

EDUCATION AND OUR NATIONAL SECURITY

19 November 1957

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INDUSTRIAL COLLEGE OF THE ARMED FORCES

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DR. CLEM: Gentlemen: At the close of World War I, the British historian and novelist, H. G. Wells, ventured the opinion that human history, as he conceived it, was becoming a race between education and catastrophe.

Less than six months ago I was still upbraiding my 16 year old son, who aspires to a career in science, for wasting his time reading such H. G. Wells stories as The War of the Worlds and The First Man in the Moon. Recently I am sure he has had occasion to observe a marked silence, even a certain sheepishness, on my part. In fact, I am now asking myself if it could be that all along he has perceived better than I the shape of things to come and the rapidity with which things are moving in this world.

It leads me to speculate even more on the question: How well prepared, mentally, psychologically, philosophically will he and his contemporaries be to meet the future with confidence and assurance?

Our subject this morning is "Education and our National Security." Our speaker is Mr. Ralph C. Flynt, Director of Higher Education Programs, United States Office of Education. Having been associated with that office for some 23 years, Mr. Flynt has enjoyed a unique vantage point from which to assess our educational system, its processes, and its problems from the standpoint of national need and national well-being.

Mr. Flynt, it is a pleasure to welcome you here this morning and to introduce you to the students and faculty of the Industrial College of the Armed Forces. Mr. Flynt.

MR. FLYNT: General Mundy, Admiral Clark, Mr. Chairman, and Colleagues: I am very happy to appear before you this morning. I think this is either the fourth or the fifth time that I have appeared in this room on a similar occasion. I believe, however, there is no one present here whom I remember as having been present here before. Nonetheless, however, it is always with a spirit that excites an educator that I can appear before a group which has such a large responsibility for so many of our youth and whose responsibility is so concerned with our national security.

You represent the type of body to which we in education like first to tell what we are doing, and second, to test the validity of our procedures and our programs, because you, along with other groups in our society, are a principal user of our product.

The Chairman has referred to what essentially is a dramatic change in the Zeitgeist. I imagine that if I had made these remarks at the time I received the invitation I probably would not have said some of the things that I am going to say this morning. There has been a dramatic change and I am sure that that change is going to be reflected not only in your program but in ours. I should therefore like this morning to try to establish a groundwork for a discussion among ourselves in the question period as to the scope and character of the problem as we in education now see it.

In order to lay the groundwork for that, however, I think I should have a few things to say first about how our educational program in the United States originated, and what are some of its characteristics and some of the responsibilities which now rest upon it. Without understanding some of these things, I don't think you can evaluate very effectively the job we and you and school boards and citizens have to do in evaluating the current situation without growing unduly alarmed but at the same time without remaining unduly complacent.

I should like to remind you that our educational system has evolved as an integral part of our society. When we came to these shores in the 17th century, we brought with us a form of education known to our British forebears. As additional generations of people have joined our ranks from other countries, we have of course had access to other kinds of inheritances. We have not, I believe, made any fundamental contribution to educational philosophy or procedure in the world. We have perhaps contributed two types of education, the land grant college and the comprehensive high school.

We have borrowed our system of education almost wholly from others. Our nursery primary kindergarten program was borrowed from our German, Swiss, and Italian friends. Our elementary school program as we know it today is something of a model of the German Hochschuler, although it has larger inheritances from our Scottish ancestors, who are very much concerned with education. Our secondary school is more nearly an indigenous evolution. We began of course with the Latin School of Revolutionary times, which evolved into the academy, which has now evolved into the comprehensive secondary

school. That is more nearly a unique institution than anything else we have at that level.

Our 4-year art college is unique, but we did not invent it. It is a very little changed evolution of a 17th century English institution, which the English have long since abandoned. The Oxford or Cambridge College is not the same as our college. We have brought down the liberal arts college as a basic groundwork institution, and we have clung to it, although our continental friends and our British friends, as I said, have moved altogether away from it.

Our graduate school is a direct import and has remained unchanged for 75 years. We got it out of the German universities both as to organization and as to method. We still have the 3-year Ph.D. superimposed upon the baccalaureate degree, and we use the seminar method, the thesis, and basic research as groundwork for training. It is the least well organized of American systems of education, the most conservative, and has proved to be the most difficult to change.

Our professional education has grown up more nearly parallel to the European and others. They have clung to the apprenticeship system somewhat longer than we have. We have evolved a professional school.

That is the form of education that we have and where we got it. Now let me say something of what we have infused into this. Most of our European colleagues at the time of the formation of our country had a stratified society, had evolved a program of education to suit that stratification, and they have essentially clung to it to this day. We did not have a stratified society and we have not evolved one. We have had to develop an educational philosophy for all people. Someone has said facetiously that Oxford and Cambridge are made for gentlemen, European universities are made for gentlemen; all Americans are gentlemen and we have a program of education for all.

I don't think we have the time to go too deeply into the reasons for that, but I think I can remind you of a point or two. Our society has evolved more or less unstratified as we moved westward on the frontier. We did not import a cross section of European British society. In other words, we have been mostly peopled by individuals who did not bring many skills with them. We had to face the frontier society in our own way. We have done it by creating an educational program, an educational system that meets all the needs of the society,

not merely the elite group. That should be kept in mind at all times because it colors almost everything we do.

We have provided a system that presumably must accept all responsibilities. What are the responsibilities that education carries in our society? I don't have the time to go into this very lengthily, but we often speak of these as responsibilities of education: We certainly have to transmit the cultural heritage; we have to expand the frontiers of knowledge; we have to train for occupational and professional competency; we have to train for civil competency. We have in the United States attempted to do that within the framework of one system of education. That again is something that you should keep in mind when we attempt to appraise or evaluate the effectiveness of our program later this morning.

The school is, in our conception, an instrument of all our society. It cannot be simply an instrument of the professions. If so, it would be very simple to test everyone at age 12 or 14 and eliminate all those who are not capable of being professional people. It is not simply a system responsible for advanced research people. Again that would be very simple. We could eliminate everybody who couldn't do that sort of thing and train the rest for that.

The elementary and secondary school program is not simply a program to prepare for advanced training. If so, that would be again very simple. We could test everybody at age 13 and eliminate those who had IQ's of below 110, and leave them to study vocational agriculture or machine shop, and go ahead with the select group, which is what our British and continental colleagues, including the Russians, do. That would make it a lot easier for us. I think a lot of us, including my two colleagues here, who come from the field of history, would be very happy if we had had, when we were university teachers, only classes made up of people with IQ's of 135 and above. But that cannot be in our conception.

We have therefore evolved as a national policy a program of education which attempts to serve all the interests of society and the needs of all people. That is a very large and difficult assignment, as you can, I think, quickly observe. It means that we have to accept the widest possible spectrum of intelligence. We cannot limit our educational program to the bright only. We cannot limit our program to the professions and the advanced occupations. We cannot concentrate on any

single objective to the exclusion of others. Our philosophy with regard both to program and to people is all inclusive.

Now let's take a look, just for the sake of laying some more groundwork for questioning, at how we have set this program up. Some of this you are very familiar with. Some of it, however, needs to be kept in mind at all times. When we were establishing the United States, education was not the paramount objective that it has later become. It was thought enough in 1775 to train leadership, to train ministers, doctors, and lawyers, and to train political leadership, which is still what our United Kingdom friends think a university is for. We have evolved a long way since our Constitution was written, but it is still our governing philosophy. Responsibility for education lies within the States and they in turn have delegated it to the local communities. We do not have a national system of education. We do not have even a Federal-State system of education. Federal interest is particular, responsive to special needs, and is found only in instances where the national need becomes paramount and something has to be done about it quickly. I remind you of the land-grant colleges established in 1862 when we could not be satisfied with the classical universities. We had to have a scientific institution for the need of engineering, science, and agriculture. When the local school systems could not produce enough trained people in the crafts and trades, we established the Federal Vocational System in 1917, just before we entered World War I.

At any rate, we have still remained a nation with State systems of education. The State can well be said to have a system of education. While they have mostly delegated it to the local communities, it is still a State system. Within this frame of reference, however, we have continued to encourage and accept large increments of private education, which is not controlled by the State. Approximately 14 percent of the elementary and secondary school pupils in our country are enrolled in private schools. Of the nearly 1,900 colleges that we have, over 1,200 of them are private; that is, they are nongovernmentally controlled. Some of them are religious, some are nonsectarian. Only about one-third of these institutions are public in the sense that they are controlled by State or municipality.

On the other hand, the public institutions carry the heaviest load. About 58 percent of all students are enrolled in public higher institutions, and about 42 percent are in private institutions. So you can see that when we pass the secondary school level we have a very different distribution of responsibility and a very different problem of finding

support and understanding. I should of course point out that the private institutions do not have access to tax resources. They depend entirely upon private donors and grantees, and upon the support of whatever organization owns and controls them.

I think you need to be reminded again, because this reinforces one of the statements I made with regard to the philosophy of education, that there has been a very marked trend in the last century to bring all kinds of training into the framework of education. Just to remind you of a few: Traditionally, in the Western World, we learned crafts and skills through the apprenticeship method. In the industrial society we might well have turned that over to preservice and inservice training in industry, but we haven't done that. We have turned over the principal basic approach to all training to the school. At the university level we have gone much further than any of our colleagues in Western Europe or in the United Kingdom in bringing almost everything onto the college campus.

The British, as you know, have only about half of their medical education on the college campus. The other half is in the hospitals. We have no hospital medical schools left. We have some independent medical schools, but they are university in character. All the dental schools except one in the United States are now on a university campus. About half of legal education is off campus and about half is on. But the tendency of almost every form of training is to seek the prestige, the imprimatur of higher education, some perhaps in the eyes of many to a rather ridiculous extent. I think most of us in education sometimes get a little amused that degrees may be had in such things as the drawing and pulling of fowl, cosmetology, and morticianship. Degrees are actually granted by reputable institutions in all of those fields.

Nevertheless, the people, the users of the product, seem to feel in our country that unless the hand of the university has been laid on the training it is not acceptable. The British are able, for example, to do an enormous amount of training of engineers off the college campus.

At any rate, I make those remarks only to illustrate facts not only of philosophy but facts that show that we have placed the responsibility for enormous areas of training that no other country would think to put in schools and on the campus. That obviously complicates matters very greatly.

We have one other unique feature in United States education that I think we ought to keep in mind, too. Not having a Federal system, and the States not having decided to operate, for example, in the sense that the French Ministry does, we have had the problem of the sanction needed to insure quality, and we proceed again in a unique United States way. As many of you know, that is done voluntarily. The general education programs at the secondary level and the baccalaureate programs in colleges and universities--are accredited by six great regional organizations, covering the regions of the United States. Our professional programs are accredited by the professional associations themselves. Just to remind you, the Council of Medical Education and Hospitals of the American Medical Association approves medical schools. The Engineer's Council for Professional Development approves engineering schools. This generally mystifies European observers. They just don't see how it can be done. They are accustomed to have the Ministry lay down standards by prescribing the content, quality of instruction, clock hours of exposure, and a system of examinations to measure and test the product.

We haven't done it that way. Again it gives us a curious and unusual set of sanctions that we have to deal with, and again it makes for an extremely complex program.

Well, so much for a sort of once-over-light description of the characteristics of the United States education, with some emphasis on the differences. I ask you to dwell upon that, because, in judging and evaluating, you have to keep in mind why we did this and how we do it, because whatever changes we make must be done within this framework, or at least from this as a starting point. We are not going all the way back and build a European system of education overnight, even if our people would permit it, which I am sure they wouldn't.

Now I would like to turn for a moment to taking a look at the job to be done in its practical aspects.

First, I'd like to call your attention to two characteristics of our population. They are very marked. One is the gross increase. In 1940 we had approximately 132 million people. We now have 172 million, nearly 173 million. The Census Bureau estimates that by 1975 we will have 228 million.

You will observe that we assume that 18 years old is the approximate age of college entrance. We had about 2.5 million 18-year-olds in 1940, and 17 years later we have only 2.305 million, and we will not reach the same numbers of 18-year-olds that we had in 1940 until 1960, when in the meantime our population will have increased from 132 million to 179 million, which is a population increase of roughly 47 million.

Let's see what the colleges and universities have done in terms of gross numbers to cut into that problem. As groundwork for that, I think you should keep in mind that our elementary schools enroll approximately 99.5 percent of all the children of elementary school age (7-13 years) that our secondary schools enroll somewhat more than 89 percent of all the age group 14 to 17, but that in the age group 14 and 15 they enroll about 97 percent. So that the losses in the secondary schools are mostly in the last two years.

I want to make an assumption here. I ask you to consider an assumption in terms of the fact that, as generations have passed, we have more and more had to depend on colleges to do our training. We can no longer use the individual who has had only two years of high school, or even four years of high school, to the extent that we once did. Advanced training beyond the high school is absolutely essential.

In 1940 we had 1.5 million people in college. We had increased that by 1 million by 1954, and by 1957, only three years later, we have increased it by approximately 900,000, which is a gross growth of a little over 300,000 a year for the three years. The marked aspect of this is that here is a curve that is going up against a curve that is going down. In terms of reaching gross numbers, the secondary schools in 1940 were graduating about 50 percent of those age 17. They are now graduating 60 percent of those age 17. In 1940 we were taking into college just a little more than 35 percent of high school graduates. We are taking about 50 percent now. In other words, the percentage of high school graduates attending college has increased by almost 1 percent per year for the last 17 years. That excludes the adverse hump during the war and the positive hump of veterans' enrollments, because, when you extrapolate that curve on the basis of the previous curve, it plows right straight through it and comes out at the same place as if there had been no wartime slough and no postwar bulge.

This reinforces the statement I made earlier about the confidence our people have in education as the answer to their problem. Indeed I

should say we have adopted education as an instrument of national policy to the greatest extent of any people, and I don't exclude the Russians. As you know, we have published a book about Russian education in the last few days and created a lot of attention, but at the same time the Russians have limited their concept very much. We have the feeling that all elements of society must have the benefits of trained people who come from our schools and that all people must have access to those.

You can't get away from the fact that enrollments in our colleges and universities have doubled. You hear a great deal about the challenge and the dangers that we are failing to meet the demands of increased numbers. We have doubled our enrollments in the last 17 years. If we are called upon to double them again from now until 1970, which is only 13 years, I am quite sure we are going to do it. The numbers, the amount of dollars, the amount of brick and mortar, the number of faculty--all those things that we have to have sound stupendous and sound beyond our reach. But, if I had made the same statement in 1940 about what we had to do by 1957 it would have sounded just as tremendous and people would have said it was impossible. It was not impossible, and I again feel quite sure we are going to do it.

Now, that is a very striking set of facts, but even that falls short. I want to tell you in a rather succinct fashion in what way it is falling short. We are taking into our colleges about 725,000 people, first year people, each year. As I said, that is about 50 percent of the high school graduates, which again is only 60 percent of the total age group.

There are slipping through our fingers about 200,000 young people who are in the upper quarter of ability. That is, they are in the upper one-fourth of their classes on any intelligence scale you want to use. That is mostly by reason of lack of money, but not altogether by reason of lack of money--to some extent it is lack of motivation, lack of community and family encouragement, and to some extent it represents pockets of resistance to the American system. By that I mean lack of full utilization of women, who form the brightest half of the high school graduates--girls test up higher than we do, they are harder workers, and yet only about one-third of them go to college. We are not utilizing

large numbers of people from certain geographical areas and from certain racial groups.

We have been in Government, a country dedicated to the principles of our Constitution and our Declaration, now for longer than any other organized government in the Western World except the British. They have made extreme constitutional changes since we have, but we still have large pockets of people who are not gaining the full advantage of the American system. And I submit that is an extremely serious matter in a day of a shortage of manpower. I know that most of you work with manpower data and you are, unlike many citizens, fully aware of the shortage of people 18 to 21. The impact of that I think has not dawned on all of us. It has dawned only slowly upon the educators.

That means that we now have 2.3 million 18-year-olds and, 22 years from now, when they are 40 years old, we will have less than 2.3 million and they will be of the rank of you gentlemen. The boys I referred to here who are now 18 will be occupying these seats 22 years from now. They will be Navy captains, Air Force colonels and generals, and Army colonels and generals. They will be the leaders of industry, they will be the heads of departments, they will be full professors, and they will be college presidents. That is where we are going to have to get them.

I would like here to venture a personal opinion. This is the most serious problem that we face today in our country, we as educators and we as parents and we as citizens. That is the most serious challenge to education, its ability to reach a presently unreached number who are capable of sustaining advanced training programs in the professions and sciences, in the humanities and the social sciences, and in every other need of society.

The next great challenge to us in terms of interpreting social action, the action of society into education, is to adjust our program to steadily changing national needs. That is an extremely difficult problem in our system of education and I want to speak of it most soberly. Having granted the principle that we will leave our elementary and secondary schools to local leadership, it should never be forgotten for a moment that we do not control education in the sense that professional staff members of ministries in other countries control it. You can't do anything in Arlington, Fairfax, Montgomery, Prince Georges Counties, and Alexandria, where I assume most of you live--I exclude the District, because you can't do anything about that--you can't do anything unless

the citizens who are elected or selected to school boards are prepared to support you in principle and in practice--by that I mean accept your program and raise the money to pay for it. We in education as professional people have no separate taxing power, any more than you in the military have. You have to get a budget.

General Mundy was describing to me the hope for a new building. Well, you know that that is related to a wide variety of other problems and competing demands. Education has the same problem. We have to recognize that, if we are going to work with the system as we now have it, we have got to find a way to evaluate the needs that must be met by education and translate them into planning action at the local level very rapidly, in terms of elementary and secondary school programs, and we must do the same in our higher education, because there are 15 States which have systems of public higher education, but they have relatively little influence over programs. To all intents and purposes, Dr. Clem and Dr. Mayes, as you well know, each college and university decides what it will do.

The big job, then, is to read the signs of the times today, estimate what we must do, and find a way to do it. That sounds very easy. It sounds awfully simple. I am sure you think those are rather trite words. Why don't we do it? All right, let's see just what some of the practical problems are now that we have to face in education. The first job we have to face is to match people and programs. It is not enough simply to plan to have some more scientists or to have some more doctors. We have evolved a system in which the individual has freedom of choice of his program. The real job that educators face is how to translate an expression of national needs in science or in medicine or for the military, or whatever, into terms that a student at each responsible level, recognizing that his responsibilities grow as he proceeds through high school and on into college, can grasp and accept.

Now, I submit that there are two things that we in education have to do. One is to provide some more rapidly moving method of validating curriculum. We have paid a fairly heavy price for local control of education. We have had to place a premium on local ingenuity and local adaptation, which means that we have had to have a degree of experimentation permitted in order to maintain integrity of the program at the local level. We have obviously come up with a very uneven program of education in the Nation. The range of quality in our elementary and secondary schools is very great from the poorest to the best. Fortunately, we have a great deal of the best, but we also have a great deal

of the poor. Our continental and United Kingdom colleagues constantly point this out as the tremendous price that we have paid for local decision with regard to curriculum and individual decision with regard to program. As you know, our British friends give to pupils, at about age 12, a matriculation or school-leaving exam which separates these pupils into three groups; and that's that. So do the French, and so do the Germans. When you take the school-leaving exam in Bavaria--two of my colleagues worked in that part of Germany--that's it. The sheep and the goats are separated, never more to be reunited. But our American people I am quite sure will never put up with that. It is educationally unsound, and I am sure the people in a democratic society aren't going to have anything to do with it.

On the other hand, it sets a tremendous problem of leadership. How are we going to express the needs of our Nation in terms that local communities can accept and put into action in terms of the kind of school they need to build? You are not going to get more science laboratories, chemistry, and physics; you are not going to better this program and that program in colleges merely by exhorting people. You have got to produce the evidence that a change must come. We are not going to change, I am quite sure--I will give a personal opinion--we are not going to change our pattern of permitting full and free choice of occupation, profession, and future education on the part of individuals.

That means that we've got to find an answer to a more effective matching of people and programs. I am afraid that that is the weakest element in our system today. I am speaking quite frankly, gentlemen. I assume that this is for your use only. That is despite the fact that many magazine articles are written attacking this or that philosophy of education, or this or that method, be it the concept of Dewey progressivism, or whatever you want--the essentialist versus the progressives, and all of that. The solution to that problem is easier than the solution to the problem of maintaining full and free choice of the individual.

The counseling and guidance program in the secondary schools is the key to that and it is the weakest element of our program. I remind you that it represents the greatest challenge to us and is the one we have got to remedy the most quickly. I think we can remedy the question of curriculum in secondary schools and colleges if there is any remedy needed. If the times require us to change direction, we can change direction pretty rapidly in this country, when we want to. I submit that during the war, for example, as some of you men know, when we needed

a college-level training program in engineering and science, we planned one and we mounted one and we put it over.

This emergency may not be quite that drastic, but I am convinced that when we want to we can move into action and revolutionize programs. I will cite you a few examples of when we have done it. We did it in medicine within 10 years after the Flexner Report in 1907 or 1908. We had the shoddiest medical education in the Western World up to about 1912, or I will say up to World War I. We had a lot of proprietary medical schools which were about the shoddiest sort of things that any first-class nation had. We now have the finest medical program in the world. We built it in the lifetime of all of us who are here.

We can change programs. If we need to have more science and math and secondary schools, we will have them there pretty soon. We cannot, however, in my judgment, afford to abandon the concept that we have freedom of choice on the part of the individual. There is only one answer to that, if you are going to maintain that philosophy. People might like to argue with me, and I hope you will. There is only one answer to that, and that is to increase rapidly the utilization of the tools that we have to measure the capacity of individuals.

All of you are familiar with testing work. You have done a great deal of it in the military, but you have done exactly the same thing with it that we have done. It is a fine body of archival data to be used when convenient. If inconvenient, it is not used. We know a great deal more about the differential capacity of pupils in the elementary schools and secondary schools and colleges; we know a great deal more about what is valid and what is not valid in measurement data than we or parents are able to use. I think there is a fairly simple reason for that, and the reason is different in our case from yours. The weight of administrative machinery in the defense establishment is so great that it is difficult to stop to use tests when you've got a thousand people in the engineering school who are ready for assignment. It is a whole lot easier to take them from A to B and from B to K and then go. In the rush of wartime, I wouldn't blame anybody if that was or wasn't done.

We have got another roadblock and that is an emotional one. Most of you are parents. You come up against it. I repeat again, we know a great deal more about people, we have much more scientific knowledge about people, than we as parents or as professional educators are able to use. We've got to surmount that block rapidly.

The second key to this machinery at the elementary and secondary schools that is the establishment of a machinery of integrity, in which you, as parents, and all of us, as citizens, and we, as educators, have absolute confidence. Now, we need a statistic or two here. We have about 25,000 public secondary schools in the United States and about 4,000 private secondary schools. We have something like 9 million students enrolled in all of those schools. We have only the equivalent of 11,000 full-time counselors working in high schools, and most of those are only partially trained. If we are going to continue to permit students or families to have a free choice based on information laid before them, rather than some kind of deterministic testing program or elimination program, which characterizes our United Kingdom and continental colleagues, we are going to have to quickly--and by quickly I mean a matter of less than five years--make this operation an operation of integrity.

That is one of the things we have been wrestling with in the last few weeks. There is not any easy answer to it, because it takes time to train people, and it takes time to gain further acceptance on the part of educators and parents. Not all high school principals and superintendents are completely sold on the counseling and guidance program. When I ask, "What's the alternative?", they have no alternative. There has to be an alternative. If you are going to permit free choice, you are going to have to have some operation of integrity which advises your boy and girl and my boy and girl--let's make it personal--and that advice has to be advice that we will accept and that society can depend upon and use. We haven't reached that stage yet.

Those I think, gentlemen, are two of the biggest challenges that we face. Perhaps you are astonished that I haven't mentioned some others; that I haven't mentioned money. Well, I am going to mention money now. I am going to mention two other things in the few minutes I have left. One is the problem of fiscal support, and the other is the problem of faculty and teaching staff. We are spending only about 5.5 percent of our national income on education now. In 1934 we were spending 5.7 percent. So obviously we have been indulging ourselves as a Nation in some other things than education in the last 27 years. We are told that it will take \$15 billion in money in the next 13 years for additional construction, replacement, etc., in higher education. That level is not very great, because, as many of you who get about to colleges know, we are using a wide variety of temporary wartime buildings which were torn down off your place and moved on to ours, and they are about the quality of your building that is across the way here. Some of them are not nearly so good.

We are told that we must train more people, along about this order of magnitude. We are producing about 9,000 Ph.D.'s a year now, yet the attrition rate in college faculties on the basis of about 300,000 members is 18,000 a year. Fifteen years ago we were taking in 40 percent of newly appointed faculty members who had completed their graduate work. Last autumn only 23 percent had concluded their graduate work. That means that now, whether or not we have watered down quality, we have obviously watered down maturity.

We are having to promote assistant professors to associate professors and associate professors to full professors on an average of five to eight years before what we would have done in the past. Maybe what we did in the past wasn't right, but I submit that you have something called the curve of age and grade, and so do we in education. It is a little rougher and cruder and unofficial, but by and large there is a period in a man's life when we think he is ready to be an associate professor, as you think there is a period in a man's life when he is ready to be a colonel, and another period when he is ready to have one star, two, or three. We have the same kind of rough idea of age and grade. We have had to undercut that curve very rapidly in order to meet our needs.

That is the most drastic problem we face--how to get more people trained, and how to get them into colleges. We are not getting more than half of these, and certainly in the field of physics and chemistry and engineering industry is hiring them away. Why should a young man become an assistant professor or even a temporary assistant professor of engineering at a salary, say, of \$3,500, when business and industry can offer him \$6,000 to \$8,000. A young Ph.D. in chemistry can pretty well write his own ticket. If he won't come for \$8,000 they will give him \$9,500. If he won't come then they will offer to move him, and pay his first month's rent, or something like that. The college can't compete with that.

We've got a dimensional problem there in terms of money, which is the easiest of all to solve. You can get money someway. It comes hard out of my pocket and yours, but it still can be had. But you can't produce fully trained faculty members any more quickly than you can produce fully trained officers. There is a problem of maturation involved, as well as a problem of specific learning.

Now, as one other problem that I think you gentlemen ought to think over seriously: How do we meet the needs of the rapidly changing

society of the day and maintain the same kind of balance between the national interests on the one hand and freedom of individual choice and local control on the other? I think many people are sorely tempted in a time like this to say, "Well, we can't afford that; it is a luxury." Someone will have to make a decision, and we will have to activate it. One is always attracted by something that is pragmatic, and Americans are essentially pragmatic. I noticed that even so crusty an individual as our friend Mr. Franco has been making noises in praise of the Russians, because essentially he thinks that what the Russians have done worked and what we have been doing hasn't worked.

A serious problem today is how to translate this expression of need into action. I have no real answer to it except to point out that in the past, with this very intricate system that I have described most inadequately, I am sure, which is extremely complex and not easily moved or changed, we have generally managed in the past to change it when we had to. It has been a rather rough and crude approach to change, but we can do it.

What is the challenge of today? We have been rather taken aback, I think, by our friends who fly the hammer and sickle. It is sort of like somebody suddenly making a better low-priced car than we can make, or doing a lot of things that we have always taken for granted we can do better than anybody else. What is the significance of this, how have they done it, and what does it mean for us? I think you are very well aware that our President and his Cabinet and our leaders, both inside the Government and out, are struggling with that problem. I think we in education might as well get into it. I am not a spokesman for education, now, don't mistake that. I will say what I think to be our general feeling, for what it is worth, and I hope it will be challenged if you don't agree with it.

By and large a situation exists here in which we certainly must take stock. One aspect of the stock taking is now our responsibility in education. It is a matter of organization and concentration of effort to do specified tasks. Obviously it is not our business to decide which branch of the military will put up neosputnik. But, over the next 10 or 15 years, whatever the Russians are doing in the field of education, or whatever any other country is doing, for that matter--Russia, Britain, France, or Germany--we have to see whether or not what we are doing can produce the same results without sacrificing the things we hold most dear. I would like to call attention to one or two things here that we ought to keep in mind when we consider that problem.

Let's take the Russians--they are an easy comparison, and they are in the public eye. The Russians, by concentrating on the production of military hardware and weapon systems and on heavy industry, excluding practically everything else, obviously can produce enough talent to man those two enterprises. If any of you have been to Russia, you know that you drop into a bottomless mudhole the moment you leave Moscow or Leningrad; their health service hardly exists; they have made no effort to mount all of the consumer goods and services that we have; they haven't had any complete nation in any sense of the word; they have hardly enough food or bread, without mentioning all the other things that we have had. I think our job here is to assess, confidently and quietly, what changes we need to make. If we must have more engineers and scientists, it doesn't mean we have to have less historians and humanists. Our Nation is a complete nation, and our civilization is one we have a right to be proud of. I don't think we need to consider dismantling all those things that have made us a complete, rounded-out nation, the most satisfying place for all people to live in freedom and justice and equality. We don't need to dismantle this and batten down the hatches and run for cover.

Now I am speaking quite colloquially, rather than using pedagogic terms, because essentially I don't want to think that the educators have got a decision to make that is a pedagogical one, that's made behind closed doors. It is a part of the national decision, because we are only a part of the national picture. But I dare say that, if we quietly assess the need for a change of curriculum in order to produce more scientists and engineers, without at the same time sacrificing other elements, we can do it. We can find the money, we can find the people, and we can find a way. I don't think we should be stampeded.

We have some serious problems. We have the problem of money; we have the problem of training people; and we have the problem of some methodology at the secondary level particularly.

Mr. Chairman, I think with that I will be ready to submit to questioning when you are ready.

DR. CLEM: Mr. Flynt is ready for your questions, gentlemen.

QUESTION: Sir, I understood you to say that we could never accept the system used by some European countries of separating the sheep from the goats, yet it seems to me that we are always going to

need garbage collectors and mail carriers and truck drivers and people who can do their job a little better but probably less happily after four years of trying to acquire an education. This ties in with the fact that we also have a much higher ulcer incidence in this country and perhaps a higher degree of mental cases, some of which might be attributed to the fact that these people try to achieve an education level and become engineers when they don't have the capacity. I wish you would comment further on why we could not accept this system.

MR. FLYNT: I will be glad to do that. First I think you will recall a word or two that I said about "their" system--on that I am taking refuge in talking about the United Kingdom, France, Germany, The Netherlands, Belgium--a typically European system, where they use the examination to separate people, and there is no choice in the matter.

I think, sir, that you would agree, and I would agree, with the first premise that obviously the spread of ability and interest is very great in our population, as it is in theirs. There are some men and women who don't want to be atomic scientists, who would prefer to drive a laundry truck or work on automobile fenders, or sell corn flakes, who could have the ability or the interest to do these higher level things. We believe in developing a system, sir, which, through placing before families and pupils full information concerning choices, gives a system of self-distribution of talent.

If you will look at the distribution over various occupational spectra, you will find that we distribute ourselves very much the same as they do, except in some areas we have far larger numbers. This is a mark of a rather advanced civilization. But at the same time I think our people would prefer to place before each individual a valid basis of choice, and, if he makes that choice wisely, that choice will turn out to be equally as sound as theirs, and the strain will be a lot less.

If I may say so, I am somewhat familiar with the psychological studies that have been made on the effect of the school-leaving exam in France, where the incidence of nervous breakdowns at the time of this examination is very high. It is true in Germany in the upper middle class levels. It is true in Britain. You build up and you know that at age 12, on that 3- or 4-day examination period, the rest of your life depends. If you happen to feel well and at your best that day, it is one thing. You may have a cold and the sniffles, which in youngsters is not too suitable. That's an awful lot to ride, sir, an awful lot of the future of a human being to ride, on a few examination questions.

I don't think that our people will accept that. I feel that we have not as yet achieved the goal that we should achieve in terms of making a basis for valid choice. We obviously have a lot of errors. Our policy generally is to say to a boy who wants to go to law school, "It looks like in every way you are not going to make it, but if you want to try it and drop out, all right." By and large we, I think, consider that this is safer and sounder in terms of democratic procedure, and yet the end result is about as effective and valid as theirs, and the crash effects are not nearly so great.

The British have become very much concerned about this, too. Some of their sociological studies indicate that, for the kind of people we have growing up in the world today, to have to be submitted to that kind of testing at age 12 is rather bad. I think a lot of our English colleagues think that we are not getting along with our philosophy. I recall meeting Sir John Mande who was for 25 years Under Secretary of the British Ministry. He said, "Well our trans-Atlantic friends are conducting the most noble experiment in the history of mankind, but an experiment it still is."

I don't think that our people, including professional educators, feel it is an experiment. They feel it must be strengthened and improved. But it is still the one that is the safest for us.

QUESTION: My question deals with the supply of teachers. From my observation, we are still paying teachers based on the number of degrees that they have, based on the years that they have been in teaching, rather than on their capabilities. In some schools I know they are trying to pay on merit. New Hampshire schools, I believe, are one example. Can you see any trend, worldwide, for this? Do you think it is a good idea or not? The second part of the question is-- about 150 of us in this room all have degrees from the academies or from universities, and if, 15 years from now, we retire and decide we would like to contribute something to the school system, we couldn't get a job teaching high school algebra, or high school general science, or seventh grade general science. Why is this?

MR. FLYNT: I will answer the last one first. The why is that education is a profession, and by definition it is a profession with a body of content and a set of techniques and procedures that require some training for it. I think the educators are not being presumptuous in assuming that there is a certain basic body of both knowledge and practice that one should command before he is permitted to instruct

young people. That is exemplified in certification standards in all States for teaching, and those standards vary from rather enlightened to perhaps rather overrestricted.

The answer to the other question is, with regard to payment on merit, it is extremely controversial. It is not very different from the different views among the services in the military, where one branch of the service feels that men should be selected for advancement beyond the present level by selection boards on merit. There is really considerable controversy, to put it mildly, where other branches have in the past used an age and grade curve.

School boards and professors of education have never been convinced that there is available an instrument that principals and evaluating groups can use that is as valid as a measurement on the basis of successful service, as evaluated by efficiency ratings year by year, and effective preparation. We had a rage of controversy over this about 40 years ago, when the trend was strongly toward promotion on the basis of evaluation on the part of principals and superintendents with a systematic evaluation method. Then that seemed to recede. I think school boards and executives got tired of the rowing and preferred to do it the other way.

We have now since the war had a sort of return to it. There is an effort in many States and cities to reassess this situation and to see if again we cannot approach it on the basis of some kind of efficiency rating evaluation at the time of promotion.

My own feeling is that in the absence of an absolutely valid system I would prefer to assure myself of requisite training and supervised experience and a subjective evaluation by principals and superintendents as a basis for promotion. That is purely a personal view, and might be challenged by many people.

It is not correct, though, to assume that, generally speaking, people are paid on the basis of degrees and that sort of thing. They are paid on the basis of bodies of preparatory work that they are required to accomplish, just as you are. I take it that any of you who came up from a company had first to go to a platoon leaders' school, had to go to a company officers' school, had to qualify yourselves, step by step, right up the line. It is not essentially different in education. The charge that they are being paid on this basis, as if you merely counted a man's degree, without looking behind it, is not well taken.

QUESTION: Mr. Flynt, as part of my question, I will address myself to the teacher shortage at the college level. We hear a lot about pay and prestige in the military as being required to attract better people. The White House Report on Education showed that those States where they have certification seem to have less trouble getting good teachers. We as parents, I am assuming, are so much impressed with education, particularly the need for higher education, that we are willing to pay whatever it takes to get better teachers. Why don't we simply raise the standards for the teachers in colleges, and therefore put some incentive toward attracting the better candidates, and let the law of supply and demand take over?

MR. FLYNT: Again I will start backwards. The law of supply and demand has taken over. If you want to hire a young physics instructor and you offer him your prevailing salary, which would be \$3,500, he says, "Sorry. That's very interesting and I would like to have an academic career, but Smith Corona or Atlantic Research has offered me \$9,000." Or if he is out in Los Angeles he will say Howard Hughes has hired him. The law of supply and demand has taken over.

STUDENT: My suggestion is that apparently it is not working. If we need a young physics instructor badly enough, why not put his salary up to meet the offer of Smith Corona and attract him?

MR. FLYNT: That is an extremely complex problem. It is just as hard to answer as it is to answer why don't we pay men of your rank and above what you would make if you went to work for Smith Corona.

In the first place, what is a valid salary for a professional man as compared to what he would make in a risk economy? You are professional people, as we are. You are not in a risk economy. A million dollars is not riding on how well you design the front end of the Edsel.

I have to go back a little bit to get at the roots of this thing. Let me say this. We do have a very drastic shortage of teachers in the elementary level and in the college level. At the secondary school level it is not so bad. It is not altogether money. As you indicated, the tighter the standards, the easier it is for us to work. New York City, for example, has teachers' civil service, with very high standards. The salary starts at \$4,500. Once you've got 10 years you've got a career. They have no trouble recruiting at all. When you lower the standards you hire people cheaper and they move in and out of the profession.

It is as much a question of motivation as anything else. If any of you read the statements made recently by David Reisman, a sociologist who has written a work which is the reverse of The Lost Generation, called The Found Generation, you will find something that I think is of profound significance. In the last generation we have been moving toward goals for young people which involve practical things--early marriage, quick raising of a family, quick settlement in a good living situation, quick membership in the Rotary and the Kiwanis and the country club, quick and smooth and easy social adjustment. That's the goal of most of our young people.

I have had an opportunity to travel to a lot of college campuses, and I am amazed at the things students say to me. I make it a habit to talk to some students if I can. I know what faculty members are going to say. They are of my generation, trained with me. They don't tell me anything that I haven't already heard. This new generation of students has got an entirely different set of goals from what you and I had. I was an undergraduate in the twenties. It was entirely a different period. Most of you are younger than I am, but some of you were trained in the middle twenties. That was a venturesome period. There was a spirit of adventure among students. You were willing to try anything. Nowadays the goal is not the learned scientist, the man who is going to make the breakthrough. It is to live in a nice suburb, have a station wagon and a Cadillac, be a socially adjusted individual, belong to a country club, play a round of golf of 76.

Well, you talk about rather low standards in order to get educated officers for your service. You are losing a lot of officers, too. I've got three neighbors, Navy captains, all three of whom quit within the last year to help some people make guided missiles. They are not lost to society. They are not lost to the public but to the service they were trained for. We are going to have to create a frame of reference. Being a scientist has a certain connotation. You speak broken English, you wear your hair long, you stoop, you wear thick lensed glasses, you are a curious chap. One of the hardest things we know of is to break through that and get into science some good young ordinary Americans named Smith and Jones, who speak with a southern accent, as I do and General Mundy does, just ordinary citizens.

This matter of goals is involved. This may seem to be a complicated answer to you, but it is a complicated problem. It is not enough for us to produce more teachers in teacher colleges and more Ph.D.'s. To give them a reward or career money is only a part of it. The frame

of reference for professional people has not been very good in the last 10 years. I suppose that is an understatement. What with security and what with almost any chance remark being misunderstood, a great many people did not want to run that kind of risk. They would rather get out and have a personal goal that did not expose them to this sort of risk. As you well know, some awfully wonderful geniuses have been rather bruised by the risk a person has to take to follow an intellectual career in education. Quite a lot of educators have not been very comfortable in the last decade.

Society has got to help us as educators to underwrite the problem of making a profession in this field a comfortable and a rewarding one in every way--not just money. I don't think doubling your salary or doubling my salary is the thing--but I'd love it; it sure would be fine. But that is not the answer. I have gotten too old to worry about that now. I need some other rewards.

We are short about 120,000 teachers in the public elementary and secondary schools. We could use about another 9,000 or 10,000 people. But I am not at all sure that if we train them they won't slip through our fingers, unless society recreates a salary scale, and that plus a place where that kind of career is a satisfying one.

I don't have the answer to all that.

DR. CLEM: Mr. Flynt, we gave you a very broad subject here, a pretty big subject that we have considered here this morning. But I think that we all agree that you have covered it quite adequately. We all want to thank you for coming down here and talking to us.

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