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EDUCATIONAL SOCIOLOGY: ITS PROVINCE AND POSSIBILITIES

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Men, women, and children nearly always live and work in groups or societies—clans, families, clubs, villages, partnerships, unions, cities, nations. Any given individual usually strives to “realize himself,” to amount to the most possible, to “get all that he can” (in the more or less “long run”) by virtue of the advantages of living and working in various groups. Because all other individuals do the same, group membership involves endless adjustments, compromises, tensions, quiet struggles, and sometimes open and violent conflicts.

In any given group of human beings the “strong” individual usually exerts a greater influence on the “weak” individual than does the weak on the strong. (It is assumed that an individual is stronger because he is older, or of keener mind, or of stronger body, or of better training, or of greater co-operative ability, than another.) Normally, also, however, if the weakness of an individual is due to youth, lack of experience, or the performance of special function, then strong individuals protect him and give him opportunity to grow to full usefulness.

In any given human group a portion of the strength of any individual is due, as in the case of animals, to innate or (biologically) inherited powers and capacities as these develop when given time and nurture. But another portion is due to the stored knowledge, tools, and methods of living and work which the group has accumulated and passes on to new members by example and

education. The "strength" of a social group, therefore, consists not only of the sum of the strengths of the individuals composing it at any one time, but also of the character and amount of this accumulated knowledge—the social inheritance which can in part exist outside of any individuals for the time being (such as inventions, laws, books).

The foregoing paragraphs, which could easily be indefinitely multiplied, express some of the truisms of contemporary sociological science. They suggest that the sociologist thinks constantly in terms of social groups of human beings, but also in terms of the individuals composing these groups. Numberless quotations from sociological writers could be cited which would seem to suggest, too, that the sociologist is frequently preoccupied with aspirations and plans for "improving" conditions or for discovering the means whereby more individuals may have more well-being than is now the case.

But the sociologist is clearly not the only man to have these aspirations and plans. Deep-rooted in the nature of every man, animal, and plant too, probably, is the ambition, desire, instinct, or vital tendency (call it what we will) to "get on," to survive, to accomplish as much as possible. Very early in the lives of many species it is found that these results can best be accomplished by co-operations—and co-operative abilities become as much the ends of evolution through natural selection or through design as protecting horns, or language, or more active brain. Nearly all inventions, governments, religions, and social customs have been evolved to help men to "get on," to have "life more abundantly." Hence a very large portion of the effort that men have expended on inventions, governments, religions, and other social agencies has been expended to help either these persons themselves, or others in whom they were interested, to have life more abundantly, to realize more happiness and less suffering, to "multiply and replenish the earth," and to enjoy the fulness thereof. Every man who has led an army to punish an enemy or has tried to further a religion has been concerned with his own or his fellows' well-being. So has every man who has sought to discover a new, or to improve an old, tool; to add new knowledge to the social inheritance; to make two blades of grass grow where

but one grew before; to heal the sick; to reform the delinquent; to promote justice; or to educate the young.

It can be said of the sociologist only that he is trying to see social conditions more comprehensively and a little more profoundly than these others. He is trying to get at the more obscure relations and processes involved and to substitute tested knowledge for the half-knowledge of inference or slowly evolved faiths. Quite probably he finds it especially desirable that some persons shall study those things affecting human well-being which are important over long periods of time and for large numbers of people. Often he becomes especially solicitous for the well-being of those weaker ones who seem to be crowded down or aside by stronger individuals or stronger groups in pursuit of their ends. Sociology is still a very young science, a very imperfectly developed field of knowledge; and conscious applications of its results have been made in only a few of the major departments of human action. The sociologist has already exerted visible influence in the treatment of dependency and crime. Indirectly he seems to be affecting policies of control of colonial dependencies and of state oversight or direction of some phases of production. But he has had as yet little recognition in practical efforts to improve religion, war, finance, economic production in general, domestic life, or education.

Nevertheless it is certain that sociology is now rapidly amassing knowledge and evolving methods which must soon find application in all departments of social study. It has frequently happened that a department of practical effort has advanced far as an art before science became available for application. The working of iron and steel had reached an advanced stage of development before physics and chemistry gave a basis for scientific metallurgy. Tillage of the soil and breeding of domestic animals had elaborate techniques before chemistry and biology had reached a stage where help could be procured from them. Healing the sick and preventing disease had become highly developed arts long before the appearance of physiology or bacteriology as sciences. Pedagogical practice, in schools and elsewhere, had produced its arts and its discussions of teaching problems long before men thought of applying psychology to their elucidation.

There are many indications that sociology has now reached a stage of evolution where its findings and methods can in large measure be made available for the further development of government, co-operative production, religion, domestic life, and education. It is noteworthy that traditions, beliefs, faiths, and customs play a large part in any field of practice in the stages prior to the application of knowledge and methods from the sciences; in fact they frequently constitute the bulk of the social inheritance of guiding principles of aim, procedure, and valuation. Such was the case with the mechanical industries largely until the end of the eighteenth century; such was the case with medicine and agriculture (except as to a few factors) until well along in the nineteenth century; and such is still, in large measure, the case with education, social control, and domestic life.

But we are clearly approaching a time of transition even in the new fields. Hardly a modern problem of politics, religion, education, economics, or community co-operation but forces us back to needs of more exact knowledge that in the last resort only the sociologist can supply—or will be expected to supply—when he is ready, for no one can pretend that sociology, relatively, is today more advanced or more in the possession of needed keys of interpretation than was chemistry in 1720 or biology in 1820. We have seen how psychology in its speculative stages waited generations and in its more scientific stage, years, until it came partly to a fruition of its dreams of application in the recent war. Now education, industry, and government are clamoring for its contributions.

The time is ripe to begin a careful examination of the possible contributions of sociology and social economy to education. The two sciences most fundamental to education are sociology and psychology. From sociology must come answers to the question, What shall be the aims of education? From psychology must come answers to the questions, What is the educability of the individual? and, How shall we best instruct, train, or otherwise educate toward predetermined goals?

In the empirical fashion characteristic of social action in pre-scientific stages educators have, of course, for thousands of years determined the purposes of conscious education on the basis of such

knowledge and belief as was available regarding the needs of the family, tribe, state, army, craft, or church. The education of princes and priests, the training of captains and soldiers, and the instruction of citizens in reading and writing have nearly always been designed partly, if not chiefly, for the good of society or some important group thereof. At times it may have appeared that the good of the individual was the chief goal—in the teaching of Latin to the sons of gentlemen, a trade to the prospective guildsman, arithmetic to the American farmer's boy, or algebra to the minister's daughter. But no serious student would at any time have defended these efforts on purely individualistic grounds. The prevailing beliefs of the time held that the public good was somehow served through the persons thus rendered more cultured, keener, or more upright than they would have otherwise been. We may flatter ourselves that we have discovered the social justifications of public or endowed education; but in reality we have only restated ancient purposes in slightly more modern terms.

Lester F. Ward, Herbert Spencer, and some other prominent sociologists have indicated some of the possibilities of educational sociology. But those educators who have recently written on this subject have been unnecessarily modest in their claims. They have seemed to hold that educational sociology should concern itself only or chiefly with the newer extensions and modifications of educational theory and practice. They have seemed desirous of avoiding recognition of the undoubted fact that the proper province of this study is the entire range of educational aims, traditional and modern, social and individual. Its primary concern must be with normal groups being educated under normal conditions.

Two recent tendencies in education have probably somewhat misled students in defining the desirable and practicable purposes of educational sociology. Beginning conspicuously about the opening of the twentieth century there developed certain new interests (in a few cases renewed interests) in those individuals and groups that had heretofore shared little, if at all, in the advantages of the schools. It was noted that only for the upper classes—for those likely to enter on their vocations through the aid of professional schools—was systematic vocational education available.

Defectives and potential delinquents received small consideration in the ordinary schools. The special educational needs of dwellers in sparsely settled areas, in crowded slums, or in broken homes were hardly recognized, and received small attention when recognized. Hence arose a large variety of demands that, in the interests of a sounder social economy, education should be extended, modified, enriched, so as to provide valuable offerings for these heretofore neglected classes or groups. Necessarily these demands had to be expressed in the sociological terminology of the day, and the needs described largely in language which had developed chiefly in connection with studies in social pathology—the first area of practical effort to which sociologist and social economist had turned.

In the second place there developed among educators during the first decade of the twentieth century, and conspicuously in America as an outgrowth of the child-study movement, a strong interest in the *socialization* of education, including all the common varieties or grades. Among many able educators the conviction grew that existing curricula were excessively individualistic in aim as well as in method—that is, their effect was to induce the individual to think unduly in terms of personal achievement, to strive to win against, rather than with, his fellows, and to ignore the realities of social interdependence. Naturally these aspirations for a more socialized education greatly interested students of sociology as well as educators possessed of some insight into contemporary social problems.

Valuable as have been the results of these new interests which have somewhat linked up education as a field of practice with sociology as a science, it is a fact nevertheless that their net effect has been to cause many educators, and sociologists as well, to think that sociology could be of significance only in the marginal or frontier regions of education, and particularly where pathological conditions are in process of correction. Hundreds, possibly thousands, of articles have been written during the last twenty years dealing with these slightly explored fields. But it is as yet hard to find more than a scant half dozen books or articles written in the conviction that to sociology and studies prosecuted by sociological

methods we must look for criteria of scientific aims in all education, and conspicuously in that which is to be provided for the average or normal 90 per cent of our folk.

This preoccupation of pioneer educational sociologists with problems in the marginal fields of education was, of course, only to be expected. In the more ancient and familiar areas standards of aim are profoundly traditional, deeply set in dogma and custom. In some cases processes of selection have so operated as to give these a very substantial validity, even though, as in the case of all practice based upon belief and custom, there is always a very marked "lag" in making the adaptations required in a strongly dynamic social order. But, generally speaking, so strongly intrenched are our faiths in the validity of the aims usually held for educational practice in our kindergarten, elementary and secondary schools, and liberal arts colleges, that any fundamental questioning of them still arouses the same mingled horror, resentment, and incredulity that formerly greeted religious or medical heresies and that still fiercely confront much sincere and profound political criticism.

We can readily concede that as a distinctive field of study educational sociology is as yet very imperfectly developed. It is not certain that within it are capable of being developed the necessary methods of attack on some of the most difficult of contemporary problems of curricula. Writers on educational sociology still slip constantly into the methods and language of speculative philosophy. Quite possibly we shall have to wait on the sociologists themselves for new methods of analyzing and evaluating the objectives of social and, therefore, of educational action.

For, obviously, we can have no satisfactory set of working principles in the construction of curricula until we possess fairly acceptable analyses, qualitative and quantitative, of the *values* of social life. Granted that such words as security, health, righteousness, wealth, knowledge, beauty, sociability, extension of race, and communion with God express valuable ends of social action, to be achieved partly through education, we are still confronted by endless problems of relative values. We cannot have everything within the space of a few years; what shall we emphasize, what ignore? Every educator knows today that, after we leave the

lowest grades, the most serious difficulties are encountered in choosing among the embarrassment of riches presented to us. Here especially do we find ancient faith standards of values in conflict with modern aspirations for a scientific determinism (always condemned, of course, by conservatives, as a conflict between idealism and materialism).

But, in spite of the meagerness of sociological support yet available, it is certain that scores of the hundreds of problems of educational aim now confronting educators are capable of being at least somewhat elucidated by sociological methods. It is especially important that inquiring minds address themselves to these problems, even if they can proceed only to the stage of breaking some of the crusts of custom and belief which have hitherto repelled all tools of criticism. In some respects work of this character should even now prove very productive.

It should, for example, prove easily practicable, given sufficient working resources, to analyze, classify, and, at least crudely, to evaluate those qualities—powers and capacities, in terms of the habits, knowledge, appreciations, aspirations, and ideals under which such values as health, wealth, sociability, and righteousness may be considered—which given groups or classes of adults possess, and to trace to their respective sources in original nature, environmental influence (including by-education), and school education these various qualities. It could be ascertained how far such of these qualities as are demonstrably valuable to the possessor himself, or indirectly through him to society, have been produced by school education or, in its absence, through by-education or fostered development. The foundations could thus be laid for investigations and experimental procedures designed to determine how far direct education could or should be provided to reinforce or supersede by-education.

In the case of qualities demonstrably unsatisfactory, as gauged by standards of a scheme of social values approved by a representative jury, similar inquiries could be made. How far, for the next generation, can the conditions of defective by-education be corrected, apart from the procedures of direct education? how far through proposed new forms of direct education?

As a means of giving concrete illustration to some possible studies in this field the examples given below are submitted. It is freely conceded that the suggested findings are excessively dogmatic in form and possibly speculative in origin. Nevertheless, it is confidently believed that the problems suggested are even now capable of attack by methods reasonably scientific.

1. When leading legislators, social economists, business men, and educators became convinced a few years ago that the well-being of American society as well as that of most of the individuals composing that society required substantial extensions of special facilities for education for vocational competency, and when it became apparent that such extensions could be assured only through vocational schools provided at public expense, problems of specific aim and method immediately appeared in large number. What was meant by vocational education? For what occupations were vocational schools desirable? for what practicable? At what ages, for stated vocations, should or could school vocational education begin? What should or could be the relations of school vocational education to commercial work, to productive enterprise, to apprenticeship, to shifting or promotion from one stage to another?

Throughout the earlier stages of evolution of school vocational education (of less than professional grade), theorists and doctrinaires found endless opportunities for expression. Little was definitely known about the pedagogy of vocational education and hardly more about localized and specific needs for it. A variety of courses in manual training and household arts had been developed in schools and these presented to citizens many of the semblances of vocational education. A variety of so-called commercial and agricultural subjects had also been introduced into schools which (with the exception of typewriting and stenography) were actually designed more to impart general information *about* some vocations than to prepare for competency in their pursuit, perhaps in the vague expectancy that such information would, in some invisible way, function as vocational competency later.

It was only when objective sociological studies of the conditions surrounding the work of men and women in actual vocational practice were instituted that the promoters of vocational education

found themselves on sound ground. Surveys were begun with a view to obtaining reasonably correct answers to such questions as these: What are the various vocations now followed in a given community? How many workers in each? When, where, and how did these acquire the competency they now possess? Were the methods followed by them in acquiring their present vocational powers (chiefly through extra-school education, of course) effective, or ineffective, wasteful, or the reverse? Is it in evidence (here or abroad) that school programs of training and instruction could be devised (as they have for several of the professions) which would give, in whole or in part, more effective vocational education for specific vocations than does now apprenticeship or the fortuitous conditions of wage-earning participation? What should be the program of such a school to insure specified vocational skills? Technical knowledge? Social insight (related to the specific vocation)?

Our accumulations of knowledge resulting from this method of study are meager enough as yet, but such as they are they present good evidence of being soundly based and relatively free of speculative elements and mystical assumptions.

2. School curricula are usually designed for normal children. What shall be done for those that are greatly abnormal or variant? As a rule philanthropy rather than the state first undertakes to provide education for the blind and the deaf, the moron and the delinquent. The very conditions of variance encountered force certain highly specialized or new types of training—touch reading for the blind, manual communication for the deaf, objective instruction for the moron, occupational training for the delinquent. But beyond these departures, historic curricula for variant children have been patterned almost rigidly after curricula for normal children. Even yet in many schools teachers are striving to impart to blind children the same knowledge of geography that is sought on behalf of normal children; in schools for the deaf, it is a usual boast that the customary “high-school” studies are taught; and even for morons the standards of intellectual attainment sought, for example, in arithmetic, hardly differ in scope and content from those held in other schools.

Nevertheless there has been progress in recent years especially in the less "institutionalized" schools. Certain fundamental questions, obviously inspired by sociological considerations, are being asked. Are the pupils of a given class and grade being trained in the expectation that they will eventually leave the school and participate on a free competitive basis in the work of the world? Or is it expected that they will remain for life the protected wards of the state? According to the answers to these questions, for given groups of variant children, programs of education will obviously differ greatly; and that fact is gradually being given influence in shaping the principles governing curricula.

But this method of inquiry has gone farther. It has resulted in the foundation of many varieties of classes for children who are less manifestly variants than are the blind, deaf, and moron. It has given us special classes, opportunity classes, ungraded classes, certain types of so-called prevocational schools, day truant schools, and several others. Gradually specific aims, more or less empirically derived, are being differentiated for the various groups thus recognized.

Here again it is obvious that, given resources and time, it should now prove practicable to carry sociological methods of inquiry very far in determining the types of special schools that society should provide and the curricula and conditions needed for each type.

3. The responsibilities for collective thinking and acting forced upon us by the war gave rise to fears that our democracy would not be equal to the strain put upon it. To many it appeared that we had allowed our education, and especially that of the public schools, to become excessively individualistic. Dr. Bagley, writing in April, 1918, said:

For the first time in our history our people are awakening to the fact that an educational system in a democracy has a fundamental duty to discharge in insuring a thorough-going community of ideals, aspirations, and standards of conduct. . . . It is safe to say that the actual sanctions that have operated to promote universal education in this country have been essentially individualistic. . . . The people are thinking today as never before in terms of common good. They are insisting that the common good shall be the fundamental standard in the administration of business, transportation, and industry,

as well as in the conduct of public affairs. . . . Today it is clear that the primary function of education in a democracy is to integrate rather than to differentiate the people.

The "Commission on the Reorganization of Secondary Education" created by the National Educational Association, states, among its "cardinal principles," under the head, "The unifying function":

In some countries a common heredity, a strongly centralized government, and an established religion contribute to social solidarity. In America, racial stocks are widely diversified, various forms of social heredity come into conflict, differing religious beliefs do not always make for unification, and the members of different vocations often fail to recognize the interests that they have in common with others. The school is the one agency that may be controlled definitely and consciously by our democracy for the purpose of unifying the people. In this process the secondary school must play an important part because the elementary school with its immature pupils can not alone develop the common knowledge, common ideals, and common interest essential to American democracy.

Now it is highly probably that back of these ideals and aspirations, of which many expressions similar to the foregoing could be cited, there is a fundamental need of readjustments in present-day education, possibly for some redirection of its aims and procedures. But it is very unlikely that we shall make substantial progress away from present educational customs—which are tardily affected by social evolution—until sociological analysis will show us far more specifically than do contemporary critics of "individualistic" education what we should do in the schools to promote "integrating" functions. Vague philosophical aspirations here require much supplementing with concrete proposals and these tested against available facts of sociology.

It is essential, for one thing, that we should detect, describe, and evaluate the integrating agencies now actively functional throughout America, apart from the schools. What are the effects of newspapers, movies, labor organizations, advertising, consumption of branded staples, and standards of living rising everywhere toward an American optimum? What are the effects on "melting pot" processes of the migration of laborers, Pullman car mixing of the leaders, our multitudinous fraternal and other organizations,

and party politics? Certainly the hundred millions in these forty-eight states are, in spite of diversities of race, place of birth, religion, and culture inheritance a remarkably homogeneous body today. May they not possess, for practical purposes, a considerably greater homogeneity than critics have feared, especially when confronted by rationally perceived need for concert of action?

Nevertheless, divisive influences are certainly to be found, some rooted in the past, some arising from new strains imposed upon the social structure. Probably some of these are very serious. Perhaps the schools should play a more effective part than they do now in furthering social solidarity. What schools—kindergartens, elementary schools, junior schools, high schools, colleges? What, specifically, should they do? Toward what collective ends of appreciation, habit, ideal, knowledge, should they work?

Now we can make some slight progress in these matters, in spite of the hugeness and complexity of the problems involved, by following the trial-and-error, hit-or-miss, empirical methods of our forefathers, just as in time we could, probably, have made some progress in combating yellow fever even if we had known nothing of bacteriology. But certainly under these conditions 90 to 99 per cent of the energy we expend will be inevitably wasted. New methods of attack, at least partially scientific in character, are needed. Can these be supplied by sociologist and social economist? In part, yes. For the rest the educator must himself develop methods of analysis and valuation of the social phenomena with which he must largely deal. Until he does this it is to be feared that much of our discussion, especially of more adequate “social” aims for education, will evaporate as fruitless speculation.

4. Heretofore, the American elementary school has comprised at least eight grades or years within which practically no flexibility of courses has been found, with the single exception that girls have not been required to take manual training or boys household arts. But there is now well under way a strongly defined movement so to reorganize elementary education that only the first six grades shall constitute the elementary school proper, the remaining grades and perhaps the first grade of the high school to be organized as a new type of school.

The processes of reorganization here at once throw us back on fundamental questions of aim. In what respects shall we, in the new school, change the historic or traditional aims, as expressed in the "subjects of study" and the more or less standardized methods of teaching them? To what extent shall we provide for flexibility either through elective offerings or optional courses? Shall we introduce into this school offerings not heretofore found in the seventh and eighth grades—foreign languages, algebra, "vocational subjects"? Should we in the junior high school greatly modify the traditional staples of all schools—arithmetic, grammar, geography, American history, literature—or those newer subjects prized by progressive schools—manual training, household arts, music, drawing, civics, physical training, general science, and vocational guidance?

For the present the situation is one of confusion. The historic studies, deeply rooted in custom and, frequently, popular approval, exhibit as yet few changes, even in progressive junior high schools. The newer studies encounter opposition because their actual objectives are as yet so ill-defined.

Any serious discussion of the junior high school curriculum soon drives back to a number of fundamental questions of educational aim. What should be the primary purposes of the school education of normal children between the ages of twelve and fourteen or fifteen, having regard to American conditions and requirements and the fact that we live in the twentieth century? Is it desirable or expedient that we offer vocational training or instruction during these years? For what purposes, of what kinds, and under what conditions? Toward the attainment of what educational goals shall we offer or require Latin, manual training, grammar, geography, and vocational guidance? How can we ascertain that the goals ordinarily proposed for these subjects are worth while? Are they worth while to all individuals, or to society through all individuals, or only to some individuals? To what extent is it desirable that all pupils in the junior high school be required to pursue the same studies in order that the school may adequately meet its responsibilities as a "socially unifying" agency?

In numberless ways we are thus thrown back upon fundamental problems of educational aim which only more extensive and, in places, more intensive, knowledge of social needs than we now possess will enable us to solve. Especially good examples of these problems are found in connection with current attempts to reorganize and modernize high-school education.

5. Some new problems have here been brought to general attention by the recent development of definite demands that schools for vocational education be made available for youths from fourteen to eighteen years of age in those occupational fields in which suitable vocational education can be given during these years. The upholders of the traditional curricula of secondary schools, such curricula being composed largely of the classic and modern languages, mathematics, two or three sciences, English, and history, have taken alarm lest the competition of the "vocational" studies or courses drive out the old studies; perhaps, just as, according to Gresham's law, bad money drives out good! Certainly if the recommendations of the National Education Association Commission on the Reorganization of Secondary Education were carried out, such results might well be feared. That Commission's "Cardinal Principles" includes:

The work of the senior high school should be organized into differentiated curriculums. The range of such curriculums should be as wide as the school can offer effectively. The basis of differentiation should be, in the broad sense of the term, vocational, thus justifying the names commonly given, such as agricultural, business, clerical, industrial, fine-arts, and household arts curriculums. Provision should be made also for those having distinctively academic interests and needs. The conclusion that the work of the senior high school should be organized on the basis of the curriculums does not imply that every study should be determined by the dominant element of that curriculum. Indeed any such practice would ignore other objectives of education just as important as that of vocational efficiency.

Against such proposals as this, what shall we hold as to the historic studies? Latin has long been supposed to be a valuable "cultural" study and an unequalled means of mental discipline. Can we prove its value? What do we mean, specifically, by cultural studies? by mental discipline? Is it known that Latin makes

valuable contributions to these ends, or do we only believe so by virtue of long reliance on dogma and custom?

But what of mathematics? of history? of physics and chemistry? even of English literature? How do we know that as prescribed or elected, these studies produce valuable results? Valuable results for whom? for society? Do they serve to "integrate" society? to lift levels of general culture? to improve democracy?

6. We are thus forced back again to fundamental problems. What are the valid aims of non-vocational education? How are these aims best to be realized through youths from fourteen to eighteen years of age? What is the place of prescription in such education? Where and under what conditions is flexibility dangerous? We are accustomed to say, somewhat vaguely, that in a democracy good citizenship and moral character must be primary aims of all education and especially of secondary education. But how, with sufficient concreteness for purposes of framing programs of instruction and training, and of testing results, shall we analyze and define good citizenship? And how can we determine the means of realizing it?

It is vaguely assumed that the study of history contributes somehow to the appreciations, ideals, attitudes, and enlightenment which fuse into good citizenship. But our customary assumptions here are painfully vague. Is any one field of history equally good with any other for these purposes? Is the history of the Grecian states of equal importance with that of the thirteen colonies? The Franco-Prussian War with the Civil War? The life of Alexander the Great with that of Roosevelt? *Ben Hur* with *The Crossing*? The barbarian invasions with the westward movement?

Now, time is short and art is long. If we are to use history and other social-science studies as means of making good citizens we need to know much more about specific objectives than is now the case. Obviously, we must turn to sociology in increasing measure for light. Even now sociology can make important contributions through its knowledge of social control, social ascendancy, and social processes.

7. A fascinating field of study, in this connection, is the fine arts. Literature, music, the plastic arts, and dancing have obviously played a large part in bringing society to the levels of advancement it has, in certain countries, reached today. We are striving to develop art studies in our schools. Are we well advised? Can we deliberately train youth in those forms of appreciation of art that will elevate individuals and improve the group life of the future? It is sometimes said that art is necessary to give us "ideals." Ideals in what fields of activity—economic, religious, political, martial, domestic? What kinds of ideals? What kinds of art produce such ideals? In fields where scientific knowledge has rapidly accumulated, do the aesthetic emotions or appreciations play increasing or diminishing rôles? It would be interesting to know, in this connection, why so many sociologists seem to avoid areas of aesthetic activity in their analyses.

8. For reasons that need not be examined here, the mathematical studies early assumed a great ascendancy in America. Textbooks in mental and in written arithmetic were formerly voluminous indeed and on their study children of a generation ago expended a large proportion of available time and energy. Algebra and geometry were long the hardest and most rigidly prescribed staples of secondary education.

A part of this ascendancy, especially of mental arithmetic, algebra, and geometry was due to a belief, long held, that these studies rendered peculiarly valuable service as mental gymnastics. This belief having been undermined and largely wrecked by psychological studies in recent years, the entire question of the desirable and profitable aims of the mathematical studies is now in process of being opened up. The processes of "cut-and-try" have resulted in the elimination of much of the preposterous mental arithmetic of former generations as well as of antique topics in written arithmetic. But we have had as yet no adequate examination of the values, actual or potential, of the mathematical studies as a whole, and it is not clear how we can obtain such an examination until we shall have devised sociological methods of approach to the questions involved.

The present writer has suggested, as a means to this end, a classification of the supposed "values" resulting from the mathematical studies into "producers'" and "consumers'" values. It is a matter of common observation that mastery of some forms of mathematical knowledge and process plays an important part in certain vocational fields—those for example of the bookkeeper, electrical engineer, statistician, money changer, artillery officer, cattle buyer, machinist, and navigator. But in many other vocations it would seem that mathematical powers play a very small part—those for example of dentist, street-car motorman, kindergarten teacher, spinner, cook, shoe-factory hand, infantryman, and tailor.

Given the necessary means, it would certainly be practicable to ascertain, with considerable precision, the quantity and kind of mathematical knowledge and skill now required for the successful performance of the hundreds of vocations whereby men live. Given these foundations it would not be impracticable to develop a consensus of reasonably expert judgment as to what the next generation of workers in these various lines of work should have beyond the possessions (in mathematical powers) of the present generation.

But some mathematics functions in life otherwise than in vocation. As "consumers," that is, as buyers of commodities for consumption, as readers, as investors for future consumption, and as "appreciators" of the social inheritance in which we share, we need some mathematical knowledge and appreciation. As life is now ordered, perhaps this amount is not large; but such as it is, it is doubtless important. Now it is submitted that, by the application of suitable sociological methods, it is entirely practicable to discover the scope and character of mathematical knowledge now used in any given "standard of living," class or group, and, on the basis of the facts thus found and evaluated, to propose necessary or desirable improvements in processes of instruction and training to be applied to the rising generation.

The importance of some such procedure as that here indicated appears when it is remembered that men differ greatly in their vocations, but only slightly in their utilizations. Instruction and training in mathematics for vocational purposes will clearly have

to be highly specialized and taken only after the vocational destination of the learner has been determined with reasonable probability. (The only alternative would be to teach all mathematics to all learners, because of our ignorance of their vocational goals, just as we might insist on teaching trigonometry to a million youths who are to serve in a future army, since we do not yet know which particular 2 per cent of them will become artillery officers or navigators having acute need for trigonometry.) But mathematics of utilization (consumers' mathematics) may justifiably be made a common subject for all, at least within the stages decreed by prevailing standards of living.

But better methods of attack on the problems of aim or objective for mathematics in school than the one suggested above can probably be devised. Surely in view of the large part played by prescribed mathematics in elementary and secondary education and the inherent probability that existing aims and standards have been determined excessively by traditions and custom, such sociological studies of objectives are desirable.

So much for some of the possible objectives of research in educational sociology. What shall or can be the character of the study itself? Can it consist of well-organized bodies of knowledge, characterized by unique and well-defined method? There is an old feud between the devotees of pure and those of applied science. The artists, too, have their troubles as between pure and applied art. Will the sociologist recognize an "educational sociology"? Can the educator afford to?

It would seem that analogies from other fields should help here; but even cursory inquiry shows that clear precedents are not to be found. It is easy to recognize in the world of actual affairs such distinctive fields of practice as medicine, war, farming, transportation, nursing, manufacture, navigation, mining, and building. It is well known, too, that workers in each of these fields have to draw on certain "pure" sciences for help. Thus medicine draws conspicuously on chemistry, bacteriology, and physiology; war on mechanics, chemistry, mathematics, and, now, psychology (note how many scientific organizations have recently discussed

the topic, "The Part Played by the Science of —— in the War"); farming on chemistry, physics, and biology; transportation on physics and mathematics; nursing on biology, chemistry, etc; manufacture on mathematics, economics, physics, and chemistry, at least; navigation on astronomy and mathematics; mining on geology, chemistry, and mechanics; and building on mathematics, mechanics, and others.

In all of these fields where pure science and practical achievement join hands there seems always to have prevailed a deep-seated reluctance to define or bound the "liaison" topics. The academic mind seems always to have preferred to require the student to "get" the pure subject as a whole and then to make his "applications," however long, tedious, and unproductive the process. A good example is found in farming. Scientific tillage of the soil utilizes in important measure certain knowledge met with in pure form in physics. But the range of physics is very vast, whereas that of "soil physics" is very limited. But the usual academic theory requires that the student of agronomy should come prepared in physics—although manifestly optics, acoustics, magnetism, and probably many other topics have not the slightest relevancy to the farmer's work.

In all other fields similar conditions prevail. Only rarely is the student of engineering permitted to concentrate on those phases of mathematics that are functional in his profession. Physicians and nurses must take biology, although even that subject applies only in part to their prospective work. Miners study all of geology, war leaders all of chemistry, as these subjects are organized into introductory texts.

Now the prevailing tendency on the part of educators to require that "applied phases" of science shall be approached from the background of the science as a whole seems often to have prevented definite organization of the linking topics. It is true we have soil physics, agricultural chemistry, educational psychology, and medical biology. But these subjects only occasionally adhere with any precision to the fields apparently delimited. In fact it would appear that, seeking a logical organization, for which they are ill-adapted, they fail of all organization.

Education, like medicine and the other fields referred to, is also an ancient area of organized practical effort. It, too, can and should draw upon the sciences for guidance—especially upon psychology for method and upon sociology for objectives, but also upon biology and physiology, architecture and statistics, for help in particular needs. Indeed we already have numberless texts on educational psychology, and we may now expect many on educational sociology.

But can we require somehow that educators will go to sociology chiefly for those contributions that can actually assist them in solving problems peculiar to education? The idealist, of course, holds that all problems belong to education; but that is not a view that can prevail with the man who effectively plans or executes the day's work. Surely we shall waste valuable time and effort if we repeat for all our pedagogical builders the educational mistakes made in medicine, engineering, and other similar areas where even the prospective soldier of average ability has been forced to attempt to build the same foundations as the man quite certainly destined to be a general or field marshal.

And what shall we say to the study of educational sociology by those thousands of bright, wholesome girls, who throng the classrooms of normal schools, and who will give from three to six years to the vocation of teaching ere they embark on the long voyage of matrimony and homemaking? Must they, too, be expected to build on broad foundations? Not least, certainly, among the problems confronting educators, is that of determining the desirable and practicable objectives of vocational training for the various teaching callings. Here, certainly, we have need of all the leadership the professor of pedagogy can give us.