A FEW years ago Professor Samuel Eliot Morison, the Harvard historian, delivered a series of lectures at the Rice Institute. In them he described commencement as the oldest, most dignified, and widespread university institution; and he went on to say that it began simply as the initiation of new members into the guild of masters or teachers. Initiations have many different aspects. I am told that at some British Universities, it is customary for the undergraduates to occupy a gallery of the hall in which the commencement is held and to disturb the proceedings by as much noise as they can make. Some of you are perhaps acquainted with initiations in which the dignity of the occasion is one of the minor features, to say the least. Nevertheless, most organizations, for at least a part of their ceremony, have some words of guidance and advice to the new initiates; hence the commencement address.

However, times have changed since the earliest commencements. Most of you members of the graduating class are probably not contemplating a career of professional teaching. You have other problems to consider than those of a teacher, and are more anxious to get at those problems than to hear me discuss them. This you probably have in common with all graduating classes. Nevertheless, the commencement address survives, and if not as old, is at least as widespread as commencement itself. As a recognition of the change in times, commencement addresses have normally been given by persons with special competence in public affairs, ethics, or religion. Presumably, they were
best fitted to give the needed advice to the new initiates; initiates not necessarily in the fraternity of teachers, but initiates into citizenship. Lately, however, there have been departures from this custom and occasionally a commencement address has dealt with the growing influence of scientific thought and activity on the duties and obligations of citizens.

This is perhaps not unrelated to the fact that the past year has seen a phenomenon almost unknown in this country or in any other country. It has seen physicists, chemists, and engineers called to testify before Congressional committees. Perhaps still more unusual is the fact that their testimony has been listened to with respect and attention. The results, however, have not yet been all that might have been desired because the witnesses did not completely agree. They failed to agree because they were faced with a dilemma—a dilemma familiar to men active in public affairs but not so well known to those accustomed to dealing with the much simpler situations of the laboratory. They faced the old problem of control versus freedom.

This sudden appearance of scientific workers in the public eye has been disconcerting to many. It has grown out of the fact that during the war many such people were mobilized to work on military problems, in every country in the world. Presumably, in all countries they were motivated by feelings of patriotism. At least in this country and Britain, most of them felt that the war was being fought for a worthy objective, and regardless of how horrible the conflict, humanity would benefit in the long run from our victory. Even those who felt some doubt on the latter point, realized that it was a case of win or perish; realized that scientific activity in the enemy countries was just as vigorous and possibly just as effective as in this country. The only
question was one of speed, and they put their most strenuous efforts into the race.

As you know, never have efforts been more spectacularly successful. They led to a large number of improved weapons of war, culminating in the development of an atomic explosive. These men were, of course, pleased at the success of their work; but they were equally disturbed at its destructive nature. Particularly those working on the atomic explosive were horrified at its effectiveness. As this project approached completion, many of them wished they might have been unsuccessful, that they might have found some principle of nature that would have prevented the concentration of such destructive forces. In spite of this inner conflict they were driven on by the feeling that the enemy was racing toward the same objective, and was dangerously close to reaching it. Sometimes they tried to quiet their consciences by the thought that such energy could also be turned to peaceful ends, but this was not very effective in the face of the actual use for destruction.

As a consequence of the necessity under which they labored, these men soon began to seek effective national and international control of sources of nuclear energy, because of its destructive possibilities. In the fall of 1945 the first bill was introduced in Congress providing for government control and supervision of all research and development work that might have a bearing on this subject. The supporters of this early bill had various motives. Some of them wanted nuclear energy under the proper national control in order, first, that it might not fall into hands where it might be improperly used; and in order, second, that suitable international control might follow. Others felt that the United States should have exclusive possession of this terrible military weapon. The extension of their war patriot-
ism led them to believe that the United States would use it more worthily than any other nation, and they seemed to think that by keeping a secret they would also keep the peace. Nevertheless, in spite of agreement with some of the objectives, large numbers of persons opposed the bill because of the restriction it placed on the possibilities of scientific research. As a consequence the bill was not passed.

The dilemma soon became apparent. The necessity for proper control and regulation was opposed to the traditional freedom of research, a freedom deeply cherished by every scholar and an absolute essential to real scientific development. Many of those most impressed by the horrors of destruction were inclined to give up this freedom as the price of survival. Many of those less close to the actual demonstration of destruction felt that the loss of freedom was too great a price to pay, even for survival. They felt that the concentration of such terrible power in the hands of the few persons constituting any government could lead only to tyranny. They believed that only widespread dispersion of knowledge and of the techniques of the new sources of energy could provide the balance necessary for relative security.

This is not a new problem. It is an old problem in new form, and with a new and terrible urgency. It has often appeared as applied to individuals, and it now appears as applied to nations as well. There is on the one hand the desire for freedom and on the other hand the desire for security. The urgency of the problem is now being emphasized by scientists. It has been tremendously accentuated by war-time developments. But the decision must ultimately be made by the whole people. You of this graduating class must take your part in properly weighing the values involved. You must help to formulate methods of national and interna-
tional control of the weapons of war, without destroying individual freedom, and without creating an oppressive dictatorship. You must also cultivate a type of freedom that brings with it such individual and national responsibility, as to minimize the necessity for control.

Since the first bill was introduced numerous other proposals have been made. The most recent, of course, as you know, is the proposal by the United States government for international supervision of all the major weapons of war. Whatever your personal views, I think you must agree that this proposal has been most carefully prepared, especially as it refers to nuclear explosives. It is based on an exhaustive study of the problem by a well-qualified committee. It undertakes to avoid limiting research by proposing the active promotion of research. It proposes to reduce to a minimum the actual policing that must be done, and to cultivate a feeling of confidence and security by creating an administration of the highest scientific and technical competence. It proposes that as suitable international organizations are established, the United States will eventually stop the manufacture of atomic weapons, and will renounce them as instruments of war. Let us hope that this proposal may be accepted as it was meant, as concrete evidence of the peaceful and benevolent intentions of this country. Initial safeguards of our own people are of course an obligation. But the hand of America is held out in friendship to all.

Many scientists, and particularly many physicists, are pessimistic about the future. They are obsessed by the horrors of uncontrolled warfare with these new weapons. We may still believe, however, that the hopes and aspirations of rational men may lead to a reasonable solution of the world’s problems; may lead to a proper balance between the necessity of government control over individuals and the
Address to the Graduating Class

necessity for individual freedom to control the government. At any rate, pessimism and despair are not likely to be productive of effective action. Hope and the determination to attack the problem and to solve it are the first requirements of success. These are your characteristics; the characteristics of youth.

It is easy to speak of the duties of nations and governments, but let us not deceive ourselves. Responsibility is the responsibility of individual men and women. If your years of schooling have brought that balance of restraint in speech, tolerance in opinion, and kindliness in action, which the Rice Institute has hoped for you, then this country is proud to have you as citizens.

The requirements, after all, for an abundant life are the same for men and for nations. The mind to do justly, and the heart to love mercy, are still the attributes of peace. "And what doth the Lord require of thee, but to do justly, and to love mercy, and to walk humbly with thy God?"

W. V. Houston.