THE COLLEGE GRADUATE AND RESEARCH

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Obviously, research is one field where the college graduate is essential. There has been great overemphasis on college degrees; in many places they are irrelevant; but in genuine research it is impossible to escape from the college graduate. I shall attempt to give you a sketch of how well equipped the college graduate is for the tremendous amount of research which is necessary in these United States of America.

"Research" is a badly misused word. A great deal of trivial statification is labeled research; much superficial "questionairing," also, is called research. The word "research" should be reserved for something vastly more fundamental and significant. As I am going to define it, research is the readiness to gamble systematically with a view to expanding the boundaries of knowledge. It is risk-taking at its most extreme point. A man may work intelligently and arduously in a laboratory for many years and find himself up a blind alley, through no fault of his own. On the other hand, he may work a relatively brief time and hit upon a valuable discovery. Or, by long labor, he may achieve something really significant and have it lie virtually unappreciated for a generation or more.

The greatest gamble of all is in basic research — sometimes called "pure" research. It is the biggest gamble because it is work at the frontier of knowledge, with all the hazards that are implicit in true exploration. It is the biggest gamble in still another sense — it takes longer for the fundamental discovery to find its way to commercial exploitation and, therefore, the economic rewards are almost certain to be slight. Yet basic research is an absolutely vital component of our system.

True research requires great skill and demands enormous self-discipline, yet neither skill, nor self-discipline, nor the combination of both is enough. In addition there has to be a readiness to take what President Conant well called "a tremendous gamble." There is a real question whether the present social, political, and economic environment is favorable to training our college students to possess and express that adventurous spirit, to take the intellectual risks which are essential to the best research.

Forces Seeking to Eliminate Competition

America is traditionally the home of keen competition; today strong forces are steadily seeking to eliminate the competitive spirit from the intellectual life. Today not only must everyone go to school, as is proper, but there is a growing insistence that everyone must get a diploma regardless of his achievements, which is improper. An official of high responsibility in our public schools has stated unequivocally that their intellectual disciplines are softening.

There is insistent propaganda that all above the moror level must go to college either for the enrichment of the mind or for some trivial reason of a social nature. And he must get a degree without too much concern over what enters his mind. All this led a distinguished, but exasperated, educator to exclaim, "Let's give them the A.B. at birth, and get it over with."

To put it bluntly, the egalitarian spirit of democracy which promised equal opportunity, has been sentimentalized to the point of offering equal rewards without reference to how the opportunity is exploited by the individual. Such sentimentalization of college in the name of democracy misconceives the meaning of equality. The pressure to have everyone get a degree whether he has talent or not, whether he works or does not work, does not result in real equality; it is only a sham. Worse still, from the point of view of those interested in research, it impairs the habit of competition; it lays insufficient emphasis upon rigorous self-discipline; it dulls the appetite for risk-taking — all of which are essential to vigorous and effective progress in research.

Vocational guidance in many schools places a striking mis-emphasis upon security. Indeed, vocational guidance often reflects the ideal of security as opposed to adventure. Its great emphasis is upon finding a job classification which is not "too full" — so as to avoid competition. It often seeks placement, in a sense that is not far removed from fixation. It lays great emphasis upon material rewards and all too little upon intellectual and spiritual satisfactions.

All such attitudes steadily discount competition and risk-taking. They are direct assaults upon the underlying qualities by which alone the college graduate can be drawn into research and more specifically they tend to cripple the motivation required for basic research. Significant research, fundamental research is essential to us; it is urgent and vitally necessary. The overemphasis on economic rewards tends to turn students away from those basic studies which underlie the developmental types of research that bring direct material rewards. Our graduates are encouraged toward more superficial development when they should be undergoing training for more fundamental work and research.

*This address by Dr. Wriston was given at the Seminar held in Providence, R. I., on November 4, 1949. Dr. Wriston, a noted educator, is president of the Association of American Universities.
For the moment, the United States is not engaged in fierce competition with the rest of the world. The war refreshed our plants, whereas in those countries that are normally our competitors — Germany and Japan, as well as some of our allies — they were impaired or destroyed. We have a competitive position which is so superior that it cannot now be challenged, but the time is coming when we shall again find ourselves involved in international competition; if we have failed to develop the competitive spirit of our youth, we shall not fare well.

It is striking that socialist countries such as those in Scandinavia have developed intense intellectual competition. There are indications that there is livelier intellectual competition in Russia than in the United States. Such circumstances ought to give us pause. This democratic capitalistic country, whose history is characterized by the adventurous spirit of the frontier, has now reacted so violently away from its tradition as seriously to impair the basic incentives to a way of life which is thrilling as well as useful, and which lays the hidden foundations for immeasurable national wealth. Some of the men now working in atomic physics will never get more than a meager salary; their primary rewards are intellectual and spiritual. But sooner or later the wealth of America will be founded upon the thoughts those men have generated.

The War and Fundamental Research

During the war some of the important sources of fundamental ideas dried up. We must remind ourselves that modern physics was not born in America; the atom was not split in America first. We have imported many basic scientific discoveries from abroad. The European centers, from which the classical advances in scientific theory and pure research have come, are disrupted or destroyed. We can no longer borrow from them; it is urgently necessary that we develop them in America.

The war stimulated advances in technology, but obstructed or halted fundamental research. As a consequence, we are living on our intellectual capital. We are not producing new capital at the rate which is essential. One of the reasons for this slowness in intellectual capital formation is that the business community is not giving to universities the resources that are absolutely necessary for this type of scientific training and research. Today, in terms of modern dollars and in terms of number of students, private philanthropy donates to the institutions of higher education in America only about one-quarter of what it provided in the 1920's. Unless that situation is cured, it will create a vacuum into which the federal government will move because, if business will not contribute money, the government will appropriate money.

The federal government is not primarily interested in fundamental research. If you go back to the foundation of our country, you will find that there was an interest in theory but with the passage of the Morrill Act that interest turned to practical matters. I have no criticism of that Act and the others which followed, but all of them look to vocational fields and not to basic scientific developments.

As a consequence of the war the federal government through the Office of Naval Research and otherwise is showing an interest in fundamental research, but not always very efficiently. When it comes to the field of atomic energy it seems evident that we are too deeply concerned with irrelevant aspects such as secrecy. There is a difference between national security and scientific secrecy. Security is essential, but scientific secrecy is folly. This morning I read Dr. Karl T. Compton's resignation as Chairman of the Defense Department's Research and Development Board. After some generalizations he spoke of "the complications of excessive checks and counter-checks which multiply the manpower requirements" and break down efficiency — a very polite way of spelling WASTE.

Then he went on to speak about the checks and counter-checks which discourage competent scientific personnel from entering a government career. Those men who have the enthusiasm that makes them create new ideas and bring out new developments do not like to wade through yards and yards of red tape. When they go back to the laboratory after hours they are not interested in overtime or time-and-a-half; they are on fire with great ideas. When you bind such men in red tape and check them, you destroy the fundamental thing which makes their work seem worthwhile to them.

The College Man in Research

To sum it up, how can we improve the situation of the college man in research? First of all, let us get a healthier public opinion as to the obligations of institutions of higher learning. Let us realize that in those institutions alone can we develop the basic sciences — the fundamental advances in pure science — upon which all technology, if the long run, must rest. I am not in any way discounting the importance of technology, but fundamental science is exactly like the foundation of a building. It may be buried in the earth and you see only the beautiful architecture above; you see the functioning part above ground, but the quality, the strength, and the security all rest upon the design of the foundation. We need, therefore, a clearer appreciation of how this arduous discipline can best be instilled.

Secondly, we need to develop throughout all our schools — public and private, from the primary to the post-graduate level — a greater interest in the spirit of intellectual competition, such strong competitive zeal as we have in the football field. If we ever see a newspaper with page devoted to college men engaged in intense intellectual efforts, dressed in laboratory garb, striving to advance knowledge — as we now see the grossly exploited athlete — I should say that would be a great day in the history of the world.

All the way through we must remember that we need talent. In the name of democracy we must not hold back a person with talent because he happens to be in a class with young people who cannot, or do not want to, move as fast as he can. We must have no conspiracy against talent such as is manifest when a company refuses to rehire an employee to another company when that release would mean the furthering of some valuable and necessary project.

Lastly, I warn you that if more support for universities does not come from the business community, it will come from government. There must be resources to carry out this arduous and expensive work. Supplying the fund demands a longer perspective than today's profit.