

One of Our Rising Expectations

BY WILLIAM P. STEVEN*

Whenever we cannot understand a surging nationalism in an area which formerly was a colony, whenever we cannot abide independence among a people who have accepted our aid, whenever a new nation experiments with political systems that differ from democracy, we are outraged. And then we are told to be calm, for this is a time of rising expectations.

I hope this *is* an era of rising expectations, everywhere. For rising expectations mean that individual men are asking more from life than their forefathers gained. They will learn, as they ask, that they must work to achieve; but before they will achieve, they must have rising expectations.

There is no nation in the world that is a finer monument to rising expectations than the United States of America. The sought-for needs of our people have created the spirit of independence and individualism which so characterizes our country. Our nation is the end result of rising expectations.

The *end* result? The word "end" is wrong. Our nation is the result—but not the end—of rising expectations. For at this very moment, the people of the United States of America are filled with rising expectations beyond any other citizenry in the world. The people of the United States not only have more because they have achieved more, but they expect more than they have achieved.

Today, I want to talk with you quite seriously, and in quite a businesslike framework, about a single one of the rising expectations of America.

A University of Michigan survey discovered recently that the parents of 66% of the boys and 50% of the girls expect their children to continue their education beyond high school and into college. These expectations are being put into effect spectacularly, as American Council on Education surveys show.

In 1961-62, 34.5% of the 2.9 million high school seniors or 1,000,500 enrolled in college.

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In 1962-63, 36% of 2.8 million seniors, or 1,008,000 went to college.

In 1963-64, however, 38% of 3.4 million seniors or 1,272,000 intend to continue in college.

In 1964-65, 39.5% of 3.6 million seniors, or 1,422,000 will continue.

In 1965-66, 41% of 3.6 million seniors, or 1,676,000 will continue.

In five years, the size of the entering college class will increase by 66%. Here is a sales curve of significance. I wish I were in a business where this kind of growth might be expected.

But this five year increase of 66% in entering college students is realized when only 41% of the seniors enter college. Yet 58% of the parents expect their sons or daughters to enter college. If that expectation is fulfilled—and the faith of the American system is that it does fulfill the expectations of its electorate—the entering freshman class would be two million instead of 1.6 million, and the load would represent a doubling of the responsibility of our colleges in the next five years.

At this point, perhaps it is proper to inquire whether this rising expectation is a reasonable one. Do all these boys and girls need to go to college?

Once in a great while in the cursory reading that I do, I come across a sentence or a paragraph into which is compressed great wisdom. The other night, in the *Bulletin of the Atomic Scientists*, in an article by the French economist Bertrand de Jouvenel, I chanced on such a paragraph.

There can be no civilization unless society affords ample credit to men of thought. As their character changes, so does society. In the history of European civilization it is easy to observe, first, a long era during which the men of thought were all men of God, clerics; then a gradual emergence of men of law, who finally became the most favored and dominant type of intellectual. As we tie great changes in political ideas and institutions to this displacement, we therefore have good reason to predict great change from the supersession of the jurist by the scientist as the most favored and dominant type of individual.

What this Frenchman is saying is that the faith of Christianity was kept alive for us during the Dark Ages by the clerics; that the democratic form of government which has freed individual expression and enterprise in developing our economic system came from the predominance of the jurists. And now, he says—as he marks perhaps the

third great change since the time of Christ in the affairs of the western world—we now respect the scientist.

The world of the scientist is a world we do not know. It is a universe, said J. B. S. Haldane, "not queerer than we imagine, but queerer than we *can* imagine." It is a universe as seen by Sir Isaac Newton, who likened his career in science to "a boy standing on the seashore, now and then finding a smoother pebble or prettier shell than ordinary, whilst the great ocean of truth lay undiscovered before me."

I recently sat in a science seminar for newspaper editors, and my inept questions prompted one scientist to inquire of me what was my interest in science. "It's news," I said, "it's the world in which we live, and newspapers must tell about it."

"No," he said, "I mean what is your personal interest—biology? Chemistry?"

"I have had neither," I said.

"Ah, then physics," he said.

"No, not even physics," I said with some shame, and added, "I guess that in science I am pretty stupid."

"No," he replied, "not at all. You are not stupid. You are merely ignorant."

I tell this story because today we are all ignorant. Science is moving at such an accelerated pace that we do not keep up. Let me give you just one example:

In World War II, America's most important strategic weapon was the B-29 bombing plane. We mounted some devastating raids on German cities and Japanese cities with a thousand B-29's. Do you have any idea where the B-29 would stand in today's strategic warfare?

Let Raymond D. Senter explain it:

Today the world powers face the prospect of true "strategic warfare" which for the first time in history threatens their very existence in the most literal sense and not in the jingoistic sense in which war propagandists previously have used the expression. While this new gradient of conflict would employ the concept of strategic bombing pioneered in World War II, it is no mere extension of that technique as many of the practitioners of that early art would like to believe.

This should be patently obvious to anyone who can see each B-52 for what it really is—the thermonuclear equivalent of a fleet of five million B-29's, while remembering that the B-29 was the most powerful strategic weapon in our arsenal less than 20 years ago. Each of our land- and submarine-based ballistic missiles, which will soon total more than 1500 in number, is the thermonuclear equivalent of 200,000 to two million B-29's. In grand total, we have the equivalent of *billions* of

B-29s, with potential for destruction beyond human imagination. Even after allowing for the destruction of 90% of the fleet in a surprise attack, what remains will be the equivalent of a fleet of tens of millions of B-29s. This is the real dimension of strategic warfare.

Without further elaboration, let us ask what kind of education does this kind of a nuclear world require. This is not a hypothetical question. This *is* a nuclear world, whether we are educated to accommodate its power and its tensions or not. And if we are not educated to control its tensions and use its power, then our ignorance will bring our own destruction.

The kind of world in which we live today, and in which our children—God and man willing—will live tomorrow certainly requires great scientists. But it also requires economists with the wit and wisdom to web together the productive capacities of the world; it requires diplomats who can resolve conflicts and dissolve tensions; it requires scholars who are steeped in the historical motivations of strange and unlike peoples; it requires linguists as familiar with Swahili, Hindi, Urdu, and Arabic as they are with Russian, and Chinese, and French and English; it requires businessmen with drive, imagination, courage and creative capacity to bring the benefits of business to both consumers and workers. The structure of society must be strong enough to contain its power sources.

These requirements rise in the same astronomical proportions as nuclear power does to other power sources. I recently asked a Rice University professor to give me the proportions of power in kerosene, the symbol of the horse-age; high octane gasoline, symbol of the automobile age; liquid and solid rocket propellants, symbols of the space age; and nuclear fuel. His answer was: assuming a single device existed which could use these fuels, kerosene and high octane gasoline have the same power; liquid and solid rocket propellants have five times more power than kerosene and gasoline; and nuclear fuel has one million times the power of kerosene and gasoline.

This is the world to which education must build in our controls. Do you think our system of higher education has adjusted to this new power structure of society? Have we kept up with the surge of new knowledge? Have we kept pace with the rising expectations of parents? Or, are we headed to social bankruptcy, in arrears in knowledge, and behind in our expectations fulfillment?

If we were to close the universities and colleges of Texas, it would be a national scandal. We would be accused of wasting the time of 200,000 of our ablest young people. The smart businessman can re-

place profits lost, he can adjust to higher taxes paid, but he cannot replace the waste of the lost time of youth.

If our educational atmosphere is not the best, new industry will not come here today. This important matter is causing a crisis in the economic future of Texas and of the Southwest. New industry is growing up around the great educational centers of the Northeast, North, and Far West. Increasingly, companies are moving to or originating in areas where the sources of brainpower are created. Our technology today is dependent upon trained scientific and engineering leadership. We must have adequate opportunity at the graduate level of education or die economically in Texas. The rule of capitalism is grow—or die.

We can worry about the cold war, the possibility it may be a hot war, the debt, the tax rate, the Red Chinese, the ultra liberals, the ultra conservatives—oh, we have many things to worry about. But few of them involve this great irreplaceable asset: *the time of tomorrow's leaders*. And *this* is a waste we cannot afford.

This waste is threefold. If we are going to achieve real educational leadership in the graduate institutions of Texas, our problems are as follows.

First, there is the problem of *catch-up*. We're badly behind the average of the nation and even further behind the best states.

Second, there is the problem of *keep-up*. The average state is improving at a faster rate than we are—and the average state does not have any more capable young people or resources than we have.

Third, there is the problem of *get-ahead*—of hiring, helping and keeping in Texas real educational leadership. Texas cannot progress without it. We cannot reach the goals we talk about, without it. We'd better not worry about whether we can solve the missile gap until we take the steps we must to solve the ignorance gap.

In Texas, we pay full professors in four-year colleges less than the average for the nation, and \$10.00 a year more than the average for the 16 southern states. We have increased that pay in the last five years less than the average for the nation and less than the average of the 16 southern states.

Here are the facts: In 1960-61, full professors at four-year public colleges in the United States averaged \$10,650; in the 16 southern states, \$8,620; in Texas \$8,630. Our rank in the 16 states: number eight of the 16.

Here are the facts for the private colleges: U. S. average, \$9,830; southern states average, \$8,210; Texas, \$7,750. Texas' position in the 16 southern states: number six in 16.

But I want you to know we do try to get our money's worth. In Texas we may not pay professors as much, but we do let them teach more students! This is economical, if not educational. The facts: Student-Faculty Ratio—U. S. average, 1 professor to 16 students; southern states average, 1 professor to 16.1 students; Texas average, 1 professor to 19.6 students. Our rank among the 16 southern states: number 15 in 16.

Of course, you need fewer teachers if you have plenty of books. The expenditures per student for libraries: average for all U. S. colleges in 1960-61 was \$42.00 per student; for 16 southern states, \$41.00 per student; for Texas, \$39.00 per student. Texas' position: eighth in the 16 southern states.

Well, perhaps that \$3.00 per student isn't important—the book might have been subversive anyway. But multiplied by 200,000 college students in Texas, it is the important amount of \$600,000—that's \$600,000 less per year for books in college libraries in Texas than the average for the United States.

Do you begin to sense how far behind we are?

Do you suppose some inkling of this standing may have seeped into the better brains in Texas high school seniors? Is this why 43 percent of the National Merit Scholarship winners in Texas high schools in 1963 went outside Texas for their college work? Is this why 86 percent of the honors graduates of the University of Texas who went on to graduate work went outside the state of Texas to take that work? Is this why in the average U. S. university, the graduate students make up 9 percent of the student body, and in Texas the graduate students make up 6 percent?

The answer is yes. This is true. How long will we stand for it? How long before we catch up?

But the problem of catch-up is only the first hurdle. What's the problem of keep-up?

Texas has 213,000 college students today. In 1970, we can expect 373,000. But ours is a state where we expect our children to go to college. It really is, even if we don't pay for it, and even if we pretend to refuse Washington aid.

We have a fine increase coming in college-age population. In the U. S. it will increase 56.6 percent, 1960 to 1970; in Texas, 58.6 percent. Here we're ahead of the national average.

But this is easy to understand, because Texas has a high percentage of residents with four or more years of college. In the nation, 7.7 percent of the people have four or more years; in the 16 southern states, 6.9 percent have. But Texas has 8 percent—and that means a

bigger-than-national demand for college for their children.

Another way to look at Texas' keep-up problem is this: urban populations produce more college students than rural populations. The U. S. was 69.9 percent urban, in 1960. Texas is 75 percent.

The managerial and professional classes produce more college students than the blue collar workers, too. The U. S. is 18.1 managerial and professional. Texas, wonderful Texas, is above the national average again with 18.6 percent.

Now just how do you think these college-educated Texans, these managers and professional people, these city dwellers where the status symbols count most, are going to get their children educated in a state which is below the national average in state operational support of public colleges and universities; below the national average in private gifts and grants per student in private colleges and universities; below the national average in educational and general expenses per student in public institutions; and below the national average in state support as a percentage of the state's general revenue fund?

The state operational support per student in the United States was \$688; in the southern states, \$692; in Texas, \$524. We rank 15th in the 16 southern states.

The private gifts and grants per student were \$199, in the United States; \$192 in the 16 southern states; and \$175 in Texas.

The educational and general support per student in public colleges and universities was \$1,183 in the U. S.; \$1,129 in the southern states; \$1,025 in Texas. We rank 13th in the 16 southern states.

Just notice this difference. Texas is \$158 per student—\$158 times 20,000 or more than thirty million dollars—below the national average. And Texas has the kind of population which will produce a larger number of college students than the national average.

Notice that \$158 is roughly 15 percent less than the national average. Do you really think Texans are 15 percent easier to educate; or that we are 15 percent more efficient in operating our schools? Or, are we defrauding the future leaders of Texas, who are in school now, with a 15 percent discount on what they should expect from college?

And are we going to defraud the larger and larger numbers by even greater discounts when we spread the money over more students? Just where do you think we will find the genius who will work for 15 percent less, spent 15 percent less, and produce genuine educational leadership? And all we are talking about here is getting to be average.

Let's look at the facts in the field of graduate education. During the academic year 1959-60, only 265 Ph.D. degrees were granted by

Texas institutions of higher learning. The entire Southwest now produces just over 500 Ph.D. degrees a year, 5.6 percent of the nation's total. Columbia University alone produced 573 in 1960, more than the entire Southwest. There are six major universities throughout the nation which produced more doctorates than all of the Ph.D. degree granting universities in Texas put together.

Is it any wonder that new industrial complexes tend to look toward the Bay area of California near Stanford with its fine graduate school, its \$260,000,000 endowment, and its research center; or to southern California and the outstanding graduate facilities at Cal Tech, or to the North or the East Coast where most of the universities have outstanding graduate schools and produce the majority of the nation's Ph.D. degrees each year?

In the state of Texas, the executive secretary of the Governor's Commission on Education beyond the high school tells me, there are 101 institutions of higher learning.

Northeastern Texas has more than its share. It is served by 48 of the 101 schools and colleges in Texas. About 72,000 students attend these 48 schools. Six are state supported universities and colleges with 30,000 students. One is a state supported graduate medical school with 400 students. Eleven are state supported junior colleges with 10,000 students. Roughly four out of seven students are in state supported colleges, universities, and junior colleges. And, in the five years beginning with the school year of 1957-58 and ending with the school year of 1961-62, these schools which enroll 40,000 students a year produced exactly 100 doctor's degrees.

That makes it pretty clear that if northeastern Texas is to meet the needs of its own educational institutions, its own industries, and its own intellectual climate, it must depend upon its privately-financed colleges and universities. It has many of them. There are, in comparison to 18 state schools, 30 private colleges and universities in northeastern Texas. Three of them are dominant in enrollment: Southern Methodist is in the range of 7,500; Texas Christian in the range of 7,000; Baylor in the range of 6,500. Of the 30,000 students attending 30 private colleges in northeastern Texas, 21,000 attend three of the institutions, and 9,000 attend 27.

And what is the record of graduate education here? Baylor has awarded, in the five academic years from 1957 through 1962, 42 doctor's degrees. Neither Southern Methodist nor Texas Christian had doctorate programs. In 1963, Baylor had 13 doctor's degrees, Southern Methodist awarded its first, and Texas Christian had programs underway.

Now how does this compare with three other schools of similar size? It happens that Yale, University of Chicago, and Duke have approximately the same enrollment as Baylor, Southern Methodist and TCU. Yale is the oldest, of course, being founded in 1701. But Baylor dates from 1845, TCU from 1873, the modern University of Chicago from 1890, Southern Methodist from 1911, and Duke—as now constituted—from 1924.

Last year the University of Chicago granted 280 doctor's degrees, Yale University granted 231, and Duke granted 106. That's 617 against the 14 for private colleges in northeastern Texas, and 617 against 22 for northeast Texas public colleges of greater enrollment.

This is deliberately a sharp and cruel picture. But the University of Chicago had no graduate program until John D. Rockefeller, Sr. began making his magnificent contributions. And Duke did not exist in that name at all until James B. Duke left it his fortune. When, gentlemen, will that happen in northeast Texas?

Your own fellow citizen, Dr. Lloyd V. Berkner—a Minnesotan from a town called Sleepy Eye—has pointed out that in time past wealth came from physical labor applied to natural resources. Today that is no longer true. "An intervening ingredient—brain power—must be available to provide the innovation that can extend our economy into new products and new services," says Dr. Berkner.

In the 1950's the Ph.D. degree was an academic curiosity. Now it is almost an industrial and educational necessity. The Ph.D. is the intervening ingredient. We need more than 20 great Ph.D. "factories" located in the three intellectual plateaus of America—the northeast, the midwest, and the far west. Now we need 100 such universities widely placed over the nation, and we desperately need several of them in Texas.

Simply to meet the needs of colleges and universities for professors with this advanced degree, Texas must produce every year 245 Ph.D.'s. Yet, in your own area, I know of one company whose president stated that, if a certain contract were obtained, he would have to hire 1,000 Ph.D.'s, and he did not know where they were coming from. I know of another company in your area which, according to the official in charge of engineering and research, anticipates that his needs for Ph.D.'s—just in the area of electrical engineering—will soar to more than 300 a year. I know of a third company in your area which is relying on SMU's capability to produce Ph.D.'s and using that capability in order to attract outstanding employees for their industry. I know also that your city, (which, thanks to the Graduate Associates and SMU, produced its first non-medical Ph.D. last May,

and has established two new Ph.D. degree programs within the last year) is one of the biggest users of Ph.D.'s in the entire state. But where are you going to get the new men required to keep up unless you move now and move fast?

Let me summarize what has been said.

First, there are rising expectations for higher education in the United States which are larger than our capacity, and much larger than we can meet with quality.

These rising aspirations come at a time when the flow of history, which has passed the cleric, is now passing the jurist, and is moving to a world in which the scientist is the dominant intellectual.

From what little we know of the world of the scientist, it is evident that most of us are not well prepared to deal with its uniquely new problems.

Thus, a deficit in higher education both imperils the democratic drive of rising expectations, and fails to provide guidance needed for a world in which scientists are dominating in intellectual life.

In these circumstances we look at our facilities in Texas. At the undergraduate level they are grievously wanting; they are less good than the average for the 16 southern states, and the 16 southern states are America's wasteland of higher education.

But even more devastating to our future assurance are the shortcomings in graduate education, which must flow out of the richness of the undergraduate curriculum.

We have the problems of catch-up, keep-up and get ahead.

We have the problems of providing very large new revenues and very unpleasant reorganization of our publicly supported structure for higher education—or we cannot afford to buy what we need.

We have equally serious problems of reorganization of private colleges and schools; too many, too small, too weakly-financed. But even the big, the strong, and the leaders in private schools in the Southwest look financially and educationally puny compared with schools of equal size and relative age in other parts of the nation.

Gentlemen of Dallas, this is where we stand today. Where we stand tomorrow is your business.