be organically organized in elementary school and secondary school, so the organic organization should be continued in college. Just as the background of the informational and functional knowledge of the current college curriculum should be passed on to the secondary schools, so much that is today saved for the university should be brought down to the colleges. My long experience with college students has revealed them to me as culturally starved individuals. Their high school experience has taught them that the only way to success and to the pleasing of their teachers is to spend much time on the barren wastes of repetitive and transitory subject matter. So great are the demands made upon their time in the preparation of assignments and obedience to petty class laws that they find little opportunity to learn the deep things of life as accidental accompaniment to the mass of required and atomistic detail. They deeply welcome the presence of a man of real distinction among their many teachers, and they eagerly seek from him the real values of intercourse with men. The reorganization of the course of our colleges in an organic pattern is sorely needed. It can only follow, however, organic preparation in the high school, and that is, up to the present, a faraway goal. In the meanwhile, no suitable established practice is extant for the college to follow. It must pursue the wisest plan that it is able to develop in the organizing of individual approaches into functional learning. It must be willing to discard the subject-matter organization which is traditional and to allow what will to emerge for the interaction of great teachers with superior students. Such boldness will in the coming years reveal a new and a more vital program for our colleges to build upon.

WORD COMPETENCY

One of the marks of the superior man is word competency. Only those who are word competent should find a place in college life. This one thing the college may demand of the entrant from the secondary school. Much as college life must depend upon the use of things, on actions and doing, yet college students should at least have reached that educational level where words have become, to a very large extent, the real substitutes for direct experience of common realities. Here is perhaps the chief distinction between the secondary school and the college. In the secondary school pupils are still on the level of concrete and direct experience. They are not yet fully competent book learners. They are engaged in the conquering of the last barriers of the fundamental concrete word backgrounds, and are not yet prepared for the abstract. They must receive their vocational experiences in the concrete, and their social participation must be actual rather than verbal. On the college level it must always be different. Nothing could be farther from the true fulfillment of the activity program in the college than to set college students to a program of learning through such building activities, or such elementary creative acts as those which are used in our kindergarten. The college student has reached the level of the man whose lifework must be to a very large extent the control of concrete realities via the intermediation of words, ideas and ideals. He must here emerge into a new competency which is beyond that of knowing and manipulating reality directly. He must control reality by his words. This by no means indicates that he is done with reality. He must still go to the community, and he must still explore certain areas of reality, especially by travel, and espe-

cially in the social understanding of people. Nor does it mean that his word competency is complete. It means that he has built up in his previous experience sufficient understanding of words of concrete meaning to enable him to use them in building abstract concepts. He must now be ready for discussion and philosophy and reading and lectures and books. He must be sufficiently strong to take over this area. He must be able to learn the higher areas of word meaning and to master the inner resources of language denied to the common man. The college activity program must be a series of acts in which men deal with ideas and through them with things and other men.

LEARNING AT CREATIVE LEVELS

College should not produce stereotypes. Neither should it reproduce antique forms. The college should be the real practice area for creative thinking. Unless the professors in our colleges occupy pioneer positions in the thinking of the day, they are not competent to guide the growth of youth. The reproduction of old patterns, of textbook history, of Latin and French translation, and formal composition, of authoritarian geometry and mathematics, of copied pictures, of performed music are but the partial products of minds which have gone to sleep in the comfortable and retired realms of pale scholarship. The function of knowledge is use. To be deeply learned and uncreative is to be a scholastic parasite—one who sucks the blood of learning but does not sustain it. I think of one professor of Latin who is an informed and cultured gentleman, competent in his thought about education and general culture. He spends his summers and his academic opportunities in Europe, passing from community to community, reconstructing old manuscripts, and gleaning lost material in the libraries of the world. His scholarship is fruitful, constantly in use, constantly producing new modes and fresh attitudes, a fertilizing and progressive scholarship.

A distinguished American scholar once told me that he learned his Latin as a lad by himself, from a torn copy of Caesar, his only resource. Moving through his own created path of learning, he discovered for himself the beauties of Latin in its more recent forms, and was able to behold for himself new vistas in the work of Erasmus and his stylistic influence on modern French. Yet to the average teacher of Latin it is a dead language, and he spends his time in the supererogatory task of murdering it. No field of scholarship is barren to the uses of the constructive and creative scholar.

Into whatever field of learning he enters, the college student should enter it creatively. Founding his originality on wide and deep acquaintance with this field, a great deal of which he should secure himself by directed study, the student who is worth the name should be ever alert in the making of knowledge, in the discovery of new fields to conquer and in conquering them with the help of his teachers. For the best training of the creative mind should be to create, with help of sympathetic teachers, in order that it may create alone when college days are over.

The crowning fruitage of education in the life of the individual should be a mature ability to create. To create in the field of literature, for example, and to go on through college organizations to publish his work in magazines, in pamphlets and in books. Pamphleteering should be a diligent college industry, and the ideas of the student should find a quick clearinghouse among his friends and teachers. Such activities might even be the basis of the formation of a series of intellectual guilds, similar to the medieval guilds but belonging not to the village or town, but to the college community. Here the mutual artists' guild might be a center for the life of a constructive art. Through its agency opportunities for community work might be secured, the bureau being supported by a percentage of the fees received. Similarly other art guilds, literary guilds, poets' guilds, and

teachers' guilds might be formed, and become the nuclear basis of an internal economic and social system integrated with the economic and social life of the community. The work of psychologists and of sociologists might be well linked up with the community. Social surveys, currents of local thought, community studies, might all be made. The Guild of Statisticians might produce charts in accordance with universal chart language to act as a precursor of a universal language. The Peace Guild, the Transportation Guild, the Choral Guild, all these many organizations serving the acting function of the college society might become the basis of a creative life within the institution integrated with the real expressive needs of individuals and related to the college and the outside community.

SOCIAL ORGANIZATION

Social organization should be further promoted by the widest freedom in the development of organic societies. The organization of functional learning groups provides the type of activity which is a necessary part of the development of the college student. In the college as a whole there should be a prevailing philosophy. The notion of assembling a group of scholastically riotous professors, each of whom has his own pet theory and point of view to support in the face of his rivals, is fallacious and troublesome. It belonged to the atomistic and partitive era in which tolerance was interpreted as chaos.

In a college in which the prevailing philosophy which unites the teaching staff in a harmonious whole is an organic one, group organization might flourish. The societies of the Idealists, the Materialists, the Aristotelians, the Platonists, and many others might live, not as traditional groups which hunt for something to fill up their programs, but as active groups, anxious to establish their point of view in the pres-

ence of opposition, eager to meet with majorities or minorities, with their professors or their fellow students to develop and understand a point of view but immaturely held; if necessary, to change it, but certainly to understand it more fully and its implications for thought and action. Religious and political societies should also flourish and receive what momentum they might develop. In the case of religious and political issues certain difficulties arise. Even in the presence of a prevailing administrative point of view, tolerance demands the permissive existence of student groups which do not usurp the privileges of others. In certain of the Scotch universities the situation is admirably met by the existence of student buildings entirely controlled by the students in all their affairs. Here are established those political and religious organizations which they allow, and in this building which is managed with thorough propriety by the students, every orderly freedom is tolerated by them. Thus students given an area of complete and uninterfered control are content with their freedom, they do not and are not permitted to attempt to manage the affairs of the university which are not theirs.

There is a sense in which college students are more helpless than babes. Their very maturity is immature. Of a baby nothing is required and he expects to accomplish nothing of great importance to the adult world. He has his simple routine and lives it out. He is equal to the occasion, fitted for the demands made on him. Not so with the maturing college youth. The high school student deals in a familiar way with concrete realities which he has learned to master with a fair degree of efficiency. The college student, however, has decided to try his wings for higher flight. He has committed himself to a task of more serious import. He is to lead in the affairs of the world, but he is not competent to lead those affairs. He will, in a few short years, go out to take

his active place, but what he begins to deal with is now a new area, an untried task. Thus, contrary as it may seem, he is less ready for social participation in community life than the high school student—not less ready in those simpler and more concrete modes of participation which are possible for the student in secondary school, but less ready to partake of those more important and significant social tasks which are the goal of his high aspirations. His youth, which was an asset in secondary school, has become a liability in college. He must still carry on his social life in the simpler forms of participation, but must bide his time until the world shall call him to the front line of the leaders of men. To enter college is to become an infant and verily a freshman. In the four years of his college career he must become a master of words, a master of men and himself a superior man.

THE TRAINING OF TEACHERS

After a recent extended tour of institutions for the training of teachers throughout the country a distinguished American educator came to a disappointing conclusion. He found that the students in nearly every school he visited were being trained to a form of practice which was considerably behind the best which was being done in their own community elementary schools. In other words, he found that the teachers of education were themselves behind the times. Professing to be leaders, they were yet not up to those who should follow them. Instead of being an impetus to education they were a drag upon it. Even the highest, the most advanced, colleges may be regarded as mouldy with conservatism and cluttered with busy inefficiency. One writer has said: "There is in the United States no University School of Education in which a faculty of marked power and distinction is devoting its full time to a highly selected body of graduate students under a program of ample scope systematically

directed toward professional leadership." We need a new leadership in the field of education, leadership by men who are more scholarly than noisy, who are better thinkers than advertisers. We cannot continue on what was leadership thirty years ago. One critic of the profession of education points out that "the calibre of persons" attracted to education may be gathered from "the trivial and uninteresting character of educational periodicals." The subjects treated in them, he maintains, are successful in their effort "to frighten away intelligence."

The same writer selects with derision from Harvard, Columbia and Chicago lists of theses for the degree of A.M. or Ph.D., the following choice titles: "The Experience Variables. A Study of the Variable Factors in Experience Contributing to the Formation of Personality," "Social Background and Activities of Teachers College Students," "Public School Plumbing Equipment," "An Analysis of Janitor Service in Elementary Schools," "A Study of School Postures and Desk Dimensions," "The Intelligence of Orphan Children in Texas."

We cannot be too clear upon the fact that the crux of educational reform is the training of teachers. How shall teachers be the best people unless their leaders are better than the best? Yet the present state of petty leadership is easily explained. It has its roots in old systems of promotion from the ranks, of present systems of teacher-college appointments, in which only too often the president of the teachers college must keep one eye on the children, the other on some political clock. Community prejudice is also operative against better methods in teacher training. But most serious of all has been the gradual operation through thirty or forty years of an inorganic, materialistic philosophy which has desiccated, and teased out the "subject" of education into so thin a thing that it is fit pabulum only for the mentally incompe-

tent. The tiresomeness, the redundancy, the inanity, the purposeless intricacy of the endless courses which are offered in the name of education is a pitiful commentary on the feebleness of our teachers of teachers. Self-indoctrinated in these petty ways, teachers of education have too often remained where they were, not bothering to familiarize themselves with the new practice being hammered out in elementary schools, or the new world around us.

Fortunately, however, all teacher training is not affected by this general sickness. There has occurred a real cleavage within the area of teacher training. The rapid strides of modern elementary education have forced the issue. In some cases far-seeing educators are beginning to remold their training institutions into newer ways and newer practices. In other cases, unable to secure from training institutions teachers fit for their use, public and private schools have banded together and devised their own training centers—as at the Winnetka Graduate Teachers College. Here have been developed new trends and new plans which must increasingly affect training institutions everywhere.

EDUCATION A SUBJECT OR AN ACTIVITY?

A great blight has descended upon education through the false habit of mind which has dealt with it as if it were a school subject. Such a mishap is a natural result of the way in which it entered the roster of studies. It came almost as a suppliant, and the young professor of education came knocking at the doors of colleges where he was not wanted. In order to find entry in our subject-ridden colleges, education itself found it expedient to pose as a subject. Once having become a subject education could now divide and subdivide itself into a series of pitiful "courses" *ad nauseam*. Thus we have fallen heir to that bitter inheritance, a tangle of separated courses in education, prescribed by the authorities, provided by the college, teased through hour after hour

by professors of education—the wearisome array accidentally arranged on no sound basis of classification—introduction to education, history of education, educational psychology, philosophy of education, method of teaching, comparative education, educational sociology, and educational what-not. From such long arrays of material students have come through their training stuffed with knowledge, examinable, successful, able to write definition after definition, erudite in the subject matter of education. Yet these students have oftentimes not been themselves humanized, unable to understand their own lives, deal with their own problems, unacquainted with children, knowing only one form of practice, able to talk but unable to teach. Such has been the sad heritage of the schools from the “subject” of education.

Education is not a subject, it is an activity. It is one of the great basic activities of life, one of the glories of being human. Consequently the training of teachers should be approached in terms first of the human actors involved and second in terms of the activity of teaching. This places the personality of the teacher in the first position, participation by the learning teacher in teaching in the second position and knowledge of children in the third, though not the least important position. It keeps education always human, always active, and is the key to a deep understanding of what teacher training should be. With these things in mind the following suggestions concerning themes of action in the training of teachers are given.

THEMES FOR ACTION IN THE TRAINING OF TEACHERS

DEVELOPMENT OF PERSONALITY

So much is the discussion of personality pushing itself to the fore that there is great danger lest it become a catchword rather than an accomplishment. Yet good personality is the

key to good teaching. Teachers should be interesting persons who are interested in persons. Time was when it was thought enough for a teacher to know his "subject." Today teachers must know human beings. A teacher should be the finest kind of person.

It is only in such a case that he is worthy to be the goal of his own pupils. Obviously the personality of the teacher is to a large extent already formed when he comes to the training school. Consequently, those who enter the training course for teachers should be selected from those who apply, in order that the best initial material may be secured for the beginning of training. Throughout the training period the fullest freedom of personal and cultural development should be provided on the college level. It is obviously desirable that teacher-training colleges should not exist alone, that they should be part of the larger whole of university or college life, that they should be affiliated with and become an integral part of a wider life in which the student body may develop broader interests and come into intelligent contact with those who will enter every walk of life. While the medical doctor or the engineer may prefer to retire from the general world of college life into the narrow groove of professional circles, teachers should never do so. It is for the teacher to know all men, and to develop a personal relationship with every branch of thought and every walk of life. To be a school man alone disqualifies any teacher. For the schoolteacher is a community personality and his work involves the whole community which he serves.

Becoming Socially Competent

Teachers should, therefore, be socially competent. They should not be monastic, they should not be retired in scholarly abstractions. They should be men among men. To be socially competent does not mean to become a beau brum-

mel; it does not mean to become proficient at cards, on the dance floor, in the graces of amusement alone. Amusement should not be mistaken for social training. Social training is a much more significant thing. It means social competency in the everyday happenings as well as the crises of life. It means competence in the meeting of people of every walk. It means full sympathy for the tasks and the lives of other men. It means to be socially conscious in the best sense of the word. It means to know the community in which one lives, its problems, its opportunities. It means being widely acquainted with the various forms which life takes in the community from the daily work of the laborer in the factory to the sleekness of the banker's living room. Teachers must know their community, the men in it, their ways of thinking and acting, and share alike their community's problems and its privileges. For teachers must be the liaison officers between the community of today and the community of tomorrow, those who are in life today and those who will go forth into it in the days to come.

Development of Personal Interests.

Every teacher in training should during his training years have full opportunity to expand his own development in the direction of his own interests and creative talent. Some of the truest education comes from following on from our own interests to the accomplishment of our self-set goals. Although all teachers in training may expect to be teachers, yet their personal interests may be as diverse as microbiology and oriental philosophy. Certainly all prospective teachers should engage in some creative occupation. This may be in the customary areas of music, literature or arts and crafts. On the other hand it may be some creative development of some aspect of the individual's own interest. For example, photography, usually a mechanical process, may be lifted to a

creative level by one sufficiently interested in it. In all probability every prospective teacher should be technically proficient in some of the hundred various forms of manual craft, and should have enough proficiency in some objective art to provide himself with personal satisfaction through its enjoyment. For an understanding of the creative process, with all its personal meaning, its value as an emotional therapeutic, its relief from the subjectivity of abstract thought, is essential to the teacher. Unless he himself experiences creativeness he will be unable to conserve and improve it in children, and unless we nourish each creative impulse with care, we squander the human resources of mankind.

DEVELOPMENT OF TECHNIQUES OF TEACHING

Teachers need a wide acquaintanceship with good teaching as it takes place in the class. The acquaintance which most pupil-teachers have with class teaching is usually far too narrow. One of the most important ways of acquainting prospective teachers with the great diversity of teaching conditions and methods is the talking picture. Surely if ever a boon fell to the lot of teacher training it is in the talking picture. For by its means what is probably the most serious lack in the training of teachers may be overcome. Ever since teacher training has been seriously undertaken one of its major problems has been the essential nature of observation of teaching and the impossibility of securing enough of it. Always there has been the problem of numbers. Too many students to observe. Too few classrooms for observation. Observation is essential for the teacher in training. Observation is a nuisance and a hindrance in the education of the children being observed. The talking picture makes it possible for us now to overcome this difficulty and to relieve the practice classrooms from the pressure of too much observa-

tion, while at the same time improving in some ways the conditions of observation. The talking picture has certain distinct advantages over simple class observation. In the first place it is brought to the students, at great saving of time. Furthermore it can be seen by large groups at once so that a single set of conditions can be used by a whole class in subsequent discussion. Again the lesson can be reproduced a second time after discussion. Still another advantage is that of diversity. Immediately, in one period of time, two or three diverse types of teaching may be portrayed, three separate sets of conditions. Such a feat is almost impossible when pupil teachers must travel from community to community to discover wide variations in teaching conditions.

Unfortunately, however, the use of talking pictures in the training of teachers is largely a thing of the future. We await the vision of some far-seeing foundation willing to finance the production of talking pictures for the training of teachers. In the meanwhile training institutions should struggle on with what we have. There are already available a number of pictures which are well suited for use in teacher training. In all probability a half-day every two weeks may even now be profitably employed by students in the early days of their training in watching, discussing and studying talking pictures of class procedure.

Such study by means of talking pictures should serve to enrich actual observation when it can be provided. Visits for observation of teaching should be serious, and made in widely scattered conditions, probably through several communities. Such a wide coverage might be secured by the arrangement once a year of a week of observation in which pupils of one community exchange for a week with pupils of another. The wide acquaintanceship which would result from such broadened notions of teaching would be invaluable in removing

from the training of teachers that empty abstractness which is so damaging.

Fruitful observation often reaches its high point in special model or experimental schools. Every teachers college should maintain and cultivate its demonstration school. This school should not be a typical community school, presided over by a conservative schoolmaster anxious not to offend the community. At times certain model schools have invalidated their own existence by a policy of imitating the current class procedures of the localities for which they prepare teachers. It is hoped that by so doing they will fit prospective teachers for the weaknesses as well as the strengths of the schools they enter. Such inbreeding of incompetence is very foolish, and those who pursue this policy are no true educators. For it is the function of the model school not to pander to the community but to inspire and lift it. In the good model school teachers should be shown the best; there is enough of the mediocre to be seen in ordinary schools.

For its own good each public school community should maintain, as an adjunct to its research bureau, a series of experimental schools. The community which thinks first of its children will be only too willing to co-operate with its training institutions in the conduct of its own series of experimental schools. In a small community one such school may suffice. In the large community a series of seven rotating elementary schools should be continually maintained, a new one being appointed each year and one of the seven being annually returned in improved condition to the system, after seven years of progress. Observation carried on by teachers in training in these experimental schools and in the model school of the training college would be most valuable, and if properly organized would be little drag upon the schools themselves. Probably the most efficient arrangement would be attained by the construction of proper buildings for

class observation. Such schools should be provided with special observation rooms adjoining the children's classrooms, separated from them by a glass partition. Broadcasting equipment carrying the voices of the teacher and pupils through the partition would complete a very satisfactory arrangement for class observation. Such a plan would make extensive observation possible without the interruption of the class being observed.

The actual practice of teaching is the gradual induction of the beginning teacher into the craftsmanship of teaching. It should be carefully graded from simple observation to the actual beginnings of teaching as a teacher-helper. So comes to the fore the system of apprenticeships which has been so successfully used under the direction of Dr. Willard Beatty at Bronxville.¹

According to this plan the teacher in training is placed, for his period of practice, under the direct supervision of one of the class teachers for the full teaching period of the school day. For eighteen weeks the pupil continues dividing his time between two teachers. Later he works with other teachers. Thus gradually he moves into a six-week period of independent teaching of a full-size class group. During this long period of apprenticeship all the assistants meet twice a week with the superintendent of schools in seminar for the discussion of the outcome of the work in terms of educational psychology and philosophy. Their work is further supplemented by the opportunity to attend regular staff seminars and school faculty meetings.

DEVELOPING A PERSONAL PHILOSOPHY OF EDUCATION

One of the major activities of the prospective teacher is that of developing his own personal philosophy of educa-

¹ See *Bronxville Schools Bulletin* No. 22, Sept., 1934, Bronxville Public Schools, Bronxville, N. Y.

tion. For a philosophy of education comes from within by the widening of one's experience and knowledge of human beings and things from without. A philosophy of education cannot be taught, it must be learned. For one's educational philosophy is not a set of subject-matter principles mastered for parrotlike production. It is a series of convictions, and should proceed out of and help to fulfill one's deepest and most fundamental beliefs. He who would teach philosophy must make converts. Having made a convert in the deepest things he may now unfold the meaning of education as he sees it. Fortunately, however, this procedure may take place, as it were, backwards. Beginning with an area of common belief teacher and student may work backward into the deeper things of life and discover the foundations on which they have unconsciously built. For philosophies of education, or of anything else, are not made in a day, nor in a term. As the pupil begins to think he begins to build a philosophy of education. Well might he keep his own private notebook in which he jots down his own thoughts on education. They may be to a large extent the thoughts of his textbooks or of his teachers appearing in new form born not of repetition but of understanding. On one occasion one of my own students took it upon himself to explain to me three years later a philosophy of education most of which he had unconsciously learned in my own classroom. I rejoiced because it was no longer mine but his own. So it should ever be with the student of education. Throughout his training career as he passes from discussion to discussion, class to class, experience to experience he should ponder them, analyze them, understand them and so lay the foundation for an orderly understanding of education which will grow and continue to grow in years to come. The training school should make full provision for this process as a continuing and organized experience from beginning to end.

KNOWING CHILDREN

Teachers in training must not merely know about children, they must know children. Throughout their training career they must be brought into actual companionship with children in the life of the school, and in whatever supplementary activities may be arranged for them. For in our knowledge of children as in other things we move from the concrete to the abstract. The psychology of childhood, the analysis of child behavior, problems of conduct and discipline are best understood in terms of concrete flesh-and-blood cases, known to the students themselves. For it is only in the warmth of such actual living that students learn to develop that love of and sympathy with children which is a necessary basis of sympathetic teaching. Failure to develop any such personal interest in the young people they teach should be an absolute disqualification for teaching. We have already in the teaching ranks too many jobholders, too many who seek financial security for themselves rather than life security for the youth of the land. Consequently students who can know books but not people should be eliminated. Those who can work together with the young people they teach move on to a true understanding of an educational psychology which will scorn the academic ramblings of the so-called schools of psychology. They will master a true psychology which serves human personality, which reveals learning and conduct as motivated in terms of personality, which beholds not merely the effects but the causes of learning and behavior. For it is only those who move on from an actual knowledge of children into philosophy of education, educational psychology or methods of teaching who find those areas more than the dusty deposits of intellectuals. We learn books by children, not children by books.

METHODS OF TRAINING

These generalities concerning the basic activities leave much to be discussed concerning methods for their realization. No full discussion of that subject can be given here, yet several suggestions seem necessary. No drastic revolution within our training schools is necessary for their realization, rather a new regime of flexibility which is already developing in our best teachers colleges, a reorganization in terms of action rather than in terms of courses.

In general there are two broad approaches to the training of teachers. There is that which provides the students with a large number of courses, an extended series of ideas and information concerning education and teaching, and hopes that he will apply these under guidance when he reaches at last observation and practice. Under such a regime the education of the pupil-teacher becomes largely an abstract study built in by the best teachers from many concrete cases used as a basis for class discussion. Such has been the prevailing practice in many institutions since the beginning of the century, a practice which still lingers on in some. A much different plan is found in those training colleges in which an opposite view is taken. There are those who believe that the training of the teacher should always proceed in the concrete teaching situation, that he should move through apprenticeship to a knowledge of education. Knowing classes, and children, he encounters problems. From problems he moves on to the discussion of problems; from discussion of problems in seminars and special groups he passes to books and to the study of philosophy, psychology and method. An admirable account of such a scheme is to be found in a recent article describing the first year of work in the Graduate Teachers College of Winnetka.¹ The account tells of the seven students,

¹ Russell Babcock, "Pioneering in Teacher Training, School and Society," Vol. 40, No. 1020, July 14, 1934, Winnetka Public Schools. See also Catalog of the Graduate Teachers College, Winnetka, Ill.

who worked for a year together on a plan like that just referred to. Similar work has been done at the Co-operative School for Student Teachers in New York.¹ It is notable that in such cases certain conditions prevail which do not usually prevail in the average public teachers college. Many of the pupils are advanced students who have already had much to do with teaching. For those who have not, especially wide opportunities for class participation and superior conditions for practice teaching are available. Public training colleges can scarcely hope to duplicate such conditions. Pupils who come to them are frequently immature. Many of them have stumbled into teaching not knowing what else to do. They are lacking in any rich background of experience on which the school can rely. The teachers college has often the double task of educating them and training them to be teachers. Consequently they will be slow to abandon much of the work which is already being done for teachers in training, and to substitute for it any limited type of training which moves only and always from direct teaching experience to discussion and study. Rather should they seek for a combination of the two. If the general trend of the work from the actual situation to discussion and study be maintained, much may be learned in other ways. While proceeding from the concrete case to the abstract thought and analysis of it, is a good way to learn, it has not yet been proved the only way. Organized studies, thoughtful presentation of cases, discussion, reading and study may still keep a large place in the training of teachers. On the other hand it should be increasingly modified in terms of the types of direct experience and action referred to above, and the action of teaching, not the subject of education, should be made the basis for the organization of courses of instruction.

Such changes in teacher training lay a new emphasis upon the initial selection of candidates for entrance. In some of

¹ See Catalog of Co-operative School for Student Teachers, 69 Bank St., New York.

our best teacher-training schools careful personal investigation and interview precedes admission, so that great care is taken in the selecting of those who have a basic personality suitable for the work of teaching. Furthermore new emphasis is laid in the seminar, the seminar in which concrete lessons and experiences in the field are discussed, those seminars which spring up spontaneously to discuss some popular topic and those in which students meet to exchange the richness of their own experiences as they pursue their personal fields of interest and study. These changes, changes in the direction of flexibility, in the direction of experience as the basis of thought, in the direction of community participation, in the direction of actual teaching activity—these may greatly improve the training of teachers.

THE UNIVERSITY AS A SOURCE OF SOCIAL LEADERSHIP

The university should do more than educate. It should lead in the affairs of the community and of the nation. Higher degrees should be awarded only to those who show genuine creative distinction. The idea that the higher realms of scholarship can be attained by every individual who is willing to apply himself, and to work over a large quantity of materials should pass away. No student should be permitted to undertake the creative work of the university who has not proved himself competent of original approaches and creative thinking, and received training and development in such work while an undergraduate.

The true university should be a clearinghouse for the social improvement of the whole community. In the time of Aristotle it was possible for the integration of knowledge to be made by a single man. In the world of today only an organization of men can compass such a task. In the high-grade university the whole institution should be engaged in the work of co-operative scholarship. Under the leadership of

some scholar of world reputation and undoubted accomplishment the staff of the university should be guided into one vast co-operating web of research and of integrated learning. In such a university learning would not be scattered, each branch being pursued in independent fashion. But the work of the university would be planned, planned in its unity and planned in its co-operative diversity. For example, the true university, willing to make a significant social contribution to mankind, might plan a five-year program in the integration and reconstruction of knowledge in terms of current life and its needs. In this task some leading scholar would be given pre-eminent place. Under his guidance the work of the university would be planned and in each department professor and students would work as one vast organic phenomenon of vital scholarship toward the solution of the problems involved. Conferences and reports might be compiled, and at the conclusion of the study a series of related volumes should set the results of the years of study before the world. Of such tasks there are many worthy of a great university and a brilliant staff. For example, the problem of securing a functional substitute for war might be made a constructive program for peace. The mapping of social or economic currents throughout the world would be a task worthy of any university which would be willing to undertake it.

Universities should become the clearinghouse of ideas. In the good university an efficient and well-staffed clearinghouse should be established. To such an institution might be submitted whatever ideas or data on problems the community or the world of scholarship might be willing to donate to the world. It should thereby be made the subject of scrutiny and study. Such a bureau might be the means of fertilizing scholarship and of vitalizing research. Regular bulletins of the clearinghouse would make the community aware of

the significant contributions garnered from community experience.

EDUCATIONAL RESEARCH

The training of teachers has suffered much from the onus of educational research. Under a mistaken scientific emphasis education has lost itself in its failure to identify itself with action rather than abstraction. The primary task of education is to direct the teaching of school and community. To center the attention of those who are to be concerned with the training of teachers upon research into some minor aspect of education is to waste much valuable time and energy. Functional research in education is necessary, and at times has proved valuable. But research is not the function of graduate students of education, who require the hallmark of a Ph. D. degree for professional advancement. It is the true function of special bureaus in national centers or in community educational systems, as an aid in the understanding of educational problems faced by the community. In Winnetka, Ill., for example, real problems requiring solution arise in the school system, and are handled by the Bureau of Educational Research. There such problems as the age of beginning reading have been investigated with fruitful results, which have proved valuable not merely in Winnetka, but throughout the land. Nonfunction research in some small branch of petty subdivision of educational thinking is no significant introduction to the situation. We are overwhelmed annually with a deluge of masters' and doctors' dissertations which are feebly uninteresting and most of which are quickly forgotten because they have no wide significance. The cult of statistics has done much to worry the minds and confuse the issues of students of education. The objectivity of so-called statistical studies has been more valued than the studies themselves have proved to be. It is

time that students of education, especially those who are to become teachers, have their attention directed away from educational research into channels more profitable to themselves and others. In lieu of statistical or academic theses seekers of the higher degrees in education should be required to perform some creative task in the field in which they are most interested. Such may be the writing of a stimulating general essay on some significant aspect of education, or the building of an experimental school, or the founding and developing of some far-reaching society for the improvement of education. Creative thought, original teaching, actual professional accomplishment are to be more prized as the evidences of educational competency than the mechanical array of tiresome sentences in a tiresome problem, the chief distinction of which is that it is so insignificant that no one has explored it before. If we must have educational research let us spare the classroom teacher from its depredations and its illusions. Let it be left for those who must work on functional problems which arise in practice and cry out for solution. We look for a good piece of research from him who will make a survey and tell us just what research would be really worthwhile, if there be any such.

HIDDEN PATTERNS

Thinkers too often overlook the forward-moving quality of events. The powers which human experience has placed at our disposal far outrun the use which we make of them. Receiving from the past innumerable records we have yet failed to sort them out, analyze and relate them. They lie in our libraries in piles which are dog-eared and dusty. Discovering in the present new materials and techniques we make but feeble use of them. Our moving pictures are used to entertain, our radio to advertise, our automobiles too often to kill. On the verge of discovering new and incalculable

forces we are unaware of their immanence. We moderns are trifling with the glories of a radiant universe. We pursue our puny ways unaware that life has clothed the world in new and wonderful garments.

How may we humans defend ourselves for our carelessness in garnering the fruits of the past? The story of scholarship is one of the pusillanimous wandering of a swarm of ants. In the presence of the reality of records men have bandied with petty notions of their own. Lost in the bypaths scholars have failed to plot out the highways. Poking in nooks and crannies they have built no co-ordinated structure. The whole world is full of libraries and documents which have never been brought together in one picture of the world's experiences in receiving and losing knowledge. China, India, America, Africa and Europe are full of old tales and ancient wisdom. Hidden in the books upon our own tables and in the obscurities of undiscovered and unheeded manuscripts the ways of the world lie maimed and hidden. Unplotted are the streams of Egyptian lore, of Chinese and Greek thinking, of Christian impulse. They foam like bubbles in a pot, yet none perceives their wholeness. History is lived in wide bands and swerving patterns, yet we read the story of generations of men in bits and patches, as if each group of men lived unto themselves alone. The philosophies of all the years and times are plotted like constellations, yet we read them as the disjointed opinions of peculiar individuals. In the long story of man the swirling, driving pathways of age-long humanity which are objectively with us lie unknown, the records comparatively untouched, unco-ordinated, like mountains of hidden gold.

Having made such poor use of these deposits of experience, how then can we be ready for the new knowledge and new tools springing from them in these last decades? Rising like wisdom from the head of Mars a false science has come

panoplied like a god. Infinite has been its bragging and ruthless its assertion. It has claimed dominion over men's minds and chained them to an obsequious obedience. Yet with knowledge has not come wisdom. One by one gifts have been showered upon us. The train, the steamship, the telegraph, the telephone, the electric light, the radio, the airplane. Today we are bound in a net by machines. They pound and beat out the personalities of men until we stagger at the whip of the machine like slaves in a galley.

Let no youth fear lest the problems of the world have been solved before his arrival upon the scene. There are today more new problems than old ones which have found solution. There must be much thinking of old thoughts and the new ones born from them. The road to a new society is not via the easiest way. It is easy to scream, easy to fight, easy to hate. Too many millions today have forgotten that the price of a new culture is as it has always been, work, devotion, unselfishness. The deepest and most serious thinking of which we are capable may be hardly enough to solve the problems which press upon us. We require the rigor of a powerful but controlled dynamic. Waves of human energy must sweep forward and carry us to new goals. Let us consciously direct them to a higher realization of human values than any which has come before.

APPENDIX I

DYNAMIC AND STATIC PERIODS IN WESTERN HISTORY

A BRIEF review of the history of Western thinking will make clear the way in which Western civilization, always based too much on static reasoning, was, nevertheless, at some times more static than others. At times it was illuminated with glimpses of dynamic reasoning with effects which were most salutary in the growth of desirable living. Wheeler¹ has indicated certain dates central to groups of years which manifested certain tendencies. Students of history will realize that the periods of years indicated here as periods of dynamic thinking were those in which an efflorescence of constructive racial experience occurred. It was in these comparatively dynamic periods that the most constructive changes were made in Western culture.

B.C 300 DYNAMIC PERIOD

The thinking of Socrates, Plato and Aristotle concerned itself in an understanding way with the problem of the relationship of the whole to the part. It was realized that wholes were prior to parts and that parts were derived from them. Furthermore, by turning from the study of objective nature to man, Socrates discovered the priority of human values as the criterion of useful thinking and under his guidance and that of later philosophers the Greeks were able to recognize, however vaguely and partially, the values of human personality, with its consequent desirable interpretations of freedom as opposed to oppression, and democracy as opposed to tyranny. Even so incomplete a realization as was theirs of the

¹R. H. Wheeler, "A Set of Postulates for Educational Theory," *Journal of Educational Research*, January, 1935, p. 9.

meaning of democracy (which existed in their society only for citizens and not for slaves) and of the personality as a touchstone of values enabled them to make lasting constructive contributions to Western culture. The cultural flowering of the Age of Pericles was a direct result of the philosophical insight of great philosophers. The spiral of history had made one forward-moving revolution.

700 A.D. STATIC

The philosophic period which followed was a period of decline. After the constructive work of Aristotle his best influence fell under a shadow. It was followed by the ascendancy of Epicurus, the Skeptics and the Cynics. "The Epicurean," says Tsanoff,¹ "stood his ground on undisguised and unwavering naturalism and rejected all teleology: 'The nature of the world is by no means made by divine grace for us: so great are the flaws by which it stands beset.' The cosmos is really a stupendous dance of atoms in the void. No Divine Providence or any Reason, friendly or malicious, governs the coupling and the dissipation of these material particles. Man's soul and body are passing combinations of irreducible bits of matter; lasting satisfaction is not to be had, nor can it be expected; immortality is a delusion; the evils of life should surprise us no more than its alleged goods; they are both but words in a world in which atoms whirling in empty space are alone real. So materialistic philosophy exhibits here its incapacity to recognize, much less to solve, the problem of evil. Epicurean cosmology could not provide for the values sought in Epicurean ethics."

In periods dominated by such a philosophy a sort of paralysis comes over the ways of men. Human beings are in-

¹ Radoslav A. Tsanoff, *The Nature of Evil*, by permission of The Macmillan Company, New York, 1931, p. 18.

capable of making vast improvements in their environment. Of course, it must be remembered that in any given period such as this, although a type of philosophy is *dominant*, its opposites flourish in many groups and in many individuals. Furthermore, when either static or dynamic philosophies appear in individuals or groups, they are not always identical philosophies. The qualities under discussion were realized but dimly by some and more definitely by others, but in different orientations and with different emphasis. In spite of these differences, however, certain tendencies toward the static or the dynamic may be detected. All static thinking is not the thinking of Epicurus, but it holds much in common with his point of view.

These comparatively barren philosophies reigned in a world that has little for us to remember until new philosophies aided men of the thirteenth century.

1250 A.D. DYNAMIC

The thirteenth century has been called the "greatest of centuries." During its passage the lives of men seem to have struck a balance, and sanity was the order of the day. It was one of those periods in which men have been able to live without the suffering of psychological lesions. It was one of history's triumphs in the way of a society in swing and balance. It was in these days that life was guided by the monumental work of such masters as Duns Scotus and Thomas Aquinas. Their philosophies were notoriously deductive and from the whole to the part, although the deductions involved were couched in the strictest of canonical logic. The limitations of this classical logic go far to explain the wasteful circumlocutions of medieval scholarship. Striving to be organic yet it was bound up in its unorganic logic.

1400 A.D. STATIC

Little need be said of the Ciceronian humanism that blighted the Renaissance. Starting off with a new impulse for living, the people of the time were unable to nourish their thinking on the dregs of Greek and Latin wholeness as revealed in the classics. As long as the thinking and the forms of the thirteenth century remained to fertilize the art of the time, it flourished under the freshening breeze of humanism. Ciceronian formalism came as an all-too-early blight, and art motivated by worldly success became mundane, rococo and degenerate.

1650 A.D. DYNAMIC

It was a struggle for the thinkers of the mid-seventeenth century to recover the dynamic point of view. Under the influence of such thinkers as Galileo, Francis Bacon, Descartes, Spinoza and Leibnitz, however, new progress was made. Physics, mathematics, biology and social thought began to recover something of the part-in-the-whole approach. In brief, as the turning of the historical spiral continues to sweep in widening circles, the new is integrated with the growing old. In a period of static thought the new and fresher thinkers are accused by the current inert conservatives of losing ground, of reverting to an old and exploded form of thought, of setting back the hands of the clock, of hampering the development of thinking. It should be clearly realized that this harking back to earlier stem is the soundest evidence which could be produced that these thinkers are not static and unchanging. They are not independent or alone, but are part of a continuum which extends from the beginnings of philosophy forward in widening circles to the present time. After inert and unprogressive periods, the stem

of the old must be recovered from which the new and wider branch may grow.

1770 A.D. STATIC

The thread was lost again in the middle of the eighteenth century. Under such thinkers as Linnaeus, Hume, Diderot, Rousseau and Adam Smith, the vision faded. Says Wheeler: ¹

"Once more the pattern broke and thought shifted toward the opposite pole, coincident with social revolution. Science, philosophy, ethics, all turn to an emphasis on the parts, or at best, on wholes that are derivative. Science turned extremely atomistic and to concepts of substance (innate properties). Man is a machine. The state is an artifact, man-made, solely for convenience (contract theory); ethics is hedonistic and utilitarian. In mathematics, geometry (interest in form) is abandoned. Biology rests its case upon preformation and a biological atomism and behaviorism anticipatory of the cell theory and modern behavioristic movements. We have mechanistic association psychology, and emphasis upon mental parts and their supposed *syntheses*."

1820 A.D. DYNAMIC

"The revolutions and scientific reaction toward materialism and atomism were no sooner over, however, when Kant and the Scottish philosophers *brought philosophy back toward pattern once again*; Thomas Brown ² and Herbert ³ led the movement in psychology; Bichat, ⁴ Goethe ⁵ and Cuvier ⁶ introduced the reaction in biology; the same movement revealed itself in mathematics in a glorious outburst of pro-

¹ Wheeler, *ibid.*, p. 5.

² *Lectures on the Philosophy of the Human Mind*, 1820.

³ *Lehrbuch zur Psychologie*, 1816.

⁴ *Recherches physiologiques sur la vie et la mort*, 1790-1800.

⁵ *Bildung und Umbildung Organischer Naturen*, 1807.

⁶ *Leçons d'atomie comparée*, 1800.

jective geometry (emphasis on form again); and theories of the State turned monistic (pre-organismic) once more. From 1800 to 1840 philosophy and science were dominated by an interest in the part-whole relation. Field theories and conservation laws were advanced in physics; stereo-chemistry held the day. The pattern of the molecule was important, and the distinction was discovered between the atom and the molecule (Avogadro). Galois laid down his famous theorem in mathematics that the special case can be proved only when the general case is subject to proof. Jacob Steiner¹ used the term *Gestalt* in geometry to describe an organic mathematical whole; Goethe used the same term to describe the form of living organisms; and Fichte² used the same term by means of which to describe the State. The whole is primary and controls its parts. Properties are derived. Ethics becomes idealistic, and utilitarianism is denounced. Philosophy and science emphasize deduction and as a consequence there is a revival. Induction is used to test theory, not as a source of theory. Man's free imagination becomes the source of theory and the consequence is an enlightenment.

¹ *Systematische Entwicklung Abhängigkeit geometrischen Gestalten von einander*, 1832.

² *Grundlage des Naturrechts*, 1796. See also:

Oken, *Lehrbuch der Naturphilosophie*, 1809-11.

Hegel, *Phänomenologie des Geistes*, 1807.

Philosophie des Rechts, 1821.

Logic, 1812-16.

Bencke, *Psychologische Skizzen*, 1825.

Rathke, *Beiträge zur Geschichte der Thierwelt*, 1820-7.

Flourens, *Recherches experimentales* . . . 1824.

Lobachevski, *Geometrische Untersuchungen*, 1840 (Conceived, 1826).

von Baer, *Über Entwicklungsgeschichte der Thiere*, 1827.

Coleridge, S., *The Theory of Life* (written 1831; published 1848).

1860 A.D. STATIC

"As before, the political world had temporarily quieted down. But likewise as before, the pattern broke again. It began to crumble in the forties. Once more there was need for emphasis upon the parts, both in theory and in practice. Civilization enters upon a period of civil and international war. The main problem was the need for more liberal constitutions and a broadening of the franchise. At the same time each State participated in movements of aggression and imperialism, a natural outcome of the philosophy that the parts come first. Consistent with the swing of the pendulum, science turns to atomism again. We have the cell theory in biology, the kinetic theory of gases, a revival of association psychology, of contract theories of the state, laissez-faire, utilitarianism, materialism and mechanism. Teleology is discarded, indeed, is denied and repudiated. Those scientists who clung to the Cuvier and von Baer tradition were looked down upon in a wave of thought that followed Schleiden, Schwann and Darwin. Theories of evolution which, under the assumptions of *pattern one* are co-operation theories, now, under *pattern two*, become competition theories. It was only natural that practical politics should have followed Darwin much to Darwin's own dismay.¹

¹ Typical mechanistic literature of this period:

Waitz, Th., *Grundlegung der Psychologie*, 1846.

Mill, John Stuart, *Principles of Political Economy*, 1848.

Fortlage, K., *System der Psychologie*, 1852.

Büchner, L., *Force and Matter*, 1855.

Bain, Alex., *The Senses and the Will*, 1855.

Darwin, C., *Origin of Species*, 1859.

"The counter reaction was clearly evident by the late eighties and in the nineties.¹ But with so much factual (quantitative; structural) material to consider, and with infinitely more minds involved than ever before, the reaction was more labored and slow than was the recovery of 1820, and is still going on. Idealism and rationalism have returned in philosophy, likewise the part-whole problem in physics, under the name of relativity. In biology, we have an organismic movement. In psychology the return of *pattern one* is evident in the logic of *Gestalt* theory. In social science the same trend is marked by socialistic theories and an abandonment of individualism. Once more social science is thinking in terms of the dynamics of social wholes, as was true of 1820 and 1650. It is thinking of parts in terms of membership character in a social whole."

¹ Typical transition literature:

Ribot, *Les maladies de la volonté*, 1883.

Fouillée, *Evolutionnisme des Idées-forces*, 1890.

Bradley, F. H., *Appearance and Reality*, 1893.

Dürkheim, E., *De la division du travail social*, 1893.

Ostwaldt, Wm., *Die Überwindung des wissenschaftlichen Materialismus*, 1895.

Wolff, G., *Beiträge zur Kritik der Darwinschen Lehre*, 1898.

Hilbert, D., *Grundlagen der Geometrie*, 1899.

Dewey, J., *Psychology*, 1886.

In this decade there were Ehrenfels (*Gestaltqualität*), Meunier (funded contents), J. Martineau (differentiation), Werner (stereochemistry), Karl Pearson (anti-atomist), C. O. Whitman (opposed cell theory), Benj. Kidd (opposed social Darwinism), A. Binet (opposed association psychology), J. S. MacKenzie, *Social Philosophy* (a fine account of the part-whole problem), W. S. M'Kechnie (organismic theory of the state), Pfeffer (opposed mechanistic botany) and a host of others.

APPENDIX II

SUPPLEMENTARY QUOTATIONS ON RELATIVITY

ON THE basis of these questions, we see that the law of the propagation of light in a vacuum is equally fulfilled for all justified systems K and K' ; on the other hand, it is seen that Maxwell's fundamental equations of electrodynamics do not change their form when the formulas of the Lorentz-transformation rather than those of the Galileo-transformation are applied to them. There is thus a universal principle of relativity, which comprehends the totality of physical phenomena; the laws, according to which the states of physical systems change, are independent of whether they are referred to one or the other of two systems of co-ordinates in uniform translatory motion relative to each other. The principle of relativity of classical mechanics is so little contradicted by this general principle that it is rather contained in it as a special case; the equations of the Galileo-transformation directly issue from those of the Lorentz-transformation when one considers only such velocities as are very small in comparison with the velocity of light so that the values $\frac{v}{C^2}$ $\frac{v^2}{C^2}$ can practically be left out of account. It follows from this that the principle of relativity of electrodynamics, carried over to mechanics, can come into conflict with no empirical result, while the converse carrying-over of the principle of relativity of mechanics to electrodynamics proves to be impossible, as the collapse of Hertz's theory showed. More closely considered, however, in the special theory of relativity, the electrodynamic processes are not used as a key to the mechanical, but a truly universal principle, a heuristic maxim of investigation in general, is established, which

claims to contain a criterion of the validity and permissibility of all particular physical fields and theories. Thus it is seen that the initial contradiction, appearing between the principles of mechanics and those of electrodynamics, has shown the way to a far more perfect and deeper unity between them than had previously existed. And this result was not reached entirely by heaping up experiments by newly instituted investigations, but it rests on a critical transformation of the system of fundamental physical concepts."

Writing on the special theory of relativity, Lenzen¹ explains how the requirements of electrodynamics brought about a reconstruction of the concepts of space, time and kinematics.

"Space is a form of relational structure and is bound to a frame of reference. In the classical kinematics different frames have the same space; length is invariant under a transformation of frames; the geometrical properties of figures are independent of the frame of reference—all of which is expressed by the statement that, in the classical theory, space is objective. Again, the time system of events is the same for all frames of reference; the time interval between events is an invariant under a transformation of frames. Thus classical kinematics presupposes a single space and a single time. The classical theory of space is summed up in the transformation from one system of reference to a system moving in the x direction with respect to the first. We have

$$x' \text{ equals } x - vt$$

$$y' \text{ equals } y$$

$$z' \text{ equals } z$$

$$t' \text{ equals } t$$

"These equations define a common space and time for systems in motion with respect to each other; if v is constant,

¹ V. F. Lenzen, "The Special Theory of Relativity," in *The Nature of Physical Theory*, reprinted by permission, John Wiley & Sons, Inc., New York, 1931, p. 193.

the transformation is called Galilean. The classical transformation equations were accepted in the electron theory.

"The electron theory of Lorentz further contained a relic of the mechanical conception of nature, the concept of a substantial ether. The equations of electrodynamics were expressed relative to a frame of reference which was at rest with respect to the ether. However, classical kinematics and the hypothesis of an ether proved to be inadequate for a satisfactory expression of the results of observation. In the special theory of relativity we achieve the elimination of the concept of the ether and a reconstruction of the theory of space and time. Definitions which are more explicit than those in classical theory render time and space relative to a frame of reference. Thus classical kinematics becomes a first approximation to a new kinematics which has been molded by electrodynamics.

"We have seen that in order to describe motion it is necessary to choose a system of reference, that is, a frame of reference together with rods and clocks. In classical dynamics one employs a set of privileged systems of which an example is the system of fixed stars. From classical kinematics it follows that the equations of dynamics also hold with respect to systems having a uniform rectilinear motion with respect to the fixed stars. The proposition that a set of privileged systems is uniform rectilinear motion with respect to each other are equivalent is called the principle of relativity of uniform motion; the principle of relativity expresses the fact that a uniform motion of a system of reference cannot be detected by mechanical experiments in the system.

"The principle of relativity was abandoned in Lorentz's electron theory; in this theory the substantial ether is a uniquely privileged frame of reference. The kinematical quantities which enter into the equations of electrodynamics are supposed to be measured with respect to the ether. Now

it was assumed that classical kinematics was applicable to the electron theory. If from the equations of electron theory expressed with respect to ether, one deduces, by means of classical kinematics, the equations relative to a moving frame, one finds that the electromagnetic equations are changed in form. The equations of Lorentz are not invariant under the Galilean transformation; thus in Lorentz's electron theory the principle of relativity of uniform motion does not hold.

"As an example of the change in electrodynamic phenomena to be expected with a change in system of reference we may consider the principle that the velocity of light with respect to the ether is a constant regardless of the velocity of the source. By classical kinematics we can calculate the velocity of light in a system moving with velocity relative to the ether. The result is that the velocity of a ray moving in the same direction as the moving system is $c - v$ in this system; for a ray traveling in the opposite direction the velocity is $c + v$. Hence in a system moving with respect to the ether the velocity of light depends upon the direction. The consequence of electrodynamics offers the possibility of determining by optical means the velocity of a system moving with respect to the ether. As early as 1881 the Michelson-Morley experiment had been performed to detect the velocity of the earth with respect to the ether. But the outcome of this experiment, and of other experiments designed for a similar purpose, was negative. And in dynamics, it has not been possible to devise an experiment which would enable one to detect a uniform motion of a system of reference. Thus negative experimental evidence offered a basis for extending the principle of relativity of uniform motion to electrodynamics as well as to dynamics.

"Physical theory was thereby confronted by a contradiction. On the one hand, the electron theory of Lorentz had furnished a satisfactory basis for the explanation of electro-

magnetic and optical phenomena. Now electrodynamics may be represented by the principle of the constancy of the velocity of light—a principle which presupposed a fixed ether and thus contradicted the principle of relativity. On the other hand the principle of relativity had been confirmed by negative experimental results."

Fitzgerald and Lorentz sought to explain the failure to obtain evidence of the motion of the earth relative to the ether by the hypothesis that bodies contract in the direction of motion; Lorentz deduced this assumption from the electrical theory of matter. Ritz and others entertained the hypothesis that the principle of the constancy of the velocity of light does not hold.

Einstein then proposed the radical solution of reconstructing the fundamental concepts of space, time and kinematics. In the special theory of relativity the concepts of space and time are so refashioned that electrodynamics conforms to the principle of relativity of uniform motion. In classical physics concepts were constructed with a view to the mechanical conception of nature; in the special theory of relativity electrodynamics becomes the legislative system of physical theory.

The problem of the special theory of relativity is the reconciliation of

- (1) The principle of kinematics.
- (2) The principle of relativity of uniform motion.
- (3) The principle of the constancy of the velocity of light with respect to at least one system.

If one assumes classical kinematics, principles 2 and 3 are incompatible. Einstein assumed principles 2 and 3 are modified kinematics.

APPENDIX III.

MATERIALISM

AN EXCELLENT description of materialism is provided by Hans Driesch who says of the materialists of the late nineteenth century: "But even these men, though philosophically trained, were of opinion that Reality, though unknowable in itself, appears to us in the form of a purely mechanical system, in which nothing but simple particles of matter are at work. We may, then, speak of a refined or philosophical materialism or, to put it shortly, of a mechanistic view of the universe.

"No guidance, no plan, no design—these are the most important negative characteristics of the mechanistic theory. Everything is contingent, everything happens by mere chance. In some directions we may at first glance believe that we discern a plan, as for instance in the domain of the organic world. But only at first glance; for deeper investigation will show that in this field also there is no plan, but only 'survival of the fittest,' to use Darwin's words. In modern terms, certain chemical compounds are more stable than others and thus form the foundation of the organic world. Thus the difference between the organic and the inorganic world is regarded as only a difference in the degree of complexity, but nothing more. In particular, it was affirmed that there is *no difference in essence*; an earthquake and the behaviour of a dog are ultimately of the same type, for both are governed by the same elemental law of matter.

"This, in fact, is the main point of the mechanistic doctrine; that there is but *one* fundamental law of Becoming in all Nature. And this is a law with respect to the *interaction of the ultimate constituents of matter*. You may take here the words 'ultimate constituents of matter' in any sense

you like. You may think of solid atoms, as the older physicists did, or of quanta of energy, or of anything else. The main point is this: the interaction between the ultimate material elements accounts for *everything* that occurs in nature, and this interaction is dominated by a *single* elemental law, be it the law of Newton, or of Maxwell, or whatever you may prefer, according to the actual state of physics.

"Let me say the same thing in other words: if one knows the distribution of the material elements and the velocity of each element at a given moment, and if one has also knowledge of the ultimate law of interaction, then one can predict everything that will happen in Nature at any moment of the future.

"This, then, is the scientific characteristic of 'mechanism' in the broadest meaning of the word. Instead of speaking of 'mechanism' we may also speak of the summative view of Nature, and if we include in the meaning of the word 'sum' what is usually called geometrical addition (think of the so-called 'parallelogram of forces'). Let me repeat: the summative view of Nature, taken in its deepest philosophical sense, is neutral with respect to the various forms of physics as represented by the names of Newton, Maxwell, Einstein, Planck, etc. It only maintains that every complex phenomenon in Nature may be dissolved into single phenomena of the mechanistic type, of which it is the (geometrical) 'sum.'

"Start from the parts—this is the main point.

"A certain difficulty for the mechanistic theory, was, of course, the existence of *Consciousness*. For this is most evidently not 'matter.' But the scientists and philosophers of that period were of opinion that this difficulty was not a very great one; conscious life, they said, is the mechanics of the brain 'seen from the other side,' and this hypothesis of so-

called *psycho-physical parallelism* (in our opinion the greatest absurdity that has ever gained foothold in philosophy) was, in fact, the leading theory in regard to the great problem 'mind and body' from about 1850 until the beginning of our unhappy century."¹

"Naturalism (mechanical view, materialism, A.G.M.) is sooner or later doomed to failure. It leaves out the higher aspects of all phenomena, and in the end these cannot be omitted. For the objects of the physical sciences which form the lower orders in the hierarchy of existence are the less significant. The atoms of the physicists may indeed be implied in the organization of conscious beings, but in a subordinate capacity: a living organism exhibits actions which cannot be formulated by the laws of physics alone; man is material, but he is also a great deal more, to wit, alive, physical and moral. Again, all physical bodies gravitate, but the activities of living to say nothing of rational bodies cannot be explained by the action of gravitation alone. So chemical affinities are presupposed in biological actions, but yet life is something more than and beyond chemical affinity. Thus it is the same inherent law of method which is displayed, not only the palpable inadequacy of explaining biological facts by chemical or mechanical facts, but also in that of explaining the rational or moral by mere biology.

"The naturalistic method, therefore, in trying to explain the higher by the lower, constantly fails to include the whole of the higher, and is constantly driven to deny what it cannot explain, and to reduce the higher to the lower. But though at first it seems plausible to explain the higher and fuller by something which *seems* simpler because it is less significant, by dint of leaving out its surplus meaning, this process becomes more and more difficult the further it is

¹ Hans Driesch, "The Breakdown of Materialism," *loc. cit.*
Francis Mason, *op. cit.*, p. 283.

carried, and if it were carried to its consistent conclusion, it would be seen to refute itself. It would end by explaining all things by that which is nothing in itself, and has meaning only in relation to the things it is supposed to explain. The further we carry our researches into the lower, the more it appears that it is not really simple, but only vaguer and more indefinite, and that the lack of differentiation indicates, not that we have got down to the fundamental principles of the complex, but that it arises from a confounding of all the distinctions which enable us to comprehend the thing.

"To take only the one example of protoplasm, which is the starting-point of biology (itself one of the higher sciences). *For biology* protoplasm is ultimate: it can no longer be derived from any lower and 'simpler' form of life. It can be defined only in terms of what it becomes or develops into. Yet this 'simple' protoplasm performs all the functions which in its differentiated developments fall to the share of the most varied structures and the most varied faculties. It sees and hears and smells and tastes and feels, thinks and wills and moves, it absorbs and excretes, it grows and reproduces itself, and all without any discoverable difference of structure. What then have we gained by deriving differences we can see and partly understand from hypothetical differences which are invisible and incomprehensible? Is the mystery lessened by being relegated to the mythical region of the unknowable and imperceptible, and is it not in very deed an explanation *ignoti per ignotius*? . . . things must be explained by their significance and purpose instead of by their 'causes,' by their ideals instead of by their potentialities . . . instead of being simple and more susceptible of explanation, the lower stages of the process are really the obscurer and more unintelligible, because they do not so clearly exhibit the drift of the process. . . . The physical laws of nature are the earliest and lowest laws of the world-

process, the most ingrained habits of things, the first attempt at the realization of its End, and so they are the very last to become intelligible. If we ever arrive at a teleological explanation of them, it will be only after we have *worked down* to them from the higher laws of the more complex phenomena. The basis, in other words, for a teleological interpretation of nature will not be found in sciences like physics and mechanics, but in sciences like psychology, sociology, and ethics."

APPENDIX IV

APPLICATION OF THE ORGANIC CONCEPT TO CURRICULUM CONSTRUCTION

CURRICULUM CONSTRUCTION in America has been dominated in recent years by those same atomistic notions which have governed education as a whole. Consequently curriculums have not been built on any unified principle but have rather been a sophisticated compilation of materials. One recent book on curriculum indicates this tendency in the very structure of the chapters. It deals with various approaches to curriculum construction, contributions of research to curriculum content, and then in sequential chapters with different subjects such as handwriting, spelling, grammar, arithmetic, art and so on. It recounts such studies as those of the American Vocational Association in the form of lists of qualities to be developed in pupils, and gives a series of basic jobs of home mechanics, such as ability to wire an electric socket, ability to mend kitchen utensils. Such approaches to curriculum construction are pernicious and inadequate. They have not developed out of the whole living of children in a unified community. Printed curriculum should be a list of unified and related suggestions developed from a study of what successful groups of children have done in the best schools, with full studies of materials and the expected times of maturing of children to those desirable experiences.

More valid than our modern work is that of Comenius. Modern curriculum makers might study the *Great Didactic* of Comenius with much profit, and improve on it in terms of modern life. For Comenius taught that as a tree puts forth its early shoots which later become its main branches, so

children should develop those main trunk lines of experience which will become the later structure of their personalities. Consequently Comenius tried to identify those basic forms of experience in terms of *expectation*. He listed them as metaphysics, physics, optics, astronomy, geography, chronology, history, arithmetic, geometry, statics, mechanics, dialectic, grammar, rhetoric, poetry, music, economics, politics, morals, religion and piety. These suggestions of Comenius have become the basis of our modern curriculum. It could at least be seriously argued that we have since then retrogressed as much as we have progressed, lost as much as we have gained. Today we should use the same all-around spiral principle but in a greatly improved form, avoiding even the appearance of atomism which the lists of Comenius falsely give. For Comenius intended that the beginnings should be made in child experience, and that each school from lower school to university should in spiral form develop the expanding experience of the learner. Today we have not merely lost sight of the organic curriculum, whereas the school which proceeds as an organic whole from nursery school to university and research institute exists with us not at all in the West. It is to be found in this modern world, so far as I am aware, only in Tagore's institution at Santiniketan, India.

APPENDIX V

THE NEW PROGRAM AT EAGLE ROCK HIGH SCHOOL, LOS ANGELES¹

BY HELEN BABSON

EAGLE ROCK, though politically a part of the City of Los Angeles and enjoying the advantage of a metropolitan activity, is socially somewhat of a unit, retaining a self-consciousness from the comparatively recent days when it was a separate town and conducted its own affairs. The population is homogeneous and, for the most part, permanent. Within its area is every school facility from kindergarten to college. From its beginning, therefore, eight years ago, the school has had the advantage of this educational continuity and a definite share in the social and cultural expression of a closely united community.

The faculty of sixty-nine, including a nonteaching staff of five, principal, boys' and girls' vice principals, registrar and counselor, and a student body numbering sixteen hundred are organized into two distinct groups, a senior and a junior high, with quite different programs and housed in separate buildings. Operating thus under a plan which tends to remove the objectionable social features of a six-year unit while it retains the longer age span desirable in directing child growth, with a sense of understanding and sympathy in the community and the constructive help and encouragement of the Division of Instruction and Curriculum of the Los Angeles city schools, the faculty have been able to proceed under very favorable conditions. The basis for the school practice lies in the belief that education should concern itself

¹ From the *Junior-Senior High School Clearing House*. May, 1935, p. 560.

with such processes and experiences as may achieve for all those involved, pupil and teacher alike, both the desire and the capacity for abundant living, today and tomorrow, in the present and in the future. To that end, several years have been given to reconstructing the school's curriculum, to eliminating everything that seemed to make no contribution to the child's adjustment to life, and strengthening and vitalizing all procedure that appeared to tend to his better social development; combining and relating both facts and their interpretation wherever such arrangement seemed to serve their purpose; setting up lines of communication between all phases of school life that there might always be an awareness of the unified objective; in a word, endeavoring in every way to formulate a curriculum that should center in the child and his experience. As a result of these years of thinking and working together, the following conclusions are taken as the basis for the school program.

Education is one continuous process and all its factors should be related in the child's consciousness. Its test should be its effectiveness in aiding him to discover and direct himself to find his place in the social structure and to make his contribution to the general good. In this process there are (1) four phases of instruction that should be considered, not as separate departments but as interdependent components whose purpose is the relation they bear to the goal of living; and (2) four types of emphasis which should cut across all group activity, emphasis whose significance arises from the organization of the world in which the child lives.

1. The assumption concerning the four phases of instruction are as follows:

- a. There are certain fundamental skills and knowledge which every person should possess. These may vary in volume and intensity as the child's capacity will vary, but their

application should always be in actual child understanding and participation.

b. Physical well-being is essential to every good life and, therefore, the child should have definite training in both the purpose and practice of health.

c. Since every person finds deep satisfaction in the use of the "gift that is in him," there should be provision, first, for helping the child discover his own major interest and capacity, and, second, for providing him the opportunity to develop it.

d. Life is abundant only as it touches a variety of different activities and interests, of minor importance possibly to the major sphere of capacity but desirable in rounding out the child's personality. None of these should be considered "extracurricular" but all should be an integral part of his education and there should be a full, broad, varied scope for his personal choice.

On these four assumptions, the schedule of the school is set up as follows:

1. Fundamental skills and knowledges.

The basic course of the curriculum is one in which the objective is social understanding. Into it are gathered every source of material and type of activity that may help the child through interpretation, participation, and judgment to understand the world of which he is increasingly a part. Music, art and literature, as vital to this understanding, are parts of the course. In the seventh and eighth grades, the class interest centers in the development of America, "the American epic," and the chief emphasis, as seems best for the grade capacity, is in the geographic and narrative elements. In the ninth and tenth years, the class undertakes a study of world cultures, endeavoring to discover the contributions of

the ages, races and nations to the present state. The eleventh years consists of investigation of American institutions and customs and in the twelfth year a variety of single hour courses, all social in significance, grow directly out of the interests developed in the previous semesters. With the exception of the twelfth year, these are two hours in length.

Out of this basic course grows the motivation for the development of various skills and capacity. Some, such as English both written and oral, are integral parts of the course. Others more specialized, such as science, mathematics, industrial arts, and so forth, reach from this class into other periods of the child's day.

From the seventh through the tenth year a nonspecialized course in science, with the objective of acquainting the child with the physical world, occupies from two to three hours a week. In addition to its relation to the basic course, correlation is made with other courses, wherever such seems natural. In addition, other periods of science, *e.g.*, biology, chemistry and physics, are offered as part of the scientific major or, in somewhat simplified form, as units under general interests.

For two years, the seventh and eighth, courses are required in the technique of simple mathematics. For the present, these are scheduled one period a day, but it is expected to lessen this amount of time for children who do not need it. As with the science, additional courses—algebra, geometry, trigonometry, and so forth—are offered as part of the major interest or general-interest schedule.

2. *Physical well-being.*

One hour a day for the entire six years is given to the consideration of health. Here a very definite effort is made to depart from the more formal type of physical education and to introduce a varied program around the general objective.

3. *Major interests.*

During the seventh and B-8 semesters opportunity is given the child in every way to discover the type of work best suited to his individual interest and aptitude. The basic-course instructor, as will be explained later, has for one of his chief concerns helping the child to decide where his natural choice should be. During the A-8 semester for one hour a day the child has opportunity to try his hand and his head in very simple, very elementary exploratory courses dealing with the various major interests—business, art, music, mechanical arts, science, and so forth. As a result of this experience tentative division is made in the ninth grade into the following major-interest groups. (The letters are used merely as a means of distinguishing the divisions for routine purposes.)

- U Groups: Students whose major interests are fairly well defined along *academic* lines, subdivided into scientific and literary majors.
- N Groups: Students whose major interests are along *non-academic* lines and subdivided into music, art, industrial and mechanical arts, domestic arts, business.
- G Groups: Students who have developed *no* specific major interest and for whom somewhat general programs seem advisable.

During the ninth and tenth years these groups are scheduled together for the main periods of the day, and during the eleventh and twelfth years two hours a day are spent in somewhat specialized study of the chosen interest and its related subjects.

4. *General interests.*

From two to five periods a week during the entire six years, the child is given his choice of general-interest subjects. In the lower grades, especially in the seventh and eighth, part of this time may be spent in a carry-over from a project or activity of the basic course, the completion of work for which the two-hour period seemed insufficient. When the child is weak in some technique or skill, he is required to spend some of his time in "workshop" where teachers are ready to help him make up his deficiency. For the most part, however, this is a period of absolutely free choice and the school endeavors to make the offerings as varied as possible, introducing from time to time new courses which have educational value whenever faculty leadership and student desire dictate.

The unification of the student's entire program, as has been stated, lies in the basic course of social understanding. From the seventh through the tenth grade, therefore, the instructor who stays with his group during each two-year cycle of this four-year period becomes in a very personal way the adviser for the individual children in his class. To him come all records, all information, all recommendations, and his contacts with the parents as well as with all the child's school relationships are frequent. Regularly he meets other instructors of the grade so that the continuity of the child's experience may be clear in the consciousness of all his teachers as together they plan the general trend of units of work and the material necessary for their accomplishment. It is this basic-class instructor who, under the direction of the school counselor, aids the child in deciding his interests, major and general. Through him because of his knowledge and understanding adjustments in the child's program are

achieved. In the final analysis, this instructor combines in this capacity the homeroom and guidance functions.

In the two later years, the eleventh and twelfth, the major-interest instructors consult with the basic-course instructor on these matters.

To be effective, such a curriculum requires careful organization of faculty effort and understanding. A member of the group relieved from some classroom obligation for this responsibility, and known as the director of the basic course, heads faculty-committee activity. To each of the three so-called class-cycle groups, seventh-eighth, ninth-tenth, eleventh-twelfth, is assigned a chairman; the basic-course instructors are, in turn, chairman of grade committees composed of all teachers in each grade. Regular meetings according to a fixed schedule arranged at the beginning of the semester made possible the unification of the plan, and careful but very simple reports in the form of class procedure agreed upon are put on file in the principal's office after each committee meeting.

Four Types of Emphasis. The four types of emphasis which should cut across class activity are based on the fact that the child will make his contribution in four life groups: the home, the occupational, the leisure time and the community or state. There should be, therefore, definite and careful planning to direct all phases of his school experience that he may realize and be ready for his place as a member of a family, as a worker, as a master of his own free time, and, in both the ethical and the political sense, as a citizen.

Four faculty committees, representing a cross section of subject interest, direct the emphasis of the class units into the four life-group channels. The function of these four committees is chiefly advisory and consists of suggestions, with occasional lesson plans, for the grade committees. The citizenship committee, for example, prepares and distributes in all

the basic courses regular bulletins dealing with such subjects as stealing, sportsmanship, student government and student regulations, etc., which are used as part of the class-instruction period. Under the leisure-time committee a unit correlating all the A-g groups eventuated in a demonstration at junior-high graduation.

On the other hand, the activities of these committees frequently turn their emphasis towards more direct channels. The vocational committee, after ascertaining the vocations in which the young people were interested, conducted a vocational day when members of the chosen professions brought student groups first-hand information. The home-membership committee, besides forming many direct contacts with parents, working directly through the parent-teacher association, has organized a class in home relations drawing on fifteen members of the faculty for class instruction scheduled as a general-interest elective in the twelfth grade. A unit consisting of informal discussion of the use of leisure time—concerts, movies, radio programs, art exhibits, etc.—and purposing to define standards of appreciation is given to all tenth-grade students by the leisure-time co-ordinator.

The accompanying chart illustrates the program by periods and grades.

While it is plain that in a school with an enrollment of sixteen hundred there must be some system of bell schedule and student programming, every effort is made to prevent such a system from limiting the child's freedom. It is possible at any time to make constructive adjustment of his day or course, and the faculty, especially the basic-course instructors, are ever alert to discover the need for such adjustment.

<i>Grades</i>	<i>I & II</i>	<i>III</i>	<i>IV</i>	<i>V</i>	<i>VI</i>
B7, A7, B8	American epic	Exploratory shop and home economics, 2 days Science, 3 days	Physical well-being	Mathematics	General interest
A8	American epic	Exploratory major	Physical well-being	Mathematics	General interest, 3 days
B9, A9					Science, 2 days
B10, A10	World culture	Choice of two: mathematics, art, languages, commercial subjects, industrial arts, home economics		Physical well-being	General interest, 2 days Science, 3 days
B11, A11	American life and institutions	Major interest and related subjects		Physical well-being	General interest
B12, A12	Basic course	Elective major interest and related subjects		Physical well-being	General interest

BIBLIOGRAPHY

- BERDYAEV, N., *The End of Our Times*, *Sheed and Ward, Inc.*, 1917.
- BERTALANFFY, L. V., and WOODGER, J. H., *Modern Theories of Development*, *Oxford University Press, New York*, 1933.
- BOGOSLOVSKY, BORIS, *The Ideal School*, *The Macmillan Co., New York*, 1936. A concrete semi-novelized picture of a secondary school which is invaluable.
- The Technique of Controversy, *Harcourt Brace & Co., New York*, 1928.
- BOODIN, J. E., *A Realistic Universe*, *The Macmillan Co., New York*, 1916.
- BRAGDON, CLAUDE, *The Frozen Fountain*, *Alfred A. Knopf, New York*. Contains discussions relating art, philosophy, mathematics and architecture.
- BURR, SAMUEL ENGLE, *What Is the Activity Program of Progressive Education?* *C. A. Gregory Pub. Co., 345 Calhoun St., Cincinnati, Ohio*, 1936. Contains practical suggestions.
- CASWELL AND CAMPBELL, *Curriculum Development*, *American Book Co.*, 1935. Departures in curriculum which are related to work in progressive schools.
- COOK, THEODORE ANDREA, *Curves of Life*, *Constable & Co., London*, 1914. An unusual and valuable book unfortunately out of print and difficult to obtain except in large libraries.
- Spirals in Nature, *John Murray, London*, 1903.
- DEMIASHKEVICH, MICHAEL, *An Introduction to the Philosophy of Education*, *American Book Co.*, 1935. Contains valuable criticisms of much that passes currently for philosophy of education.
- DRIESCH, HANS, *The Problems of Individuality*, *Macmillan & Co., London*, 1914.
- HAMBIDGE, JAY, *The Elements of Dynamic Symmetry*, *Brentano's, Inc., New York*, 1926.

HENDERSON, C. HANFORD, Education and the Larger Life, *The Houghton Mifflin Co., New York*. This book, with the other listed by Henderson and one by Nathan Oppenheim definitely influenced the thinking of Mrs. Marietta Johnson, of Fairhope, Ala., toward organic thinking in education.

What It Is to Be Educated, *The Houghton Mifflin Co., New York*. (See note under Henderson above.)

HENDERSON, I. J., Fitness of Environment, *The Macmillan Co., New York*, 1913.

HOWARD, F. E., and PATRY, F. L., Mental Health, *Harper & Bros., New York*, 1935.

HUXLEY, J. S., Problem of Relative Growth, *Methuen & Co., London*, 1932.

JENNINGS, H. S., Genetics, *W. W. Norton Co., New York*, 1935.

KEATINGE, M. W., Comenius, *McGraw-Hill Book Co., New York*, 1931. Contains copious selections from Comenius.

KORZYBSKI, ALFRED, Manhood of Humanity, *E. P. Dutton & Co., New York*, 1921. An unusual and important book establishing the distinctive quality of man among all beings.

Science and Sanity, *The Science Press, Lancaster, Pennsylvania*, 1933. A very important though obscure book.

KRETSCHMER, E., Physique and Character, *Harcourt Brace & Co., New York*, 1925.

LAUWERYS, J. A., Editor, The Film in the School, *Christopher's, 22 Berners St., London W. 1*. This book contains a chapter by Captain G. D. Griffith describing a form of co-operation between moving-picture producer and schools which should be of interest to American communities.

LEARNED, W. S., Variability in Education (Studies in variability in achievement among students in higher institutions). *The Carnegie Foundation for the Advancement of Teaching, Thirtieth Annual Report, 1935, 522 Fifth Ave., New York*.

LENZEN, V., The Nature of Physical Theory, *John Wiley & Sons, New York*, 1931.

- LINK, HENRY C., *The Return to Religion*, *The Macmillan Co.*, *New York*, 1936.
- LOSSKY, N. O., *The World as an Organic Whole*, *Oxford University Press*, *New York*, 1928.
- LOTKA, A. J., *Elements of Physical Biology*, *Williams & Wilkins*, *Baltimore*, 1925.
- MACKAYE, JAMES, *The Dynamic Universe*, *Charles Scribners Sons*, *New York*, 1931.
- MASON, *The Great Design*, *The Macmillan Co.*, *New York*, 1934.
- McKNIGHT, FLOYD, *Buildings*, *Arts and Press Guild*, *New York*, 1935. Poetry expressing something of the organic mode of thought.
- MELVIN, A. GORDON, *Building Personality*, *The John Day Co.*, 1935.
The Activity Program, *The John Day Co.*, 1936.
Education for a New Era (pamphlet), *The John Day Co.*, 1933.
The Technique of Progressive Teaching, *The John Day Co.*, 1932.
Progressive Teaching, *D. Appleton & Co.*, 1929.
- OPPFENHEIM, NATHAN, *The Development of the Child*, *The Macmillan Co.*, *New York*. (See note under Henderson above.)
- PARKER, FRANCIS W., *Talks of Pedagogics*, *Kellog & Co.*, *Chicago*, 1894.
- PENDRY, E. R. and HARTSHORNE, H., *Organizations for Youth*, *McGraw-Hill Book Co.*, *New York*.
- PUPIN, M. I., *The New Reformation*, *Charles Scribners Sons*, *New York*, 1928.
- REICHENBACH, H., *Atom and Cosmos*, *The Macmillan Co.*, *New York*, 1933.
- RIVLIN, H., *Educating for Adjustment*, *The D. Appleton-Century Co.*, 1936.
- ROGERS, ARTHUR KENYON, *English and American Philosophy Since 1800*, *The Macmillan Co.*, *New York*, 1922. Contains a section on Pragmatism.

- RUSSELL, BERTRAND, *The A. B. C. of Atoms*, *E. P. Dutton & Co.*, New York, 1925.
- Study of the Relations of Secondary and Higher Education in Pennsylvania, *The Carnegie Foundation for the Advancement of Teaching*, 522 Fifth Ave., New York, 1931.
- THOMPSON, D'ARCY, *Growth and Form*, *Cambridge University Press*, Cambridge, England, 1917.
- TSANOFF, R. A., *The Nature of Evil*, *The Macmillan Co.*, New York, 1931.
- TUTTLE, H. S., *A Social Basis of Education*, *Crowell & Co.*, New York, 1934.
- The Changing College, School and Home, April, 1935, Vol. XVI, No. 60., Parents and Teachers Association, Ethical Culture Schools, 2 West 64th St., New York. A special number giving an account of work going on in most of the leading experimental colleges.
- WAGNER, D. O., *Social Reformers*, *The Macmillan Co.*, New York, 1934.
- WHEELER, R. H., *The Science of Psychology*, *T. Y. Crowell Co.*, New York, 1929.
- WHEELER, R. H., and PERKINS, F. T., *Principles of Mental Development*, *T. Y. Crowell Co.*, New York, 1932.
- WHEELER, R. H., *The Laws of Human Nature*, *D. Appleton & Co.*, New York, 1932.
- WHITE, WILLIAM, *The Meaning of Disease*, *Williams & Wilkins Co.*, Baltimore, 1926. Organic thinking applied in this area.
- WHITEHEAD, A. N., *The Principles of Natural Knowledge*, *Cambridge University Press*, Cambridge, England, 1925.
- WOODGER, J. H., *Biological Principles*, *Harcourt Brace & Co.*, New York, 1929.

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