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THE STATE UNIVERSITY AND RESEARCH.*

IT is the privilege of the private school, the denominational institution and the independent university to select the phases of education to which they shall devote themselves; but the appropriate sphere of a state system of education is predetermined by the inherent relations which the state sustains. The function of all state institutions is the welfare of the commonwealth. By first intention, the state is not concerned with the individual, but with the aggregate body of its citizens. The state must necessarily deal with individuals, but rather as integers of the aggregate body than *as* individuals. State education, therefore, in the strictest construction, and in the highest ideal, is the education of the aggregate body that forms the commonwealth. Education from the view-point of other institutions may deal primarily with the individual, and only secondarily with the aggregate. State education deals primarily with the aggregate, and only incidentally with the individual as a constituent of the aggregate. Obviously I am defining the ideal rather than the actual fact of practice; rather of the goal to be at length attained than any present achievement.

In its earliest stages, formal education seems to have been altogether individual. Gradually it grew to be the privilege of select classes, and at length, but only at a late day and among the foremost peoples, it has come to be a possibility for all.

* One of the two convocation addresses given on the occasion of the semicentennial jubilee of the University of Wisconsin.

Parallel with this extension of personal privilege, there has been a growth in the breadth of the educational conception. The elevation of the aggregate intellectuality of the people has begun to succeed the narrower idea of the education of the individual simply. To paraphrase the immortal apothegm of Lincoln, primitive education was of the individual, by the individual, and for the individual. The state's ideal effort is the education of the commonwealth, by the commonwealth and for the commonwealth.

Lest this shall seem mere borrowed rhetoric, let us examine the fundamental source of education in the ulterior sense, as distinguished from the technical and narrow sense. It need not be affirmed that education is broader than 'schooling.' The development of mind and character begins before the school is entered, and continues long after the halls of learning are abandoned. Education is begun when thought, feeling and activity begin, and ceases only when thought, feeling and activity cease to be susceptible of modification. At all times, a large part of the educational influences lie outside the schools. Education is derived from every mental contact; it is absorbed from the whole intellectual environment; it is inspired by infinite sources of stimulus. The course in the schools are merely a limited selection from possible means, chosen for supposed effectiveness during the receptive and formative stages.

The *fundamental* and *ulterior* sources of education do not lie in the conventional schools, but back of them. These sources can not here be defined at length, but in a simple phrase, they may be said to lie in *the great stock of ideas possessed by mankind.* This phrase inadequately embraces the whole, but let us agree that it may stand for the whole. In so far as the stock of ideas of a people is narrow, defective and erroneous, on the one hand, or broad, demonstrative and exact, on the other, in so far the fundamental subject-material of education partakes of these qualities. In so far as the sentiments, beliefs, attitudes and activities of a people are narrow, loose and perverted, on the one hand, or free, generous and ethical, on the other, in so far education inevitably shares in these qualities. *For these are the fundamental sources of education.* The basal problem of education is, therefore, concerned with the entire compass of the intellectual possessions of a people, and, in a measure, of all mankind. The special selections propagated in the schools are but a miniature reflection of the total possession, and this selection is usually noble or mean, as the whole is noble or mean.

If these considerations are true, the *fundamental* promotion of education lies in an increase of the intellectual possessions of a people, and in the mental activities and attitudes that grow out of the getting, the testing and the using of these possessions.

In the education of the individual, the personality of the instructor counts for much. In the education of a people, the personality of a teacher is fused with the multitude of other, and often conflicting, personal influences, and, unless it be phenomenal, it is submerged. But determinate truths work together for permanent results. These results often lie athwart the trend of personal inculcations. True ideas work incessantly and unswervingly toward a destined end, while the thousand little waves of merely personal influence cross one another's paths and work one another's destruction. Determinate truth is radioactive, and sends forth a constant stream of penetrating, illuminating emanations, to which only the most leaden intellect is opaque. The discoverers of great truths and the authors of great ideas are the great educators.

The education of the individual does not necessarily lift the education of the aggregate, for if we convey to the rising generation only such ideas as we have inherited, the summit-level of education is not raised. There may be diffusion—there may be an evening up—but no lifting of the upper levels. If the intellectuality of the new generation does not rise above that of the old, there is only a Chinese dead-level of ancestral propagation.

If we are agreed upon this, let us turn to the question, *How is real educational advancement to be secured?*

Some progress may be made in a live people by voluntary research and by the incidental accretions of common experience, but if our intellectual estate be left to such sporadic and unsystematic agencies, growth is a creature of uncertainty. If perchance there be laudable growth, it is scant credit to the state. If the enrichment of our intellectual world be left to spontaneous individual action, it can not be hoped that it will be continuous or systematically directed. It will follow the diverse lines that chance to be inviting to individuals. Inquiries will be taken up and dropped at pleasure, and will be limited by scant resources. There is as good chance of finding a rich man in heaven as in a laboratory.

To secure laudable progress in the fundamental conditions of education, systematic provision for scientific research is requisite. By scientific research I do not, of course, mean physical research alone, but rigorous investigation in any field. To give this research its best adaptations to the needs of a people, it should be systematically controlled in the lines most tributary to these needs. To make the results available to all who will use them, suitable means for dissemination are requisite. Inevitably the highest intellectual training will grow out of this, for such training is both the prerequisite and the outcome of the struggle to find truth and to test it. Out of this training will come the best possible development of intellectual capacity, of right attitude toward truth, and of considerate action controlled by the scientific spirit.

With the majority of Wisconsin people I hold that it is a legitimate function of the state to train boys to be farmers, but I believe it to be a much higher and truer function to develop the science of agriculture, to increase the intellectual activity of every farmer, to improve the agricultural art on every farm, and by such improved art, to furnish better and safer food to every citizen. That such a result is not an idle dream need not be affirmed in Wisconsin. Gigantic steps towards its realization have already been taken. The material results you know, for they are tangible. The intellectual and moral results more easily elude recognition. I venture to cite a personal observation. It was my privilege to compare the agricultural conventions of this state at two periods separated by a decade, within which the experiment station became a potent influence. The dominant intellectual and moral attitude of the earlier period was distinctly disputatious and dogmatic. Opinions and floating notions played the part that should have been reserved for demonstrations. Interpretations were loose, and close analyses rare. In the second period, the dominant attitude was that of a scientific conference. Opinions were replaced by demonstrations, or by tentative hypotheses. Conviction was sought by the presentation of determinate facts, gathered by experiment and laborious observation, carefully analyzed and cautiously interpreted. The whole was characterized by a notable approach to the methods of approved scientific procedure. The intellectual and moral contrast of the two periods was one of the most pronounced expressions of advance in the higher education in a great mass of

people in the midst of practical life which it has ever been my privilege to witness.

If the state educates an engineer, it promotes the common safety, which is threatened by an ever-increasing multitude of new contingencies springing from new devices in construction, transportation, sanitation, electric lighting, *et cetera*. But if the state creates and spreads broadcast engineering science, it makes protective intelligence more nearly a common possession, and lays the groundwork for universal caution and for intelligent watch over every one who holds the power of life and death in his hands. The supreme function of the state's college of engineering is rather the creation and dissemination of engineering science than the personal training of a technologist.

If the state educates a physician, it confers a benefit on the commonwealth by so much as he contributes locally to the public health. But if the state investigates the cause of disease and the mode of prevention and cure, and propagates the results, every citizen, directly or indirectly, becomes a beneficiary, and the interests of the whole people are conserved.

Doubtless it is a proper function of the state university to train lawyers; for their public service is indispensable, but it is a higher function to develop the science of law-making. The subject matter now taught relates chiefly to the application and consequences of laws already enacted, and especially to the litigation that springs from their obscurities or defects. Should not the chief effort lie back of this in investigation precedent to law-making? With suitable provisions, the history of every law passed by the legislature may be traced by the methods of historical science, its workings measured with approximate accuracy, and its adaptation to its purpose scientifically determined. Similar determinations in other commonwealths are equally possible. Comparison between these, when sufficiently multiplied and critically discussed, should give a basis for determining the best mode of legislative treatment with something of the confidence that clinical records give to surgical or pathological treatment. The important function of law-making may be subjected to the same antecedent processes of scientific inquiry, of judicial induction, and of intellectual caution and equipoise that obtain in medicine, mechanics or agriculture. This may at present seem Utopian because of regnant practise and prepossession to the contrary, but, given the same patience and ingenuity, why may we not treat the history of laws in the same critical, deliberate way that the scientific pathologist treats the history of disease, or the scientific surgeon the history of an operation? It will not be denied that if the modes of scientific research controlled this field, so especially the function of the state, it would be as beneficent in its sphere as scientific pathology is in its realm, or the high art of surgery in its field. Beyond this historical treatment, there is the great untouched field of *systematic experimentation in legislation under scientific control*—but the next speakers would have good cause for action at court if I entered on this untrodden field.

These citations are merely illustrative selections. Research in every realm of a people's legitimate interests is an appropriate function of the people's *organized self*, the state, and of the people's *organized instrument of research*, the state university.

The people of Wisconsin are to be congratulated on the important initial steps already taken by their university towards the fulfillment of its higher sphere. They are to be warmly felicitated on the larger effort upon which the new administration of the university has already entered with so much of vigor and enthusiasm. They are to be congratulated on the acknowl-

edged ability of their new leader to direct the development of investigation in fruitful lines, an ability already eminently demonstrated by personal researches. It is a further ground of high hope that he adds to commanding ability and fruitful experience, so large and so true appreciation of the higher function of a state university.

Conscious of my personal partiality, I yet believe that in truth the University of Wisconsin is a leader among its class in this higher field of research. But no university has yet fully entered upon it. Which shall be the first to become predominantly an institution of research? Which shall be the first to fulfill the high destiny of an ideal state university? Citizens of Wisconsin, given the means and the moral support, your new educational chief will lead forward with gigantic strides your beloved institution into this upper and broader field of usefulness. Will the means and the moral support be forthcoming? T. C. CHAMBERLIN.

UNIVERSITY OF CHICAGO.

THE MOSELY EDUCATIONAL COMMISSION. II.

IN most American colleges the arts course occupies four years; in a few only is it possible to graduate in three years. At Harvard College, where the subject of the length of the course has long been under discussion, it has recently been determined to allow students to attain the bachelor of arts degree in three or three and a half years, instead of four years; but owing to the improvement in the courses of instruction it will be possible to require from candidates who obtain the degree in the shorter period evidence of higher scholarship than has been expected of their predecessors at the end of four years. The arts course at the Johns Hopkins University extends over three years; but the standard of matriculation is said to be considerably higher than that maintained by institutions which require a residence of four years. The question whether the professional schools of the universities shall require a degree in arts or science from all candidates for admission is now being much debated. There is clearly a strong desire to raise the standard. This is well expressed in the following passage from the report made by President Eliot, of Harvard, at the close of 1902:

> Since the wise and efficient conduct of American affairs, commercial, industrial and public, depends more and more upon the learned and scientific professions, the universities owe it to the country to provide the best possible preparation for all the professions. This best possible preparation can only be given to young men who up to their twenty-first year have had the advantages of continuous and progressive school and college training.

President Eliot gives the following table showing the proportion in nine universities in which law and medical students holding a preliminary degree stand to all students:

Universities.	Holders of a Preliminary Degree.	Whole Number of Law and Medical Students.	Per Cent. of Holders of a Preliminary Degree.
Harvard	886	1,134	78.1
Columbia	562	1,260	44.6
Pennsylvania	331	928	35.6
Northwestern	220	691	31.8
Michigan	216	1,367	15.8
Yale	119	398	29.9
California	118	269	44.0
Chicago (Med.)	100	325	30.7
Cornell	75	607	12.3

Harvard University "has definitely determined to pursue the policy of requiring for admission to its professional schools a preliminary degree and has already applied this policy in all its professional schools except the dental school. The result has been an improvement in its professional schools striking in proportion to the strength of the contrast between the former students and the present in regard to their previous training."