THIS SPEECH REFLECTS THE VIEWS OF THE AUTHOR AND DOES NOT NECESSARILY REFLECT THE VIEWS OF THE SECRETARY OF THE NAVY OR THE DEPARTMENT OF THE NAVY.

FACT AND FICTION IN AMERICAN EDUCATION

H. G. Rickover

Great events throw long shadows. That is why it is customary to observe their anniversaries. We might with profit have used the occasion of the seventh anniversary of Sputnik last October to reflect on its significance and to take stock of how we reacted to the challenge it posed for us.

Sputnik dramatized the fact that today a nation's position in the world is closely related to the number and competence of its scientists and technologists, as well as to the educational level of the general population. We were more deeply shocked by this Russian achievement than most other people because we took for granted that the first man in space would be an American. Were we not first in wealth and military power? Most Americans believed this proved we were supreme in science, technology, and education as well. It seemed incredible to them that Russia should excel in these areas. Has Sputnik taught us to eschew illusions? Not in education, I am sorry to say. There we continue to repeat clichés based on misleading statistics that hide the true state of our position vis-à-vis other countries with whom we are in competition on the world stage.

Sputnik challenged our scientific and technological performance in a direct and obvious manner. To this we responded promptly. We proceeded to mount a major offensive; we are still doing our best. In a less direct, less obvious way, it also challenged our educational performance. Here our response has been uncertain, faltering, and in no respect as positive as in the technological field. What made us react so differently to the several challenges implicit in a single event? To know the reasons is important for then we might find ways to speed a lagging response. Capacity to act without delay when change becomes necessary is one of the attributes that make a society viable, that keep a country at the top.

In the missile-space case we had several things going for us: The people on whom the country depends for action in the field, the scientists and technologists, were quick to see that Sputnik necessitated upgrading of our performance; they were willing to help bring this about. We had a concrete and practical problem. We set ourselves a clear-cut goal which could be attained simply by investing enough money and skilled manpower. There was no organized opposition. So we went ahead with dispatch.

In the education case, none of these things were going for us, except money. Though ours is already the most costly school system in the world, in terms of its yield in genuine education, money has not been a major bar to reform; the following factors have: Those directly responsible, the members of the educational establishment, were slow to grasp the significance of Sputnik for education, reluctant to admit that drastic reforms are necessary, strongly opposed to changes in the status quo which would adversely affect their vested interests. There was no organized opposition of this kind in the missile-space case.

School reform, moreover, is not a simple practical matter, especially not in this country where it is mixed up with all sorts of deep emotions. We cannot bring ourselves to look upon our schools as institutions charged with specific tasks they ought to perform as competently as possible; certainly as competently as schools in other advanced nations. We fail to recognize that life in all modern industrial countries now calls for much the same kind of intellectual competence, and that this competence can be acquired in no other way than by formal schooling. Many Americans have almost as fervent an attachment to our present school system as to the Constitution. To submit evidence that it is less efficient than others smacks to them of treason. This makes reform difficult.

Then, too, we have never agreed on precise goals for American education; it is

therefore not surprising we have been unable to set clear-cut goals for educational reform. Even if we agreed on goals, where would we find the skilled manpower to attain these goals? No really significant improvement is possible unless we raise the intellectual and educational qualifications of teachers. How can we do this, in the face of the determination of educational officialdom that existing certification requirements must be enforced. These are an insult to intelligent people, a useless bore to bright students. Intelligence is at a premium today; it will not be lured into education unless it is appreciated and rewarded in our school system.

From whatever point we look at the reform problem, we come up against organized opposition by defenders of the status quo whose personal commitment to habitual ways of thinking and acting goes counter to the nation's interest in having a first-class system of education. Of course, no solidly entrenched bureaucracy ever submits meekly to demands that it reform itself. Whether it be concerned with education or any other matter, the response will be the same: The power of the organization will be used to try to muzzle would-be reformers within the bureaucracy, to attack and vilify outside critics, and to fashion so admirable an image of the achievements of the organization that popular clamor for reform will be stilled.

No wonder we have had more talk of reform than action; more experimentation, gadgetry, costly mechanical gimmicks than fundamental changes that would make our school system responsive to individual and national needs. There have been changes for the better, but these have been sporadic and slow; little has been done to remedy the basic weaknesses in American education. We are still the only advanced country where direction of the educational enterprise is in the hands of administrators rather than teachers; our teachers still are less qualified than their counterparts abroad; we prolong comprehensive schooling unduly; there is chaos in educational nomenclature and academic degrees.

Critics like myself, whose concern with educational deficiencies antedates Sputnik, did rather hope the Russian spectacular would lend urgency to our pleas for reform. Perhaps it has but, to a reflective observer not shackled by commitment to the status quo, it seems as if there had merely been a change in the wording of the clichés that are being put forth in order to soothe the public by stimulating educational chauvinism. Ten years ago, the clichés one heard were: "ours is the best school system in the world; only we educate <u>all</u> children; we pioneered free public education." These are not often heard now, instead everyone says that "we have many times more people in <u>higher</u> education; twenty-five--or if the speaker's enthusiasm carries him away, forty--per cent of our youth attend a university compared to four to five per cent abroad." None of these clichés have any basis in fact but by sheer repetition they have become embedded in American folklore. They flow from the mouths of speakers as automatically as light turns on when you press a switch; they sink into the minds of audiences with the ease of self-evident truth.

What keeps these clichés alive are the statistics put out by the educational establishment. These are compiled by people whose unfamiliarity with education in other advanced countries leads them to equate educational achievement levels that are widely divergent, thereby creating an illusion that young Americans get more "higher" education than do Europeans. The catch is in the adjective. What we call higher isn't considered so abroad. We label our schools and degrees differently; thus what is called "university" or "college" here would abroad rate no higher than an academic secondary school or a vocational institution below university level; what we call <u>high</u> school would be a "middle" or a "continuation elementary" school. Faulty statistics and labels that overvalue American education by three to four years perpetuate the illusion that we have a mass system of "higher" education.

I have tried for years to combat these illusions by collecting and publishing

concrete facts about European education. We must be realistic. It is European education we should equal--better still excel; there is no doubt we do splendidly in comparison with education in the Congo or Outer Mongolia! In my books on English and Swiss education I give documented information on educational achievements abroad which enables the public to compare foreign school systems with our own. Here is what I found to be fact concerning the true amount of schooling our children obtain. Compare it with the fiction of education clichés.

What has to be kept in mind is that the educational value of a school year in Europe is at least a third higher than in America. This is so because their school year contains more hours of classroom instruction. During each hour more is learned because children follow carefully planned sequential programs that avoid duplication and leave no serious gaps in subject knowledge; they study more intensively, do more homework and are better taught. European standards of teacher education are notably higher, especially at the secondary level. Also, teachers are not enthralled to pedagogic blunders dreamed up by second-rate experimenters and researchers; for instance, the notion that serious study must be postponed because children, supposedly, are not ready at age six and need more playground activities. Nor is European education handicapped by the ideological strait jacket that imposes comprehensive schooling to age eighteen. This cannot but make for great inefficiency and an appalling waste of our children's best learning years.

The result is that Europeans attain any given educational level years before our children get there. At the end of their compulsory school period they will have had at least as much schooling as Americans at the end of eleven years. While abroad every normal child absorbs this much education because the authorities enforce 100 per cent attendance, here so many drop out that more than a third of our youth do not at the present moment complete the equivalent of this European minimum.

It is estimated that in Western Europe only about ten to fifteen per cent of youth are content with the minimum; the rest either continue at school or begin a combined apprenticeship-part-time school program, lasting two to four years and culminating in an examination that yields a diploma in a skilled trade. In some parts of Europe this vocational education is compulsory for those who quit school after eight years. The combination of elementary and vocational education amounts to more schooling than most American high school graduates obtain. Enrollment figures show that not until 1958 did we manage to get half our youth through the full high school course.

What of the stereotyped boast that five to ten times more Americans than Europeans attend a university or college? Alas, it is a semantic illusion. To equate the European university with our college is absurd. In the course of the nineteenth century the European university, which once consisted of a college or undergraduate faculty and three graduate faculties, was transformed into an exclusively graduate institution. Simultaneously, what we call college or undergraduate education was shifted from the faculty of arts of the old university to the upper grades of the academic secondary school which prepares for the European baccalaureate. Consequently, the American college, in European terms, is concerned with secondary education; only our graduate departments and postbaccalaureate professional schools are the equivalent of the Continental university. Because of the stretch-out, in American education, it takes a college-preparatory high school course plus four years of college to reach the bachelor level here, which Europeans attain in twelve, at most thirteen years. Vocational and professional colleges are roughly comparable with European technical schools below university level. Every time we use the term "college" when we speak of a European university, or "high school" when we mean a gymnasium, lycée, or grammar school, we perpetuate illusions

that do us no good.

It is instructive to follow a class of first graders on their climb up the education ladder. On the basis of enrollment figures in the Hearings before the General Subcommittee on Education, Committee on Education and Labor, House of Representatives, Eighty-Seventh Congress, First Session, H.R. 4970, and degree awards listed in the American Council on Education's Fact Book on Higher Education, this is what happened to the children who entered school in 1944: seventy-four per cent made it to the sixth grade, fifty-three per cent to the eleventh, and forty-seven per cent graduated from high school. About half of these entered college; thirteen to fourteen per cent obtained some sort of bachelor's degree, two and one half to three per cent will probably receive a master's degree and one third to one half of one per cent a doctorate.

These percentages are much higher than a few years ago. According to the Statistical Yearbook, sixty per cent of the population twenty-five years or over has had fewer than eleven years of schooling, ten per cent five years or less; only seven and one half per cent have had four years of college or more. We have yet to achieve an attendance record comparable to that in Prussia in 1825--139 years ago--when every child between seven and fourteen was in school. In 1880, the illiteracy rate of German recruits was one half of one per cent, in 1925 that of Japanese recruits less than one per cent, but today we reject one quarter of our draftees because they can't read a simple manual. Estimates of functional illiterates vary between eight and eleven million. In Denmark they have an amiable argument whether there are one or two illiterates in the country!

While Europe has for some years had a shortage of unskilled workers and must import foreigners to do common labor, we have a surplus. We have masses of young people so deficient in mental and manual skills that no advanced society could

provide them all with jobs, except on a charity basis. Their tragedy makes a mockery of our constant boast that we are the best educated, most literate people on earth. So severe is our shortage of professional people that we shop abroad for men with doctorates, much to the chagrin of countries that have spent large public sums on the education of these bright young people.

I have an idea that if clichés and misleading statistics did not give us an illusory picture of the state of American education, the public would long ago have demanded reform. If we wish it, we have but to insist that our education statistics be accurate; after all, we pay for them. European statistics are better than ours because of the similarity of their several school systems and the near equivalence of their degrees. Our school system and our degrees are so different from theirs that we must find some way to factor the lower value of the American school year into our statistics so that they will be internationally comparable. This would rectify education statistics in the same way that the device of the "constant" dollar rectifies economic statistics. The constant dollar takes account of changes in the real or purchasing value of actual dollars at different times. To illustrate:

To a layman changes in Gross National Product (GNP) are an indication of changes in individual income. In actual dollars GNP rose from 214 to 624 billion between 1945 and 1964; this <u>looks</u> as if we had become three times richer. If the figures are expressed in constant dollars, the rise is from 383 to 612 billion or merely sixty per cent. If we translate this into per capita terms, taking account of a rise in population of almost fifty million, the increase is from 2,727 dollars to 3,188 dollars or only seventeen per cent.

Statistics are an extremely helpful descriptive shorthand, but we must be sure we know just what they describe in numerical terms. When they show that with six per cent of the world's population we own more than half the world's telephones

and automobiles--or for that matter, most other consumer products--this shows that we stand first in industrial production. We tend to reason from this that we are first in everything else, but this does not follow. For instance, we stand twelfth in infant mortality, fourteenth in longevity for males and ninth for females; some of the countries doing better than we are quite poor. The number of new book titles published per annum says something of the reading habits of a country and thus perhaps indirectly of educational levels. In 1961 on a per capita basis France published three times more, Great Britain five times, and Switzerland ten times more new books than we.

Europe has for a century worked at setting up uniform statistical standards. We remain outside this effort. Perhaps we should join it. A noted mathematician once remarked that "today the lives and happiness of people depend more than most of us realize upon the correct interpretation of public statistics." Misleading or misunderstood statistics will "paralyze intelligent criticism." This, I believe, is the case with our education.