

spread. But for the present it must be admitted that the comprehensiveness of genotype seems to vary as between the cells of different tissues, of different organs, and even more as between cells of corresponding tissues in different species.

This conclusion, if it becomes a conclusion, contradicts the expectation derived from the general uniformity of nuclear structure throughout the life of a plant. There would seem to remain as the only possible explanation of the apparent facts the occurrence of genetically effective cytoplasmic differences between the cells of different tissues or organs. Much

evidence indicates that related species may differ significantly in cytoplasmic constitution, and that this constitution favors or inhibits the expression of particular genic potentialities. The cytoplasm of a cell, then, in some measure helps to determine its genotype. The possibility is suggested that in the course of ontogeny cytoplasmic differences may appear, one consequence being that, while the ability to divide persists, the genotypic capacity of the cells of particular regions is limited. In the absence of more positive evidence, this possibility remains for the present nothing more.

THE UNIVERSITY AND THE PRESENT CRISIS¹

By Professor ANTON J. CARLSON

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YOU have assigned me a sobering subject. The present crisis is war, all-out war. I am talking to mature colleagues, men and women trained in weighing evidence. I have worked in the college and in the university for nearly fifty years. My service in the Army in war (A.E.F.) fortunately covers a much shorter period (1917-19). But after the Armistice in November, 1918, I saw more of the backwash of war in all the war-devastated countries of Europe than perhaps any other member of the A.E.F. So I should know something of both the university and war.

To me, education and war seem to be incompatibles. Education aims at approximate truths and understanding; it tries to develop free, inquiring, fair and just minds. Education is constructive: It tries to make two blades of grass grow where only one blade grew yesterday. The student worthy of that name asks "what," "why" and "show me the evidence." The soldier obeys. Obedience to laws and the command of others are important, but not the most important lessons for citizens in civil life. Individual responsibility, understanding and performance are of more profound and abiding significance for a healthy human society. War is destructive: "The scorched earth," destructive of human life and health; destructive of the fruits of human toil; destructive of the finest, the fairest and the most frail flowers of human social evolution: the search for understanding and the attainment and application of justice. War and hate are Siamese twins. Hate and fear do not create understanding, light and happiness.

The hysteria, the fear, the false propaganda, the hopes and the necessities of an all-out war, in the very nature of things, invade the university, the col-

lege campus. Yes, even the "little red schoolhouse" and the more pretentious high school. These forces and necessities affect boards of trustees, budgets, teachers, investigators and students, just as they affect every man and woman on the street, on the farm and in the factory. If this summary is even approximately correct, how are we of the colleges and the universities to meet these terrible issues?

In the first place, we, of all people, should endeavor to keep both feet on the ground, re-examine the moorings of education for democracy and men relatively free, and not do anything obviously wrong and foolish, such as: (1) Giving the bachelor degree at the end of two years in college. For such a measure can not remedy faults and failures in our system of education. We can not do that either by giving or withholding any degree at any stage of education. Such a proposal causes plenty of confusion, at least for a time, and evades the main issue: The fault's not so much in our educational system as in us, the teachers and the students. Are all of us real teachers, do all of us really teach, by precept and by example? And do our students really study, or do they play and loiter on the way? To be sure, the bachelor degree has not the same significance of achievement in all students even in the same college or university. And I admit that an exceptional student may achieve a mastery and a training in two college years that a few other students fail to attain in four years in college. But I do not think that this applies to the mine run of the American youth. If state laws permitted, some stupid medical school faculty might give the M.D. degree to the student after a sojourn of two years in the medical school classes, as was done in our country quite generally fifty or a hundred years ago. But such a measure now would not be a step in advance of medical education.

¹ Presented at the regional conference of the American Association of University Professors at Louisiana State University, March 6, 1942.

(2) We should not pretend that "general education" can be completed or is "completed" at the end of two years in college, on any plan; or that something significant, either for education or war, is achieved by the student or the college by giving any kind of label or degree to the student on this impossible achievement. We can, by various educational plans, subject students to a broader educational exposure during the high school, the freshman and sophomore years. Examinations will disclose the percentage of "takes" mainly in the matter of temporary memorizing. What will carry over in the line of understanding, motivation and achievement in the life of these students, no college faculty can guarantee. If I have any grasp of the meaning of "general education," that starts in infancy and continues throughout life, at least in the case of those men and women who are and who continue to be intellectually alert and intellectually omnivorous.

(3) War, and especially an all-out war, spells increased regimentation and autocratic dictation in many fields for the duration. There is not lacking signs that misplaced and myopic chairmen of college departments, deans, college and university presidents, as well as boards of trustees are being infected by this virulent virus of dictation, to the jeopardy and detriment of the essential individual freedom and responsibility, both of the members of the faculties and the students. We do not have to, we should not copy the dictators of other lands, in the field of education and fundamental research. If we do, we thereby administer a setback to college and university education in our country.

(4) The period of universal war hysteria and fear may be a time for re-examination of our educational moorings. But it is not the best period to inaugurate basic educational reconstruction. That work calls for mental calm. There is little or no evidence that human nature has undergone much change in the last hundred thousand years. Man in every land will be much the same at the end of this war. This seems to be the story of man. The Alexanders, the Caesars, the Genghis Khans, the Napoleons of the past killed and maimed people and destroyed the fruits of human toil. But they did not change man. I think the same will be true of this war. This war will make man poorer. It might be worth it, did it make him wiser. The processes of education found relatively effective yesterday will do the same work with similar youths to-morrow, if we aim at understanding and freedom, and not perpetual regimentation, violence and war.

The foregoing may be designated negative obligations on the university during the present crisis, something we should not do. There are equally important positive obligations on the university in this crisis, things that we can and must do. Among these are:

(1) A tightening of our intellectual belt, a greater attention to duty, both as teachers and students. This may mean more hours. It certainly means the old hours better spent. I have long sensed that we could dispense with the doll and the nursing bottle and advantageously add more iron to our intellectual loaf on many sectors of our educational front. This we can do now, instead of wasting our attention and time on curricula and degrees. That reminds me of Lessing's fable of the Raven and the Eagle: "The Raven saw that the Eagle sat upon her eggs for thirty days, and that from her offspring sprang the king of birds. I also, said the Raven, will sit upon my eggs thirty days, and my children shall rule the feathered kingdom. So the Raven sat upon her eggs for thirty days, but she brought forth only ravens." As applied to higher education, the obvious reply to Lessing's tale is this: we don't sit on any and all eggs. Deans and Committees on Admission select the eggs. Yes, yes, but look at some of the failures that are hatched after the four years of "sitting"—chicks that chirp, but won't scratch! If a student does not get exposed to "culture" and "general education" in every course in the college or university, that student is still in the cradle or the teacher should resign.

(2) Most universities and some colleges have laboratories, libraries and teachers needed for the training of men in the special services of our armed forces. These services and facilities should be, and I think are, at the full disposal of our government for the duration. In some cases, this may result in some inconvenience to regular undergraduate, as well as graduate students, as well as more work on the part of members of the faculty. But what of it? If special courses, if summer courses bring in additional funds to the university, it seems obvious that such funds should go to those who do the extra labor. If no extra funds materialize, we should still do this work, to the best of our ability.

(3) Most universities and many colleges have scientific men and specialists in other fields who are in position to aid our government in the solution of the numerous scientific and other problems forced on us by this war. This important war service should be, and I think is, being rendered by our universities.

(4) It would seem obvious that our colleges and universities, even during the present crisis, must continue to train the usual, if not an increased, quota of physicians, chemists and engineers each year. If this is to be done these institutions must receive the usual inflow of superior students for such training. In the case of medical students at least, this means men and women with excellent personal character, in addition to sound bodies and superior mental stuff. Such qualities are equally valuable and acceptable to our armed forces. But while the part of our armed

forces trained to kill Germans and Japanese is the spear-head of our war effort, medical and other technical services are equally essential in this organized effort. And adequate replacements of this personnel must be provided for. I think this is a special responsibility on the university in this crisis. In the case of students in or accepted by the medical schools, this is already provided for by giving such students tentative commissions in the Medical Corps of the Army or the Navy. But the able and bona-fide premedical student during his first two years in college may still be drafted. So, after a year or two, the medical schools may not have enough first-class medical students to train. That would be a catastrophe, and we must see to it that it will not come about.

(5) Many voices have been heard in our land over many years to the effect that the essential training in the high school as well as in the college can and should be done in less than the present eight years. Maybe so. It certainly can be done better, that is, more thoroughly, if we continue to use these eight years. I do not think we have as yet sufficient biological and medical information to enable us to say what amount of mental vacation is the minimum for the health of our high-school and college youth. And let us not forget that education, like the biological processes of growth, is partly a factor of time. And like growth, the educational time factor varies with the individual. In any event let us not set the limit for formal education under the stresses and hysteria of war, and let us be certain that the all-around speed-up, the longer and the more intellectually strenuous student college year does not eventuate in two degrees instead of one, the B.A. and the T.B. (tuberculosis).

(6) President Conant, of Harvard University, thinks that university students should and must decide for themselves the matter of joining our armed forces before age puts them on the call and selection for those services. With that I agree. This seems equally sound when applied to members of college and university faculties, irrespective of age. If there is a task with the armed forces that you can do better than any other man available, your duty seems clear, at least to me. But I also think that your skill and effort toward education of to-morrow's citizens are as important for our way of life and approximate justice in the world at large as gunning a German soldier or bayoneting a Japanese sailor.

(7) I have, and I do differ on many points in education with my brilliant president, Mr. Hutchins, but I see eye to eye with him on this: "What the world needs, what this country must have, is free minds—minds informed by principles derived through human experience through the ages, minds that are open no matter what waves of change beat upon them." The

duty and the responsibility of aiding in the maturing of such minds rest in no small part on the university, in times of peace and in times of war. This is no mean service, if we give our all. For war creates special follies and dangers for the years that follow war. One of these is the hope that Utopia can be created by hate and violence, that war can establish "freedom from want and freedom from fear" for all men. This delusion, however useful in war, will endanger the peace, for which we are supposed to fight. We of the faculties could aid the next generation by example, by ourselves winnowing the war time propaganda chaff from the wheat of cold realism. We might also, for the better day, when the dawn of peace shall once again brighten our land, re-examine one recent trend, one segment of recent socio-economic philosophy, to wit: Our youths must be shielded from real work, from all individual social and economic responsibilities till they are 18 to 21 years of age; and, at the other end of the life span, people past 50 or 60 years of age should be cut off from work and responsibility, and supported in idleness on public pensions. Is this the best we can do for to-morrow? I think that this philosophy is unbiological, anent both ends of the life span; and instead of being kind and wise, I think that it is both cruel and stupid. This is just one of the many difficult problems before us, calling for the degree C.T.C.—clear thinking and courage. How many of us live up to that degree even during the 40-hour week?

I have presented some duties and some don't's for us, that is, the university in the present crisis. Both have been put more clearly by others. I quote from an outstanding member of our association, Professor Zechariah Chaffee, Jr., of Harvard University:

Most of all, we need an immense amount of thinking and talking about the kind of world we want after the war. Victory is not enough unless it brings a just and enduring peace. American civilization can not stand an endless outpouring of billions for defense during a patched-up peace. The problem is enormously difficult. In 1919 we tried to put together the pieces and failed. Now there are very few pieces to put together. There will have to be a big, fresh start, and its success will depend on the continued support of the American people for a good many years after the fighting is over. Any plan framed by a few leaders, however wisely, will fail unless it responds to widespread thoughts and desires of us ordinary men and women. Whatever plan is proposed will involve drawbacks, and citizens must first have become ready to accept those drawbacks as preferable to the horrors of a third World War. That means they must be made thoroughly aware through long discussion in speech and print of the nature of the plan. The seed Wilson sowed was perhaps better than we knew in the short time it was before us. At all events, it fell on

thin soil and was blown away. If the new seed of 1943 or 1944 or 1945 is to take firm root, the soil must first be ploughed long and deeply back and forth by the impact of ideas, until it is prepared for fertile growth. . . . Last time we forgot all this. We became so afraid of those who advocated a peace without victory that we put some of them in jail and scared the rest into silence and so we got a victory without peace. This time we must be wiser and not forget. Let us not in our anxiety to protect ourselves from foreign tyrants imitate some of their worst acts, and sacrifice in the process of national defense the very liberties which we are defending.

And this, from a university administrator, President Hutchins:

The intellectual activities of the university are the symbol of everything we have to defend. The best service we can render in the defense of our country is to see to it that those activities are maintained in full force and vigor. . . . Our basic function remains the same. Another has been superimposed upon it which will make it hard, perhaps very hard, perhaps impossible to carry on our basic function. . . . That basic function, intellectual leadership, is more difficult than ever—more vital than ever. . . . To formulate, to clarify, to vitalize the ideals which should animate mankind, this . . . is the incredibly heavy burden which rests, even in total war, upon the universities. If they can not carry it, nobody else can. If it can not be carried, civilization can not be saved.

THE UNIVERSITY AND THE WAR¹

By Dr. ARTHUR CUTTS WILLARD

PRESIDENT OF THE UNIVERSITY OF ILLINOIS

WHAT of the university in a world at war, and the place of the university in that war? As a group, the land-grant colleges—of which the University of Illinois is one—are already in the war. They have furnished a total of 75,000 reserve officers for service in the armed forces of the United States. Prior to Pearl Harbor, over 50 per cent. of our Army officers had come from the Reserve Officers Training Corps, which is still producing more than 10,000 officers a year.

The University of Illinois has always had one of the largest Reserve Officers' Training Corps units in the country, and has never questioned its obligation to both the federal and the state governments to maintain this corps on a strictly compulsory basis. At present there are over 4,200 students enrolled in the military classes, 600 of whom are in the advanced course and about 300 are in line for commissions in June as U. S. Army Officers.

But what of the other obligations of the university in the emergency? Certainly no other educational institution in the State of Illinois is faced with a greater responsibility to serve in every possible way to help win this war. It should be obvious that our most effective resources are to be found in the fields of teaching and research. In those areas we have had experience and success. We have a large and competent staff, an extensive and well-equipped plant; all of which are now at the disposal of the government for whatever war-time service is most appropriate.

"Education as usual" is, in many situations, no longer possible, and a state university should be one of the first institutions to accept this fact, and adjust

its program accordingly. In my opinion, it is the first concern of the University of Illinois to help win the war. Everything else is secondary, even the much-talked-of long-time educational program so essential for making a durable peace.

Our programs of teaching and research have already been readjusted to produce more graduates in all fields in less time. Our Colleges of Medicine, Dentistry, and Pharmacy in Chicago have adopted a four-quarter system, and the colleges and schools in Urbana-Champaign have provided for an intensive summer quarter of 12 weeks in which a student can acquire full semester credit.

Nor is this the only departure from normal, as students called under the Selective Service Act may, if in good standing, receive course credit for the balance of any semester or even get their degrees if called for war service during their final semester.

Many new courses have already been established or existing courses have been specially adapted to meet the professional demands for various war services. As typical of the latter, the university is providing and teaching complete curricula in many of its colleges to permit young men from 17 to 19 years of age to enlist in the U. S. Navy under the new (V-1) program. This does not resurrect the old Students Army Training Corps. It does not put the men in college into uniform nor does it require naval drill.

There can be no question as to the importance of physical fitness for all of us in the struggle ahead, and the School of Physical Education at the university is already offering all its facilities for meeting this more serious threat to the sturdiness of our manpower.

Reference has already been made to the competence

¹ Excerpts from an address given in Chicago on February 26, at the Washington Award dinner of the Western Society of Engineers.